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# RETAINING A SENSE OF SPONTANEITY IN FREE JAZZ IMPROVISATION THROUGH MUSIC TECHNOLOGY

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## ABSTRACT

The Free Jazz genre has many interpretations and takes different forms from one musician to another, which makes it difficult to define as a single entity. This paper focuses on the style pioneered by Ornette Coleman (b.1930) as his form is probably most well known. Whilst his could be considered one of the most spontaneous Jazz styles in terms of its improvisational language, it does come with its limitations. His Free Jazz improvisations whilst created in the moment, are not truly spontaneous as Coleman still relies heavily on the idiomatic Bebop ensemble culture, melodic language and formal structures in his music.<sup>1</sup> This paper is an account of some attempts to retain a sense of spontaneity in Free Jazz improvisation by incorporating music technology. Through my own experiments and research I have found that through the use of live recording, sampling, processing and playback technologies, it is possible to surprise the improvisers with even their own musical ideas and hence inspire them to break away from using the idiomatic Bebop language.

In this approach a laptop performer is employed in the ensemble, using live recording, sampling, processing and playback technologies to choose (in an uninformed manner) which materials will be explored in the group's improvisations. This adds a layer of spontaneity as not only can the instrumentalists' improvisations be replayed from any point, but also

extended beyond the technical capabilities of the performer through electronic processing. Hence, not only are the opening improvisations spontaneous to the performance but so too are their development. The implications of this strategy, not only in creating original works, but also in the performance of 'Jazz standards' will be discussed.

## INTRODUCTION – CONTEXT

Free Jazz was one of many indeterminate music styles that came about in the middle of the twentieth century. Whilst it still had historical and social connections to its African-American heritage and subsequent musical idiosyncrasies, it paved the way for other forms of 'free improvisation', a broader term which encompasses other musical attempts in improvisation to steer away from any idiomatic connections to any other music that came before it. In this paper I have accounted my own experiments and research, which propose an alternative improvisational strategy using music technology, and yet still retain a sense of spontaneity. I will also explore techniques developed by other musicians that have explored this concept. To provide an understanding of the reason that others and myself have explored this topic, I will begin by looking at the workings of Ornette Coleman, and discuss some issues that face the traditional Free Jazz improviser and limit him or her from improvising in a truly spontaneous manner.

## ORNETTE COLEMAN'S FREE JAZZ ENSEMBLE

Free Jazz is a style of music pioneered in late 1950s and early 1960s America by jazz musicians such as Ornette Coleman, Derek Bailey and Cecil Taylor. They began exploring new possibilities in improvisation against the backdrop of highly idiomatic genre of Bebop. Coleman describes the improvisation environment of Bebop with the following in his liner notes to the 1959 album *Change of the Century*:

Today, still the individual is either swallowed up in a group situation, or else he is out front soloing, with none of the horns doing anything but calmly awaiting their turn for their solos ... the final effect is one that is imposed beforehand by the arranger. One knows pretty much what to expect.<sup>2</sup>

Coleman responds to this by freeing his ensemble members to play whatever they wish, whenever they wish. He does mention however, it is '...because we [the ensemble] have the rapport we do that our music takes on the shape it does. A strong personality with a star-complex would take away from the effectiveness of our group, no matter how brilliantly he played'.<sup>3</sup> Whilst Coleman is referring to the significant effect the ensemble culture has in free improvisation, he still keeps the ensemble within the traditional Bebop realm in its instrumentation and ensemble roles. In his early Free Jazz album *The Shape of Jazz to Come* (1959) the drummer, Billy Higgins, plays a constant pulse, the bassist, Charlie Haden, plays a walking bass line and the two front line instruments (Coleman's alto saxophone and Don Cherry's trumpet) play the melodies and counter-melodies. The overall sonic palette is really no different to the Bebop ensemble.

Even though he frees his performers to play at their own discretion, the ensemble collectively calls on familiar sounds from their background in Bebop. Despite that the ensemble culture allows unimposed roles and structures into the improvisations, Coleman's ensemble falls into the roles they are comfortable with. These comfort zones do not readily result in spontaneity in improvisation. To paraphrase Coleman, 'one knows pretty much what to expect' in this situation.

