Bifurcations

Scott Mc Laughlin

May 2007

Duration 8 mins.

Clarinet Quartet

Bifurcations

Performance instructions

Programme note

Bifurcations is a part of a series of works which takes aspects of chaos/complexity theory as a metaphorical model: in this case I wanted to see how it was possible to use chaotic period-doubling as a structural device.

In the real world, period-doubling can be seen in any system which changes smoothly over time. Most notably in the swirling patterns in flowing water as it becomes more turbulent with increased flow/speed. Bifurcations occur where smooth changes in certain parameters lead to a sudden changes of state where as the system becomes unstable it 'jumps' to a new state which is more complex but stable: period-doubling means that each new state is twice as fast/complex as the last, rapidly leading to chaotic state.

This piece charts a slow increase in harmonic complexity whereby a single chord turns in upon itself, moving through points of stability and instability and the inevitable bifurcations.

General

- Barlines are for co-ordination only and should not be accented, the piece has no metric pulse.
- Apart from the accented *forte* pitches, all notes should be faded in from nothing and fade out to nothing: the four players should blend together into one sound. On different instruments, some microtonal fingerings will not allow fading from nothing, do the best you can with these.
- Before the piece, clarinets II and III are required to detune their instruments by approximately ¼ tone by pulling out the barrels slightly.
- All of the microtones in the score can be achieved by covering holes further down the barrel or by lipping down (preferably before attacking the note to avoid a sudden and intrusive pitch-bend).

Microtones:	
Offset in cents:	-150 -125 -100 -75 -50 -25 0 +25 +50 +75 +100 +125 +150

The microtones used in the score are idealised. The player should treat them as points to aim for, a degree of intonational latitude is assumed.

