

diptych

a DUET for harpsichord, electric piano and live electronics

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Fall 2008

Program Note

diptych explores the differences between how human beings and machines can process and understand sound. At times the performer is controlling and guiding the system of live electronics, however, this relationship also gets reversed and the performer's actions come under the control of the system. During the first half of the piece, which consists of linear/ goal driven gestures, control of the relationship is exchanged only once. In the second half, the exchange of control happens much more rapidly and functions in a circular way. The two halves, then, of this diptych in the most basic terms can be seen as a line and a circle. Implicitly, the austere conceptual differences between a line and a circle present an analogy to the fundamental relationship between man and machine.

Performance Notes

Setup

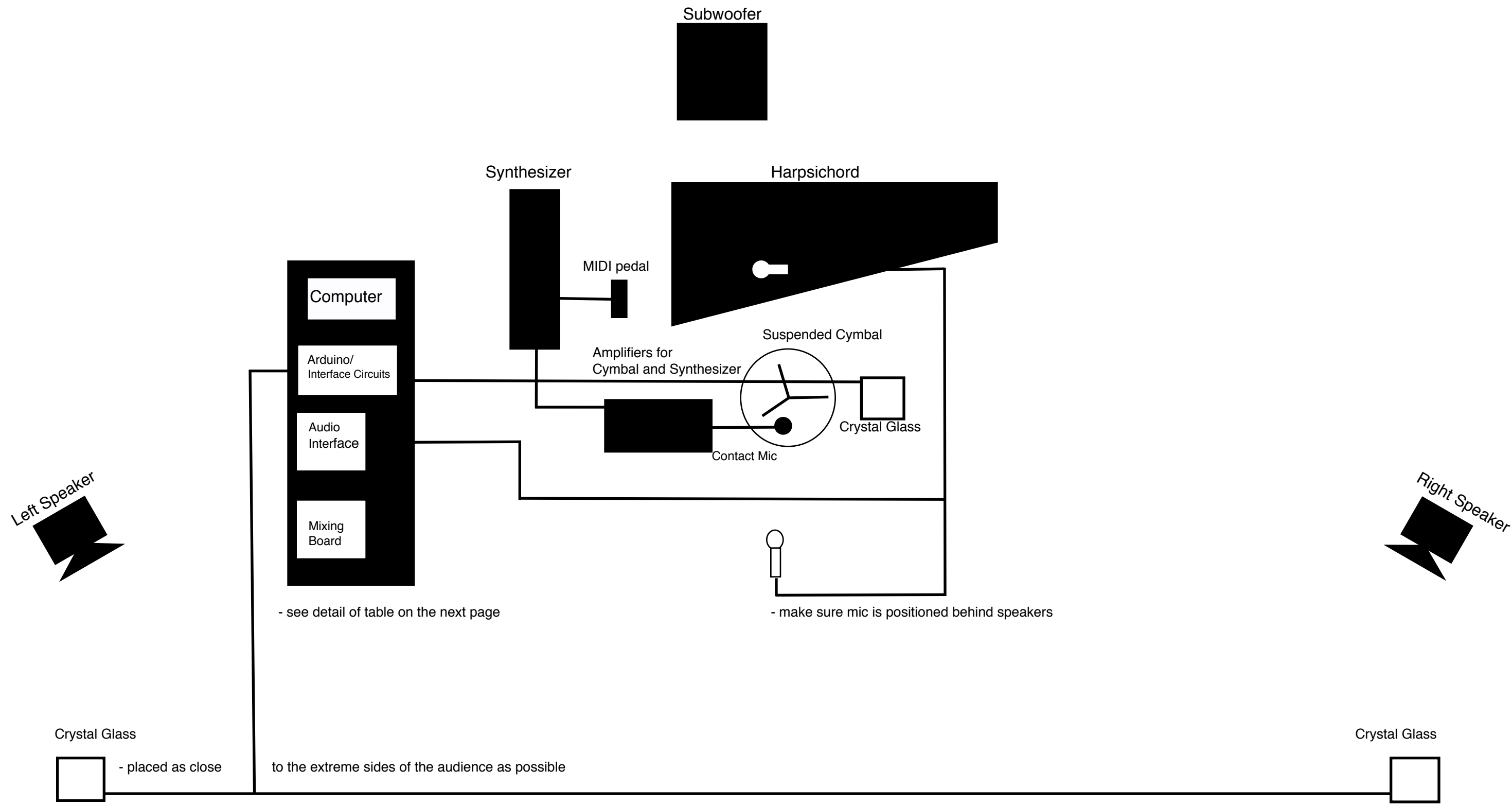
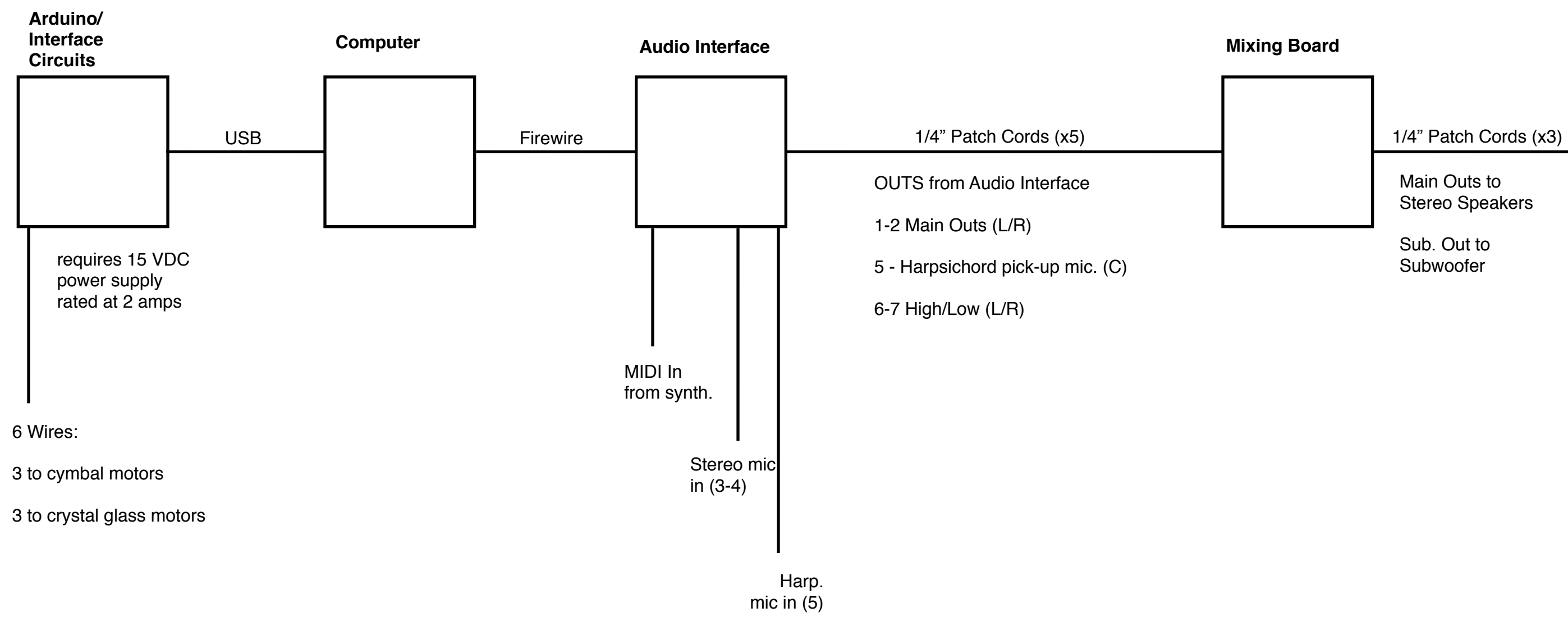


Table Detail



Notes to Sound Diffuser/Computer Operator

- Begin the computer program at the same time the performer starts the piece
- Ensure that the computer is recording without clipping
- Achieve all harpsichord dynamic markings with the pick-up mic
- Cue the start of II, which will also end GROOVE
- After the transition material is heard, balance the levels of the high and low tones coming from channels 6-7 of the audio interface.