Over-familiarity with playing with the same performers overtime also creates its own limitations to spontaneity. As John Cage once said, 'Improvisation is generally playing what you know' and 'doesn't lead you into a new experience'.<sup>4</sup> The familiarity with what the ensemble improvises can inform the improvisational decisions of the individual improviser and hence limit them from spontaneous 'new experiences'.

## RADICAL MOTIVES FOR RADICAL MOTIFS

Coleman's melodic language was still considered radical in its time, a time when musicians were mostly concerned with the harmonic development of improvisation. Coleman also responded to the strict harmonic (and hence melodic) language of Bebop. Coleman reveals in an interview with Eric Jackson that he wanted to 'play a musical motif without having any preconceived notions of the style that the idea came from'<sup>5</sup> and realised after several attempts he would not achieve this goal in the style of Bebop.

Coleman considers that the rigidity in Bebop was due to the strict harmonic language. He first dismissed the piano from his ensemble on his album *Tomorrow is the Question* (1959) something he would bring back until around the 1990s, as its primary role in the jazz ensemble is to outline the harmonic progressions of the thematic material. By doing so, the improvisation sections in his compositions develop more motivically than harmonically. It is because of his unusual harmonic language in these improvisations however, that the albums did not always strike a chord with listeners.

Jeff Pressing paraphrases Ekkehard Jost in his article *Free Jazz and the Avant-Garde* who questions Coleman's 'clearly original' music as conflict occurs 'between his maintenance of a tonal framework and traditional song forms in his compositions (which were and continue to be widely admired), and the improvisations on them, which though bop-like in style often gave faint reference to the chordal progressions, acting instead more linearly via chains of association'.<sup>6</sup> It appears Coleman was still not totally free from the Bebop tradition, and hence his improvisations were not truly spontaneous.

## STRUCTURE OF COLEMAN'S FREE JAZZ

Although there is spontaneity at one level in the structure of the Free Jazz improvisations, Coleman still imposes the song-form (as mentioned in Pressing's article above) structure (AABA) in his Free Jazz albums. Even though Chris Kealey commends how Coleman transforms the song-form in a refreshing manner, as he was "free from the need to "make the changes""<sup>7</sup> it once again limits the improviser to work with or around it, and does not encourage them to, what Coleman attests 'put what you want in it [the amount of space available to improvise].'<sup>8</sup>

By looking at the influences that brought Coleman to his Free Jazz albums, one can see there are still many ties to the Bebop traditions, which limits Free Jazz from being truly spontaneous. In the next two sections I will analyse such limitations and then propose strategies of others and my own where one can retain a sense of spontaneity in Free Jazz improvisation.

## ANALYSIS OF LIMITATIONS IN FREE JAZZ

So far I have discussed three areas that limit the improviser in Free Jazz, the ensemble culture, melodic language and formal structure. To consider these terms more broadly I will discuss them as 'interactivity', 'sonic palette' and 'formal structure' respectively.

### LIMITATIONS IN INTERACTIVITY

The interactive nature of Coleman's ensemble fell into familiar ensemble roles. Although he removed the underlying 'harmonic' role in the ensemble, he did not free the musicians from the 'pulse' role. The drummer is still there beating out constant quavers just as they did in Bebop music. The bassist accompanies him in the 'pulse' role by playing a walking bass line. These two players then do not get to play in a truly free and spontaneous manner as they still have another purpose to serve to the other musicians.

In his album *Free Jazz* (1960) Coleman features a 'Double Quartet', one quartet for each stereo channel when played back. Ornette Coleman plays saxophone with trumpeter Don Cherry, bassist Scott LaFaro, and drummer Billy Higgins in the left channel and trumpeter Freddie Hubbard, bass

clarinetist Eric Dolphy, bassist Charlie Haden, and drummer Ed Blackwell appear in the right. Again, he uses traditional instruments and they play their traditional roles as 'each player simply brought his already established style to the table. That means there are still elements of convention and melody in the individual voices'<sup>9</sup> limiting the chance for spontaneity to occur.