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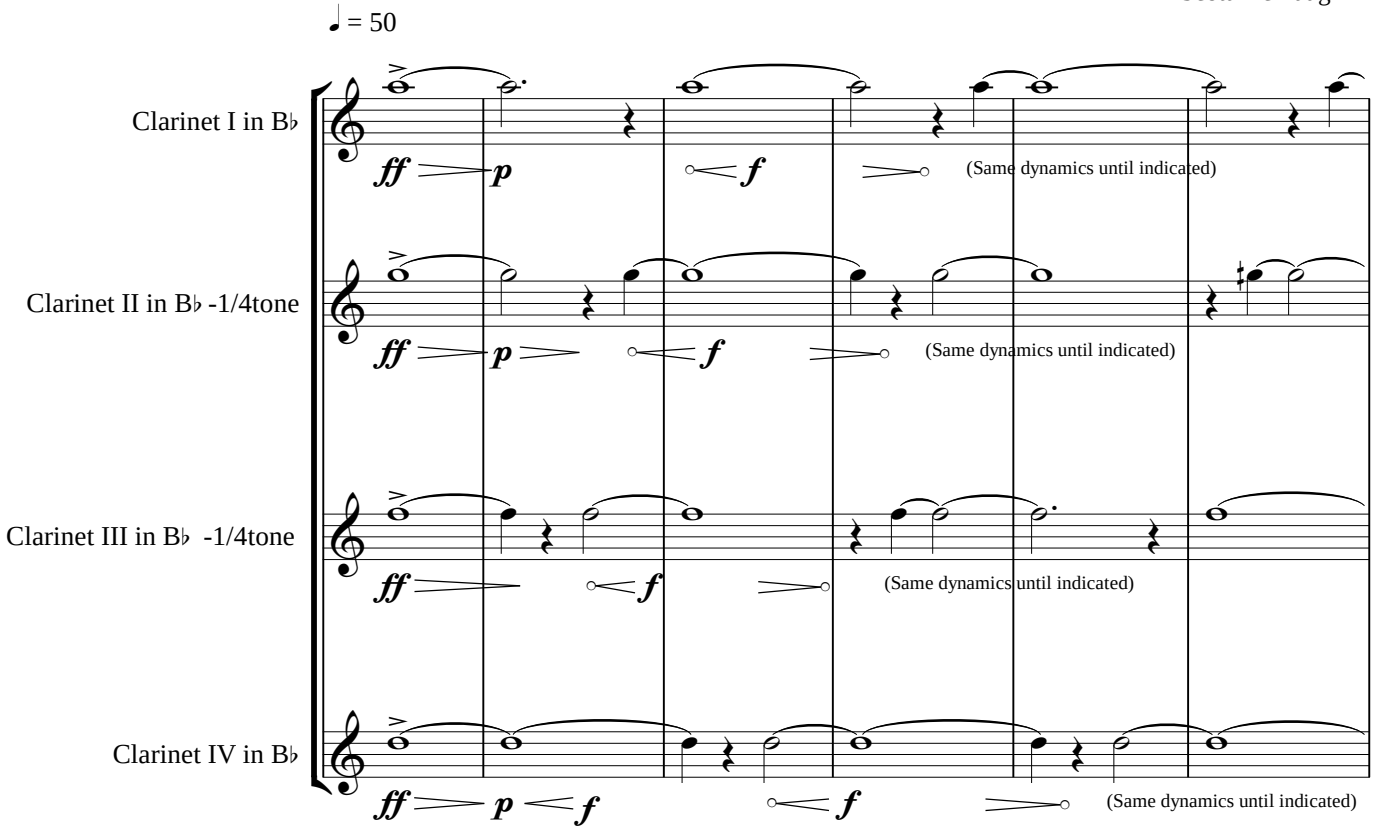
