ARTAUD'S SNAKE: GESTURE, TIME AND PLAY

A COMPOSER'S REPORT ON THE USE AND DEVELOPMENT OF THE WIGI INFRA RED WIRELESS GESTURAL SYSTEM

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ABSTRACT

I outline some issues regarding gesture, time and memory arising from the development of the WiGI interactive wireless instrument and its use in the context of free improvisation and acousmatic composition. My perspectives derive from my activities as a composer and performer and around what I experience to be a series of tensions between free improvisation and digital technology.

1. INTRODUCTION: ARTAUD'S SNAKE

If music has an effect on snakes, it is not because of the spiritual notions it offers them, but because snakes are long, because they lie coiled on the ground, because their bodies touch the ground at every point: and the musical vibrations which are communicated to the ground reach their bodies like a very subtle and prolonged massage; well, I propose that we treat the spectators like snakes that are being charmed, and that we lead them by way of the organism to the subtlest notions. Antonin Artaud

2. GESTURE AND ELECTROACOUSTIC MUSIC

Gritten argues that until recently gesture was rather overlooked by musicologists [7]. But there appears to be a new recognition of the body as an object of research within both philosophy [14] and musicology and a reassertion of gesture as a fundamental element of both practice and form in electroacoustic music.

Roads points out that from the earliest development of electronic music, gesture was an an intrinsic part of analog instruments.[4] The Theremin, for example, used changes in the proximity of the body to an electrical field to produce changes in pitch and amplitude. In Le Groupe de Recherches Musicales (GRM) this visceral aspect was also profoundly important. Battier writes of Schaeffer:

"the composer draws from a repertory of actions, controls, manipulations, synchronizations (…) among the turntables, the mixer, the potentiometer [3]"

Battier writes that, for Pierre Henry, “electroacoustic music was an affair of gesture and invention”. Henry focussed on the physical aspects of sound formation, the body in direct interaction with sound:

"Anyone who practices Electroacoustic music invents his music, makes it, makes it real, with his fingers"

In the early GRM the extended interactive potential of analogue machinery replaced the rule of the score and became a generative aspect of musical language. The development of voltage controlled instruments in the 1960s such as Buchla’s Electric Music Box combined gestural tools for transducing touch and motion along with generative possibilities from random voltage sources. But the development of computer music in the 1970s tended to dispense with such dynamic interactive elements: the physical interface becoming, as Roads puts it, “an afterthought”. He argues for the importance of the body and its gestures and inflections:

"These inflections of the human body infuse music with signs of life: breath, rhythm, a sense of effort, motion and feeling. Listeners react instinctively to these performance qualities"

Roads quotes live electronic musician Joel Ryan:

"Effort is closely related to expression in the playing of traditional instruments. It is the element of energy and desire, of attraction and repulsion in the movement of music."

Although the development of the personal computer has tended to leave the gestural and interactive in a relatively underdeveloped state, digital technologies have been harnessed to reconnect the body with sound. Electroacoustic composers such as Michel Waisvisz, Richard Barrett, Joel Ryan and Paul Obermayer, for example, have travelled in a different direction, creating improvisational work and hardware and software tools, which re-emphasize the link both between body and sound, and between emerging technologies and new musical form.

In the Theatre and its Double Artaud proposed a gestural model of theatre performance which bypasses the traditional language of theatre, directly addressing the physiology of the spectator:
if the gesture is made under the right conditions and with the necessary force, this reverberation invites the organism, and through it the whole individual personality, to assume attitudes that correspond to the gesture that has been made.[2]

Gesture expands outwardly across the stage, directly entering the physiology of the Audience; an intimate and material call-and-response. Theatre is conceived as action, as gesture and the audience as a reverberant physical body: the most primal collective level at which interaction can be initiated.

By contrast, in electroacoustic music, and in acousmatic music by definition, there is often no performer nor any physical intimacy on which to base such primal communication. Acousmatic sounds themselves are essentially anonymous, without visible author, and presented in wilful abstraction from their sources. But even in acousmatic music it is possible that those same physical gestures and vibrations which caress the snake’s organism may still enter and affect the listener’s physiology. The acousmatic event, despite its disembodied presentation, has a dual existence; it is a virtual performance without performer but also a “real” physiological event.

