

Semaphore

Cross-domain expressive mapping with live notation

Conference on Technologies for Notation and Representation

Paris-Sorbonne/IRCAM, May 2015

Richard Hoadley

Digital Performance Laboratory, Anglia Ruskin University, Cambridge UK

This presentation is available here: <http://rheadley.net/presentations/tenor-semaphore-s.pdf>

This research has been subsidised by Anglia Ruskin University and Arts Council England

v0.02

8th Feb 1963

Notation is a way of making people move. If you lack others, like aggression or persuasion. The notation should do it. This is the most rewarding aspect of work on a notation. Trouble is: Just as you find your sounds are too alien, intended 'for a different culture', you make the same discovery about your beautiful notation: no-one is willing to understand it. No-one moves.

Cornelius Cardew, from **Treatise Handbook**, 1971

A handwritten musical score for tenor saxophone, featuring a variety of notations and symbols. The score is written on a system of staves. At the top left, there is a treble clef with a key signature of one flat (B-flat). The notation includes a series of horizontal lines, some with vertical lines through them, and a large, hand-drawn oval shape. A prominent feature is a large, hand-drawn circle in the center, containing a musical staff with notes and a treble clef. To the right of this circle, there is a section with a treble clef and a key signature of one flat, featuring a series of notes and a large, hand-drawn oval shape. The score is written in black ink on a white background.

180

Three research streams

1. algorithms (patterning)

2. physical computing

3. notation/representation

...linked by cross-domain expression and interpretation

Cross-domain expression?

- Music is already cross-domain (as are all arts)
- It is formed of physical action to create patterns
- I'm not worried about what happens when those patterns are recreated fresh today. As a composer, I suppose I rely on my judgement to help me decide whether I like the *form* of a pattern or not.

Notation/representation

- is a complex semantic and graphic form of 'language'
- is not really suited to non-specialised environments
- presents many challenges concerning electronic implementation and display

Notation: complexity

A complex musical score for string quartet, showing multiple staves for Violin I, Violin II, Viola, and Cello. The score is dense with musical notation, including notes, rests, dynamics (mp, mf, ff, p, pp), and performance instructions like 'pizz' and 'arco'. The score is divided into two systems, with the first system starting at measure 56. The notation is highly detailed, with many accidentals and dynamic markings throughout.

Ferneyhough **Second String Quartet** (1980)

Notation: Mea culpa

Handwritten musical score for "Mea culpa" by Richard Hoadley. The score is written on a system of six staves, divided into two systems of three staves each. The top system consists of three staves (1, 2, 3) and the bottom system consists of three staves (1, 2, 3). The top staff of the top system is marked with a tempo of $\text{♩} = 110$ and dynamics *mf* and *p sotto*. The top staff of the bottom system is marked with dynamics *mf sopra* and *f sopra*. The middle two staves of both systems are marked with dynamics *p sotto* and *mf sopra*. The notation includes various rhythmic values, accidentals, and articulation marks.

Richard Hoadley **Four Archetypes** (1995)

