

Miroslav Spasov

TEN SEFIROT

for

Piano and Electronics

(2021)

Notes on Performance

CUES: 1, 2...13

The underlined numbers above the stave designate the *Cue* number.

ELECTRONICS

2 microphones	Mic.1 & Mic.2, (DPA or any other 'close' mics) to be placed close to the strings of the piano. Mic.1 will capture high and Mic.2 low registers.
Audio Interface	2-mono in/8 mono-out
Computer	(Apple Mac Book Pro with OSX 10.15 or later)
Software	<i>Ten Sefirot for Piano and Electronics.app</i> (standalone performance application)
Audio mixer	(takes 2 Mic inputs and outputs 8 channels routed to 8 speakers around the audience)
Eight speakers	8 speakers (1-8) in clockwise direction around the audience
Smartphone Camera/ or Camcorder	Any smartphone camera with Bluetooth protocol can be used to send the video capturing wirelessly to the computer. The distance between the smartphone and the computer should not exceed 10 meters. Alternatively a camcorder can be connected to the computer using a USB cable.
1 technician	a person sitting at the mixer, who will be responsible for: <ul style="list-style-type: none">- activating and deactivating the microphones- controlling the work of the computer during the performance — pressing the space bar to set the following cue and activate the software instrument associated with that number- controlling the balance between the sound of the piano, the sound coming out of the microphones and processed in real-time by the computer, and the sound of the pre-processed soundfiles stored into the computer's hard-drive.

Duration: 24 minutes

Stage Setting and Equipment

Equipment (Audio and Computer)

2 mono microphones, one placed at the high (Left), the other at the low (Right) register of the piano should be routed either directly (not recommended) or through a mixing desk to the two mono inputs of the audio interface;

Audio interface and loudspeakers: 8 mono outs should be connected to a mixing desk and from there routed to the eight speakers around the audience. The numbering should be in a clockwise direction (1-8) with No.1 at Left-Front. No.2 should be at Right-Front and the remaining speakers should close the circle at No.1. No speaker should be placed behind the piano (placed at the front of the audience). The sound of the piano need no extra amplification. Balanced cables should be used.

The **audio interface** has to be connected to the **computer** via **USB/Firewire** cable. The appropriate 'driver' for the **audio interface** has to be installed so the computer can 'see' it.

Equipment (Smartphone camera or camcorder) *see FIGURE 1

Any smartphone camera with **Bluetooth** protocol can be used to send the video capturing wirelessly to the computer. The distance between the smartphone and the computer should not exceed **10 meters**. To connect the device enable the **Bluetooth** connection in both the smartphone and the computer. If a smartphone camera is used, it has to be mounted on the piano, vertically above the keyboard at a height above pianists' head and positioned 'face-down' in a such a way to capture exactly the entire piano keyboard — from the bottom to the top white key. **A strong clip can be used to fix the smartphone selfie-stick to the piano and attached either to the piano's lid or the Music Rack's base.**

If a camcorder used, it has to be placed on a tripod at a height above pianist's head and positioned in such a way to capture exactly the entire piano keyboard — from the bottom to the top white key.