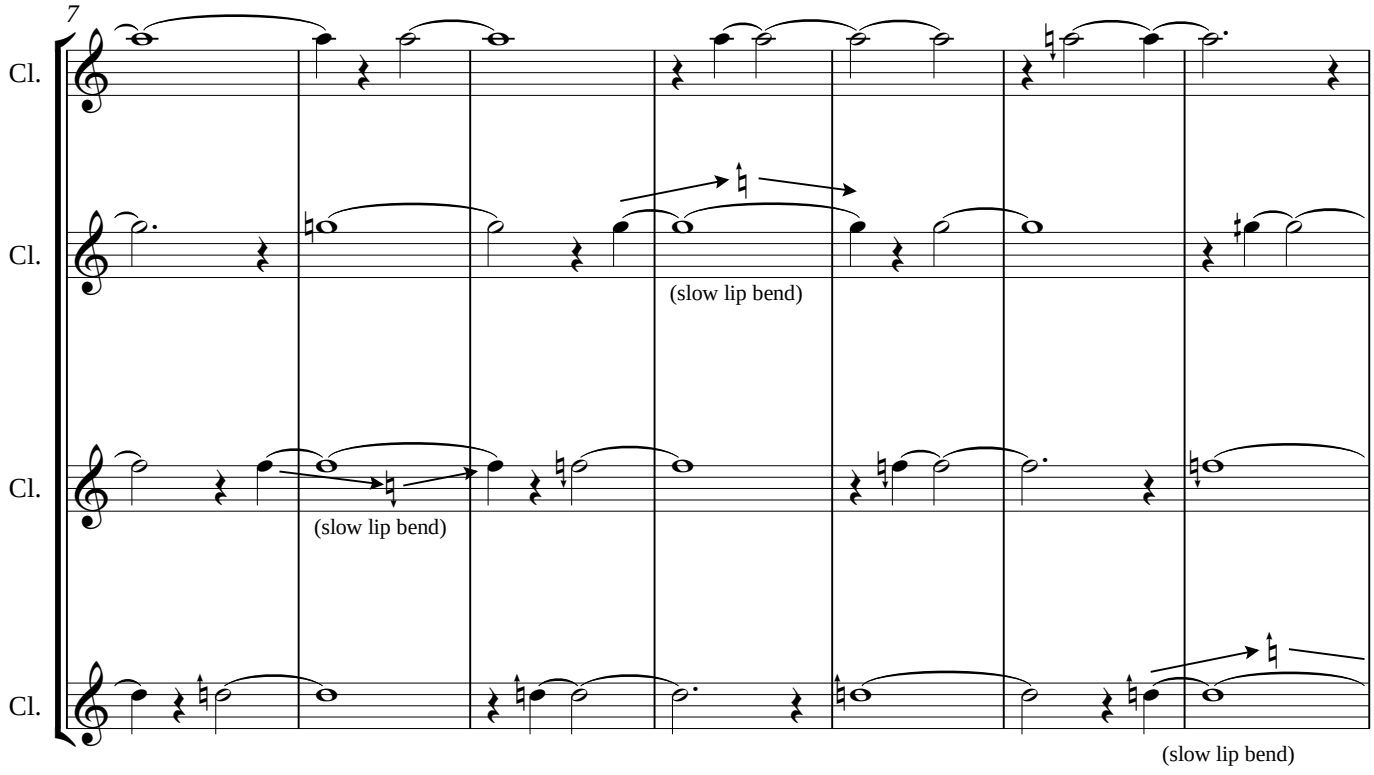
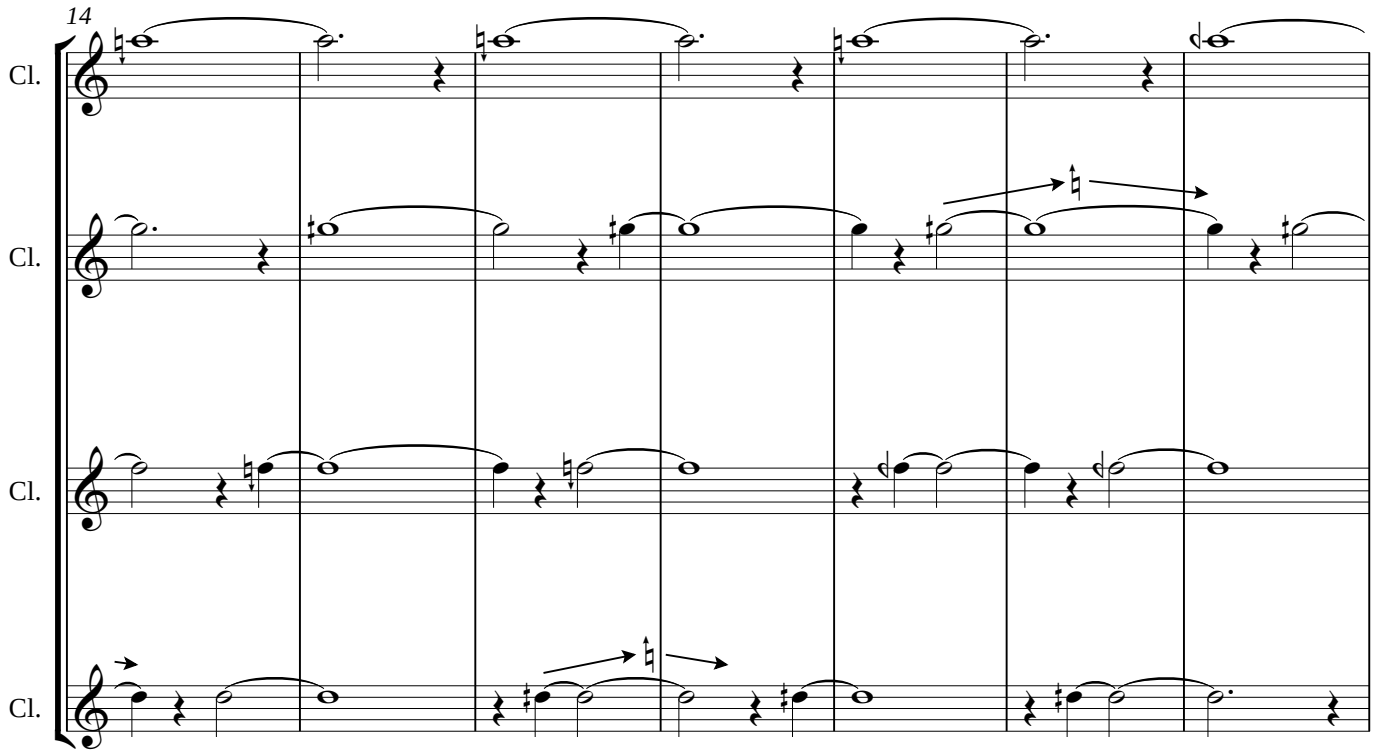
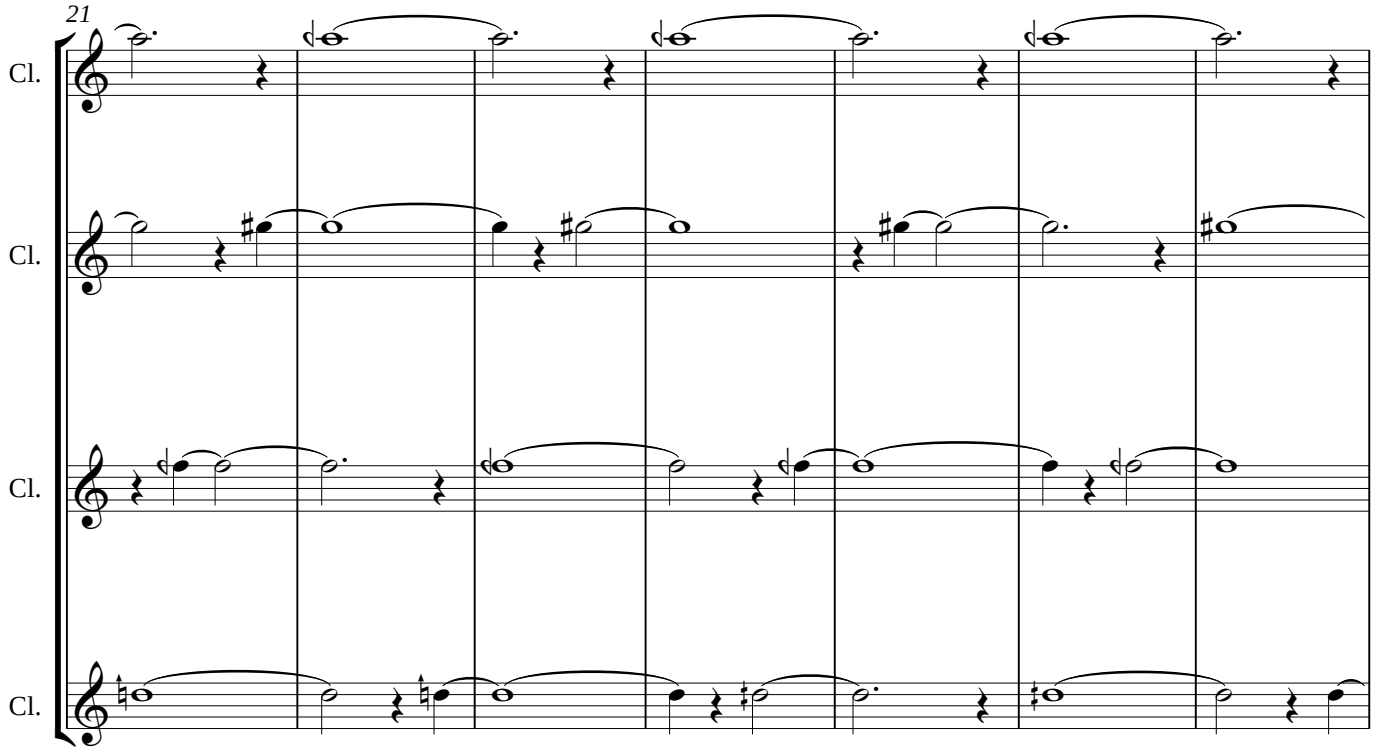





