

Bifurcations in a Continuous System

Scott Mc Laughlin

Sep 2011

Duration 8 mins.

electronic keyboard and live electronics (MaxMSP)
for Sebastian Berweck - synthist

Bifurcations in a Continuous System

Abstract:

In writing this piece I wanted to create something pianistic for the performer, but where the musical argument was alien to the keyboard. So here the pitch content is a linear mapping of the duration between keystrokes, producing a sound that is constant and lacks the characteristic envelope of the piano sound. Similarly, other attributes of performance such as key-release, dynamics, notes etc., are mapped to timbre using histograms and averaging.

Electronics Requirements:

- The piece is played with a midi keyboard plugged into a computer running the MaxMSP patch. A footswitch pedal is also required to change presets, the patch listens for this as midi control message 64: the patch is programmed on to receive a pedal plugged into the keyboard not the soundcard, this setup can be reprogrammed by the composer if necessary, contact the composer ahead of time if this is the case.
- Currently the patch runs on Apple OSX only, contact the composer for a windows port of the patch. Linux systems are not supported by MaxMSP at the time of writing.
- **Levels:** the overall level of the piece should be medium, if possible it should be loud enough to cover any clicking noise made by the sound of the keyboard keys.

Patch:

- Installation: keep all these files in the same folder.
- Open the "MAIN bifurcation_vX¹.maxpat" file, turn on the patch by clicking box on top left, and go!

Score:

- because the tempo of the events directly affects the pitch of the synth, the tempo must be rigorously maintained and the note durations should be metronomically accurate. Of course this is impossible, and the minute variations in tempo are part of the piece, but the performer should not deliberately vary the tempo.
- Preset numbers mean press your footswitch pedal. The first preset is automatically loaded so requires no pedalling but is on the score so that it matches the preset numbers on the patch.
- The patch shows:
 - *Durations in:* the relative durations of each successive key event. Short notes are high, long notes are low. The patch ignores durations outside a 20-2000ms range.
 - Levels:
 - *Duration synth level* shows the level for the pitches generated by durations between key events.
 - *Key synth level* shows the level for the sound generated from the keys/pitches.
 - The sliders cannot be altered in performance.
 - *Presets* numbers show the current preset and the slider shows interpolation between presets. "R" is another reset button, but the same as...
 - *Reset* puts the patch back into start mode; returns to preset 1 and stops all active voices.

¹ where X is the current version number.

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♩ = 75 (very strict - metronomic - do not vary tempo)

[Approximate sounding pitch**]

(x 8-10) (x 7) (x 7)

preset 1 (auto*)

(x 5) (x 8)

(x 8) (x 8) (x 8)

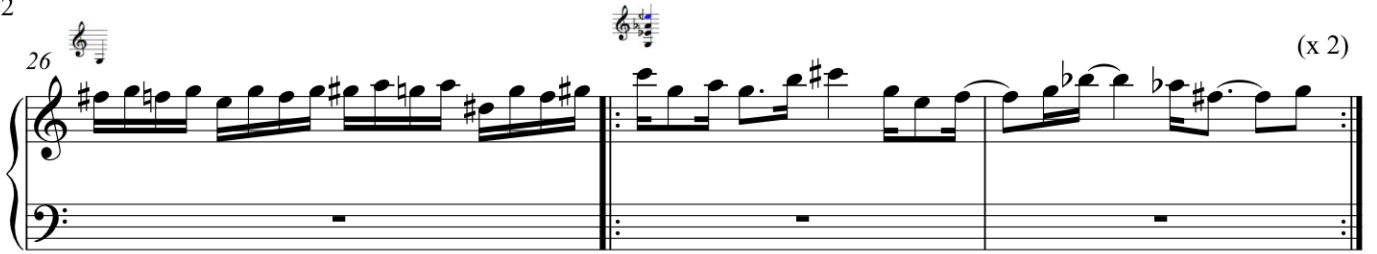
(x 8)

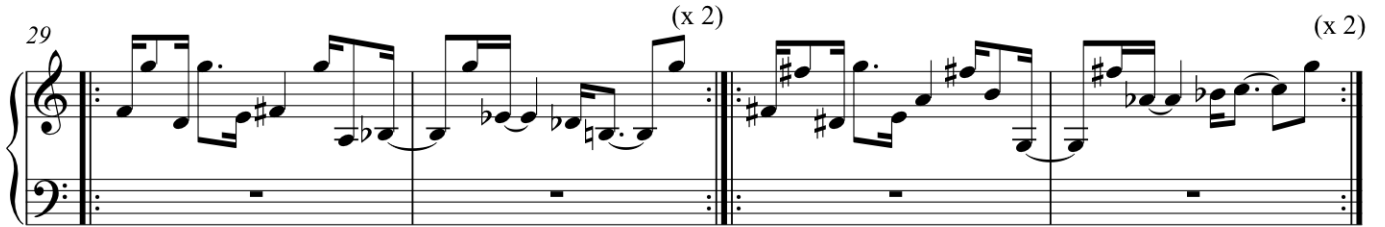
preset 2 preset 3

(x 2) (x 2)

[* preset 1 is automatically loaded in the patch, no pedal-press needed.]


[**not all pitches are shown, generally only a new pitch, but sometimes full harmonies when it is complex]

26  (x 2)

29  (x 2)

33  (x 2)

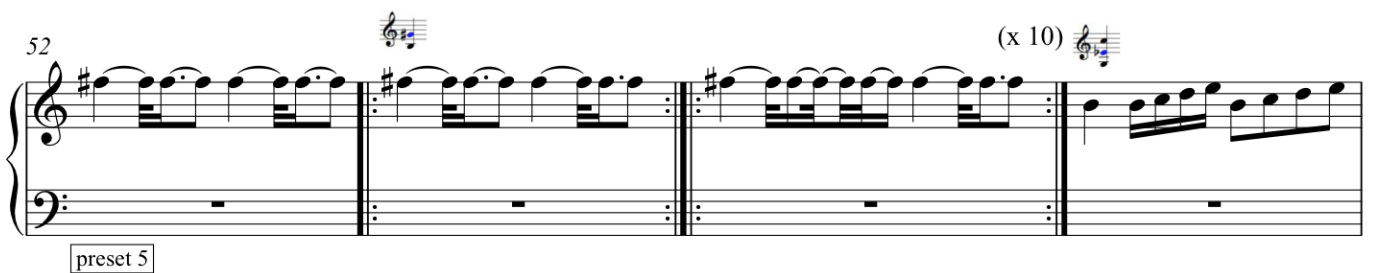
preset 4

39  8va

46  (8)

(gradually change to this over 8-10 repeats)



52  (x 10)

preset 5

56 (x 2) (x 2)

62 (x 2) (x 2) (x 2)

68 (x 2) (x 2)

preset 6

74 (x 2) 10-15" (x 2)

preset 7


80 (x 2)

83 (x 2) (x 2)

preset 8

87 *8va* (x 2) *8va* (x 2)

91 (x 2) (x 2)

95  

preset 9

98  

102  