It is arguable that in electroacoustic music that physical gesture is also simulated in the listener in an inferred or virtualized form. Godoy traces this concept back to Schaeffer [6] Battier refers to it as “relayed” gesture [13]. Also following Schaeffer’s inspiration, Smalley describes it as “surrogate” [14]:

When we hear spectromorphologies we detect the humanity behind them by deducing gestural activity, referring back through gesture to proprioceptive and psychological experience (…) Not only do we listen to the music, but we also decode the human activity behind the morphologies…

The concept of simulated inference was explored by Srinivasa Narayanan, who, combining findings from cognitive linguistics and structured connectionist modeling, sought to establish physiological connections between basic sensorimotor functions, language and cognition [8]:

embodied representations of events and actions can be activated with respect to structures not linked directly to the body in its current physical context. Instead of being carried out directly, these actions can trigger simulations of what would happen in the imagined situation.

Narayanan discusses physio-linguistic evidence relating the signified content of certain verbs and metaphors directly to the body’s relative ability to complete certain tasks, demonstrating that perceptual and motor systems are activated during language understanding.

areas of motor and pre-motor cortex associated with specific body parts are activated in response to motor language referring to those body parts (…) Passive listening to sentences describing mouth/leg/hand motions activates corresponding parts of pre-motor cortex.

Narayanan’s concept of simulated inference, which corresponds with similar concepts proposed by Gallese and Lakoff [5], can begin to explain how gestural events quite removed from any immediate source-bonded signification yet may create an almost instinctive physiological response in the listener. As for Artaud’s snake, the listening human body perhaps responds to a sonic gesture as if it was receiving a concrete physical gesture. Such a gesture is not filtered through the imagination into a representation, but experienced by the senses immediately, as an event.

3. INSTRUMENT, TOOL AND INTERFACE

For electroacoustic musicians the instrument or interface creates and limits all the possibilities we have for directly interacting with our material. The tool is never a given: more an unfolding problem, which to a greater or lesser degree, we must invent for ourselves and what we invent depends a great deal on what we want to, on our musical desire. I had performed improvised music on the saxophone for many years before I turned to electronics and I greatly missed the dynamic physical immediacy of the saxophone and the inherent physical feedback it gives to the player. My current research is no doubt at least in part an attempt to recapture some aspect of these qualities.

3.1. The WiGI Instrument

My current composition and performance practice is mainly based around the WiGI (Wireless Gestural Instrument) which is a heavily augmented Buchla Lightning infra red midi controller developed between 2006 and 2011 with the help of STEIM [12].

The Buchla Lightning MIDI controller was originally designed in the late 1980s by Don Buchla. It employs infrared sensors which track the location of two wands, similar in form to conductor’s batons, within a two-dimensional (XY) space, which in my case is a rectangle of around 2 by 1.5 metres. Direction, speed and velocity are all calculated from this location data and the XY region can be subdivided into up to eight zones, all of which may be freely associated with MIDI controller numbers, note numbers or channels. We have extended the Lightning’s physical form and its functionality using Nintendo Wii-mote handsets and Arduino wireless boards alongside STEIM’s LiSa and JunXion input processing software.

I initially approached the Lightning mostly as percussive/pitch controller; much like a two-dimensional marimba. Sounds tended to be ordered left to right like a keyboard. Amplitude, filter cut-off, attack/decay speed could be controlled by velocity, much as they are in conventional keyboard synthesis. I experimented with mapping continuous MIDI controllers to multiple percussive patches, a single “strike” engaging several different and independently modulated instruments, organised spatially and creating very rapid and complex percussive layers. Within this system there was a close correspondence between gestural stimuli and audio events1.

1 The Buchla Lightning in this context can be heard in a duet with saxophonist Evan Parker recorded as part of a Grutronic concert in Lancaster UK, 1995, available online at http://richard-scott.net/wp-content/uploads/2010/12/evan-parker-and-grutronic.mp3
3.2. LiSa
To many LiSa, STEIMs sampling software, may well seem an archaic and obsolete tool, but for dynamic sample manipulation, resampling and live sampling it remains highly effective. LiSa introduced an important aspect of non-linearity to my thinking. In LiSa a continuous buffer of sample data is held in RAM which can be addressed in a multiplicity of ways. One image I like is that the audio data is like a piece of magnetic tape which can be played back simultaneously at different speeds and directions by an indefinite number of tape heads. For both free improvisation and acousmatic composition such a possibility was far more intriguing than the keyboard-like percussive models I had previously programmed. How I might typically work with the system in an improvised performance is that I have several buffers of sound materials and I can select one or more of these bodies of material to play, changing the start and end point of the loop within a 2-1/2 minute sample buffer, manipulating pitch, amplitude, filter frequency and filter cut-off. I have twelve different types of play simultaneously available with options for different loop positions, tempos, forwards and reverse play, and also granular synthesis modes; all controlled by the spatial locations of the the two Buchla wands and by the Wii Remote and Arduino buttons and accelerometers.

