Unveil

for a (string) instrument and live electronics

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v1.0

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Introduction

The intention of the piece is to create a gradually unfolding immersive soundscape created exclusively from live input of a string instrument. The focus is put on the texture and timbral transitions, from pitch to noise and vice versa. Certain parts are live-looped (including the effects and transitions, see System structure) and repeated later in the composition to create layered spatial textures. These loops are also used for spectral freezing controlled by the live input.

The score itself is supposed to serve as an outline for the composition, with various degrees of freedom, so that each interpretation is different, and only the general structure is fixed. It is indicated where various parameters of the system should be changed, but the indications are not strict and can be interpreted freely.
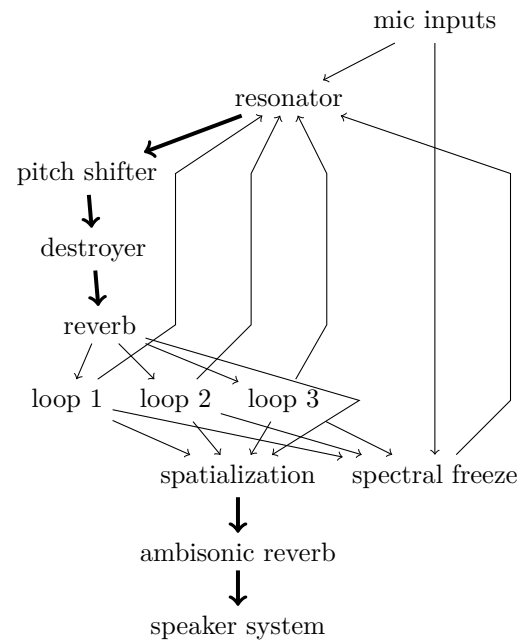
The score has 5 movements where different techniques and approaches are used. The movements should come after one another in a more or less continuous flow, without longer pauses. The total approximate duration is **13 minutes**, but is not strict.

The notation is based on time durations indicated by horizontal dashed lines. The approximate times are marked at barlines, where each bar is 20 seconds long. Non-pitched sounds are notated by cross noteheads, while pitched sounds are notated by regular noteheads. The pitches are not absolute and only approximate. Various bowed string instrument techniques are indicated, although with slight modifications, the score can be adapted also for non-string instruments, which are capable of producing sustained pitched and non-pitched sounds and preferably can be captured by contact microphones.

The whole live electronics system is implemented as a SuperCollider script, although several extensions are required: The Ambisonic Toolkit (ATK), AmbiVerbSC and sc3-plugins.

The piece, including the SC files and the score, is available at this GIT repository.

System structure

mic inputs

resonator

pitch shifter

destroyer

reverb

loop 1   loop 2   loop 3

spatialization   spectral freeze

ambisonic reverb

speaker system

System Notes

This system uses multiple independed loops with variable length (dependend on the first recording), the input of which is post-FX. There are several effects: *resonator, pitch shifter, destroyer* (bit crushing and downsampling), and a tank *reverb* based on the Dattorro algorithm.

Moreover, there is a *spectral freeze* effect which freezes the spectrum of the current position in given loops dependend on the live input amplitude. The individual frozen spectra can be crossfaded with the input signal.
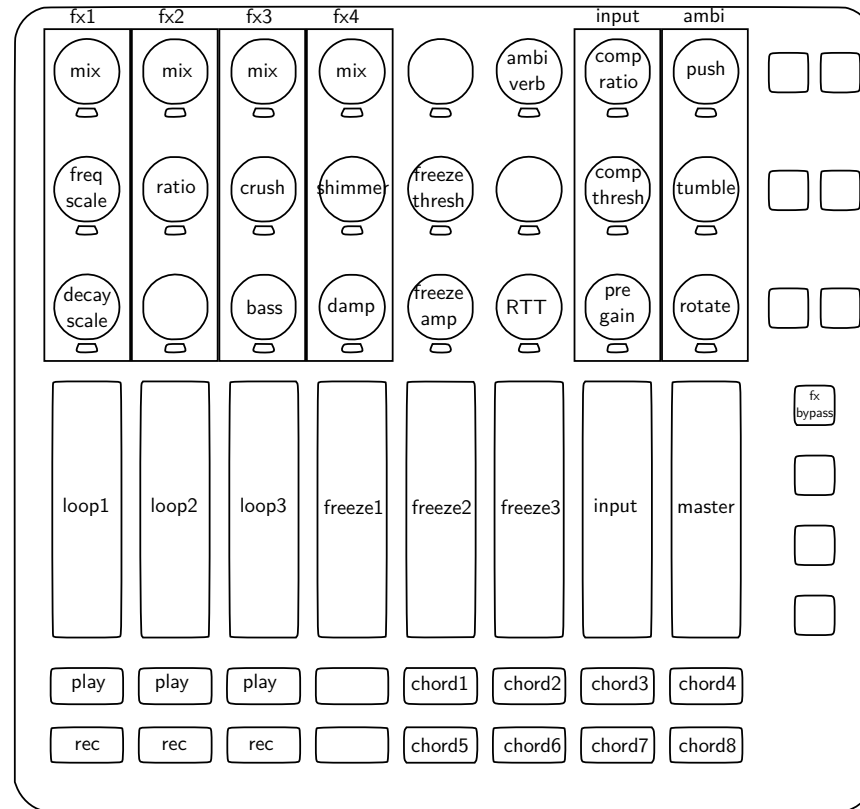
With the default configuration, there are 5 signals to which effects are applied individually: 2 microphone inputs and 3 loops (altough these numbers can be changed and this setup can be modified for particular purposes).