14
Cl.
Cl.
Cl.
Cl.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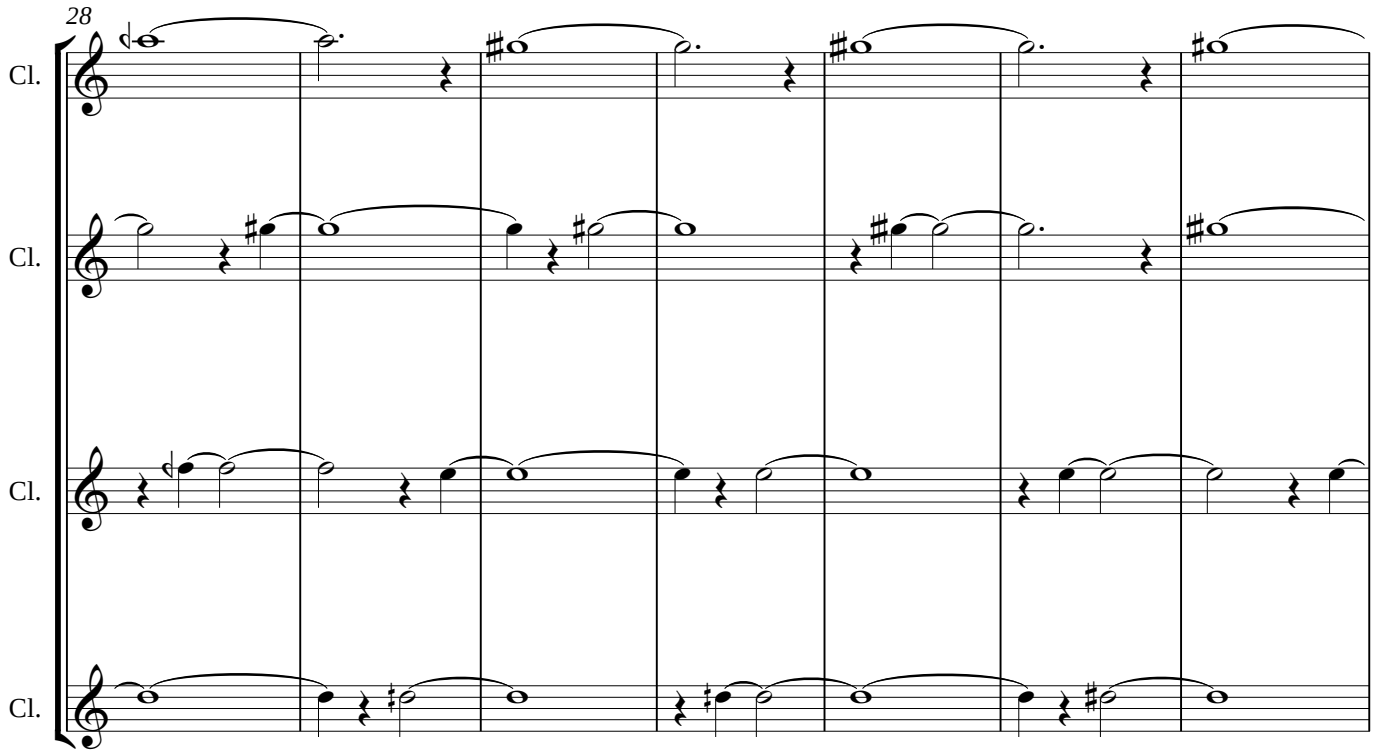
Cl.
Cl.
Cl.
Cl.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