

**Knut Vaage:**

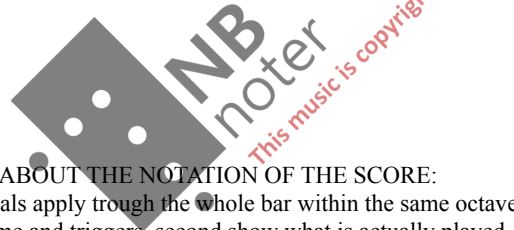
# **ELECTRA**

*(norwegian: ELEKTRA)*

for  
electric violin and computer

2003  
revised Sept. 2006  
re-revised and reprogrammed Sept. 2011

*with thanks to Thorolf, Ellen and Victoria*



#### ABOUT THE NOTATION OF THE SCORE:

Accidentals apply through the whole bar within the same octave.  
Upper staff show time and triggers, second show what is actually played, and the rest describes the computer activity - all based on realtime processing

DURATION:  
Approximate 14'

The Max/MSP programming is done by Thorolf Thuestad at BEK in Bergen  
Video by Ellen Røed

Commissioned by Victoria Johnson  
First performed at Autunnale 2003 by Victoria Johnson  
Partly financed by «Fond for lyd og bilde»  
Revision 2011 supported by TONO and BEK

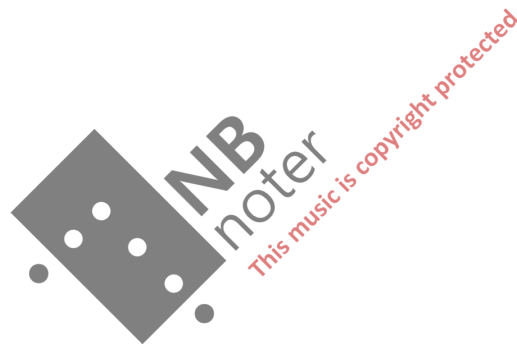
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Score at Music Information Centre Norway, P.box 2674 Solli, N-0203 OSLO, [info@mic.no](mailto:info@mic.no)  
[www.knutvaage.com](http://www.knutvaage.com)

Technical requirements for Electra:

A high quality P.A. system with subwoofers, an intel based Macintosh computer, and a four channel soundcard is required. The el-violin have to use a strong fuzz-pedal, for instance the Marshall JH-1 Jackhammer effect pedal or a fuzz-pedal from Boss.

A software package interpreting the instructions in the score can be freely downloaded from: <http://www.bek.no/~thor/electra.zip>  
This will run on any intel based Macintosh with Osx 10.6 or later.

For technical requirements please refer to Readme\_elektra.pdf included in the software package.



Video projection (2006 - 2011)

*Electra also includes a video projection performed from computer. It is a homage to the volcano Popocatepetl based on interplay between stillness, dynamics and noise. To make it I downloaded thousands and thousands of images of the active volcano Popocatepetl from Centro Nacional de Prevención de Desastres in Mexico, where scientists surveil the volcano. Having sorted and categorised the images according to visual aspects rather than temporal ones, I structured the images in cyclical patterns creating affective accelerating structures. While the static volcano occupying more than half of the image is present in every single image (even at night because of the glowing fuming top), everything else is subject to change. By exploring ideas of stillness and repetition, acceleration, signal and noise, the volcano material becomes an emotional site.*

*Electra is a work that has taken several forms; small video projections in exhibitions or as larger projections in a in a concert setting in dialogue with a musician performing the score. The score is a composition by composer Knut Vaage and the video work was created for this music. The video might however even be presented without the music.*

*Initially the video was made for a commission by BIT20 and it was first performed at Bergen Kunsthall during EKKO festival 2005. It was then accompanying Ingela Øien who played Electra on a flute and computer. Since that, it has on several occasions been performed in collaboration with violinist Victoria Johnson who plays the music on electric violin and computer. While the airiness of the flute went well with the movements of the clouds in the images, the combination of the electric violin and the volcano creates a strong dialectic in the audio-visual expression in such a way that the two very powerful forces; violin(ist) and volcano constantly challenges, pushes and pulls on each other in an intense and emotional relationship. In most performances we have seeked to emphasise this dynamic by situating the video and the performer in a dialectic relationship in the space of the performance.*

Ellen Røed

# Electra

Knut Vaage

♩ = 60

Timeline

Max/MSP: 0 effect

Electric Violin

Effect 1

Effect 2

Effect 3

Timeline

El. Vln.

Effect 1

Effect 2

Effect 3

0.10 (click on)

Timeline

El. Vln.

Effect 1

Effect 2

Effect 3

(higher than midi-note 92)

TRIGGER A

FFT spektrum of noise:  
(change for each attacc, randomly)

softly first, gradually more intense

\* Rehersal starting point

Timeline 0:20 0:26 0:30 0:40

(sfz secco molto  
mute strings after attack)

El. Vln.