<http://rheadley.net/presentations/tenor-semaphore-s.pdf>

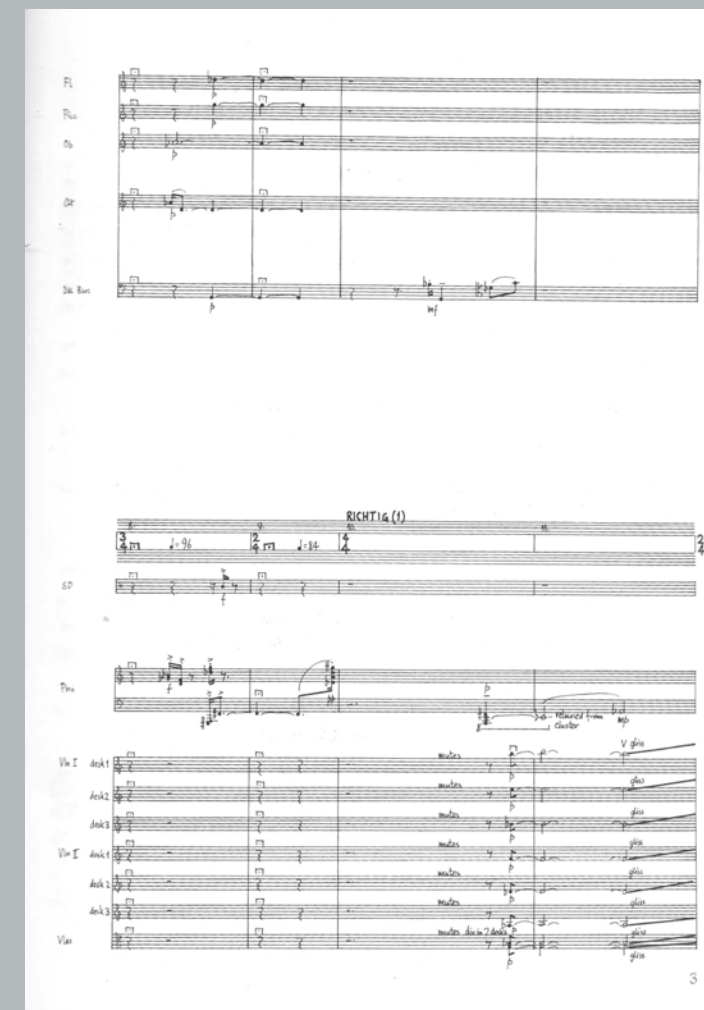
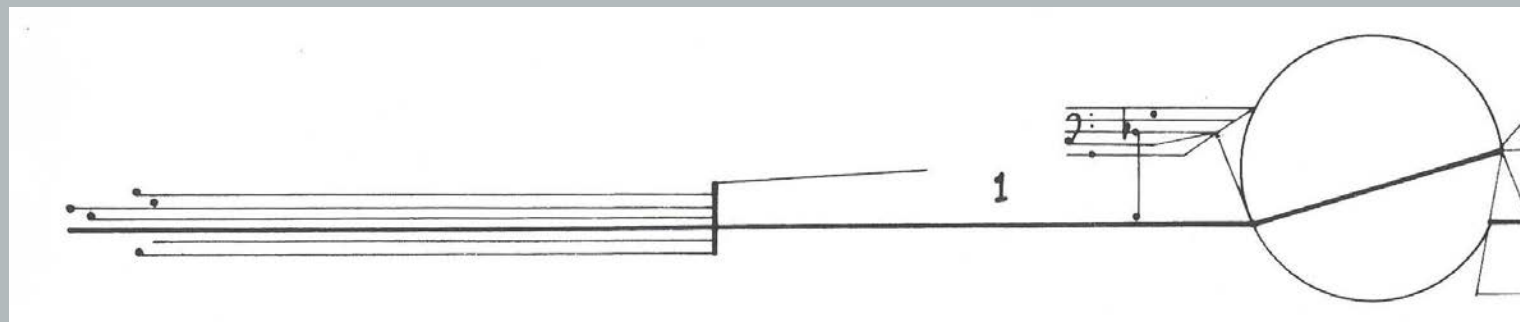
Graphic notations: Cardew

