

Live, algorithmically generated notation, creativity and performance

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Live, algorithmically generated notation, creativity and performance

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v002

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this presentation is available at:
<http://rhoadley.net/presentations>

Why?

...to unify dots and signals: enriching electronic music with live performance and algorithmic patterning, and integrating the skills and learning of performing musicians with the electronic environment

[quotation =>]

...to investigate links between 'technologies' and approaches: mapping between domains: algorithm and physical gesture into live notation: understanding which gestures have 'meaning' and which gestures don't

...to investigate liveness in music performance and improvisation

...to learn about and analyse compositional processes through automation and to investigate the implementation of imaginative processes

...to investigate the expressive potential of 'non-experts' through gesture

...to understand the difference between a 'technique' and a 'tool': compositions can both expressive and an experiment - there are contradictions between expressive, creative and experimental roles (trying to see how expressive you can be in a completely automated environment), but maybe these are equivalent to the 'restraints' so important in other contexts.

Music, controls and signals

'Music processing', in the way that this community uses it, denotes the processing of music information, which is stored in its structured symbolic musical 'Gestalt'. The term 'music processing' implies a difference from the signal processing community, in that it does not deal with sound as the source material for investigation, but deals with **music as score or music as timebased structure stored in a symbolic form, such as codes, languages**, etc.

Obviously the boundary between signal and 'music processing' can become very blurred, but it is useful to mention this division as it seems that the research, its communities and their methodologies tend to be different and do not overlap in a major way.

Carola Boehm, Book Review, Organised Sound 7(1): 79–82, 2002



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The technique:

investigates and implements:

...automated, algorithmic composition

...music composition, performance, improvisation
and notation

...physical computing and interactivity

Changes to notions of composition (and notation)

"Formerly when one worked alone, at a given point a decision was made, and one went in one direction rather than another; whereas, in the case of working with another person and with computer facilities, the need to work as though decisions were scarce - as though you had to limit yourself to one idea - is no longer pressing. **It's a change from the influences of scarcity or economy to the influences of abundance and - I'd be willing to say - waste"**

John Cage quoted in CMJ 16:4 by Larry Austin

"Computers are bringing about a situation that's like the invention of harmony. Subroutines are like chords... [and] ... are altered by a single punch. **We're getting music made by man himself, not just one man."**

John Cage, 1969.

The tools:

...provide a structure for the generation of music and/or common practice notation (plus) according to stylistic rules

...facilitate communication between SuperCollider and INScore

<http://supercollider.sourceforge.net/>



<http://inscore.sourceforge.net/>



<http://rheadley.net/inscore> (from October-November 2012)

...eventually, maybe, offer the beginnings of a more standard interface for physical mapping, [but...]

Mapping the 'digital divide'

A creative leap of imagination: there are no links between the digital and the real except those we choose to make

This is also true of our imaginations. We regularly make links between separate cognitive domains. Computing merely emphasises how complex this activity actually is.

"You can be moved to tears by numbers – provided they are encoded and decoded fast enough."

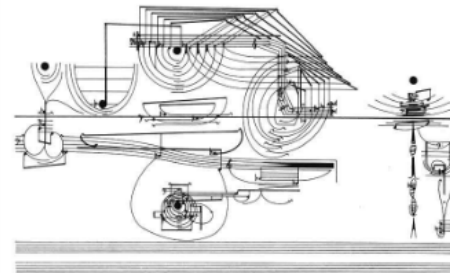
Richard Dawkins, River Out of Eden

although here Dawkins is talking about digital streams rather than patterns.

(...and, of course, there's the organ)



Kyle Carozza
<http://tvskyle.deviantart.com/art/Quick-gesture-drawings-7688105>



Cardew, Treatise

Related work: algorithms

Aaron et al., "A principled approach to developing new languages for live coding", Proceedings of NIME 2011

Collins, N. "The Analysis of Generative Music Programs." Organised Sound 13(3). 2008

Hedelin, F. "Formalising Form: An Alternative Approach To Algorithmic Composition." Organised Sound 13(3): 249-257, 2008.

