The Role of Ambiguity within Musical Creativity

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Keywords

Abstract

Working beyond a paradigm where musicians perform pre-composed works, the authors celebrate spontaneity and the ephemeral nature of sound. Using examples from their audio and visual practice they offer a post hoc analysis, discussing ambiguity and unpredictability as a strategy to foster musical creativity. In uncovering hidden and unintended potentials in seemingly fixed media they expose the instability of this definition, suggesting a reworking of such fixities as a useful line for enquiry. In highlighting the efficiency of physical interaction they consider the lack of tactility inherent within computer systems and problematize the wider role of digital technology within their work.

Introduction

Our work is grounded in improvisation and real-time music making. Through the exploration of indeterminate and dysfunctional systems, we embrace ambiguity as creative tool and catalyst, a strategy to probe, provoke and generate. Our original performance practices were as a guitarist and DJ, but we have spent several years extending our practice through free improvisation and other repertoire. We have not consciously sought to sever ties with the vernacular practice from which we started, but our current work, whilst sometimes exposing these roots, pushes forward to seek out and access previously neglected areas of creativity and develop what for us, are new modes of practice. By reflecting on the tension between the physical world of objects and the digital world of computing, we endeavor to explore this divide and provide a valuable insight into contemporary music making.

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Performance Ecology

We have diverse *performance ecologies* [1] which consist of, on the one hand, turntable, sampler, hardware effect processors, and laptop, and on the other hand, guitar, modified electro-mechanical systems, hacked electronic toys and other appropriated objects. Bell's turntable-centric ecology deals exclusively with pre-existing musics, whereby raw, unmediated material, such as a chunk of Frank Sinatra, coexists alongside more direct causal gestures like scratching [2]. This practice could easily be configured as an attempt to put agency back into that which we have lost through acousmatic listening and recording; an attempt to make recorded music live again. The guitar, due to its *wearable* nature, is at the centre of Ferguson's ecology, this is one element of a multi-faceted setup that includes assorted pedals, circuit-bent [3] keyboards and other paraphernalia. These instruments offer moments of resistance to direct causal action, and as part of an aesthetic that embraces both intentional and unintentional activity, can allude to a perception of autonomy that is essentially dialogic. Generally, in our performance ecologies both the proximity of objects to the body and the layout of equipment are paramount. Primary causation and somatic intelligence are predicated on speed of access and the ability to (re)interpret. The physicality of moving around ecology where everything is 'reachable' and able to be reconfigured at arms length allows for varied creative potential and is a defining feature of what we do.

Physicality and Re-negotiation

Improvisation demands spontaneous interaction that is very much predicated on being in the moment. For example, the *Fly Piece* [4] is both a literal manifestation of such an event and the motto 'probe, provoke and generate' with which we have aligned ourselves. Physical interaction lies close to the core of our practice, the ability to rethink and restructure is vital. 'This isn't working, what else might I do?' Embracing this challenge can demand an immediacy of response that is familiar to any improviser. Whether moving from an expression where there is direct correlation between input gesture and resultant sound to something more uncontrolled, or changing from textual accompaniment to something much more confrontational, the instruments(s) with which we engage must be highly tactile. For example, in September 2005 we presented *i creeps dan remind due ten* [5], as part of this programme we developed apiece called *Fluid* [see figure 1, right].

*Figure 1. *Fluid*, JPEG Image, 2304 x 1437, September 2005 (Mark Self). Performance of Fluid as part of *i creeps dan remind due ten*, King's Hall, Newcastle University.*

This involved pouring water between two large aluminum flowerpots; the thin and highly resonant construction amplified the transfer of water allowing tuning and musical expression. The rules of the exchange were simple: take one step and pour. The fast pace of the piece afforded no time to think, for once the transfer was complete it was then the responsibility of the person who had just finished pouring to scramble into a receiving position to catch the water before it hit the floor. The significance of this piece lay in its use of physicality; the complexity of this negotiation made no one moment repeatable, bringing a sense of discovery with every move.