Furthermore, the interactivity is limited as Coleman retains his role as 'band leader', presenting a hierarchy within the ensemble that again does not free the musicians. Coleman arranged a 'predetermined order of featured soloists and several brief transition signals [that he] cued.'<sup>10</sup> By retaining predetermined elements, still in line with Bebop traditions, Coleman does not retain a sense of spontaneity in his improvisations. Steve Huey even points out that the idea of collective improvisations 'wasn't quite as radical as it seemed; the concept of collective improvisation actually had deep roots in jazz history, going all the way back to the freewheeling early Dixieland ensembles of New Orleans.'<sup>11</sup>

### LIMITATIONS IN 'SONIC PALETTE'

The 'sonic palette', in terms of instrumentation, timbre and idiomatic sounds, still remain in the realm of Bebop. Whilst Coleman himself pushed the timbral qualities of his instrument in his own improvisations by using extended techniques, his fellow musicians did not. This is what sets Coleman's Free Jazz apart from 'free improvisation' as Derek Bailey considers free improvisation a quest to make music that 'has no prescribed idiomatic sound.'<sup>12</sup> This is ironic as Coleman is quoted earlier in this paper as saying he wanted to 'play a musical motif without having any preconceived notions of the *style* that the idea came from'. In section three I will discuss how other musicians post the Free Jazz style have freed up the 'sonic palette' through the use of music technology, as well as accounting for my own experiments. Furthermore, I will discuss how some of these methods free the improviser from recapitulating idiomatic ideas, and break away from their established style more so than others.

### LIMITATIONS IN FORMAL STRUCTURE

It has already been mentioned that Coleman used traditional song-forms, pre-composed motifs or themes and predetermined ordering of solos

in his Free Jazz recordings. Any predetermined factors can get in the way of true spontaneity. The trajectory of the improvisation is purely linear and hence the overall piece maintains a uniformed textural quality of a constant, pulse driven sound. The pieces hence consist of smaller sections of solos – a predetermined feature. There is no room for the structure or development of the improvisations to be spontaneous.

In order to overcome these limitations, I wanted to come up with a strategy that did not require the performers to ‘retrain’ the way they improvise, rather I wanted to put them in a situation where they could feel comfortable in exploring and expanding their improvisations. I felt I could achieve this by incorporating music technology into the ensemble. I then researched how other Free Jazz ensembles had done so, whilst keeping in mind my aim of retaining spontaneity in improvisation.

## MUSIC TECHNOLOGY IN FREE JAZZ ENSEMBLES

In this section I will discuss how three ensembles have used music technology: Splice (United Kingdom), Roam the Hello Clouds (Australia) and Rafael Toral’s (Portugal) *Space Programme*.

### SPLICE

Splice is a quartet consisting of Robin Fincker (tenor saxophone and clarinet), Alex Bonney (trumpet and electronics), Pierre-Alexandre Tremblay (bass and electronics) and Dave Smith (drums). Their ‘raison d’être is to mesh together influences of contemporary jazz, free improv [sic], loud and soft noise, punk grit, ambient music, and more... with seamless blends or blunt juxtapositions.’<sup>13</sup> In their album *Lab*, Tremblay mainly uses electronically produced sounds, but also adds effects to the performers’ live sound such as delay and reverb. These electronic textures are generally considered to be ‘dubby drone[s]’<sup>14</sup> and ‘ambient’<sup>15</sup> which depict that the electronics perform a more background role.

Whilst electronics expand the sonic palette of the ensemble by adding new sounds, there is still a sense that it has been delegated the time-keeping role of the traditional rhythm section. Ken Waxman remarks ‘Tremblay’s electronics maintain the sometimes opaque methodical pulsations which

pervade the disc.’<sup>16</sup> By maintaining a uniformed texture throughout each track, there is less opportunity for spontaneity.

### ROAM THE HELLO CLOUDS

Australian trio Roam the Hello Clouds brings together Lawrence Pike (drums) Phil Slater (trumpet) and Dave Miller (laptop). Miller samples Pike and Slater’s improvisations live in a very complementary fashion. The ABC invited the trio to perform on their show ‘Sound Quality’ (April 25<sup>th</sup>, 2008) which resulted in a half-an-hour long improvisation. Here ‘Miller’s efforts are both subtle and trenchant. They’re inherent to the playing, but generally linger in the background.’<sup>17</sup> Again the electronics have been assigned to an accompanying role.

Roam the Hello Clouds’s music is also distinctly pulse-driven, and, like Splice, maintain a single texture throughout each improvisation, which still holds ties to the Jazz tradition. Once the texture is established, it remains constant; the development is not as spontaneous as the beginning material.