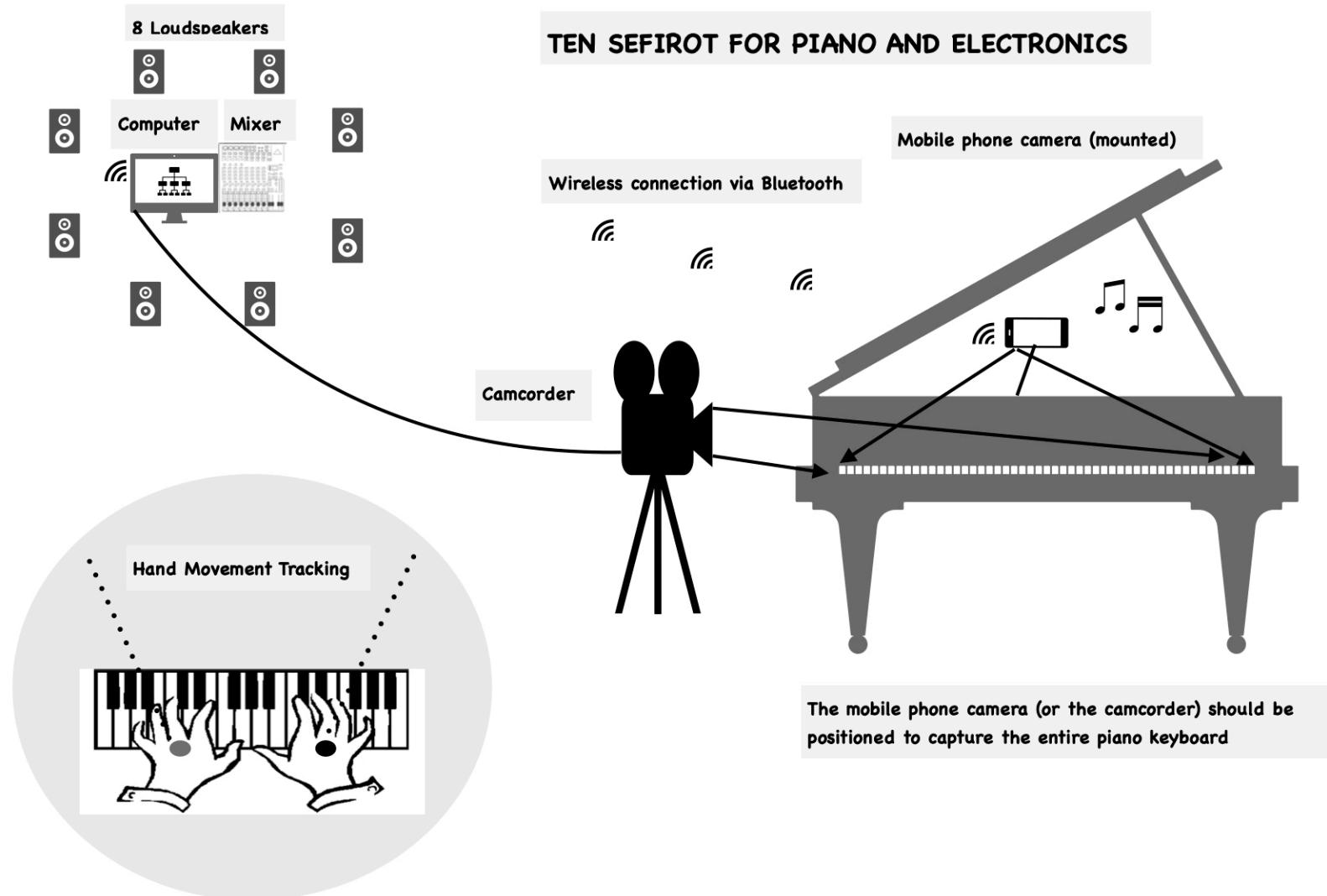
Connecting the Equipment (audio equipment, audio Interface, smartphone camera/camcorder, computer and software)

Once the communication between the audio interface and the computer has been established, launch the **Ten Sefirot for Piano and Electronics.app** software. This standalone application doesn't need any additional drivers and it should work on any computer. **Detailed instructions about how to enable both the audio interface and the smartphone camera (camcorder) from within the software are given at the application's main window/interface.**

Pianist's Hands (* see FIGURE 1)

In order to allow the single camera to track both of performer's hands independently the **back of the pianist's hands** need to be marked with different colour — by either using a marker or applying very thin stickers on the back of the hands, if the pianist is comfortable with that. If markers are used, the pianist can draw a circle (1/2-inch in diameter) anywhere on the back of each of his/her hands. Any two colours can be used, however **green** and **blue** are the safest as they make a good contrast to the skin colour. **NOTE: neither of the two colours used should appear on the pianist's hands or arms as the software will track these colours wherever they appear in the video captured.**

FIGURE 1



Performance

1. Drop the application *Ten Sefirot for Piano and Electronics.app* on the computer's Desktop (or anywhere convenient) and launch it.
2. In DSP Status:
Set the appropriate audio driver, input, and output sources;
Set the Sampling rate to 44100
I/O and Signal vector size to 512
Max Scheduler in Overdrive and Scheduler in Audio Interrupt to "ON"
3. In the left upper corner of the main patch (INPUTS:MICROPHONES) double-click on the IO object and from the popup menu on the left choose "Audio input".
4. The performance of the work require an audio/computer technician — a person sitting at the mixer and controlling the microphones, the computer during the performance, the balance among the piano sound and the real-time processing.