Fluid was something of a landmark piece for us, and highlighted the essence of what it is to interact. This was the first time we had collaborated without our normal instruments, bringing us back into a reality based entirely on a fundamentally physical, human (re)negotiation. *Fluid* happened without the added complication of digital technologies and was a useful starting point in identifying the problems associated with computers in our own music making. Computers can require high-level programming skills but more often than not are reliant on the limitations of a graphical user interface, the inflexibility of which is incompatible with what we do. However, we recognize that the flexibilities that computers can provide are vastly different to that possible through physical interaction alone.

Computing Potentials

So what are our views on computers? The instability of any definition affirms an inherent confusion of role, with chameleon like multi-tasking that resists definitive function, a computer can never be considered as just a word processor, DVD player, internet browser or television; considered in this way, computers are always-already a site for ambiguity. Compartmentalized both in terms of physical structure (display, keyboard, mouse, etc) and language (everything is reduced to binary information), they are accessed indirectly via, often generic, hardware interfaces; the thing itself is never touched. This separation of causes from their affects obscures the legibility of gesture and denies expressive, causal interaction, tactility is clearly lacking. Computers are designed to perform high-speed mathematical and logical operations, they require minimal physical exertion, and once prescribed a function should do exactly as programmed, unless they crash, of course. Our practice utilizes computers for two reasons. The first of these is random access potential. Random access offers an alternative to the linearity of previous media like film and magnetic tape where non-sequential information, recorded at different times and in different places, can be accessed and presented in a unified form. To illustrate this we can consider the composition *BBS* [6], a piece that resulted from laptop improvisation, utilizing materials derived from previous instrumental improvisations, samples sourced from vinyl and at a later date, instrumental overdubs. When random access potentials are combined with the possibility of remote networked communication, we can metaphorically reduce perceived barriers of time and space. This is a concept we explore in the installation, *Memory Machines* [7]. This involved using multiple turntables (some modified) and a computer-based audio/visual manipulation system built in Max/MSP/Jitter [8]. The installation occupied two separate rooms with multi-channel audio relayed throughout both spaces via computer network to ten loudspeakers. Using multiple automated delays on real-time camera and microphone feeds we setup the computer to blend between dry (real-time) and various wet (delayed) signals, fluctuating between delay times of thirty seconds and ten minutes. The installation explored interpretations of, and interactions with, sound and movement, functioning as a memory of activity within the spaces.

Our second reason for utilizing computers is their ability to facilitate and manage complex relationships. For example, a simple electronic switch could be used to turn a light bulb off or on, a perfectly normal application, but utilizing a computer, the bulb could be lit only when the switch is pressed five times, held down for ten seconds or the switch could only become active at a certain time [9]. Rather than dealing with only one scenario, the relationship between pressing the switch and the light coming on can also be modified in real-time, which is useful when an unpredictable outcome is desired. By exploiting the complex negotiations that computers allow we are able to foster ambiguity as a creative tool, something that is mirrored throughout our practice.

Ambiguity

Ambiguity is itself an ambiguous term. To help uncover its mystique we refer to three broad categories as outlined by Gaver, Beaver, and Benford:

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Ambiguity of *information* finds its source in the artefact itself, ambiguity of *context* in the sociocultural discourses that are used to interpret it, and ambiguity of *relationship* in the interpretative and evaluative stance of the individual. [10]

There is nothing new about fostering ambiguity for creative means, in fact the nature of art itself can be said to lie in its interpretation. However, by drawing attention to the different ways ambiguity is utilized within creative work, we aim to better understand our own aesthetic, and now attempt an analysis of *Fluid* in light of these classifications. Firstly, the flower pots were no longer just storage containers since we selected them for their audible, aesthetic qualities when transferring water (ambiguity of information). By placing them into a different environment (the concert hall rather than the garden) we were able to subvert how they are perceived in the everyday (ambiguity of context). And finally, by expressing ourselves in performance we were able to recognize new potentials in what have become, for us, versatile, musical instruments (ambiguity of relationship). Consequently, and as Gaver suggests, it can be affirmed that ambiguity can serve to unmask new functionality:

By impelling people to interpret situations for themselves, it encourages them to start grappling conceptually with systems and their contexts, and thus to establish deeper and more personal relations with the meanings offered by those systems. [11]

Embracing Unpredictability

From flower pot to turntable, the latter was originally intended as a playback device, but has since moved beyond its prescribed functionality. It is now considered an instrument in its own right since it allows one to 'feel' sound by controlling vinyl with the hand. However, this was not always the case as outlined by the turntablist, Cut Chemist:

You were never supposed to touch it. I mean, your parents were like,
    'Don't touch the turntable! Don't touch the record! You'll ruin it.' [12]

Working explicitly with pre-existing materials can be considered an ambiguous process since the musics used are detached from their original contexts and juxtaposed with other musics from a plethora of genres, leading to an exciting exchange between improvisers as they battle to interpret and evaluate the creative situation. Beyond this, Bell will often employ needle dropping [13], an indeterminate process that acts not only to challenge other performers but also himself. Since it is uncertain what sound will be made it can be seen to problematise causal link and raise questions of intent, and there are visible parallels within sampling technologies. Unlike turntables, digital samplers (whether hardware of software) allow for different ways of working with and manipulating audio, but often in a way that supersedes human capabilities, which on the one hand can open up new vistas for cognitive refinement but only, it would seem, at the expense of the physical. In response to this issue Bell is currently investigating Ms Pinky's *Interdimensional Wrecked System* [14], a DJ/VJ program designed to run in conjunction with Max/MSP/Jitter. By using the turntable as an interface to map the physical onto the virtual [15], one is able to exploit both the characteristics of physical objects and the flexibilities of computers. Pre-existing musical materials thus become a resource for creative manipulation and can be used to facilitate both gestural and indeterminate responses, rather than simply existing as autonomous 'works.'

When improvising, we believe that we are not simply dealing with physical reflex. Gestures may arrive as something of a surprise and feel alien to us but only because our cognitive processes happen so fast that we are not aware of them until they emerge as somatic output. A performer on the receiving

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end may not realize that an emerging sound was unintentional, or that a gesture happened by accident, however, they will respond to it nonetheless. In this case, one is no longer responding just to oneself or another but also to a third unpredictable element which acts to stimulate and extend dialogue. Reacting to the challenge of unpredictability that is presented by ambiguity in musical systems, also demands that we operate outside of learnt gestural causality and pushes us to new levels of spontaneity. This is made possible through the continuous re-negotiation of what actually constitutes a musical instrument.

*Figure 2. *ionventsinter*, September 2005 (John Ferguson). Modified chimes used in *ionventsinter* as part of *i creeps dan remind due ten*, King's Hall, Newcastle University.*

*Figure 3. *ionventsinter*, September 2005 (John Ferguson). Amplified coins used in *ionventsinter* as part of *i creeps dan remind due ten*, King's Hall, Newcastle University.*

We have also sought to design ambiguity into performable systems, an example of this is *ionventsinter* [16]*.* Featuring nearly fifty channels of live audio and twelve loudspeakers in an immersive surround sound environment, this involved three sets of windchimes amplified and distributed so that the audience appeared to be listening from the centre of each set of chimes [see Figure 2]. Microphones would not have afforded enough separation and would have picked up more than one individual chime. Piezo [17] contacts, however, worked perfectly well, and although high frequencies were slightly diminished this was a reasonable compromise given the isolation and therefore spatial possibilities. One piezo contact on each tube allowed fifteen sources to be distributed as evenly as possible around the eight available channels of speaker output. The sets were individually activated by multiple desk fans, which were remotely controlled from a central performance area. Since the head of each fan was set to oscillate automatically there was a degree of uncertainty and inertia in the system, forming one of three distinct layers of ambiguity. For example, when flicking the switch there was always a possibility of no sound as the fan could easily be pointing away from the chimes. Moving air activates the chimes, however. Knowing which ones will be struck and how loud they will be was largely a process based on chance. Finally, through amplification and spacialization, gestural characteristics could be transformed.