### RAFAEL TORAL’S ‘SPACE PROGRAMME’

Rafael Toral defines ‘post-free jazz electronic music’ by referring to ‘jazz forms that welcome irregular metrics, an open field of sound frequencies and freedom from ‘themes’, chord progressions, etc. ‘Post-free jazz electronic music’ operates beyond traditional instruments, built to play ‘notes’ and beyond, of course, the culturally established sounds of jazz typical instruments.’<sup>18</sup> He describes his *Space Programme* with the following:

...it as a sort of imaginary development from Free Jazz through the way of electronics. Curiously, there was indeed a proliferation of electronics in jazz in the early 1970s, but I observed that approach was keyboard-based (derived from piano culture) and therefore it had an harmonic (vertical) grid. On the other hand, since it was mostly jazz-rock, it was embedded in a straight rhythmic (horizontal) grid. So, a music structurally based on square shapes ... I wanted to make music in the *Space Programme* that is totally free from such grids. The time is liquid and the full frequency spectrum is used, without any scales or traditional Western-based harmonic structures. However, phrasing and swing are core values in this music, as in jazz.<sup>19</sup>



Toral attempts to break away from the pulse orientated music that seems to permeate Free Jazz music, as well as traditional Bebop harmony. Electronics provided him with more flexibility to be truly free in his improvisations, as time can be spliced into non-metric segments and with a full frequency spectrum of pitches and timbre available, the variable for change and spontaneity are much greater.

Expanding on these findings in the music of Splice, Roam the Hello Clouds and Rafael Toral, I attempted to incorporate music technology into an acoustic ensemble (one or two acoustic instruments) in a way that would increase the potential for spontaneity in Free Jazz ensembles.

## RETAINING A SENSE OF SPONTANEITY

As George E. Lewis states, 'what is "known" cannot be truly spontaneous or original'<sup>20</sup> (1996), it seems the way to free the improviser to be spontaneous is to take them out of their familiar performance style that they know how to control. One way of doing this is by incorporating music technology, as it allows for recorded sounds to be morphed into something different and 'unknown'. These 'unknowns' open up more variables of change within the live performance of the improvisation. This means that the performers are never 'knowing' where the improvisations are going, as a lot more directions are available hence allowing the music to retain spontaneity.

My set-up draws on the traditional jazz improvisation practice that calls for the ensemble to respond to what the other performers play. The instrumentation, however, is undetermined. This retains a sense of spontaneity in the ensemble's interactivity, as the traditional roles of soloist and accompanist are dismissed and all performers can freely improvise together.

The improvisers are presented with their own sound in the samples – but as they have never heard it before due to the electronic processing. This frees them to experiment creating sounds in the improvisations they wouldn't have considered before, perhaps to match the new sounds or to juxtapose the new sounds. This retains spontaneity in the 'sonic palette'.

Finally, in my method the laptop artist has limited control over 'choosing' which part of the recording will be sampled and processed, so not even the laptop artist knows how the piece will develop, hence the structure retains spontaneity. Other ensembles do not limit the control of samples as much as this, which defines a key difference between the methods of my experiments and their techniques.

## SPONTANEITY IN INTERACTIVITY

When I conducted my experiments I wanted the interactivity roles within the ensemble to be more equal; one is not bound to a hierarchy of soloist and accompanist. Everyone is improvising at the same time and hence one improviser does not feature above another. An external force was manipulating their sound and the improviser was to respond to it. I noticed that the improvisers began improvising in a familiar fashion, but as the samples were introduced their improvisations were taking on a new form that was less akin to Bebop practices.

It seemed that the way they usually improvised was challenged and they were freer to consider other sounds they could make on their instrument. They may choose to mimic the sound, play something contrasting or not play at all. Whilst improvising to their own processed sound they are also listening to the live and processed sounds of the other performers. This opens up spontaneity in the interactivity again. The laptop artist too may respond to the live performers' improvisations, for instance, they may hear a certain rhythm and mimic that in their processing, by changing sample length or timbre or volume in time with that rhythm.

Opposite are two diagrams, which depict the ensemble interactivity within Coleman's Free Jazz (**Figure 1**) and my own strategy respectively (**Figure 2**). One can see that there are more possibilities available in my strategy, which retains spontaneity in improvisation.

## SPONTANEITY IN 'SONIC PALETTE'

Not only can the laptop performer also extend the timbral qualities of live performers, the live performers may also attempt to recreate those sounds acoustically, hence extending their 'sonic palette'. This increases the amount of timbral possibilities for the improvisers, thus adding more variety and spontaneity to the performance.