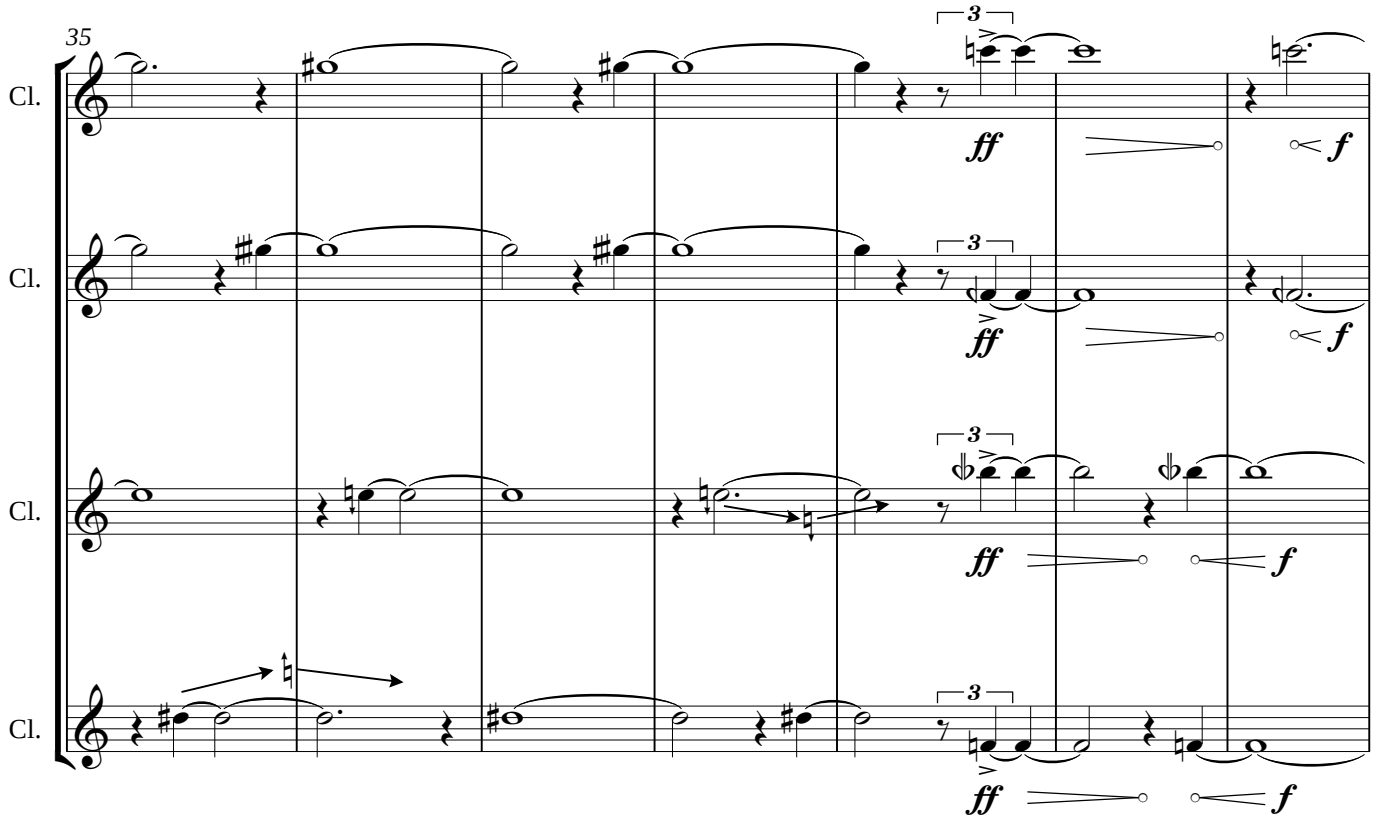
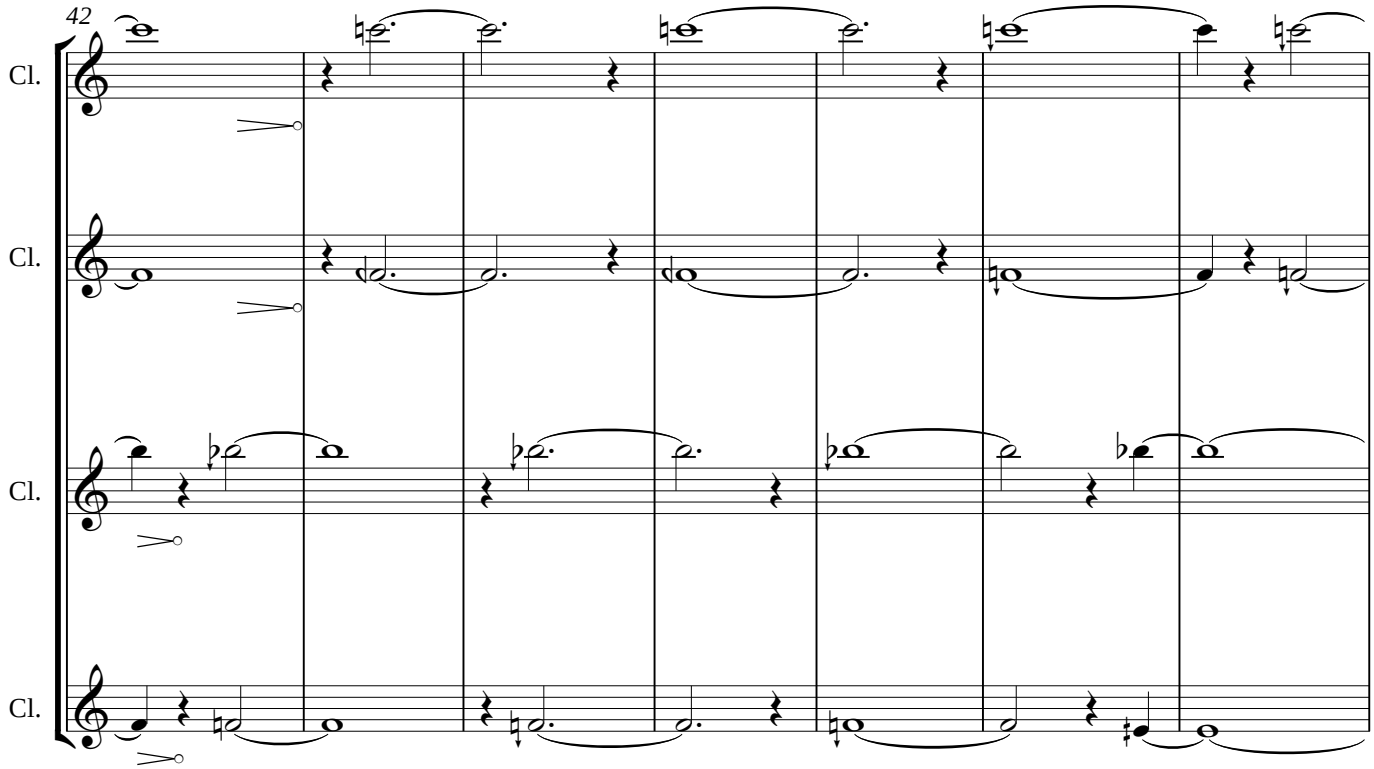
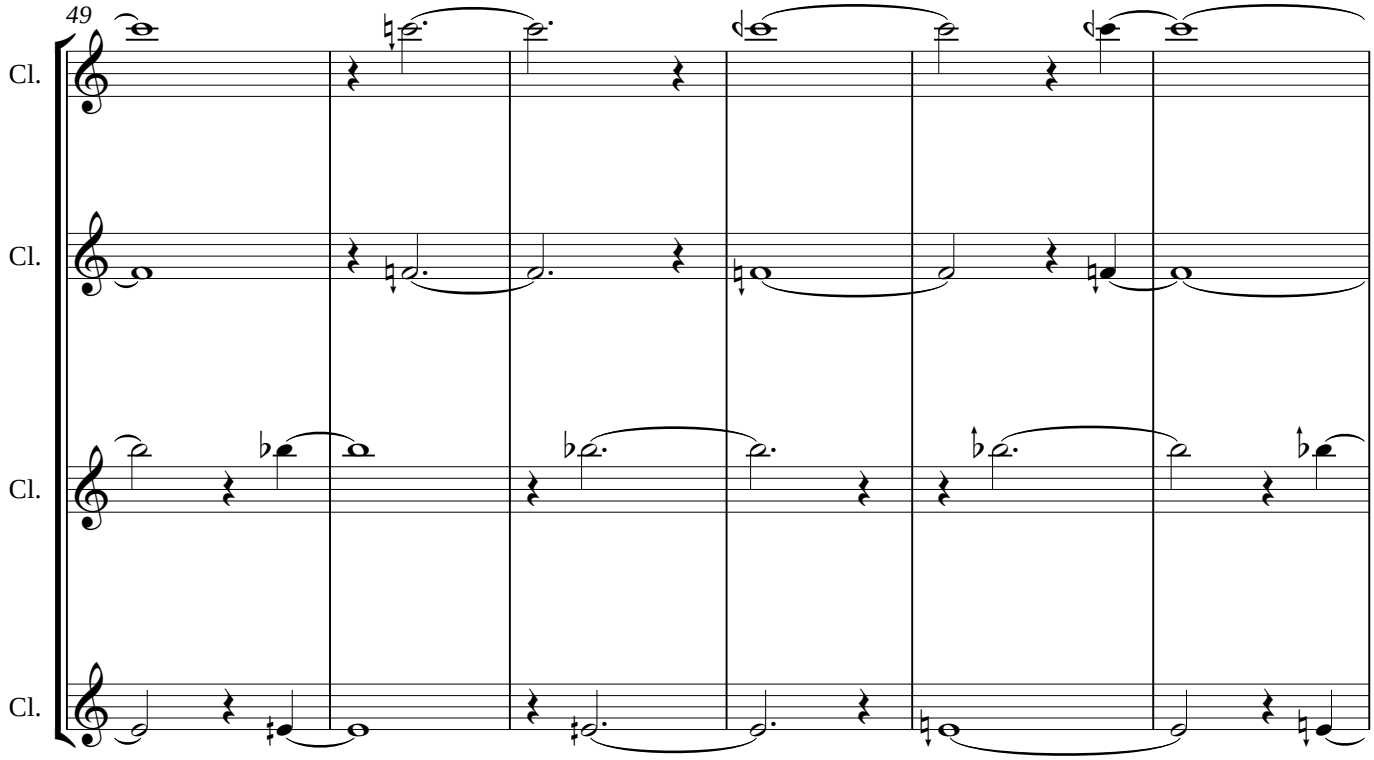
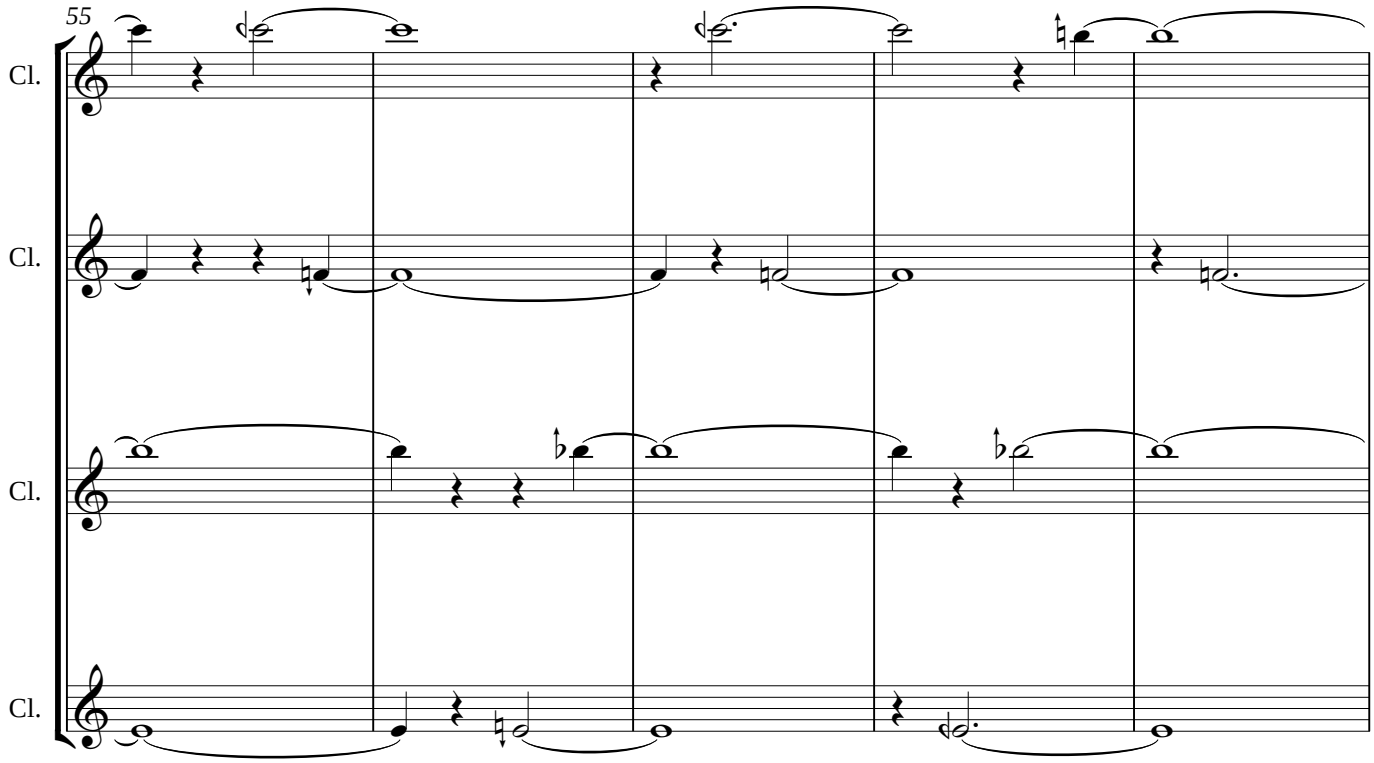
Cl.
Cl.
Cl.
Cl.