Loy, D. G., "Musimathics : the mathematical foundations of music", Cambridge, Mass. ; London: MIT Press. 2006.

Edwards, M., "An Introduction to Slippery Chicken", ICMC Proceedings, 2012.

and Cope, Roads, Xenakis, etc., etc...

algorithms might be...

top down
bottom up
hybrid
bespoke

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top down

bottom up

hybrid

bespoke

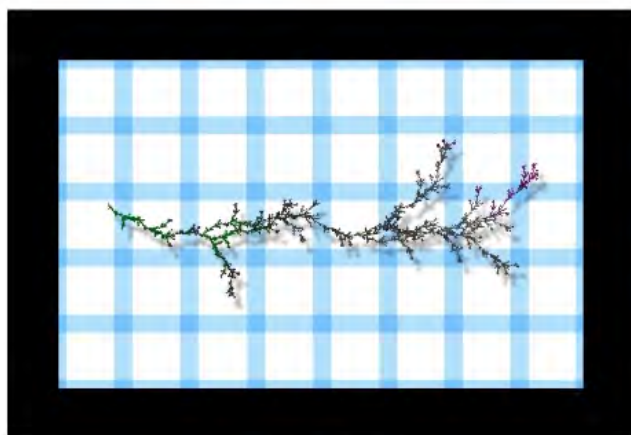


Figure 1. *Vine and Tablecloth*



Figure 11. A landscape made from IFS attractors.

Mark Franz, 1997, Mathematics and Art

Related work: live or real-time notation

[definition =>]

- MaxScore (Didkovsky, Hadju)
- Bach Project (Agostini, Ghisi)
- eScore (McClelland, Alcorn)
- Lilypond with extensions
- Live Notation (Eacott, Collins)
- LOLC (Freeman, etc.)

Differences in environment (CAC or not) functionality and aesthetics, including quality of notation, speed and variety of rendering, etc.

definition:

'live notation' is...

music notation that is generated as the performance progresses and where this process is itself considered to be of central importance in the composition. In this case I am referring to **common practice music notation**, generally understood to be the notation that, like common law, has become commonly used over the last 800 or so years

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Performances

[to display, or not to display, the notation?]

Cambridge Festival of Ideas 2011
Mifune Tsuji <http://rhoadley.net/calder>



YouTube

SuperCollider Symposium 2012

Marcus Barcham-Stevens <http://rheadley.net/calder>





YouTube



Comments

from a variety of reviews

"machine musicianship and learning as a
compelling reason for using real-time notation"

"concerns over the possible difficulties involved
in keeping track of a performer's place in the
'score'"

"concerns over the feasibility of an 'accurate' and
structured rendition"

"concern over lack of rehearsal, familiarity and
even the status of the performer: only a glorified
sight-reader, no room for interpretation"

Performers' comments

I put these concerns to some of the performers involved - they came up with some interesting, unexpected and innovative opinions

Cheryl Frances-Hoad

composer (and occasional, splendid 'cellist)

enjoyable to have more control over contribution

creative use of system idiosyncrasies (rapid changes in page writes)

incompatibility with 'standard' performance

challenging, comparison with chamber music

interesting take on remembering structure - that this could happen within the time-frame of the piece

the use of 'archetypes'

[indeed, the idea in my mind, maybe associated with the notion of algorithm design, was of 'archetypally' rather than specifically expressive melody]

very positive use of negatives (the lack of 'craft' made Cheryl play more expressively; the lack of dynamics enabled more natural, 'very pleasing' expression)

on awaiting unknown instructions: the thrill of that tiny part which could go wrong(!?)

(I can't imagine what she means...)