In my method, the improviser can truly disassociate themselves from their previous training and idiomatic improvisation language, as they are surprised with the new sounds, which are in fact their own sounds, processed. This personal attachment to the samples creates a unique experience for the live performers, as they hear their own improvisations in a new light. In a way they are hearing themselves afresh just as the audience does. Now the improviser is not bound to their previously conceived ideas of how they sound and what they can achieve, nor are they bound to improvising with 'motifs' or 'licks' or other idiomatic sounds they know how to play. They can be spontaneous and attempt to create new sounds inspired by the sampling and processing.

## SPONTANEITY IN STRUCTURE

The structure of my improvisation strategy is free form, and does not use any preconceived materials, however there are some technical areas that need to be organised beforehand. The laptop artist may however choose what type of processing they will have available to use prior to performance, much like how the live performers may choose their instrument. Also, the initial improvisations that begin the piece may be recorded and stored separately by the laptop artist or as a group together. This would require communication before or during the performance. However, once the recordings have been made, the lack of control over electronic

sampling allows spontaneity in development of the performance, as there are more possible changes in timbre, texture, and pulse over time. I achieve a lack of control over the electronic sampling in my piece *Sampled Moving Forms II* (2011) by using a Graphical User Interface slider object (Figure 3) in the Max/MSP computer program, which allows you to highlight any duration of the recording, without looking at the recording itself. This stops the laptop performer from visually seeing the representation of a sound in a recording, as one could discern, for instance, a 'loud' section from a 'soft section' by looking at the 'waveform' object (Figure 4).

Furthermore, there is the possibility of recapitulation as one can return to previous samples. This gives the performance structural integrity, and a sense of non-linearity as performers are reminded of previous spontaneous ideas and take them on different journeys. This contrasts to Coleman's Free Jazz albums, which maintain a uniformed texture throughout the form of the improvisations.

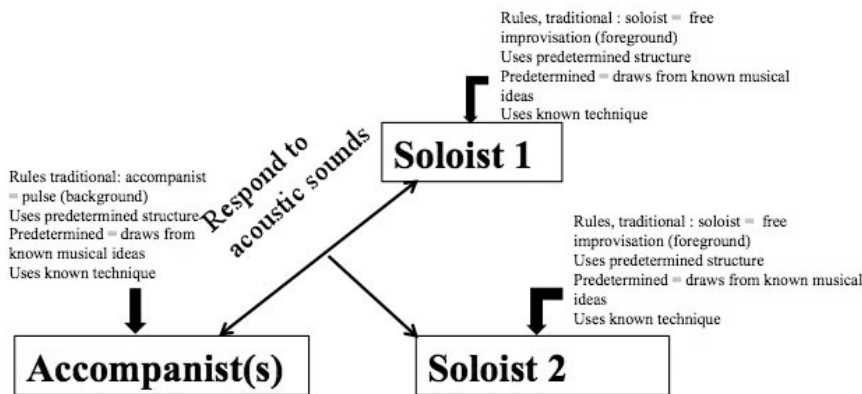


Figure 1. Coleman's Ensemble: Limited interactivity.