Detailed instructions about how to start using the software application and engage the audio interface and the smartphone camera (camcorder) are given in the **application's main window/interface**.

How It Works (* see FIGURE 2 & FIGURE 3)

The smartphone camera (camcorder) tracks the pianist hands's movement with respect to the piano keyboard's octave/register. The user can pick the colour/hue to be followed by clicking on the actual colour inside the video showing the hands and the keyboard. The colours chosen are shown in the two smaller windows — the one to the left for the left hand and the one to the right for the right hand (**Figure 3**). The location coordinates of a colour region of each of the hands are sent to particular MaxMSP-Jitter patch with virtual 'instruments'. The data coming from the smartphone camera (camcorder) is first conveniently scaled and converted into streams of variables and routed to the 'mapping area' directly controlling the parameters of sound synthesis and processing as well as multi-channel spatialisation in real-time (**Figure 2**).

FIGURE 2

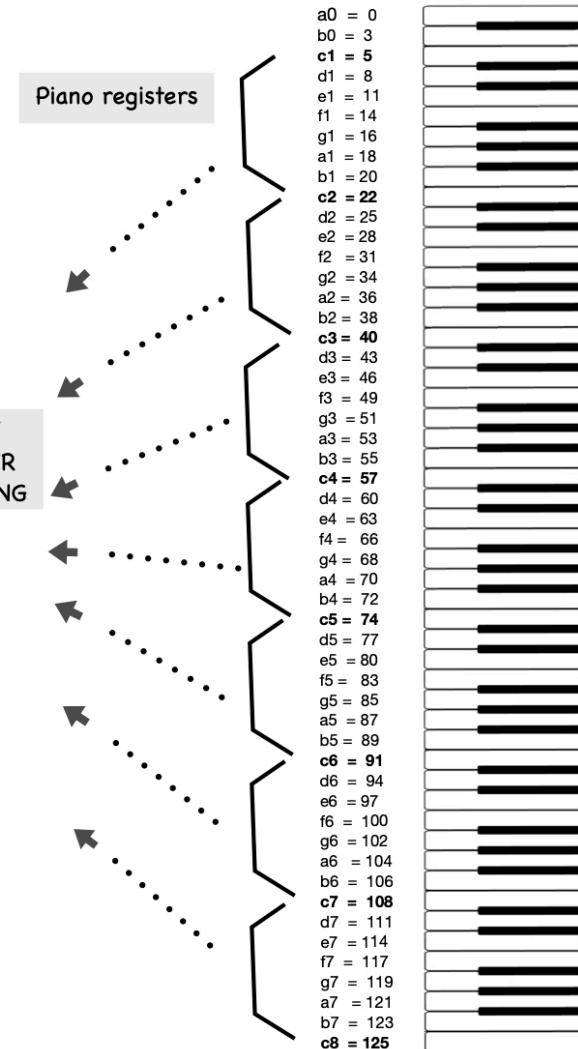
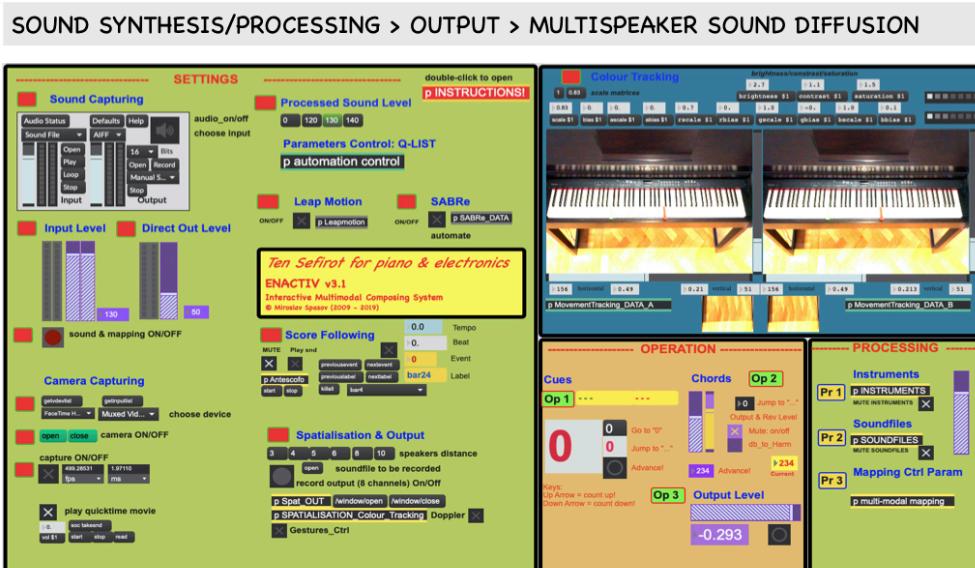
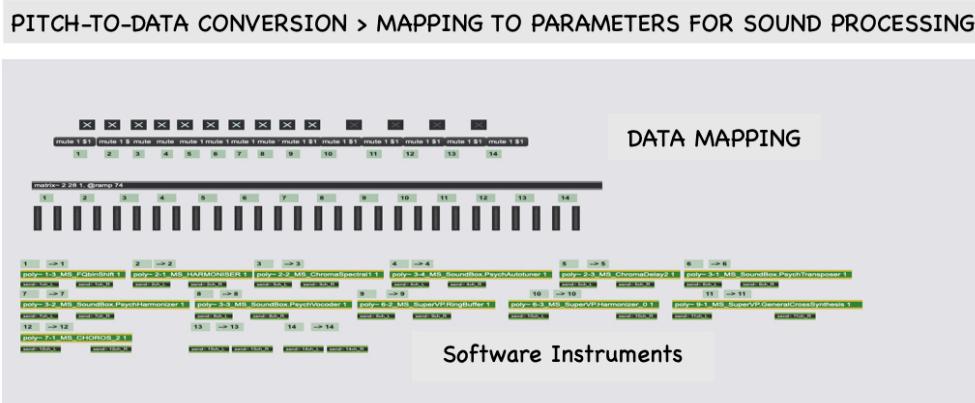
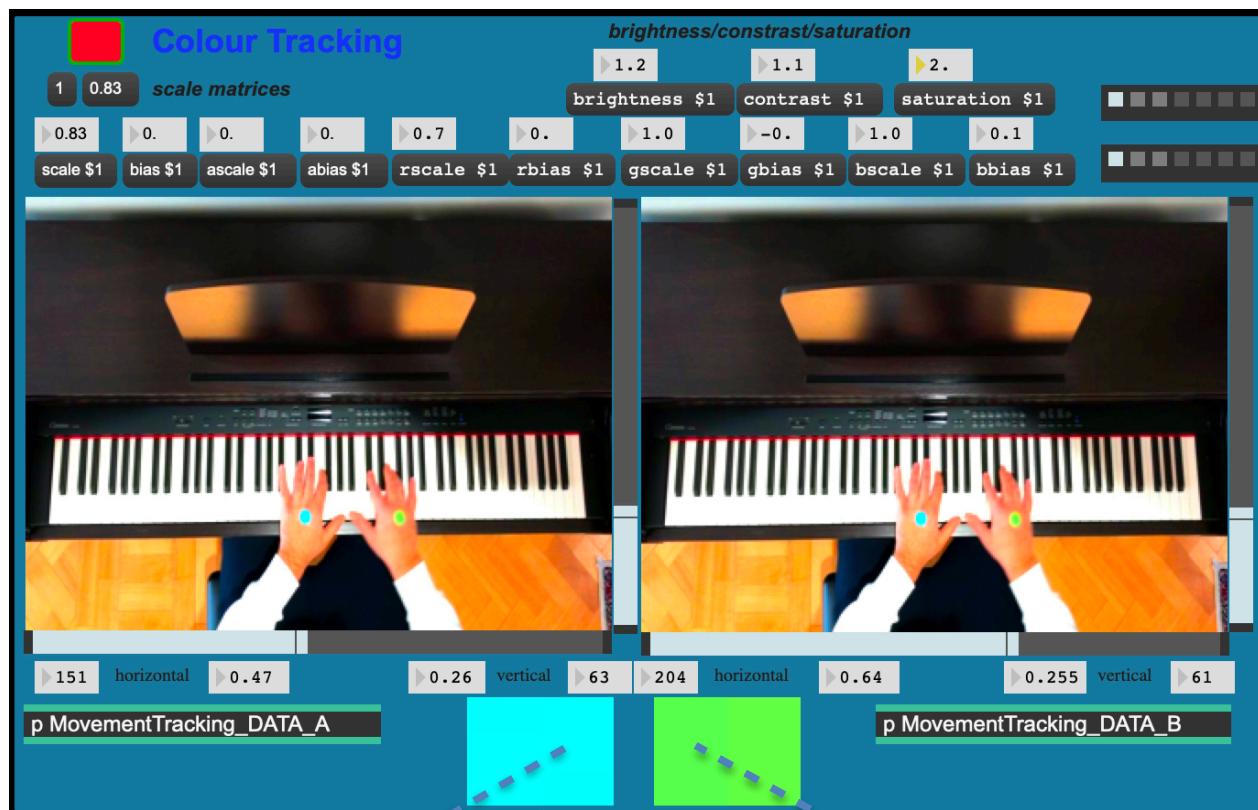