Equipment Specifications

- Computer:**
- operator required to start and stop Max/MSP program found on included CD, further instructions are found within the program
 - computer is connected to microcontroller via USB (simulating serial communication) and an audio interface via firewire
- Audio Interface:**
- minimum I/Os: 3 XLR in, 1 MIDI in, 2 outs for stereo playback
- Mixing Board:**
- 5 channels required
- Arduino + Interface Circuits/Motors:**
- these materials are unique and are available from the composer, please visit his website, paulschuette.com for contact information
- Amplifiers:**
- cymbal amplifier should be equalized with all available bass and sparing mid and treble
- Microphones:**
- harpsichord mic should be a super cardioid
 - while the primary function of this mic is pitch tracking, the signal should be routed out the speakers for reinforcement purposes
 - center mic should be stereo and should be capable of picking up the entire setup, preferably with a large diaphragm
- Cymbal:**
- the larger the better
 - amplified via a contact microphone
- Crystal Glasses:**
- 2 wine glasses, 1 champagne flute
 - variations in size is acceptable, glasses that ring for 3 or more seconds are preferred
 - the champagne flute should be placed in the center by the harpsichord and the wine glasses should be at the left and right extremes
 - glasses are also available from the composer
- Timers:**
- the performer must start 2 timers at the begin of the piece, one positioned on the harpsichord and the other on the synthesizer
- Synthesizer:**
- connected to audio interface via MIDI
 - synthesized sound should be that of a vintage electronic piano, like a Fender Rhodes
 - MIDI sustain pedal required

I

1

* Performer must synchronize beginning with the computer operator

45" 1' 30" 2'

♩ = 40 accel. ----- ♩ = 60 accel. ----- ♩ = 100 accel. ----- ♩ = fast as possible

Harpsichord

molto staccato

1 **2** **3**

fff *f* *mp* *ppp*

* All harp. dynamics are achieved by the sound diffusionist

The musical score is written for Harpsichord on a grand staff (treble and bass clefs). It is divided into three sections by vertical dashed lines. Section 1 (0 to 45 seconds) starts with a tempo of ♩ = 40 and 'molto staccato' articulation. Section 2 (45 seconds to 1' 30") starts with a tempo of ♩ = 60. Section 3 (1' 30" to 2') starts with a tempo of ♩ = 100 and ends with 'fast as possible'. Dynamics are marked below the staff: *fff* at the beginning, *f* at the start of section 2, *mp* at the start of section 3, and *ppp* at the end. Slanted lines connect the dynamics to the section boundaries. Above the staff, tempo markings with quarter notes and 'accel.' are connected to the section boundaries by dashed lines.

PITCH - Play pitches that could be notated in the space outside of the lines.

For example, in section 2 at approximately 1" all pitches from a B in the bass clef staff down to the lowest F on the instrument are available for the left hand.

- Sound only one pitch at a time
- Continually use pitches from all available pitch space. Do not become fixated on the new space as it becomes available.

RHYTHM - play angular, asymmetrical rhythmns
- randomly alternate between hands
- pace rhythmns losely according to the indicated tempos

CRYSTAL GLASS INTERACTIONS

- Generating responses: In section 1 - repeat a pitch 2 times
In section 2 - repeat a pitch 5 time
In section 3 - repeat a pitch 10 times
 - pitches to not have to be repeated consecutively to generate a response
- Attempt to provoke responses from the cymbal, but remain in control at all times.
- Holding down the MIDI pedal connected to the synthesizer sets the computer to listen to incoming pitches.
Releasing the MIDI pedal stops pitches from reaching the computer.
Use this control to facilitate control of the relationship
- Allow the end of section 3 to become somewhat chaotic and out of your control (full pedal throughout section 3)

2

Synthesizer

PITCH - Play pitches that could be notated in the space inside of the lines.