35
Cl.
Cl.
Cl.
Cl.
3
ff
f


42
Cl.
Cl.
Cl.
Cl.


49
Cl.
Cl.
Cl.
Cl.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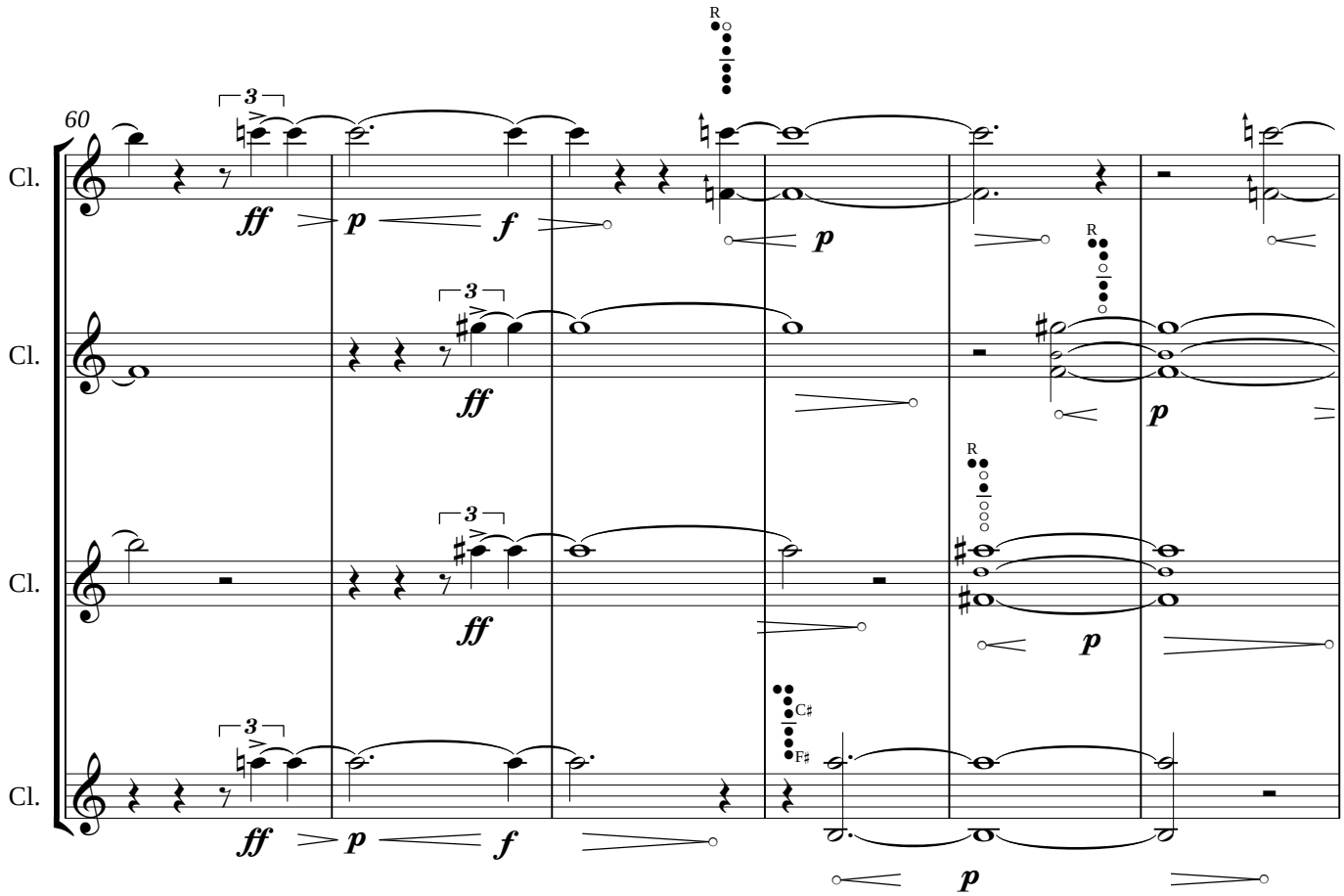