FIGURE 3

Left Hand Tracking

Right Hand Tracking



Colour being
tracked (LH)

Colour being
tracked (RH)

Programme Notes

As in many other compositions, my main creative interest in this work is closely related to- and influenced by, the study of cognitive science and anthropology — the parallelism of structures between musical processes on the one hand and the processes of culture-coloured consciousness on the other. In this case, I have made an attempt to bring some ideas stemming from the ancient tradition of *Kabbalah* ('reception' or 'tradition' from the school of thought in Jewish mysticism). Its teachings define the inner meaning of the Hebrew Bible through one of the fundamental kabbalistic texts, the Medieval Zohar, which was first published in the 13th century. *Kabbalah* sees the human soul as mirroring the Divine (after Genesis 1:27, "God created man in His own image, in the image of God He created him, male and female He created them"), and more widely, all creations as reflections of their life source in the *Sephirot*. The *Sephirot* are considered revelations of the 'Creator's Will' and they should not be understood as ten different "gods" but as ten different ways the one 'God' reveals his 'Will'. Underlying the structural purpose of each of the *Sephirot* is a hidden motivational force which is understood best by comparison with a corresponding psychological state in human spiritual and cultural experience.

As the ten *Sephirot* are a step-by-step process illuminating the 'Divine plan' as it unfolds itself in 'Creation', the 'Infinite Light' is 'dispersed' among this collection of miniatures representing metaphorically an acoustic reflection of that process. I have been driven by the *Sephirot*'s 'light refraction' and used it as a metaphor to develop a musical form consisting of separate short movements based on a simple melodic phrase, each of which originates from the rich folk musical tradition of the Slavic people living in the south-east region of Europe – and predominantly the Balkan peninsula (North Macedonia, southern part of Serbia, Bulgaria and northern parts of Greece). The 'sonic illumination' starts from the first of the *Sephirot* – *Keter* (above-consciousness) and its five-tone 'rubato' song and continues through *Hokmah*'s (wisdom) slow dance phrase, *Bina*'s (understanding) rhythmic character, *Hesed*'s (kindness) lullaby-like motive, *Gevurah*'s (severity) 'impressionistic' mode, *Tifferet*'s (beauty) tonality-bound traditional phrase, *Netzah*'s (Eternity) folk dance, *Hod*'s (Splendour) marching rhythm, *Yesod*'s (Foundation) 'elegy', to the last one – *Malkuth*'s (Kingship) emotional pathos. The eleventh miniature from this collection, DA'AT (Knowledge of Good and Evil) is the location where all ten *Sephirot* are united as one — metaphorically represented by the extremely simple melody consisting of three tones in downward motion very common in the folk music from the region described above as well as across many other cultural traditions around the world.

KETER

for
piano and electronics

J = 60

Piano

pp — *p* *sfp* — *sfp* *ppp pp* — *mp* *pp* — *mp* *f* *sfp mf* — *f* *ff* *mf* *ff ff*

CUE No.1

Electronics

(*8va*) —

Pno.

mf — *sffz* *f* — *mp* *p* — *f* — *ff* — *sffz* — *fff*

El.

12

(*8va*) —

Pno.

ff — *p* — *pp*

El.

17

HOCHMA
for
piano and electronics

Piano

Electronics

Cue No.2

Pno.

El.

10

Pno.

El.