RHYTHM - play angular, asymmetrical rhythms
- randomly alternate between hands
- pace rhythms loosely according to the indicated tempos

SAMPLE INTERACTIONS

- Generating responses: - add dissonant intervals to existing harmonies to generate responses - m/M2, m/M7, TT
 - add consonant intervals to existing harmonies to quiet responses - unisons, P5, P4 (unison is most effective)
- As in I, provoke responses, but remain in control
- Allow the end of section 3 to become somewhat chaotic and out of your control
- The MIDI pedal only functions as a sustain pedal during this section

3

- This section lasts for 2'. From 4' to 6' in the continuum of the piece.
- Choose 1 sound to respond to approximately every 5"-10" either from the cymbal or the speakers
- Respond to that sound with combinations of trills and tremolos that emulate the sounds approximate pitch/range of pitches, inner rhythmic content and dynamic
- Responses can be played on either the harpsichord or the synthesizer depending upon the timbre of the sound being emulated:
 - harshly pointed metallic sounds should be responded to with the harpsichord
 - larger, smoother and more mellow sounds should be responded to with the synthesizer
 - combinations of the two are also allowed

4

Harpsichord

6' 6' 45" 7' 30" 8'

1 2 3 4

GROOVE

(accel.)

x3

R.H. - begin in the uppermost octave
- move down an octave after each repeat
L.H. - play as written throughout

p *mf* *mf* *ff*

1. React to the crystal glasses rhythmically with any pitch in any octave
2. Continue to react to the glasses rhythmically, attempting to discern a pattern, but with only the specified pitches in any octave.
3. Continue to align a pattern with the rhythm of the glasses using the sets of notated pitches sequentially.
4. Lock into a rhythmic groove with the glasses on the specified rhythm. 2 pitches should from the set indicated should be played at the same time in any combination.
Repeat 3 times then cue the computer operator to move on. An accel. will begin after the first time.

II

Instructions / Timing

A brief transition will be generated by the computer program when the operator cues the beginning of this section.

Approximately 10” after the GROOVE has ended begin with the following instructions:

ROTATION:

1. Choose an electronic piano gesture and perform it. All gestures should be selected once before any are repeated. At the beginning of that gesture press and release the MIDI pedal to put the computer in an active listening mode. The computer will respond to the gesture with previously sampled material which will be heard over the speakers.
2. The computer will choose when to stop responding to the electronic piano. When the computer does choose to stop - stop playing.
3. The computer will then either immediately proceed with gestures on either the crystal glasses or the cymbal - or the computer may also elect to pause before executing this gesture. Either way select the appropriate response from the harpsichord gestures based on what the computer is playing.
4. The performer then chooses when to end this interaction by ceasing to respond and simultaneously pressing and releasing the MIDI pedal.
5. The performer can then either immediately begin the cycle again with step 1 - or the performer may elect to pause before beginning the cycle again.

Gestures and the pauses between them should last anywhere from 1” - 10”

The tempo and dynamics of performed gestures are unspecified and to be selected by the performer - extremes of both are encouraged.

Begin each rotation, in a moment of textural sparseness. Silence and thinness of texture will become increasingly rare as new rotations are added.

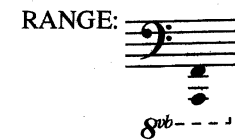
Stop adding rotations when there no gaps.

When new rotations are no longer being added, the computer program will cue the end of the piece.

Electric Piano Gestures

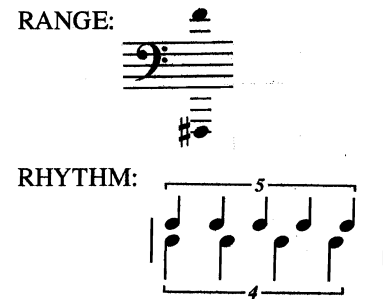
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- play random trills and tremolos with varying and dissonant rhythmic values (not in response to any sounds being heard)
(Example of rhythmic dissonance:
16th note trill against quarter note triplet tremelo)
- the first trill/tremolo must contain a pitch from the given range
- subsequent trills/tremolos maybe played anywhere within the instruments range
- avoid completely chaotic playing by repeating each trill/tremolo with the same pitches and rhythm for no less than 3"



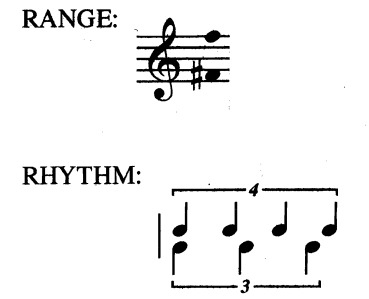
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- choose a pitch set of (0, 1, 2, 5) from the given range
- play those pitches in any octave (contained within the range) alternating between the given rhythm and trills/tremolos on the same pitches
- alternate the rhythm in relation to the pitches
- once the computer is imitating the rhythm randomly accel./rit.