These signals are spatialized: evenly panned in a circle using ambisonic encoding. The sound field then can be shaped using ambisonic techniques *Push* (pushes the sound field into a plane wave coming from given direction), *Rotate* (rotation along the X axis) and *Tumble* (rotation along the Z axis). FOA is used in this version. There is also an ambisonic tank reverb at the end of the chain (`AmbiVerbSC`). The ambisonic signals can be decoded to various speaker setups and also to binaural output for headphone monitoring.
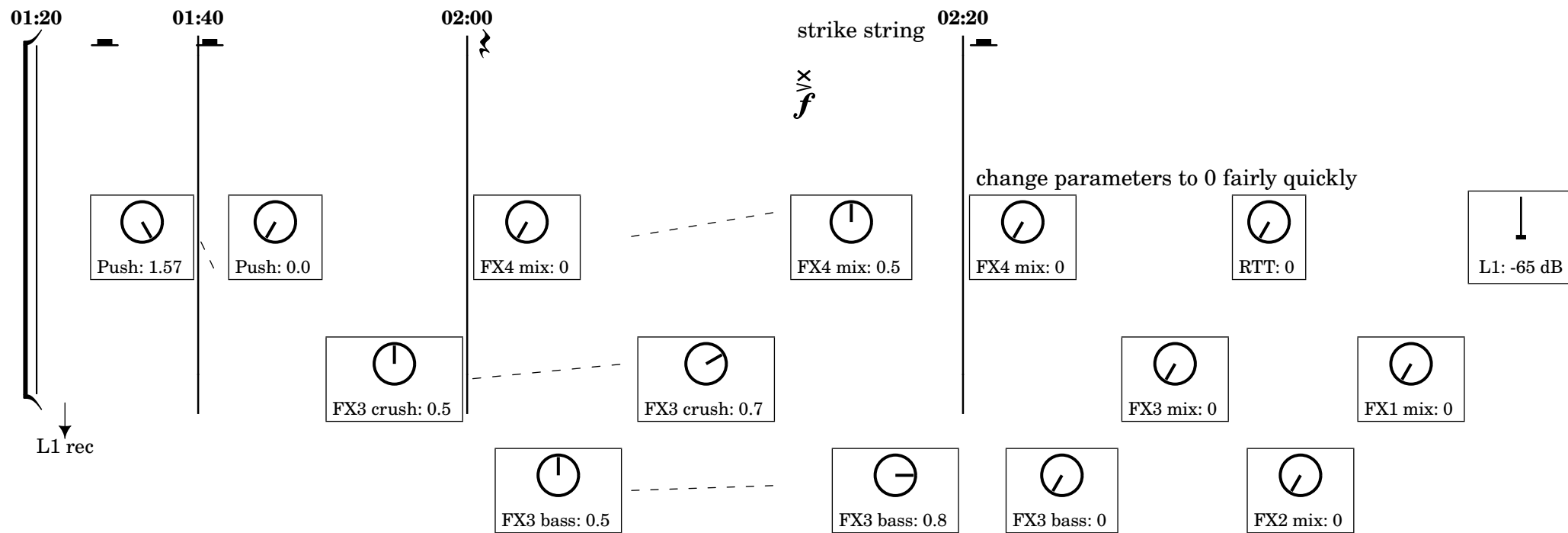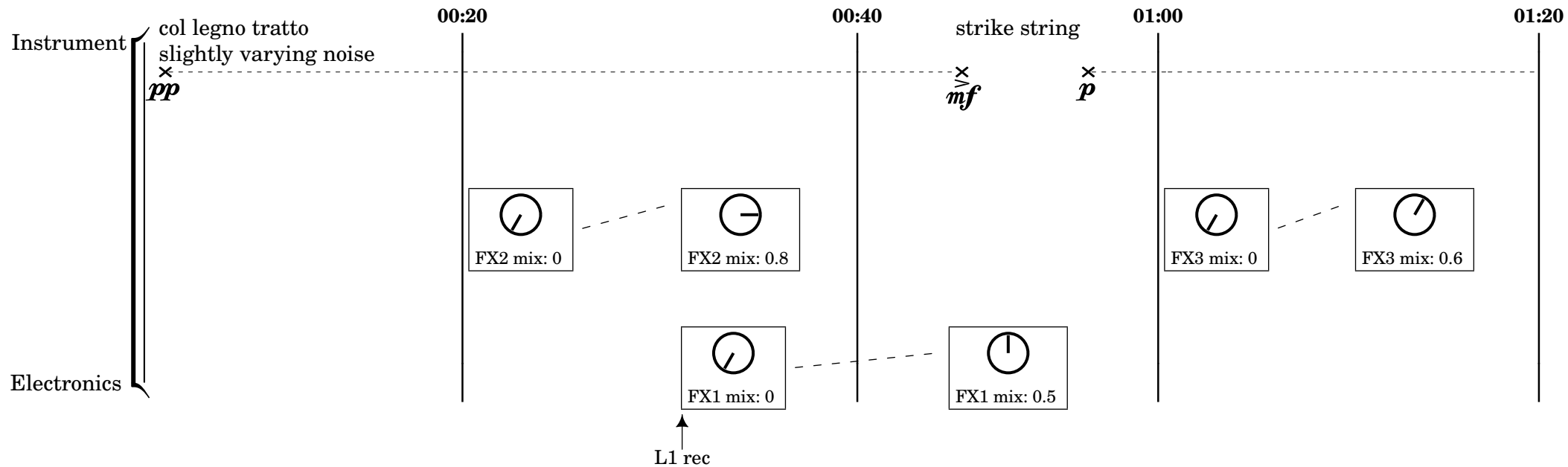
Further details about the system can be found in the SuperCollider script `unveil.scd`.