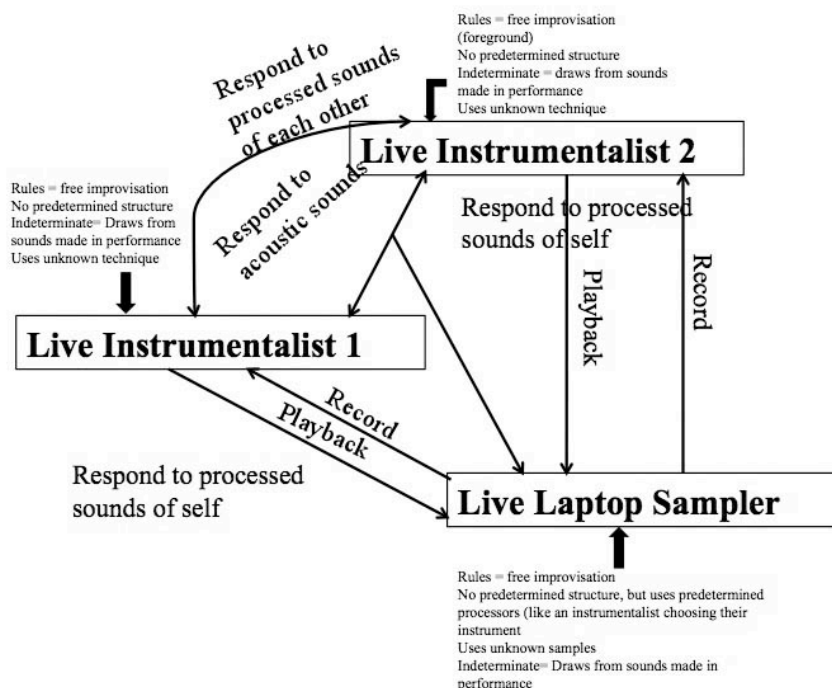
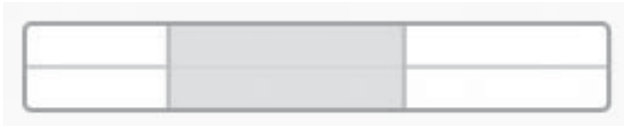
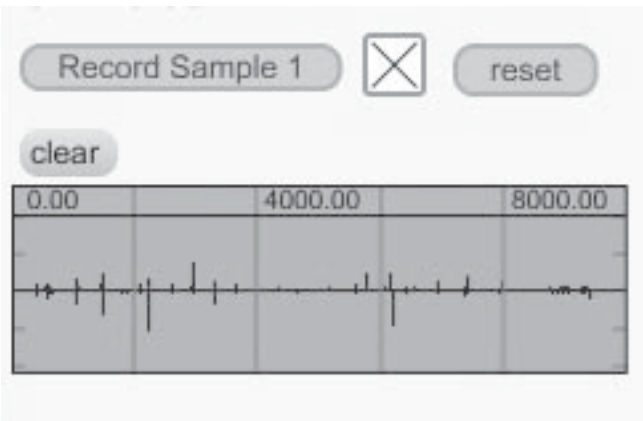


Figure 2. My Ensemble Model: Increased interactivity.



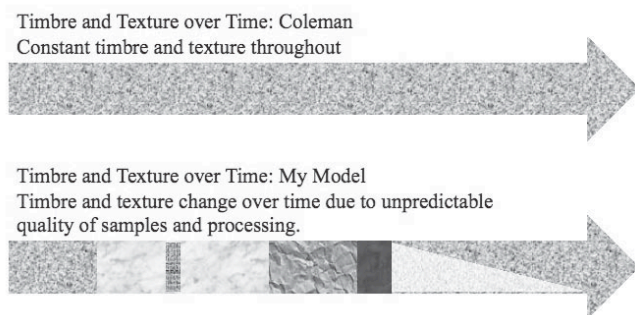
**Figure 3.** 'Slider' object in Max/MSP used to highlight any sample length – disassociated from the 'waveform' object means *what* sound is sampled is more spontaneous.



**Figure 4.** 'Waveform' object in Max/MSP – visual representation of sound stores recorded audio but is not used as a sampling guide.

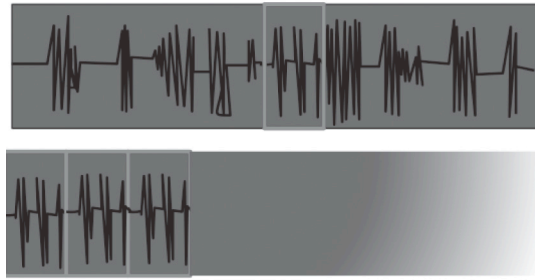
### CHANGES IN TIMBRE AND TEXTURE

Processing can change the timbre of an instrument, such as frequency filters, synthesis or increasing, decreasing or reversing the play back speed of the sample. By changing samples or processing one can swap from one texture to another very quickly (**Figure 5**). Also a short sample can be looped over and over to create a 'chord' (**Figure 6**); what initially was a motivic idea now sounds as a constant repeating sound.