Effect 1 FUZZ BOX OFF add. gradually more and more noise and overtones from high spectrum of chords, ringmodulated

Effect 2 Pitch shifter: (in half steps)

Effect 3 timeline trigger 1 sampling for buffer 1

direct sound OFF

timeline trigger 2

\* (Rehearsal starting point)

Timeline 0:46 0:49 0:50 0:54

El. Vln.

Effect 1 direct sound ON

Effect 2 playback sampling from buffer 1 rhythmic polyphony, random pitch variation

Effect 3

transform each noise part

timeline trigger 3

timeline trigger 4

timeline trigger 5 Sampling of group for buffer 2

*p* *fff* *p* *fff* *fff* *p*

Timeline 1:00 1:08

El. Vln.

Effect 1 random edit

Effect 2

Effect 3

random edit

playback sampling from buffer 2

timeline trigger 6

*fff* *fff* 3:2 3:2 3:2 3:2 3:2 3:2 3:2 3:2

Timeline 1:20 1:25

El. Vln. *(poco rubato)*

Effect 1 FUZZ BOX ON

Effect 2 timeline trigger 7 fade effect

Effect 3 fade effect

Timeline 1:30 1:35 1:40 1:50

El. Vln. *(a tempo)* *TRIGGER B* *higher than midi-note 92* *sul tasto* *gliss. lento, smooth as poss. (durata 52 sec.)*

Effect 1 Cloud delay (high gliss. into delay) (input on) (eff. vol. fade in) timeline trigger 8 fade effect

Effect 2 Sampling of the filtrated sound for buffer 3 enforce sub spectrum (cut of freq. 85 Hz) Low pass filter, gradually transform

Effect 3 High spectrum, reverbed and ringmodulated cut input (fade naturally) timeline trigger 9

Timeline 2:00 2:10 2:20 2:30

El. Vln. *ord.* *quasi Bb spectrum* *G spectrum* *sub cue fade*

Effect 1 playback sampling from buffer 3 (loop)

Effect 2 playback sampling from buffer 1 rhythmic polyphony, random pitch variation

Effect 3 timeline trigger 10

Timeline

2:37

2:40

2:50

El. Vln.

crush tone  
gliss. lento, smooth as poss.

Effect 1

(playback buffer 3)

Effect 2

Granular cloud real time effect:

Effect 3

timeline trigger 11  
fade effect

0

Timeline

3:00

3:10

El. Vln.

Effect 1

Effect 2

Effect 3

Timeline

(higher than midi-note 85)

TRIGGER C

ord.  
(poco rubato)

(a tempo)

9:8

9:8

9:8

El. Vln.

Effect 1

(sub spectrum continue)

Effect 2

(trigger turn effect OFF)

Effect 3

(higher than midi-note 75)

Timeline 3:20 3:25 3:35 3:40 TRIGGER D

El. Vln. gliss. lento, smooth as poss. crush tone fade direct sound

Effect 1 timeline trigger 13 Pitch change: (upwards gliss, smoothly) (granular effect)

Effect 2 delay fade in -11 +11

Effect 3

direct sound ON timeline trigger 16

9:8 9:8 6:4

ord.

fff

Timeline 3:50 3:55 4:00 4:10 4:20

El. Vln. sul tasto gliss. lento, smooth as poss. (1 min. 15 sec.)

Effect 1 edit spectrum random 0 random spectrum sampling

Effect 2 (sub spectrum from el.vln/fuzz) timeline trigger 17

Effect 3 Sampling of the filtrated sound for buffer 3

listen to sub spectrum (notated on eff. 2)

(delay) 0

The player must listen to the sub spectrum. Enforce slowly upwards chromatic/modal melodic movement while the glissando lento is falling

Timeline 4:30 4:40 4:50 5:00 5:05 5:10

El. Vln. ord.

Effect 1

Effect 2

Effect 3

timeline trigger 18 playback sampling from buffer 3 (loop)

cut effect 1 and 2 timeline trigger 19

transform sampling gradually

Timeline

5:11 5:15

El. Vln.

9:8 9:8 9:8 9:8 9:8

fade direct sound

direct sound OFF

(sfz secco molto  
mute strings after attack)

Effect 1

Effect 2

Pitch changer:  
(smooth major second gliss)

Effect 3

(playback buffer 3)

timeline trigger 20

timeline trigger 21

FUZZ BOX OFF

Timeline

5:20 5:23

El. Vln.

9:8 9:8

Effect 1

Effect 2

Effect 3

pitch change glissando slowly upwards

timeline trigger 22

FUZZ BOX ON

Timeline

5:25 5:30 5:32

El. Vln.