Performers' comments

Marcus Barcham-Stevens

violinist and composer

relegation to sight-reading: 'no'

creative interpretation

in the moment, adding tension and excitement

role of memory in performance: longer, more melodic phrases can be memorised and then creative choices made

the role of individual choice as presented by the notation, (e.g. tempo)

'informed' improvisation

consciousness, instinct, intuition in interpretation, performance and improvisation

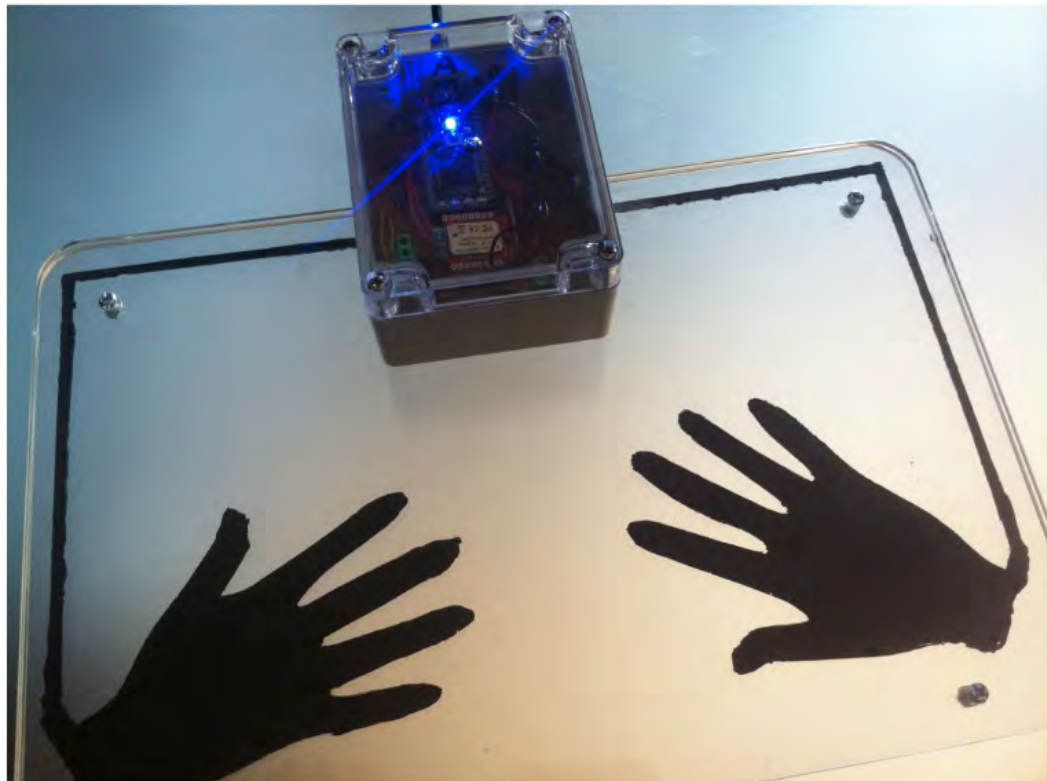
Marcus was provided with a couple of videos of a couple of 'versions' of the piece ("Calder's Violin minus one") and so is able to say that he 'practised the piece quite a lot'

He makes the point that he understood the 'gestalten' of the music which did enable him, in his opinion, to 'shape' and even 'internalise' the music

Touching Sound and Gismos...

Generic Interfaces for Socio-musical Orientation

Computer Supported Cooperative Work



Interim conclusions: performance and representation

- there is a lot more to performance than gestures or movements, but gestures and movements enhance performance and, through technology, can enable others to participate
- control is a balance between physicality and practicality, between touch, movement, gesture and intention
- the more 'realistic' sensor systems become, the more 'realistic' the mapping tends to be. This implies that mapping is generally implemented as a factor of the desired 'realism' of the sensor system

Next steps

the interplay between 'gesture' and 'touch'. How and why do we need our hands to control some things in detail? [[video =>](#)]

finger, hand and gesture recognition

some gestures are full of meaning, others should be ignored. How to tell the difference?

multiple parts all generated live: 'group' structured improvisation

rhythmic synchronisation across parts and groups

dynamics, phrasing, annotation: more use of augmented score features and experiments in how they can be used

investigating the balance between composition, performance and improvisation

machine listening

live coding of 'real' performance

therapeutic uses (gismos)

pedagogical uses, maybe particularly support for sight-reading and improvisation



You Tube

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Demonstration: three streams



Thankyou

any questions?

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this presentation is available at

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