A fourth level of ambiguity lay at the mixing desk, each individual chime having its own fader controlling volume level. Performing with these was rather challenging. Although it was possible to second guess and therefore shape a performance, control was rather limited. Reacting to this unpredictability was the main point of the piece, the resultant sound world was that of a rich fluctuating texture with bigger gestures jumping out and moving around the space. The sound itself had an indeterminate relationship to its casual impulses, both in terms of the revolving desk fans, and their physical activation. As part of the same piece, we used two upturned loudspeakers filled with coins, and manipulated low frequency Risset tones [18] through them. The vibrations of the speakers made the coins literally *dance* producing a beautifully complex, high frequency music as they *fought* each other [see Figure 3]. Using stereo close microphone techniques, the coins where

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introduced into the amplified sonic spectrum and manipulated with spacialization and equalization controls, and thus functioning as another instrumental layer of ambiguity within the piece.

Through modification or redesign one can also extend capability beyond presupposed notions of usage and access inherent functionality that was previously masked or at least unheard. For example, preparing the turntable by placing a small object beneath the vinyl will give the impression that the vinyl is warped. By adjusting the tone arm so that it balances precariously against this vinyl, aspects of the sound will be omitted when the turntable begins to play. This is due to vinyl moving in and out of contact with the stylus and is intensified further when combined with the likely possibility of the stylus skipping, either deliberately or via vibrations caused by bass frequencies emitted from loudspeakers. Similarly the Speak and Spell [19], which is a child's toy that is notorious for its *bendablilty* and very much valued for its unpredictability within Ferguson's ecology. When modified the function of the keypad can change dramatically, depending on at which point in the programme the various switches are activated. Because the switches are connected in series many possibilities arise, and the instrument becomes particularly unpredictable when on the verge of a crash. Body contacts (where the body acts like a circuit board component, rather like a human resistor) respond to the area of skin placed in contact with the circuit which can be controlled by pressure, so the amount of electricity that leaves the circuit and flows through the body depends on how one touches it, resulting in an unpredictable but tactile controller that greatly amplifies any variation in pressure. Additionally, by flicking a switch that is a design modification, Ferguson is able to *grab* and tune loop points, producing fuzzy, sporadic pulses. As a result we find inspiration in listening to the indeterminate rhythms emerging from both the turntable, (for example, a fractured Shirley Bassey vocal with snippets of drums and broken brass stabs), and the Speak and Spell, with its organically evolving, punctuated textures [20].

Conclusions

Functioning as a strategy to probe, provoke and generate creative response, ambiguity plays a vital role in our music making. In exploring indeterminate and dysfunctional systems alongside more direct causal gestures, we embrace unpredictability within improvisation. Physical interaction is fundamental in what we do; layout, accessibility and tactility of equipment are all major factors. In recognizing the inherent lack of tactility in computers systems as something that restricts us, we utilize only the potentials of computing that we find useful and unique, principally random access and network potentials. For us, the friction between the physical world of objects and the digital world of computing is a fruitful line of inquiry in facilitating exciting musical dialogues.

References

1. A term used by John Bowers to describe the arena for activity created by a musician in his immediate surroundings at Music and Machines III, a two-day conference organised by the International Centre for Music Studies (ICMuS) and Culture Lab. This event explored the emerging/emergent relationships between music/sound art and machines under the impact of digital systems, 15 December – 16 December 2005, Newcastle University, England, http://www.ncl.ac.uk/culturelab/events/item/mm5

2. A DJ technique that involves moving a vinyl record back and forth with the hand as it plays on a turntable.

3. Creative short-circuiting of electronic devices. For example see, R. Ghazala, *Circuit-Bending: build your own alien instruments* (Indiana: Wiley, 2005).