20

Cue No.3

2 (8^{va}) - 8^{va} 8^{va} - HOCHMA 8^{va} - 8^{va} -

Pno. { El. 27

(8^{va}) -

Pno. { El. 31 ff fff

Pno. { El. 37 f ff

This musical score consists of three staves, each featuring a piano (Pno.) and electronic (El.) part. The score is divided into three sections corresponding to the staves. Each section contains two measures of music. The first staff begins at measure 27 with dynamic markings (8^{va}) and (8^{va}) - . The second staff begins at measure 31 with dynamic ff. The third staff begins at measure 37 with dynamic f. The piano parts feature various note heads, stems, and slurs, while the electronic parts provide harmonic support with sustained notes and chords. The score concludes with a final dynamic ff.

BINA
for
piano and electronics

J = 120

Piano {
Electronics [Cue No.4]

Pno. {
El. 8

Pno. {
El. 15

The musical score consists of three staves. The top staff is for 'Piano' and 'Electronics'. It starts with a dynamic 'f' and a tempo of *J = 120*. The middle staff is for 'Pno.' and 'El.'. The bottom staff is for 'Pno.' and 'El.'. Measure 1 (measures 1-7) features complex piano chords and electronic sounds. Measure 2 (measures 8-14) shows piano chords and electronic sustained tones. Measure 3 (measures 15-21) features piano chords and electronic percussive patterns. Various dynamics like *f*, *ff*, *sffz*, *f*, *mf*, and *ff* are used throughout. Fingerings like LH and RH are indicated. Measure 15 includes a 'Cue No.4' for the electronics.

2

Pno.

El.

21

BINA

LH RH

8

LH RH

8

9

fff sffz mf

8

9

8

8

26

mf

sffz

8va -

f

ff sffz

sffz

34

Pno.

El.

34

HESED
for
piano and electronics

$\text{♩} = 80$

Piano Electronics

Cue No.5

Pno. El.

13

Pno. El.

13

8va

Pno. El.

22

The musical score consists of three staves. The top staff is for the Piano, starting with a dynamic of *pp*, followed by *p* and *mp*. The middle staff is for the Electronics, with a box labeled "Cue No.5". The bottom staff is for the Piano again, starting with a dynamic of *f*, followed by *ff*. The score includes various time signatures (5/8, 6/8, 7/8, 8/8, 5/8, 6/8) and measures of complex rhythmic patterns. Measure numbers 13 and 22 are indicated on the piano staves.

GEVURA
for
piano and electronics

Miroslav Spasov

The musical score for GEVURA consists of three staves of music. The top staff is for the Piano, the middle for the Electronics, and the bottom for both. The score is divided into three sections: Cue No. 6, section 8, and section 15.

Cue No. 6: The piano part starts with a dynamic of *mf*, followed by a dynamic of *f*. The electronics part has a dynamic of *p* and a dynamic of *mp*. The piano part ends with a dynamic of *tr*.

Section 8: The piano part starts with a dynamic of *mf*, followed by a dynamic of *f*. The electronics part has a dynamic of *p* and a dynamic of *ff*. The piano part ends with a dynamic of *tr*.

Section 15: The piano part starts with a dynamic of *ff*, followed by a dynamic of *mp*. The electronics part has a dynamic of *mf* and a dynamic of *f*. The piano part ends with a dynamic of *LH*.

GEVURA

Pno. El.

20 LH ff sffz f sffz mf sfz mf 8va- f

This section of the score shows two staves. The top staff is for the piano (Pno.) and the bottom is for an electric instrument (El.). Measure 20 starts with a dynamic **ff**. The piano has sixteenth-note patterns with grace notes. The electric instrument has sustained notes. Measure 21 begins with a dynamic **sffz**. Measures 22 and 23 show complex chords and sustained notes. Measure 24 ends with a dynamic **sfz**.

Pno. El.

26 8va- ff fff sffz fff

This section continues with two staves. The piano (Pno.) has sustained notes and chords. The electric instrument (El.) has eighth-note patterns. Measures 27 and 28 show sustained notes. Measures 29 and 30 end with dynamics **sffz** and **fff**.

TIFFERET
for
piano and electronics

Piano

ff

LH

8va-----

8va-----

8va-----

8va-----

mf

f mf

8va-----

8va-----

Cue No.7

Electronics

Pno.

ff

f

El.