Controller mapping

This is a MIDI mapping currently used in the script for Novation Launchcontrol XL. It can be adapted for other controllers by modifying given environment variables in the SuperCollider script.

Instrument

Electronics

col legno tratto
slightly varying noise

pp

00:20

00:40

strike string

mf

01:00

p

01:20

FX2 mix: 0

FX2 mix: 0.8

FX3 mix: 0

FX3 mix: 0.6

FX1 mix: 0

FX1 mix: 0.5

L1 rec

01:20

01:40

02:00

strike string

f

02:20

change parameters to 0 fairly quickly

Push: 1.57

Push: 0.0

FX4 mix: 0

FX4 mix: 0.5

FX4 mix: 0

RTT: 0

L1: -65 dB

FX3 crush: 0.5

FX3 crush: 0.7

FX3 mix: 0

FX1 mix: 0

L1 rec

FX3 bass: 0.5

FX3 bass: 0.8

FX3 bass: 0

FX2 mix: 0

II

02:40 col legno battuto

Instrument

f × ×××× × ×
pp ——— f

× ×××× × ×
pp ——— f
reverb with accent

L2: -65 dB

FX4 mix: 0.4   FX4 mix: 0

FX2 ratio: 1.3

Electronics

L2 rec

L2 rec   L2 rec

03:00

arco   sul ponticello   gliss

mf

L2: -65 dB   L2: 0 dB

03:20

FX2 mix: 0.4

FX2 mix: 1

Tumble: 1.5

harmonic glissando [1]