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4. For example, see video clip 1
<http://www.tronlennon.co.uk/Movies/Tron_Lennon_Fly_Piece_Low_quality.mov>. Whilst on an expedition to capture video for use in performance we happened upon a fly within some leaf litter. By gently disturbing the litter, we were able to initiate and engage the fly.

5. The title for this event is a nonsensical anagram derived from 'precise and undetermined', performed in King's Hall, University of Newcastle upon Tyne.

6. For example, see audio clip 1
<http://www.tronlennon.co.uk/Music/Tron%20Lennon_BBC%20part%201.mp3>.

7. For example, see video clip 2
<http://www.tronlennon.co.uk/Movies/TronLennon_MemoryMachine.mov>.

8. http://www.cycling74.com

9. This notion is informed by P. Dourish, *Where the Action Is, The Foundations of Embodied Interaction* (MIT Press: 2004).

10. W. Gaver, J. Beaver and S. Benford, "Ambiguity as a Resource for Design," in *CHI Letters* Vol. 5, No. 1, p. 233 (2003).

11. W. Gaver, J. Beaver and S. Benford, "Ambiguity as a Resource for Design," in *CHI Letters* Vol. 5, No. 1, p. 233 (2003).

12. Scratch: the movie, dir. Doug Pray (2002).

13. A technique that involves dropping a stylus on a vinyl record as it plays on a turntable.

14. http://www.mspinky.com/

15. Parallels are visible in Joel Ryan's *Physical handles on phantom models* where the 'image with which the artist works to realize his or her idea is no longer a phantom, it can be touched, navigated and negotiated with.' J. Ryan, *Some Remarks on Musical Instrument Design at Steim*, online article at STEIM Writings, http://www.steim.org/steim/texts.php?id=3

16. This was the opening piece for *i creeps dan remind due ten*.

17. Pressure piezometeres, like a microphone, translate vibration into sound, but only when coupled with the physical vibration.

18. This is based on the work of Roger Shepard in the 1960's: Risset Tones are based on sine waves, but with mathematically complex spectral modifications. This creates an aural illusion that sounds like a gliding sine tone in a state of constant movement, either ascending or descending in pitch, but somehow always remaining static.

19. An educational toy for children produced in the 1970s by Texas Instruments.

20. For example refer to audio clip 2 <http://www.tronlennon.co.uk/Music/TronLennon_JTTedit.mp3>. This is a very good example of the interplay between turntable and Speak and Spell.

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Author Biographies

John Ferguson is an accomplished guitarist with substantial professional performance experience; he obtained a BMus in Popular and Contemporary Music at Newcastle University in 2004, and completed a MMus with distinction in September 2005. He is currently an AHRC funded Ph.D candidate conducting practice led research under the supervision of Bennett Hogg and Sally Jane Norman. Provisionally entitled 'Beyond the Record: New Roles for the Live Musician', his thesis will interrogate the notion of what a live musician is, or could be. Grounded in improvisation and real time music making, his current practice focuses on circuit bending and hardware appropriation. This explores notions of autonomy and the creative potential of ambiguity as a catalyst for interaction in live electronic music.

Paul Bell is a computer-based studio composer, Hip-hop DJ and free improviser. He performs individually as Harrison Maudlin and collectively as one half of the Tron Lennon improvisation duo. He is currently an AHRC funded Ph.D candidate undertaking practice led research into the use of recorded material in spontaneous music making, an attempt to make recordings live again. His research questions the restrictions that copyright law has placed upon the creative reuse of already-existing musics. His project thus aims to negotiate around the apparent antitheses that are central to the characterization of contemporary reality, exploiting their paradoxical character. Paul is also an administrator for the ICMUS Hub, an online music community at Newcastle University.

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