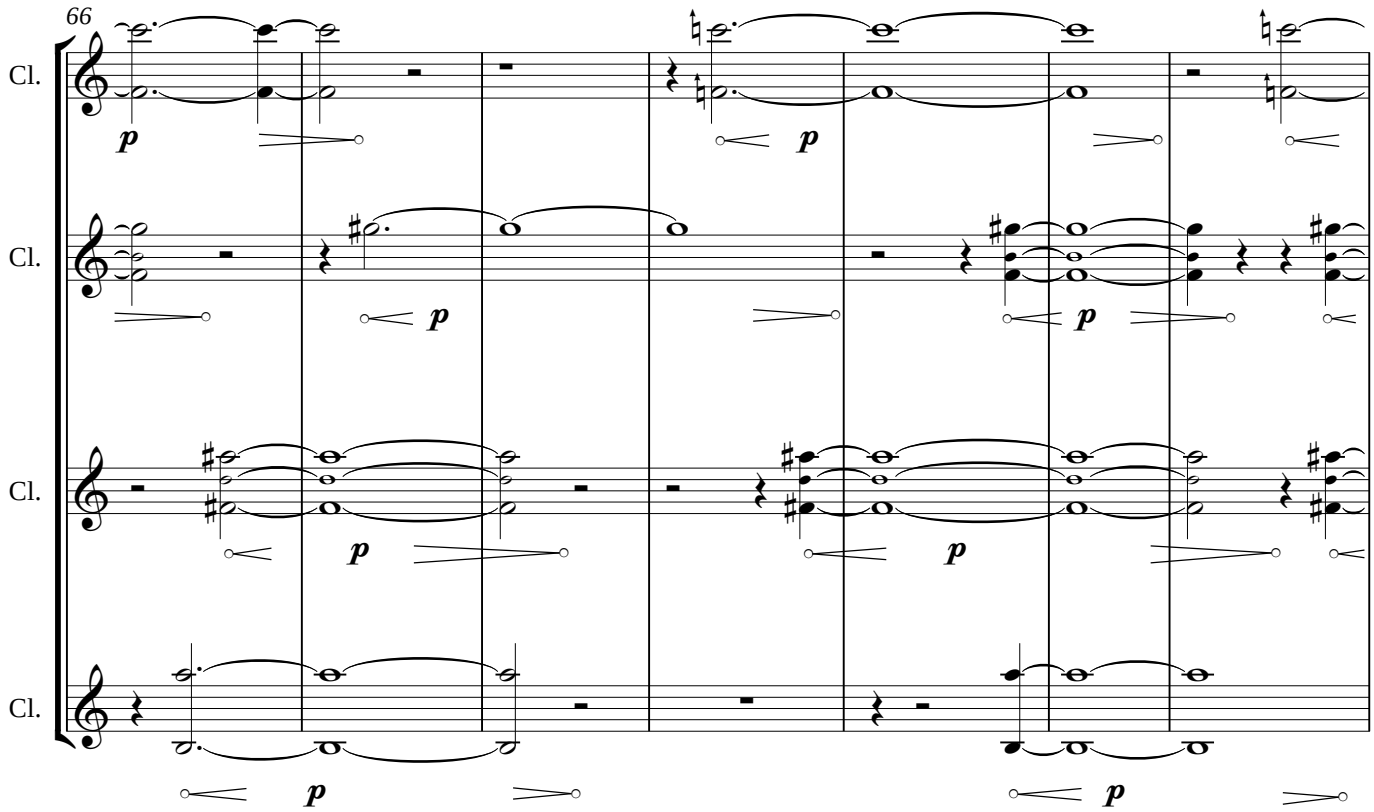
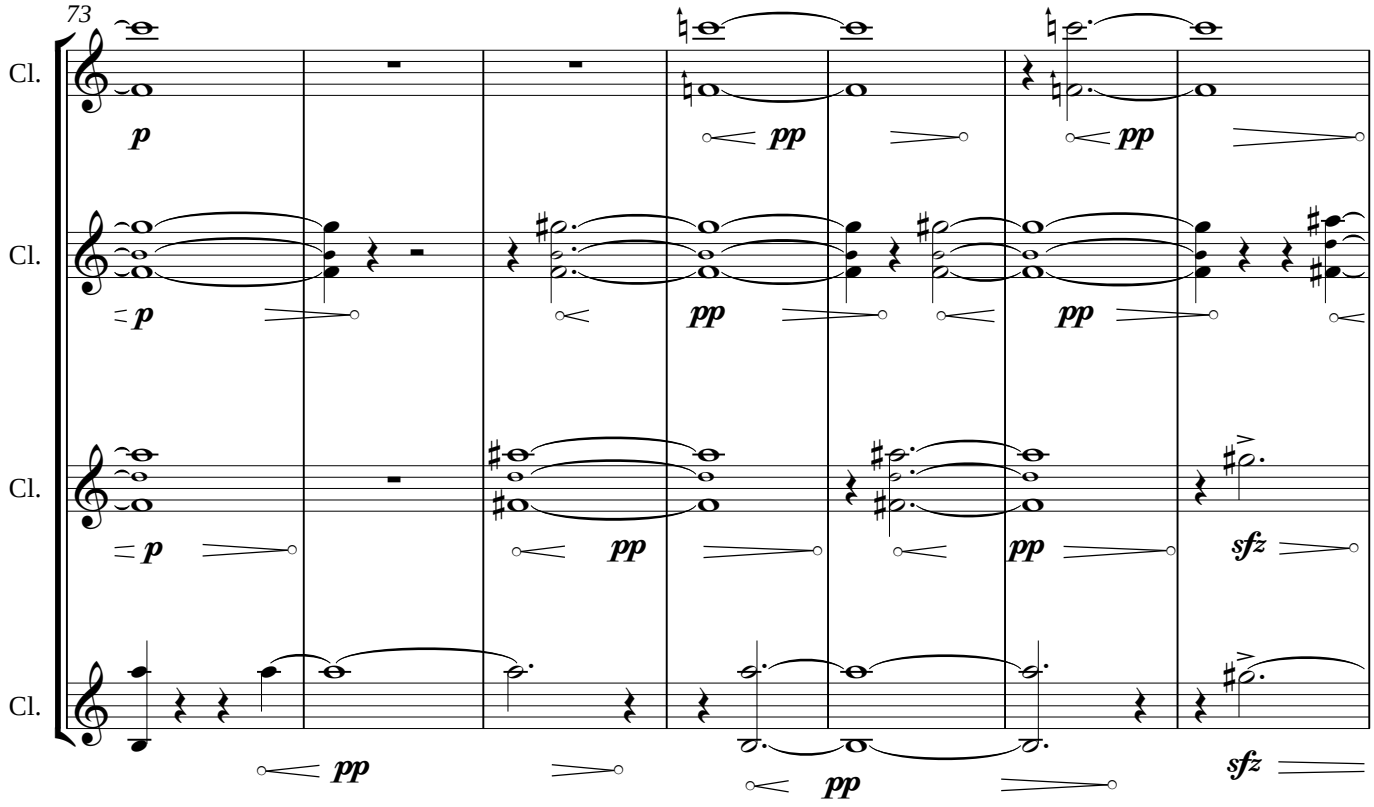
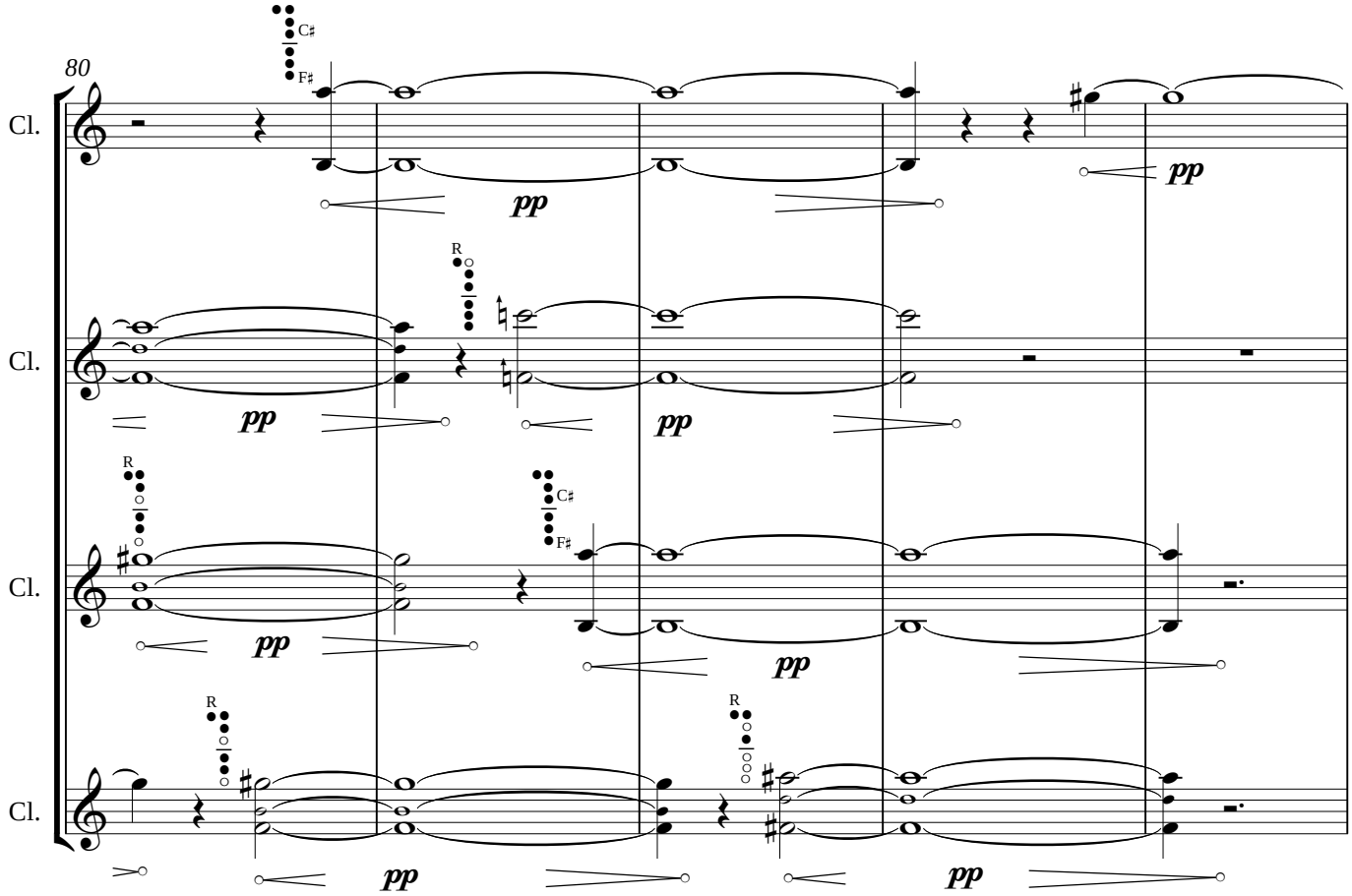
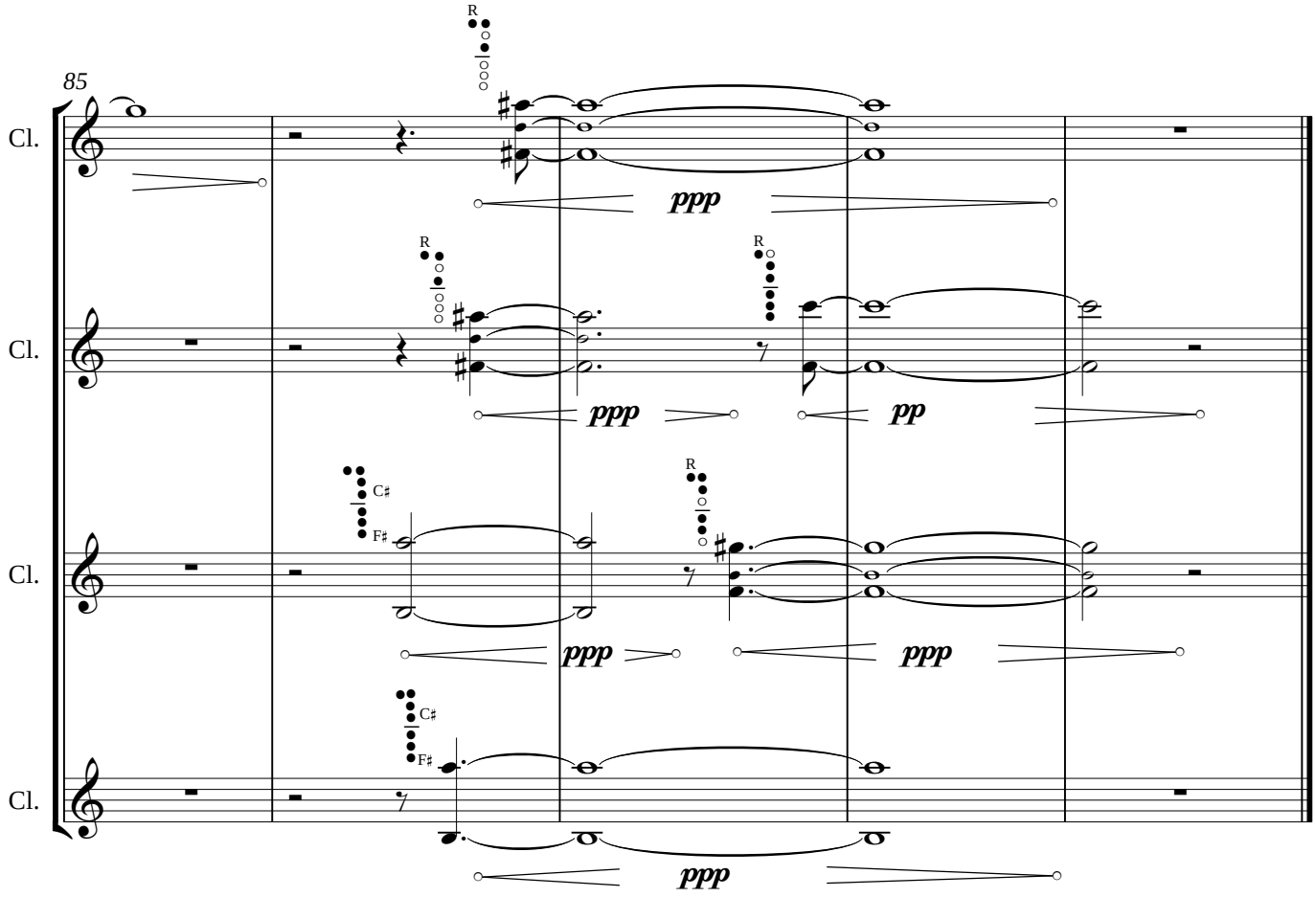
Cl.
Cl.
Cl.
Cl.


60
Cl.
Cl.
Cl.
Cl.
3
ff
p
f
R
C♯
F♯


66
Cl.
Cl.
Cl.
Cl.
p


73
Cl.
Cl.
Cl.
Cl.
p
pp
sfz


80
Cl.
Cl.
Cl.
Cl.
C♯
F♯
R
pp


85
Cl.
Cl.
Cl.
Cl.
R
C♯
F♯
ppp
pp