

Four Pieces with Cognitive Constraints

III. Lightness

For String Quartet
(2021)

Kenrick Ho

Preface

The set of *Four Pieces with Cognitive Constraints* are inspired by Fred Lerdahl's work in music cognition. All four compositions were generated from a Max patch that is specifically designed to satisfy the 17 constraints from Lerdahl's essay titled *Cognitive Constraints on Compositional Systems*. These constraints provide the basis for constructing a highly organised hierarchical structure for the Max patch to work with. The set of work explore how Lerdahl's idea of a 'musical grammar' can be coded into a music generation program.

Performance Notes

Lightness is in Just Intonation. All notes are to be played with natural harmonics based on Justly tuned open strings. Therefore, before playing, the open strings should be tuned to the following frequencies. Please note that the Violin 2, Viola and Cello parts require scodatura in the third string.

	String	Frequency (Hz)
Violin 1	E5	660.0
	A4	440.0
	D4	293.3
	G3	195.6
Violin 2	E5	660.0
	A4	440.0
	B \flat 3	234.7
	G3	195.6
Viola	A4	440.0
	D4	293.3
	B \flat 3	234.7
	C3	132.0
Cello	A3	220.0
	D3	136.7
	E \flat 2	78.2
	C2	66.0

ca. 5'00"

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All notes fade in and out
Bow as necessary, as smoothly and evenly as possible

Adagio

Violin 1 IV non vib.
pp poss. *pp*

Violin 2 non vib.
pp poss. *p* *pp* *p*

Viola IV non vib.
pp poss. *pp*

Violoncello non vib.
pp poss. *p* *pp*

Vln. 1 *sempre pp*

Vln. 2 *pp* *p* *pp*

Vla. *p* *pp* *p* *pp*

Vc. *sempre pp*

Vln. 1 III *pp* *p* *pp* *pp* *p*

Vln. 2 III *sempre pp* *p* *pp*

Vla. III *p* *pp* *pp*

Vc. *pp*

A

19

Vln. 1 *pp* *p* *pp poss.* 10"

Vln. 2 *pp poss.* 10"

Vla. *p* *pp poss.* 10"

Vc. *pp poss.* 10"

IV

pp poss. *p* *pp*

pp poss. *p* *pp*

III

pp poss. *p* *pp*

27

Vln. 1 *p* *pp* IV

Vln. 2 *pp* *p* *pp* III

Vla. *p* *pp* *p* *pp* *p* *pp*

Vc. *p* *pp* *p* *pp* *p* *pp*

p *pp*

33

Vln. 1 *pp* *p* *pp* *pp poss.* 10"

Vln. 2 *pp* *p* *pp poss.* 10"

Vla. *pp* *p* *pp* *p* *pp poss.* 10"

Vc. *pp* *pp poss.* 10"

III

pp *pp poss.*

B

40

Vln. 1
Vln. 2
Vla.
Vc.
Vc.

pp
pp poss.
pp
pp poss.
p
pp
pp poss.
p
pp
pp poss.
p
pp

47

Vln. 1
Vln. 2
Vla.
Vc.
Vc.

p
pp
pp
p
pp
p
pp
p
pp

53

Vln. 1
Vln. 2
Vla.
Vc.
Vc.

pp
p
pp
pp poss.
pp
pp poss.
p
pp poss.
pp
pp poss.