**Figure 5.** Comparison between time and texture over time, Coleman (top) and my model (bottom).

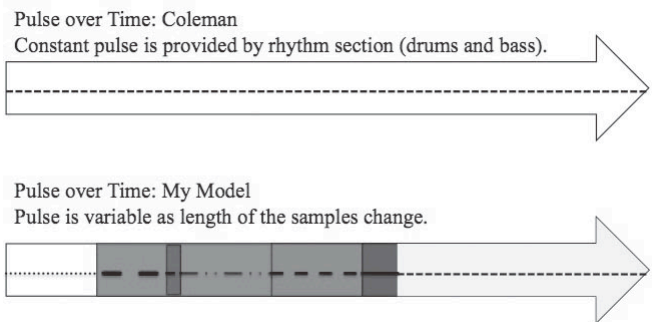
Looped Sample:  
Once a linear phrase. When a fraction of it is sampled it is heard as a chord.



**Figure 6.** Looped sample becomes a chord.

### CHANGES IN PULSE

Looped samples of varying lengths create different grooves or pulses. In other words, the 'time signature' can change spontaneously at any time, without the improvisers having a preconceived idea of what it will be (**Figure 7**).



**Figure 7.** Pulse over time Coleman (top) and my model (bottom).

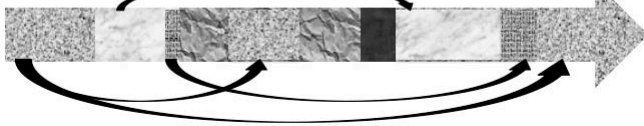
### RECAPITULATION

The concept of revisiting previous ideas is what sets my strategy apart from Coleman's in terms of spontaneous structure. Whilst Coleman's ensemble develops the improvisations organically over time, it has a single line of trajectory. By incorporating the possibility of recapitulation, the improvisations are structurally more spontaneous as the improvisations can develop in a non-linear way (**Figure 8**). A previous idea can be revisited and developed into something different.



Recapitulation not possible in Coleman's Free Jazz.  
Ideas are created and developed on a linear plane.

Recapitulation is possible in my model, as one can return to  
previous ideas with sampling technology



**Figure 8.** Recapitulation is evident in my model.

## KEEPING IN TRADITION – ARRANGING JAZZ STANDARDS

By sampling a recording of a jazz standard live (with or without predetermined samples) the jazz standard is reinvigorated, whilst still sounding familiar. One such arrangement was experimented by sampling the opening measures of 'Self Portrait in Three Colors' by Charles Mingus and applying electronic processing to them in a piece called 'Sampled Moving Forms: On a theme by Mingus' (2011). A live acoustic drummer then responded to these samples with improvisations.

## CONCLUSION

By incorporating recording, sampling, processing and play back technologies into the jazz ensemble, one can retain a sense of spontaneity in Free Jazz improvisation. The technology broadens the possibilities available to the improvisers through interactivity, 'sonic palette' and structure. The initial spontaneous improvisations by the live performers are manipulated and can surprise the performers with their own sounds, which creates a unique personal experience for the improvisers. It frees them to explore ideas that are not bound to their idiomatic performance styles they have previously developed. This is in great contrast to Ornette Coleman's Free Jazz albums as it takes away the limitations of familiar and traditional techniques, thus creating new, original and spontaneous improvisations.

## REFERENCES

- Bailey, D. 1992, *Improvisation: Its Nature and Practice in Music*. Da Capo, New York.
- Coleman, O. 1960, *Free Jazz*. Ornette Coleman (alto saxophone). Atlantic B000002I55, compact disc.
- Coleman, O. 1959. Liner Notes, *The Shape of Jazz to Come*. Ornette Coleman (alto saxophone). Atlantic B000002I4W, compact disc.
- Coleman, O. 1960, Liner notes, *Change of the Century*. Ornette Coleman (alto saxophone). B000002IIL, compact disc.
- Huey, S. "Free Jazz". (n.d.). Last modified (n.d.) <http://www.allmusic.com/album/free-jazz-mw0000256161>
- Jackson, E. 1981, "Jazz Conversations with Eric Jackson: Ornette Coleman". Narrated by Eric Jackson. *WGBH Radio Boston*. December 3, 1981. <http://www.wgbh.org/programs/Jazz-Conversations-with-Eric-Jackson-304/episodes/Jazz-Conversations-Ornette-Coleman-4923>
- Kealy, C. 2010, "Free Jazz: A Subjective History". Last modified March 22, 2013. [http://www.last.fm/user/Treefreejazz/journal/2010/06/09/3p5iyk\\_free\\_jazz%253A\\_a\\_subjective\\_history\\_by\\_chris\\_kelsey](http://www.last.fm/user/Treefreejazz/journal/2010/06/09/3p5iyk_free_jazz%253A_a_subjective_history_by_chris_kelsey)
- Lewis, G.E. 1996, "Improvised Music after 1950: Afrological and Eurological Perspectives". *Black Music Research Journal*, 16(1): 91-122
- Pressing, J. 2002, "Free Jazz and the Avant-Garde" *The Cambridge Companion to Jazz*. DOI: 10.1017/CCOL9780521663205.013
- Sansom, M. 2001, "Imaging Music: Abstract Expressionism and Free Improvisation". *Leonardo Music Journal, Not Necessarily "English Music": Britain's Second Golden Age*. 11: pp. 29-34
- Splice. "Lab". 2011. Last modified 7th February 2011. <http://www.earconnector.co.uk/splice/>
- Toral, Rafael. (n.d) "Frequently Asked Questions". Last modified (n.d.). <http://rafaeltoral.net/press/faq>
- Weidenbaum, M. 2008. "Live Jazz-tronic Roam the Hello Clouds MP3". Last modified October 22, 2008. <http://disquiet.com/2008/10/22/live-jazz-tronic-roam-the-hello-clouds-mp3/>