Of course this merely realises the implications of a digital system. Once transduced into discrete streams of binary data the relationship between controller and sound making apparatus becomes arbitrary and subject to whatever mapping, inversion, quantization, scaling and modulation the programmer chooses. As inputs can be converted into to sonic outputs in innumerable ways, the performer interacting with a digital system is no longer dependent either on their virtuosic gestural capacities or the physical body of an instrument.

3.3. JunXion
The flexibility of LiSa's non-linear structure made a MIDI routing and processing application software essential: STEIM's JunXion. With Frank Balde’s programming assistance we were able to multiply the functions of many of the Arduino switches, introduce differentially timed switch modes, shift keys and so on, introducing the potential of something like a full range of MIDI/OSC controllers to the WiGi system.

Recent development include the implementation of a variety of timers and tables in JunXion functioning as sequencers or sample and hold/looping devices, creating new possibilities to make drones and more “orchestral” layered material. The introduction of sustained long loops loosens me from the percussive keyboard player role even further and frees me to work with other parameters, for example spatial diffusion, building multiple layers, and changing the contents of buffers. With JunXion the WiGi has become a much more rounded and layered instrument\(^2\). The WiGi is going beyond Buchla's inspiring interface and becoming an instrument in its own right: multifaceted in operation and increasingly introducing its own qualities to the process of composition.

Such non-linear complexity and freedom does not come without consequences. The elective mapping of arbitrary variables and processes inevitably introduces a new kind of distance into the relationship between player and instrument. This inevitably tends to encourage an extra layer of arbitration, or worse a separation, between the premeditating, prospective thinking and the sensing, inflecting body. So while it does put a much greater degree of systematic control and and determination in the hands of the musician, this technology comes at the cost of the breaking of an intimate and sensuous relationship between player, instrument and sound.

4. TIME IN PROGRAMMING AND IMPROVISATION

The task of programming a digital system and the activity of performing with an interactive instrument inhabit palpably different dimensions of time. Programming time is far closer to the productive conditions of conventional (paper or electroacoustic) fixed media composition than it is to the irreversible moment of improvisation. John Young writes [16]:

In the acousmatic studio, the fixity of sounds on the medium allows us to stop and repeat sound, inviting probing analysis of any sound object and in turn investigate the nature of our responses and relationships to sound.

In fixed media composition gesture is decoupled from time and from immediate sonic consequence: there is no organic relationship between the time of the music's composition with either the duration of the piece or with actual moment of the music's performance. Improvisation, because the moment of its gestation and performance is singular and indivisible, lacks the luxury of such temporal abstraction and thus takes on a fundamentally different relationship with time and space, having enormous implications for the programming of interactive instruments.

In improvised music-making the role of gesture role is not, I would argue, to recreate the illusion of linear time as Smalley argues is its role in acousmatic music. In an improvisation neither form nor action are predetermined, both need to be responsive to their physical context and to time. So in this regard, there is no illusion to be maintained. Rather, improvisation gesture represents a genuine interaction with time and in this moment the conversational interplay of gesture becomes the music's structure; it is the DNA from whose microscopic interactions improvisation's musical form is derived. As the nature of such a collective organism can be discovered only in the moment of playing, improvisation represents a quite delicate coupling with time, which certain kinds of premeditation can no doubt easily destroy. So my own use and development of a technology which actively interrupts the possibility of unpremeditated and unprogrammed gestural response or inflection surely betrays, at the very least, a mismatch between my artistic aims and the tools I have chosen to realise them.

In this light I do think that sitting in a studio programming a computer to be able to do what I think I will want it to do when I am improvising is innately problematic. Improvisation creates and proceeds from an immediate internal necessity occurring in interaction with any number of sensory, spatial and sensory forces. It is very difficult to predict or to cognize these forces — not only because they overlap and because they are

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\(^2\) Multiple layers can be heard in use for example in my composition Ghosts of the Gamecock http://richard-scott.net/compositions/acousmatic/ghosts-of-the-gamecock/
numerous, but also because they can never be extracted from time and space, nor can they be identified and controlled as independent variables.