8

LH

8

TIFFERET

Pno.

14

f > *mf*

f

14

El.

This musical score page shows two staves. The top staff is for the piano (Pno.) and the bottom staff is for an electric instrument (El.). The key signature is one flat. Measure 14 begins with a dynamic of *f*, followed by a crescendo indicated by a diagonal line and *mf*. The piano part consists of eighth-note chords. The electric instrument part starts with eighth-note chords and then moves to sixteenth-note patterns. Measure 15 continues with eighth-note chords for both instruments. Measure 14 ends with a fermata over the piano's eighth-note chord.

Pno.

21

LH

ff

21

El.

8va-----

LH

fff

This musical score page shows two staves. The top staff is for the piano (Pno.) and the bottom staff is for an electric instrument (El.). The key signature changes to one sharp. Measure 21 begins with eighth-note chords for the piano, with a dynamic of *ff* and LH (left hand) indicated. The electric instrument part has eighth-note chords. Measure 22 continues with eighth-note chords for both instruments. The piano part ends with a dynamic of *fff* and LH.

NETZAH
for
piano and electronics

The musical score consists of three staves of musical notation, each with a tempo marking of $\text{♩} = 180$.

Staff 1 (Top): Labeled "Piano" and "Electronics". The piano part features a continuous eighth-note pattern with grace notes. The electronics part provides harmonic support with sustained chords and occasional percussive strikes. The section is labeled *Cue No.8*.

Staff 2 (Middle): Labeled "Pno." and "El.". The piano part continues its eighth-note pattern. The electronics part introduces dynamic markings: *sfp*, *ff*, and *sffz*. The section ends with a dynamic *ff*.

Staff 3 (Bottom): Labeled "Pno." and "El.". The piano part maintains its eighth-note pattern. The electronics part features dynamic markings: *ff*, *sffz*, *ff > f*, and *ff*. The section concludes with a dynamic *ff*.

2 (8^{va}) - - - -

Pno.

El.

NETZAH

mf

f

8^{va} - - - -

Pno.

ff

f

ff

sffz

ff

fff

mp

El.

34

mf

f

ff

f

ff

8^{va} - - - -

Pno.

El.

42

HOD
for piano and electronics

Piano

f

Cue No.9

Electronics

ff

f

ff

f

Pno.

El.

Musical score for piano and electric bass (El.) from measures 17 to 24. The score is in common time, featuring a treble clef for the piano and a bass clef for the electric bass.

Pno. (Piano):

- Measure 17: Dynamics ***ff***. The piano part consists of eighth-note chords and sixteenth-note patterns.
- Measure 18: Dynamics ***f***. The piano part continues with eighth-note chords and sixteenth-note patterns.
- Measure 19: The piano part features a sustained note with a wavy line above it.
- Measure 20: The piano part consists of eighth-note chords and sixteenth-note patterns.
- Measure 21: The piano part consists of eighth-note chords and sixteenth-note patterns.
- Measure 22: The piano part consists of eighth-note chords and sixteenth-note patterns.
- Measure 23: The piano part consists of eighth-note chords and sixteenth-note patterns.
- Measure 24: Dynamics ***ff***. The piano part consists of eighth-note chords and sixteenth-note patterns.

El. (Electric Bass):

- Measure 17: The electric bass plays eighth-note chords.
- Measure 18: The electric bass plays eighth-note chords.
- Measure 19: The electric bass plays eighth-note chords.
- Measure 20: The electric bass plays eighth-note chords.
- Measure 21: The electric bass plays eighth-note chords.
- Measure 22: The electric bass plays eighth-note chords.
- Measure 23: The electric bass plays eighth-note chords.
- Measure 24: The electric bass plays eighth-note chords.

Performance Instructions:

- Measure 17: ***ff***
- Measure 18: ***f***
- Measure 24: ***fff***, ***sffz***

YESOD

for
piano and electronics

Musical score for piano and electronics. The score consists of two systems of music. The top system is for piano (LH) and electronics. The piano part is in 4/4 time, key of A major (three sharps), dynamic f. The electronics part is in 4/4 time, key of A major, dynamic f. The bottom system is for piano and electronics. The piano part is in 4/4 time, key of A major, dynamic ff. The electronics part is in 4/4 time, key of A major, dynamic f. The score includes various performance instructions such as LH, 8va, ff, f, and dynamics. A bracket labeled "Cue No.10" is present under the piano and electronics staves.