Cornelius Cardew: Octet '61

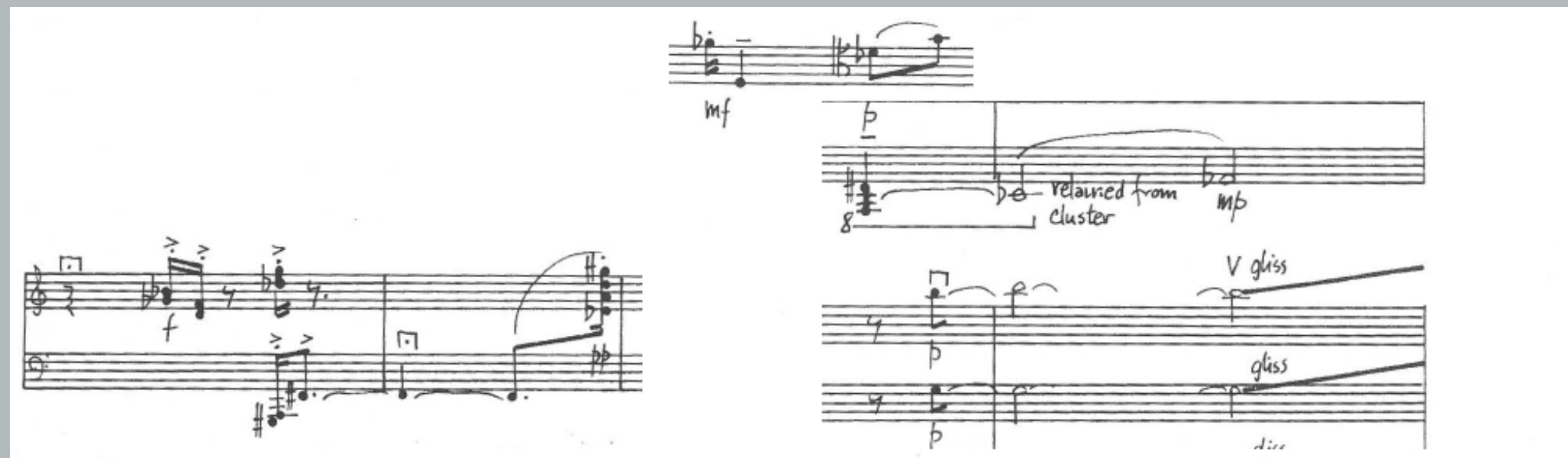
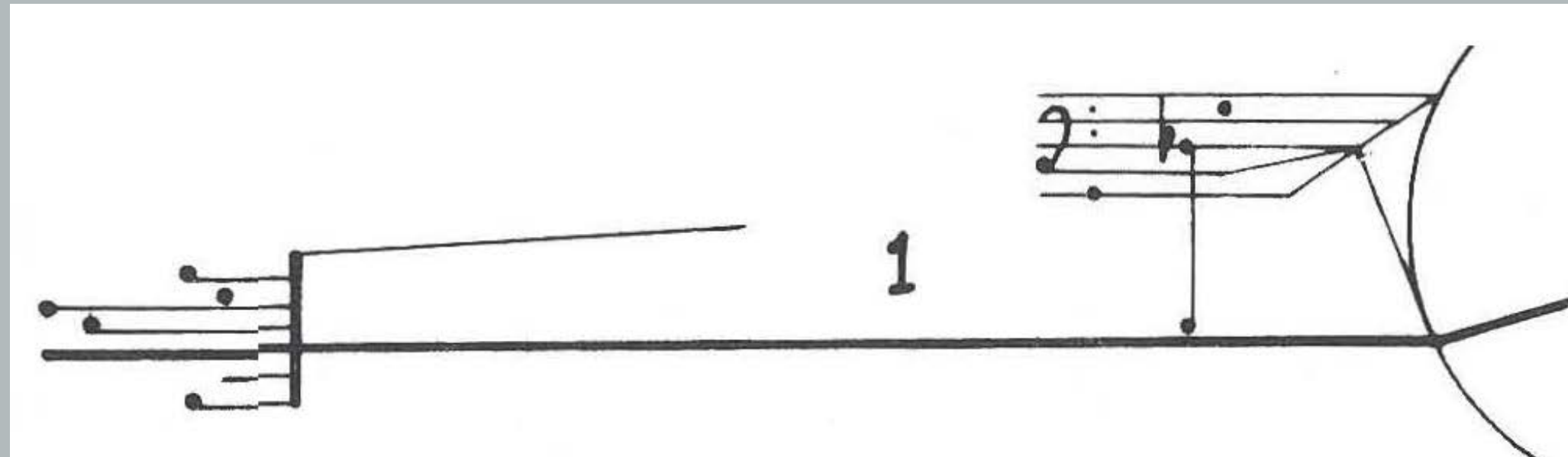
The image shows a handwritten musical score for 'Octet '61' by Cornelius Cardew. The score is written on a single staff with a treble clef and a key signature of one flat. It features six numbered staves (1-6) at the top, each with a circled number. Below these are two staves of graphic notation, with circled numbers 1-6 placed below the notes. The notation includes various symbols such as stems, beams, and accidentals, along with dynamic markings like 'f' and 'p'. A '3P' marking is visible at the bottom right of the graphic notation section.