5. VIRTUOSITY, HABIT, MEMORY

What do we mean by virtuosity in the context of electroacoustic music and improvisation? As anyone who has not yet quite recovered from the virtuosic excesses of jazz fusion or progressive rock of the 1970s may feel painfully aware, virtuosity in itself has no particular purpose or resonance, it takes on meaning only in its relationship with context. In terms of my own instrument, I think I must have some kind of virtuosic ambition because I have consciously set out to emulate something of the extended technique, breadth and velocity of virtuosic acoustic instrumentalists such as Evan Parker, Anthony Braxton or George Lewis. Such improvisers combine an extremely sophisticated technical command of the instrument with an openness to new and discursive sound relationships emerging during the moment of performance. But one thing that strikes me when performing with Evan Parker is that he embodies a virtuosity not just of playing, but of \textit{listening}. I think this reminds us there are other kinds of virtuosity happening in both free improvisation and electroacoustic music: virtuosity is as much a function of receptivity and of communication, as it is of pure instrumental technique. Such virtuosity goes beyond the heroic to become something shared, a collective capacity for listening and dialogue, between both sounds and people.

We all have our licks. But what happens if they become compulsions? While the development of habit is a no doubt necessary aspect of the development of instrumental technique, habit is also a potential problem for improvisers. Merely executive virtuosity, in abstraction from dialogic communication, is monologic and risks losing an immediate engagement with time and removing itself from receptive, open-ended listening and of collective responsibility for music-making. Such virtuosity might be seen as an extremely ingrained form of memorized habit which functions as an automatic, defensive or neurotic repetition of the past or a way of avoiding the present, and as a loss of awareness, choice and decision-making. As if the memory of a successful action might inhibit our ability to act and interact in the present moment.

A digital instrument too, whether computer, sampler, sequencer or synthesizer, is above all a tool for the translation, preservation and addressing of time and memory. Bob Ostertag [9] points out that digital memory has particular consequences for the recollection of music. The remembered sonic image of musical experience that was once encapsulated within the body as memory, which for example was so important to the development of jazz and folk musics, is now held for perpetuity in an objective digital form in the machine. The resources available for the preservation of the sonic past have indeed rapidly expanded. In the 1990s electronic musicians had a few seconds or minutes of sample time available, now we can have hours, days, months, even years duration of sound directly available to us anytime and anywhere including in the moment of performance. And currently emerging networking technologies offer the improviser further access to what represents an almost infinite virtual digital memory [13]. The digital machine is increasingly doing our remembering for us. Does that free us from the task? Or just make us dependent, and weaken our own capacities for remembering and forgetting our own musical experiences and acts?

If anything, improvisation may be more about forgetting than remembering. The failure and inaccuracy of human memory might itself be an importance source of creativity and new ideas, which may be becoming lost to us. Without forgetting, without abandoning some aspects of previous knowledge and experience, I don't believe that the the receptivity to time and the collective, dialogic intimacy of gesture and that I personally strive for in improvisation is really possible. This surfeit of randomly accessible memory might lead us away from the uncertainty and immediacy of gesture and time and become an impediment both to the decision-making, freedom and to the creativity of the electroacoustic improvising musician.

6. CONCLUSION

Derek Bailey commented, on the ephemeral nature of improvisation:

\begin{quote}
It is so malleable, it really is like sand, you have to make it stick. Naturally it doesn't stick, you can just form it and then it's gone (...) I think to make it stick is actually a kind of heresy. [11]
\end{quote}

But now the sand really does stick: silicon musical memory potentially exists forever, albeit in a most abstract and immaterial form. But perhaps something significant is being forgotten too. Perhaps our perception and inhabitance of the present moment, and our appreciation of actions made in the immediate moment of performance, is becoming weakened or distorted by this almost involuntary capability of digital systems for infinite memory?

By both decoupling gesture from time and relying increasingly on the infinite memory of machinery might we be losing the ability to charms Artaud's snake and to make a direct physiological connection with listener? The instruments we choose make certain things easy to achieve and others impossible. If we come to accept the limitations of existing ways of thinking about interactivity, or to identify our artistic goals with the kinds of interaction that digital machinery currently allows, rather than what we as composers desire, there is a danger that the technology no longer functions as an expressive or creative tool but as a structural restriction on the potential of new modes of musical interaction and thus of the developments of new musical forms.
7. REFERENCES


[9] Ostertag, R. Presentation by Bob Ostertag, 24th June 2010 at the time of writing part of the presentation is available for viewing online at http://vimeo.com/15353314