Musical score for piano and electronics. The score consists of two systems of music. The top system is for piano (Pno.) and electronics (El.). The piano part is in 12/8 time, key of A major (three sharps), dynamic ff. The electronics part is in 12/8 time, key of A major, dynamic f. The bottom system is for piano and electronics. The piano part is in 12/8 time, key of A major, dynamic f. The electronics part is in 12/8 time, key of A major, dynamic mp. The score includes various performance instructions such as LH, ff, f, f, mp, and fff. A bracket labeled "12" is present under the piano and electronics staves.

MALCHUT
for
piano and electronics

J = 56

Piano

Electronics

Cue No. II

8

ff

sffz

f

ff

sffz

sffz

LH

6 5 3

9

ff

sffz

f

ff

10

RH

LH

RH

10

LH

6 12 12 12

fff

El.

MALCHUT

Musical score for piano and electric bass, page 2, section MALCHUT.

The score consists of two staves:

- Pno. (Piano):** The top staff uses a bass clef and a 2/4 time signature. It features dynamic markings *p*, *mp*, *mf*, *f*, *ff*, *mf*, *fff*, and *> mp*. Performance instructions include "LH" above a measure and "tr." (trill) over several notes. Measure numbers 13 and 18 are indicated.
- El. (Electric Bass):** The bottom staff uses a bass clef and a 2/4 time signature. It features dynamic markings *f*, *ff*, *fff*, and *p*. Measure number 22 is indicated.

Both staves include measure lines and vertical bar lines indicating measures and sections.

DAAT

for
piano and electronics

Piano

Electronics

Cue No.12

mf

f

ff

mp

f

6

LH

RH

LH

RH

LH

RH

Pno. LH
El. 18 LH ff fff mp
18 Cue No.13

This musical score page contains two staves. The top staff is for the piano (Pno.) and the bottom staff is for the electric bass (El.). The score begins at measure 18. The piano part features a series of eighth-note chords in 3/4 time, with dynamic markings of **ff** and **fff**. The electric bass part consists of sustained notes. Measure 19 starts with a dynamic **mp**. Measures 20-21 show the piano playing eighth-note patterns with dynamics **LH**, while the electric bass continues its sustained notes. Measure 22 begins with a dynamic **LH**. Measures 23-24 conclude the section, with the piano playing eighth-note patterns and the electric bass providing harmonic support.

Pno. LH LH RH LH
El. 24 mf > > RH
24

This musical score page continues from the previous section. The piano part (Pno.) begins at measure 24 with eighth-note chords and dynamics **mf**. The electric bass part (El.) provides harmonic support. Measures 25-26 show the piano playing eighth-note patterns with dynamics **LH** and **RH**. Measures 27-28 conclude the section, with the piano playing eighth-note patterns and the electric bass continuing its sustained notes.

DAAT

This musical score page shows two staves. The top staff is for the Piano (Pno.) and the bottom staff is for the Electric instrument (El.). The score is in common time, with key signatures changing frequently. Measure 28 starts with a forte dynamic (ff) indicated by a crescendo line. The piano part features sixteenth-note patterns and grace notes. The electric instrument part has eighth-note patterns. Measure 29 begins with a piano dynamic (f) indicated by a decrescendo line. The piano part continues with sixteenth-note patterns. The electric instrument part has eighth-note patterns. Measure 30 concludes with a piano dynamic (fff) indicated by a decrescendo line.

This musical score page shows two staves. The top staff is for the Piano (Pno.) and the bottom staff is for the Electric instrument (El.). The score is in common time, with key signatures changing frequently. Measure 34 starts with a piano dynamic (ff) indicated by a decrescendo line. The piano part features sixteenth-note patterns and grace notes. The electric instrument part has eighth-note patterns. Measure 35 begins with a piano dynamic (fff) indicated by a decrescendo line. The piano part continues with sixteenth-note patterns. The electric instrument part has eighth-note patterns. Measure 36 concludes with a piano dynamic (fff) indicated by a decrescendo line. A box labeled "Cue No.14" is located at the end of the electric instrument staff.