9:8 9:8 9:8 9:8 9:8

6:4

direct sound ON

sample while playing

sample buffer A

Effect 1

Effect 2

Effect 3

fade effect

timeline trigger 23

timeline trigger 24

timeline trigger 25



Timeline triggers: 5:35 5:40 5:45 5:50 5:55 6:00 6:05

Timeline

El. Vln. *pp* *ff* *pp* *ff* *pp* *ff*

Effect 1

Effect 2

Effect 3

sample buffer B  
sample buffer G  
sample buffer D

playback sampling random corrupted

play buffer A  
play buffer A  
play buffer B

play buffer C

timeline trigger 26  
timeline trigger 27  
timeline trigger 28  
timeline trigger 29  
timeline trigger 30  
timeline trigger 31  
timeline trigger 32

(loop)

6:10 6:20 6:31

Timeline

El. Vln. *pp* *ff* (mute)

Effect 1

Effect 2

Effect 3

play buffer D

random delay 100% cut input

timeline trigger 33  
timeline trigger 34

(loop)

6:40 (higher than midi-note 92) TRIGGER E (a tempo) 6:50

Timeline

El. Vln. *poco rubato* (*sfz secco molto* mute strings after attack)

Effect 1

Effect 2

Effect 3

output (fade delay)

pitch change upwards stepwise triggered by attacks

add. gradually more and more rests of noise and overtone spectrum from chords

FUZZ BOX OFF

playback sampling from buffer 3

timeline trigger 35

9:8 9:8

Electra

8

Timeline 7:00 7:11

El. Vln. *add noise* **FUZZ BOX ON** *fff* *3:2*

Effect 1

Effect 2 *timeline trigger 36*  
*playback sampling from buffer 1*  
*rhythmic polyphony, random pitch variation*

Effect 3

Timeline 7:20 7:27 7:30 7:40

El. Vln. *sul tasto* *3:2*

Effect 1 *fade effect*

Effect 2 *timeline trigger 37*

Effect 3 0

Timeline 7:50 8:00 8:10 8:20 8:30

El. Vln. *(no Max/MSP effects)*

Effect 1 *timeline trigger 38*  
*enforce sub spectrum*  
*Low pass filter, gradually transform* 0

Effect 2

Effect 3

Timeline 8:40 8:45 8:50 9:00 9:10 9:15 9:20

El. Vln. *pp* *ppp*

Effect 1

Effect 2

Effect 3

make beautiful sounds with harmonics and noise harmonics, poco ad lib.

ord.

fade effect

timeline trigger 40

pitch change glissando slowly upwards

sound from effect 1

FUZZ BOX OFF

timeline trigger 41

add noise

sound from effect 2

Timeline 9:25 9:35 9:40 9:50 9:52

El. Vln. *mf* *pp* *ppp* *p*

Effect 1

Effect 2

Effect 3

sul A

*8va*

add noise from direct sound

Resonator: make rhythmical and high pitched tone

sample to buffer 2 (high pitched tone)

timeline trigger 42

timeline trigger 43

timeline trigger 44

Timeline 10:00 10:10 10:15 10:30 11:45

El. Vln. *p* *pp*

Effect 1

Effect 2

Effect 3

(click off)

(55 sec.)

(click on)

structures made by random: delay, resonator, pitch change..... slowly transformed

close input

gentle pitch shift slow and easy

add harmonizer

add extreme pitch change

timeline trigger 45

timeline trigger 46

timeline trg 47

11:50 (triggering at 11:49, opening direct sound)

Timeline

El. Vln.

Effect 1

Effect 2

Effect 3

timeline trigger 48

9:8

9:8

6:4

6:5

9:8

fff

FUZZ BOX ON

fade all Max/MSP-effects

fade delay

(random harmonizer)  
rapid bubble effect

Timeline

El. Vln.

Effect 1

Effect 2

Effect 3

3:2

(poco rubato)

(a tempo)

9:8

9:8

NB noter

This music is copyright protected

12:00

Timeline

El. Vln.

Effect 1

Effect 2

Effect 3

(higher than midi-note 92)  
TRIGGER F

(poco rubato)

(a tempo)

(con tutta la forza)

FFT spektrum of noise:  
ringmodulator ----> reverb

sampling of direct sound for buffer 4

enforce sub spectrum

playback sampling from buffer 3

Timeline 12:10

El. Vln.

Effect 1 add. gradually more and more noise and overtone from high spectrum of the vln.

Effect 2

Effect 3 transform sampling gradually

Timeline 12:15

El. Vln.

Effect 1 (transformed noise)

Effect 2 playback sampling from buffer 1

Effect 3 (grad. transformed buffer 3)

timeline trigger 49

Timeline 12:20 12:24

El. Vln.

Effect 1

Effect 2

Effect 3

crush tone

timeline trg 50

mute all effects

but playback sampling buffer 2

Timeline 12:28

El. Vln. *ord.*

Effect 1 (transformed noise)

Effect 2 (playback sampling from buffer 1)

Effect 3 (grad. transformed buffer 3)

cut buffer 2

Timeline 12:30

El. Vln.

Effect 1

Effect 2

Effect 3

change chord by noise and add pitch change

FUZZ BOX OFF

timeline trigger 52

Timeline 12:40

El. Vln. *ord.*

Effect 1 (Playback buffer 4, add noise)

Effect 2 (rhythmic polyphony, buffer 1)

Effect 3 (transformed extreme buffer 3)

transform noise gradually (higher tone quality)

FUZZ BOX ON

crush tone

(mute)

timeline trigger 53

mute all effects

but generate FFT noise

timeline trigger 54