03:40

L2 rec

[1]Slide over natural harmonics freely, continuously

04:00   **04:20**   **04:40**

FX1 mix: 0

FX1 mix: 1

FX3 mix: 0

FX3 mix: 0.2

FX3 mix: 0

Tumble: 0

L1: 0 dB

Push: 1

L3 rec

Reso f scale: 1

L3 rec

FX1 mix: 0

FX2 mix: 0

L2: -65 dB

L3: -65 dB

Push: 0
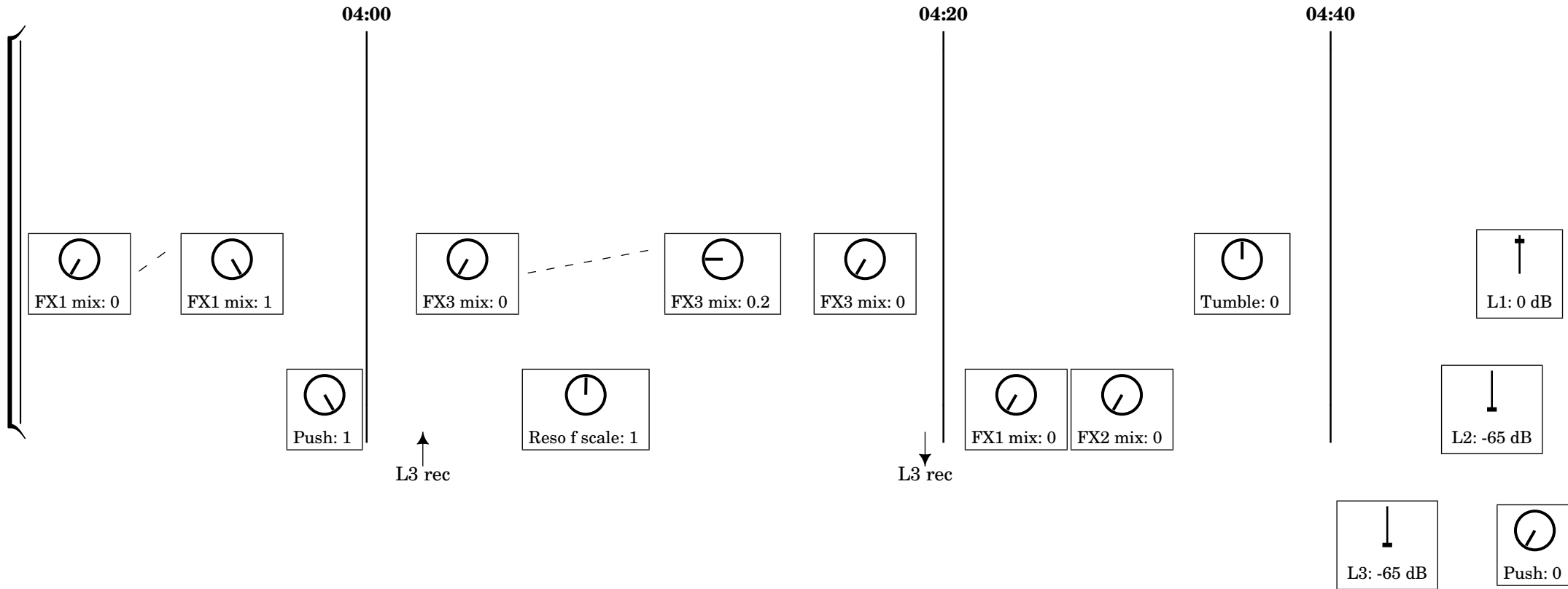
III

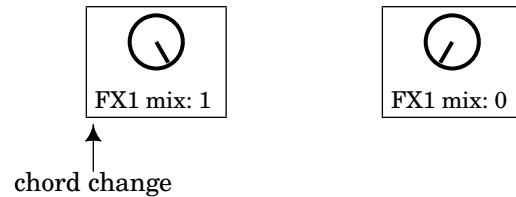**aleatoric, duration ~2:00**

Electronics

let loop play, change chords and parameters
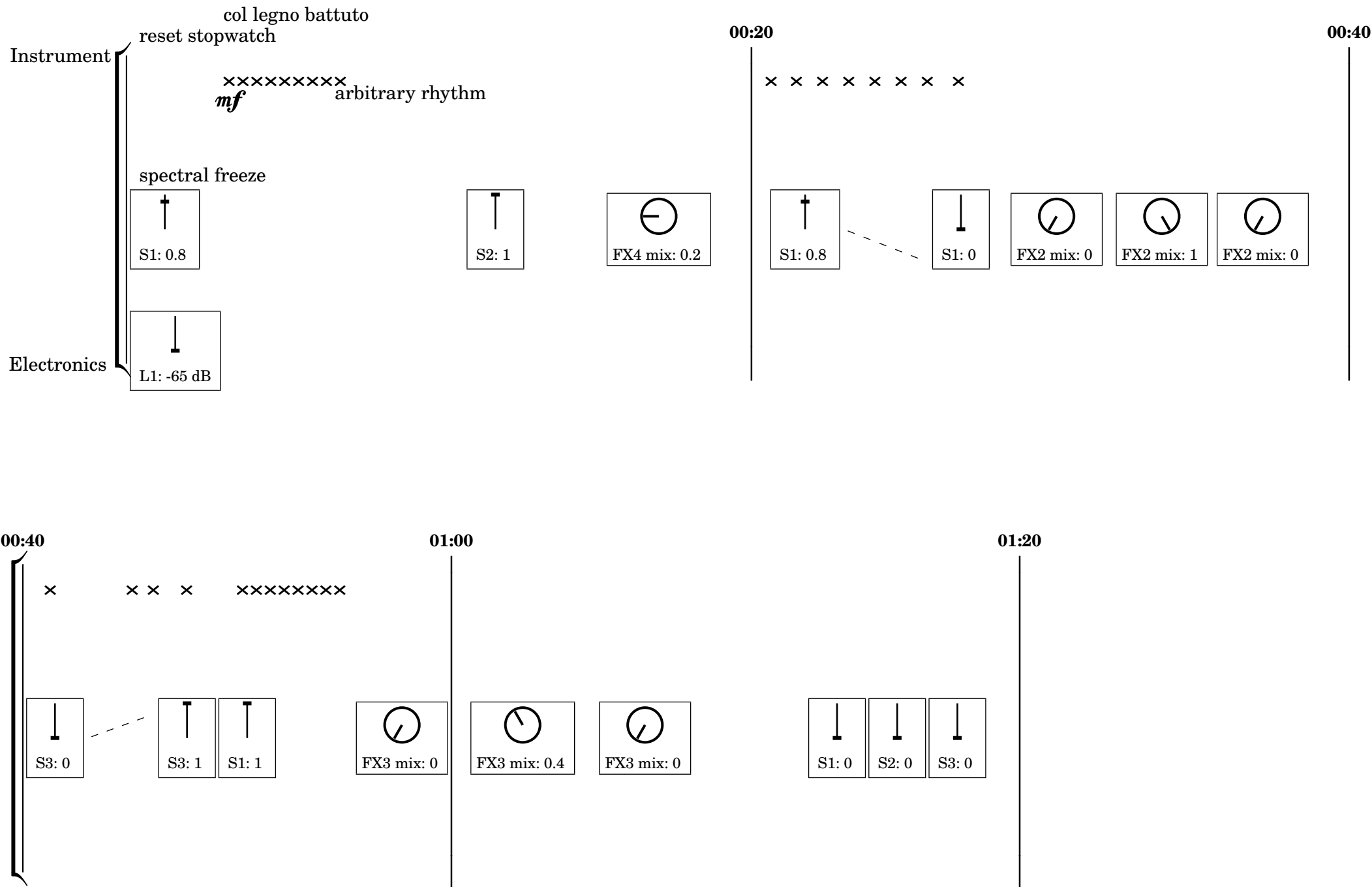
arbitrary value

arbitrary value

possibly change other FX parameters at will
or occasionally fade in other loops
repeat

FX1 mix: 1

FX1 mix: 0

Rotate: 1

Tumble: -1

chord change

IV

Instrument

Electronics

col legno battuto
reset stopwatch

00:20

00:40

×××××××××
mf arbitrary rhythm

× × × × × × × × ×

spectral freeze

S1: 0.8

S2: 1

FX4 mix: 0.2

S1: 0.8

S1: 0

FX2 mix: 0

FX2 mix: 1

FX2 mix: 0

L1: -65 dB

00:40

01:00

01:20

× × × × ××××××××

S3: 0

S3: 1

S1: 1

FX3 mix: 0

FX3 mix: 0.4

FX3 mix: 0

S1: 0

S2: 0

S3: 0

V

duration ~2:30

Electronics

slowly fade in all loops one by one

gradually apply FX and fade out

| L3: 0 dB | L2: 0 dB | L1: 0 dB | FX1 mix: 1 | FX2 mix: 1 | FX3 mix: 1 | FX4 mix: 1 | RTT: 1 | FX3 mix: 0 | L3: -65 dB | L2: -65 dB | L1: -65 dB |