Banff Sketches

for MIDI piano and interactive music system
1990-91

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Program Note

*Banff Sketches* is a composition for two performers, one human, and the other a computer program written by the composer. The computer hears the performance of the human, analyzes it, and contributes to the musical texture a part of its own based on this analysis. There is no score stored in the computer to be played back in performance; all of the music it plays is composed on stage. How it composes is a function of what it hears, and of connections made between the analysis and composition methods by the composer. The analysis classifies features of the human performance (register, speed, harmony, rhythm, etc.) and the way these change in time. The composition methods attached to these classifications are varied throughout the piece, yet the result is not in any sense random. If the computer hears the same thing, it will play the same thing in response. However, it can function equally well with composed or improvised music. *Banff Sketches* takes advantage of this flexibility by presenting the pianist with a fully notated composition, interspersed with some opportunities for improvisation within the logic of the piece. Each performance will differ to the degree that the human player’s interpretation varies. The title is something of an anachronism – *Banff Sketches* is now the composition those sketches became. Still, the idea of a sketch captures an important part of what is different about making music like this with a computer: that performer and composer, working together with software able to adapt to input from both, can fashion a musical environment which is clearly one composition, but with many possible realizations.
Technical Requirements

- Apple Macintosh computer with MIDI interface; OSX 10.10 or higher
- Acoustic piano with MIDI adapter, such as Yamaha Disklavier (MIDI keyboard controller with good quality piano sampled sound may be substituted if necessary)

The MIDI signal from the piano is sent to the computer; the computer in turn produces audio in response. The piano should be miked as required to produce an even balance with the synthetic sound.

Performance Notes

Changes in the kind of response made by the computer to the live performance are marked in the score as "states". Each state change is associated with some event in the human performance: the most common type of trigger occurs when a particular pitch is played. The pitches associated with each such state change are shown with triangular noteheads. An accent above a state change means that it will be triggered by any attack from the piano. An accent mark with two lines through it means that the state change will fire when the pianist stops playing (no attacks).

The graphically notated sections are improvisations involving both the pianist and the computer. These should be rehearsed several times with the machine to learn the kinds of responses different playing styles will evoke. The boxed graphics represent material that can be played in any order, with any amount of separation between them. The graphic indications should be taken as evocations: no precise definitions of the marks are given here, in order to engage the pianist's imagination and improvisational strengths as fully as possible. The best way to prepare the improvisations is to practice often with the computer.

The durations marked above the fermatas in the improvisation and computer solo sections should be taken as general indications: the pianist should perform (or allow the computer to continue) for the amount of time shown, plus or minus 5 seconds. The pianist's musicianship, rather than a stopwatch, should determine the length of these segments.
State 2
continue previous plus
loud -> trill
fast -> solo

State 3
line -> accent
low -> invert, solo
midhigh -> tremolo
high -> glissando
regular register -> tap
irregular register -> no tap

State 4
line -> sawtooth
not line -> bass
fast -> thin
regular speed -> mutate sawtooth
quick changes in articulation and dynamic
general speed fast

State 5
line -> accent
not line -> arpeggio
low -> crescendo, solo
short -> tremolo
regular register -> tap beat

State 6
line -> sawtooth
not line -> bass
wide -> tremolo
midhigh -> diminuendo
fast -> accelerando
regular speed -> mutate sawtooth
quick changes in articulation, speed, and dynamic

State 7
line -> invert
not line -> crescendo

State 8
line -> accent
not line -> arpeggio
mildhigh -> tremolo
high -> trill
loud -> decrescendo

16"

20"

computer solo

State 9
continue previous plus
line -> solo
low -> invert
slow -> sawtooth
soft -> crescendo
regular register -> sawtooth mutate

State 10
continue previous plus
midslow -> grace notes
loud -> harmonize

-4-
State 11
midhigh -> crescendo, harmonize

State 12
continue previous plus
soft -> accent, invert, loop
State 13
continue previous plus
loud -> backward, glissando

State 14
continue previous, minus soft links, plus
soft -> accent, diminuendo, transpose
not line -> arpeggiate
State 15
silence
State 16
- line -> solo, grace notes
- not line -> arpeggio, accent, transpose
- low -> invert
- midlow -> tremolo
- high -> ornament
- midfast -> glissando, tight
- fast -> accelerando
- all -> tap beat
- regular speed -> accelerando mutate

State 17
- not line -> transpose
- soft -> accent
- loud -> invert, diminuendo

- 8 -
quick changes in articulation, speed, and dynamic
State 25
silence

State 26
store events until rest then
wide => loop
not line => arpeggiate, crescendo

- 13 -
State 27
continue previous plus
not line -> accent

State 28
continue previous plus
all -> solo

State 29
continue previous,
without storing events, minus
not line -> loop plus
not line -> transpose
State 30
line -> invert
low -> glissando, tremolo
middlow -> crescendo, ornament, trill
middhigh -> loop, sawtooth

State 31
all -> phrase, harmonize
line -> thin, invert
not line -> arpeggio
high -> tremolo
test -> decelerando
loud -> accent
phrase -> mark boundary
computer solo

State 33
all -> solo
line -> transpose, accent
not line -> arpeggio
high -> sawtooth short -> grace notes
soft -> loop loud -> ornament
fast -> accelerando
regular register -> accelerando mutate
regular speed -> tap beat
irregular speed -> stop tap

State 34
all -> tap beat
fast -> light, thin, decrescendo