## ENDNOTES

1. Pressing, J. "Free Jazz and the Avant-Garde", *The Cambridge Companion to Jazz* (2002) DOI: 10.1017/CCOL9780521663205.013
2. Coleman, O. Liner notes, *Change of the Century*, Ornette Coleman (alto saxophone). B000002IIL, 1960, compact disc.
3. Ibid.
4. Cage, J. Cage in Kostelanetz, *Conversing with Cage*, Limelight, New York, 1987, p. 223.
5. "Jazz Conversations with Eric Jackson: Ornette Coleman", Narrated by Eric Jackson, *WGBH Radio Boston*, December 3, 1981, <http://www.wgbh.org/programs/Jazz-Conversations-with-Eric-Jackson-304/episodes/Jazz-Conversations-Ornette-Coleman-4923>
6. Pressing, J. "Free Jazz and the Avant-Garde".

7. Kealy, C. "Free Jazz: A Subjective History", last modified March 22, 2013, [http://www.last.fm/user/Treefreejazz/journal/2010/06/09/3p5iyk\\_free\\_jazz%253A\\_a\\_subjective\\_history\\_\\_by\\_chris\\_kelsey](http://www.last.fm/user/Treefreejazz/journal/2010/06/09/3p5iyk_free_jazz%253A_a_subjective_history__by_chris_kelsey)
8. Sansom, M. "Imaging Music: Abstract Expressionism and Free Improvisation", *Leonardo Music Journal, Not Necessarily "English Music": Britain's Second Golden Age*, 11, (2001), p. 29
9. Huey, S. "Free Jazz", last modified (n.d.), <http://www.allmusic.com/album/free-jazz-mw0000256161>
10. Ibid
11. Ibid.
12. Bailey, D. *Improvisation: Its Nature and Practice in Music*, New York: Da Capo, 1992, p.83.
13. Splice, "Lab", last modified February 7, 2011, <http://www.earconnector.co.uk/splice/>
14. Mann, I. "Lab", last modified September 28, 2011, <http://www.thejazzmann.com/reviews/review/splice-lab/>
15. Ibid.
16. Waxman, K. "Something in the Air – Expatriate Canadians Create High-Class Improv Elsewhere", last modified January 30, 2013, [http://thewholenote.com/index.php?option=com\\_content&view=article&id=15108:something-in-the-air--expatriate-canadians-create-high-class-improv-elsewhere&catid=51:jazzaimprovised&Itemid=178](http://thewholenote.com/index.php?option=com_content&view=article&id=15108:something-in-the-air--expatriate-canadians-create-high-class-improv-elsewhere&catid=51:jazzaimprovised&Itemid=178)
17. Weidenbaum, M. "Live Jazz-tronic Roam the Hello Clouds MP3", last modified October 22, 2008 <http://disquiet.com/2008/10/22/live-jazz-tronic-roam-the-hello-clouds-mp3/>
18. Toral, R. "Frequently Asked Questions", last modified (n.d.), <http://rafaeltoral.net/press/faq>
19. Ibid.
20. Lewis, G.E. "Improvised Music after 1950: Afrological and Eurological Perspectives", *Black Music Research Journal*, 16, No. 1 (1996), p.107.