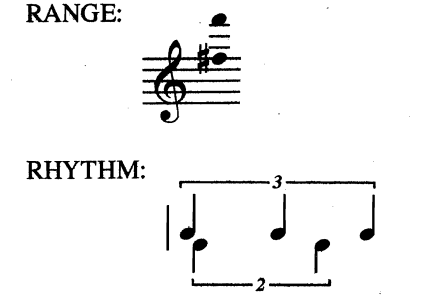
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- choose a pitch set (0, 1, 2) from the given range
- play those pitches with the given range with the given rhythm
- alternate the rhythm in relation to the pitches
- once the computer is imitating rhythm:
 - randomly accel./rit.
 - alternate the rhythm with the same pitches from the octave above



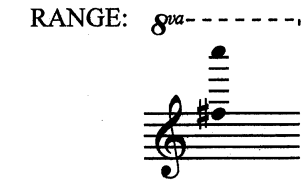
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- choose a pitch set (0, 1) from the given range
- play those pitches within the given range with the given rhythm
- alternate which pitch plays which half of the compound rhythm
- once the computer is imitating rhythm:
 - randomly accel./rit.
 - alternate the rhythm with the same pitches from the octave above



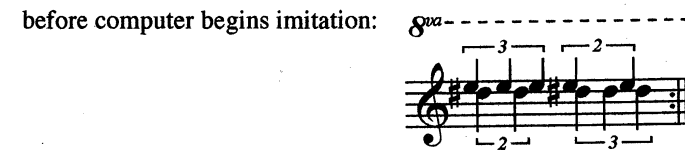
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- play a single pitch from the given range at an even rhythm
- ♪ not > (fastest computer response possible)



EXAMPLES:

Gesture 2 (similarly applicable to gestures 3 and 4):



some possible combinations after computer begins imitation:



Harpsichord Gestures

1

LISTEN FOR:

- an even rhythm being played on the center glass

RESPONSE:

- imitate the rhythm being played on the center glass on the lowest note of the instrument

2

LISTEN FOR:

- the given rhythm being played on the outer glasses

RESPONSE:

- choose a pitch set (0, 1) from the given range
- play those pitches within the given range imitating the rhythm being played on the outer glasses
- alternate which pitch plays which half of the compound rhythm
- as the integrity of the rhythm becomes distorted try to follow the pattern

RANGE:



RHYTHM:



3

LISTEN FOR:

- the given rhythm being alternated between all three crystal glasses

RESPONSE:

- choose a pitch set (0, 1, 2) from the given range
- play those pitches within the given range imitating the rhythm being played on the glasses
- alternate the rhythm in relation to the pitches
- as the integrity of the rhythm becomes distorted try to follow the pattern and add the same pitches from the octave below

RANGE:



RHYTHM:



4

LISTEN FOR:

- random sounds from the cymbal being alternated with the given rhythm being played on the crystal glasses

RESPONSE:

- choose a pitch set of (0, 1, 2, 5) from the given range
- play those pitches in any octave (contained within the range) imitating the rhythm being played on the glasses and the sounds being heard from the cymbal with trills and tremolos comprised of the same pitches
- alternate the rhythm in relation to the pitches
- try to imitate the sounds from the glasses and the cymbal as closely as possible - these sounds are highly randomized and exact synchronization is not expected

RANGE:



RHYTHM:



5

LISTEN FOR:

- random sounds from the cymbal with no alternating activity from the crystal glasses

RESPONSE:

- play random trills and tremolos that imitate the inner pitch and rhythmic content of the sounds being heard from the cymbal
- the entire range of the instrument may be used