From Cardew **Octet 61** (1961)

Graphic notations: Cardew *Treatise* (1963) and *Bun No. 2* (1964)



Detail from Treatise and Bun 2...



Why pursue these lines of research?

- it offers me a chance of understanding the act of composition more
- it unifies dots and signals: enriching electronic music with live performance and algorithmic patterning
- it enables the live synchronisation of algorithmic generation of both electronic and electroacoustic material and notation

- it allows the exploration of links between expressive domains: algorithm and physical gesture into live notation: which gestures have 'meaning' and which don't
- it encourages virtuosic performance and investigates liveness in music performance and improvisation
- it allows analysis of compositional processes through automation
- ...as a consequence and to clarify, it's a technique *and* a tool, just as these compositions are both pieces and experiments

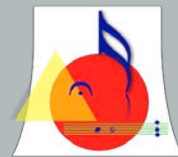
dots vs signals

'Music processing'...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.

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

The tools

- provide a structure for the generation of music and/or common practice notation as well as many arbitrary graphical elements
- facilitate communication between SuperCollider and INScore
- offer the beginnings of a more standard interface for physical mapping



and are located...

- <https://github.com/supercollider/supercollider>
- <http://inscore.sourceforge.net/>
- <http://rheadley.net/inscore> (on request)

Performances: **Gaggle**, HCI conference, Cambridge, UK, 2009



Gaggle, Museums, interfaces, spaces, technologies, 2010



Calder's Violin, SuperCollider Symposium, London 2012



The Fluxus Tree, LIPAM, Leeds UK, September 2012



Quantum Canticorum, Museum of Modern Art, Barcelona, June 2014



To display, or not to display, the notation?

Quantum Canticorum Demonstration, Natural History Museum, London, June 2014



Semaphore, Covent Garden, Cambridge, October 2014



Peer comment and criticism

1. many comments asking about the possibilities of machine musicianship as a compelling reason for using real-time notation (imagination over reality)
2. possible difficulties in keeping track of one's place in the score
3. the feasibility of obtaining an 'accurate' and structured rendition due to lack of rehearsal

1. the 'fetishisation' of the notation (when displayed)
2. the dancer being 'caged' by the 'cone of the Kinect' (MSphobia?)
3. the 'conservative' nature of the music (old fashioned modernism? a reasonable point, maybe, and there are no stylistic predicates with the technology)

Forthcoming events

- *Performance of 'How To Play the Piano in 88 Notes'* by Philip Mead, Music as Process Conference, Goldsmiths, London, 6th June 2015
- *Performance of 'Semaphore'* for dancers and musicians, 9th July, M.A.D.E., Cardiff
- **Semaphore** plus **new piece**, workshop and demo at Festival of Ideas, October 2015, then at the following venues:
 - Cardiff Contemporary Festival
 - New Cut Arts, Halesworth, Suffolk
 - Colchester Arts Centre
 - WestAcre Theatre, Norfolk
 - Conway Hall, Holborn

Demonstration

Just in case:



Thank you

any questions?

contact:

research@rheadley.net

this presentation is available at

<http://rheadley.net/presentations>

as **tenor-semaphore-s.pdf**