Metacreation IAT-811

VOYAGER

WHAT IS VOYAGER?

"Voyager is a nonhierarchical, interactive musical environment that privileges improvisation. In Voyager, improvisors engage in dialogue with a computer-driven, interactive "virtual improvising orchestra." A computer program analyzes aspects of a human improvisor's performance in real time, using that analysis to guide an automatic composition (or, if you will, improvisation) program that generates both complex responses to the musician's playing and independent behavior that arises from its own internal processes."

Lewis, 2000

"...improvisors are engaged in dialogue with a computer-driven, interactive improvisor. A set of algorithms analyzes aspects of a human improvisor's performance in real time, using that analysis to guide another set of algorithms that blend complex responses to the musician's playing with independent musical behavior."

Lewis, 2007

WHAT IS VOYAGER? (ORIGINS)

-Created by George Lewis between 1986 and 1988.

-Inspired by early 'interactive composing' projects such as David Behrman's 'Runthrough' and Gordon Mumma's 'Hornpipe'

According to Lewis, follows a 'live algorithm' model of music improvisation:

-a live algorithm can collaborate actively with human performers in real-time performance without a human operator

- a live algorithm can make apt and creative contributions to the musical dimensions of sound, time and structure

-live algorithms can contain a parametric representation of the aural environment which changes to reflect interaction between machine and environment.

Blackwell and Young 2006

What is Voyager?

Voyager does NOT need external input

Voyager Receives All Information Sonically

a Voyager performance is a non-hierarchical Improvisational, subject-subject model of discourse rather than a stimulus/response arrangement

Voyager's Creator...

So first of all who is George Lewis?

-Currently a professor of music at Columbia (jazz trombonist/composer)

-Previously taught at U of C San Diego, School of Arts and even at Simon Fraser University's Contemporary Arts Summer Institute.

-BA Philosophy, Yale University

-Music recordings include the eponymous 'Voyager' which features duos between Lewis and the Voyager program

-Written works on ethnomusical paradigms with explicit focuses on european and african perspectives on composition and improvisation

-As of 2007, apart of a SSHRC-funded research initiative (led by Ajey Heble of University of Guelph), "Improvisation, Community, and Social Practice" (2.5 million)

CONTEXT FOR CREATION

Two central interests:

1-Computation/interactive sound installations

2-Cultural aesthetics of musical composition and improvisation

Voyager was created to...

-explore how 'personalities and identities become articulated through sonic behavior'

-to privilege trans-african improvisation rather than the euro-centricity of order and synchronicity.

-fashion an improvisor with its own agency, external indeterminacy and its own sound (meets Robert Rowe's notion of 'player' → not 'instrument')

Voyager was built to improvise music while incorporating the variation, difference and 'noise' which Lewis demarcates as hallmarks of trans-african music.

A work which defies a ethnomusical hegemony which has privileged structure, order and prescribed performance.

How Does it Work?

Created in FORTH

64 single voice midi controlled players

Pitch followers parse the sounds of acoustic instruments into MIDI data streams

This data is parsed into up to two streams for handling

Recombines the MIDI streams into new ensemble combinations

Setphrasebehavior is run globally every 5-7 seconds

```
:ap setphrasebehavior ( -- )
    ::ap" general phrasing " ( task recurs at intervals of 5000-7000 ms )
    5000 time-advance 11 irnd 200 * 5000 + to cycle


    begin
        ::ev
        bodymusic 0=                    \ in this version this red light is always zero
            if calcork                  \ set up new group of players, including number and position in space
            else allplayersoff \ turn off all groups and start over with a new group.
            then
\ set up how system will follow input; set MIDI timbres
        setfollowbehavior       setreplies            setvoxbehavior

\ set melody algorithms, pitchsets, reverb and chorus type
        setwavebehavior         setscalebehavior      setreverbbehavior        setchorusbehavior

        computer-solo?          \ if no one is playing, I have a solo

\ set volume and velocity, microtonal tonic transposition
            if setvelbehavior   setvolbehavior        settonicbehavior

\ set octave, interval range, duration range
            setoctbehavior      setintbehavio          setwidbehavior    setlegatobehavior

\ set length of notes
        bodymusic 0=            \ in this version this red light is always zero
            if setrestbehavior \ set up average degree of silence
            then

\ set portamento, whether or not to follow tempo, and tempo ranges
            setportabehavior    settempofollow         setspdbehavior
            then

        ;;ev
    cycle time-advance
    again
    ;;ap
;ap
```

How Does it Work?

The setphrasebehavior also then allows Voyager to make one of a series of choices regarding timbre, melody algorithms, note lengths etc.

Selects one of 150 microtonally specified pitchsets from the Partch pitch table along with volume, reverb, response to tempo etc.

(tone table sample on handout)

```
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    cycle time-advance
    again
    ;;ap
;ap
```

How Does it Work?

In addition to setphrasebehavior, Voyager has another subroutine, setresponse which determines how incoming data is collected and managed, which averages the incoming pitch, tempo etc. in preparation for delivering a response

Choices made by Voyager are directly associated with its perception of the other improvisors including the calculation of the probability of a note being played

Will sometimes allow one, both or none of the other improvisors to influence its next improvisional decision—Voyager may choose to commence a solo if it's not 'hearing' anything.

Voyager will take musical lead and the other improvisor may have to follow it

```
setresponse ( -- )
  setinputbasedur            \ set tempo ranges based on input note durations
  bodymusic 0=               \ in this version this red light is always zero
    if setinputplayprob      \ probability of note or rest, based on input
    then

\ set duration range and length of notes, interval range
  setinputlegato   setinputwid       setinputint

\ use pitchset based on last few input notes; set octave and microtonal tonic transposition
  setinputscale    setinputoct        setinputtonic

\ set MIDI volume and velocity
  setinputvol      setinputvel
;
```

Autonomy vs. Automata

Voyager's ability to innovate outside the control of its co-participants classifies Voyager (for Lewis) as an autonomous, creative machine which follows its own line of reasoning...there are no external 'cutoff's or 'vetos' to Voyager's performance other than unplugging it.

Voyager participates in what Lewis terms an 'emotional transduction': a performance with INTENT which embodies MEANING and declaring EMOTIONAL and MENTAL intention

Thus, as much as Lewis ascribes agency to Voyager, he believes the program to be a mirror for the emotional state of the human improvisor even if the computer makes tonal/pitch/duration decisions which significantly deviate from the human.

...is he a mirror for it? Can the machine even as agent be ascribed any notions of meaning, emotion and mentality?

Discussion and Listening to the Smooth Sounds of Voyager....