

Vinícius Cesar de Oliveira

Eutrópia III

(2025)

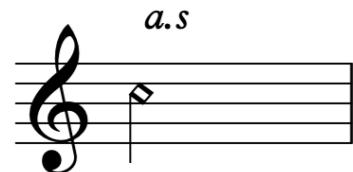
for flute and live-electronics

Eutrópia

When he enters the territory of which Eutropia is the capital, the traveler sees not one city but many, of equal size and not unlike one another, scattered over a vast, rolling plateau. Eutropia is not one, but all these cities together; only one is inhabited at a time, the others are empty; and this process is carried out in rotation. Now I shall tell you how. On the day when Eutropia's inhabitants feel the grip of weariness and no one can bear any longer his job, his relatives, his house and his life, debts, the people he must greet or who greet him, then the whole citizenry decides to move to the next city, which is there waiting for them, empty and good as new; there each will take up a new job, a different wife, will see another landscape on opening his window, and will spend his time with different pastimes, friends, gossip. So their life is renewed from move to move, among cities whose exposure or declivity or streams or winds make each site somehow different from the others. Since their society is ordered without great distinctions of wealth or authority, the passage from one function to another takes place almost without jolts; variety is guaranteed by the multiple assignments, so that in the span of a lifetime a man rarely returns to a job that has already been his. Thus the city repeats its life, identical, shifting up and down on its empty chessboard. The inhabitants repeat the same scenes, with the actors changed; they repeat the same speeches with variously combined accents; they open alternate mouths in identical yawns. Alone, among all the cities of the empire, Eutropia remains always the same. Mercury, god of the fickle, to whom the city is sacred, worked this ambiguous miracle.

Italo Calvino, The invisible cities

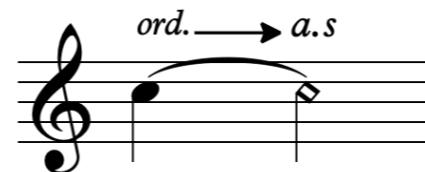
Notes for performance



(a) Aeolian sound with a lot of air noise.



(b) Aeolian sound with little air noise: almost regular sound.



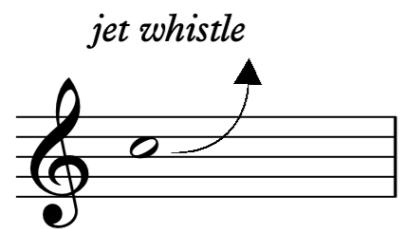
(c) Gradual change from regular to aeolian sound with a lot of air noise.



(d) *Pizzicato* or *slap tongue*: short percussive sound.



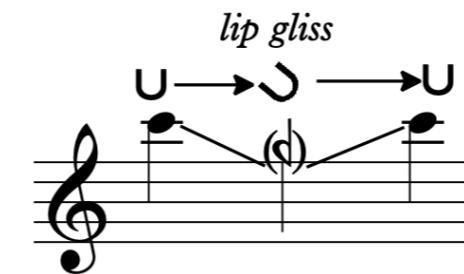
(e) *Frullato*.



(f) Jet Whistle: forcefull and loud attack of air.



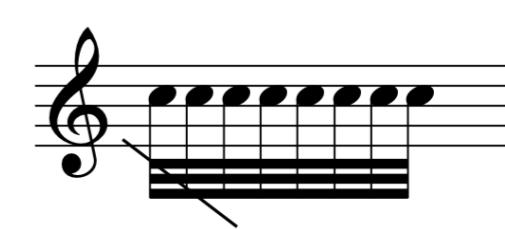
(g) *Glissando* with lips to a specific pitch.



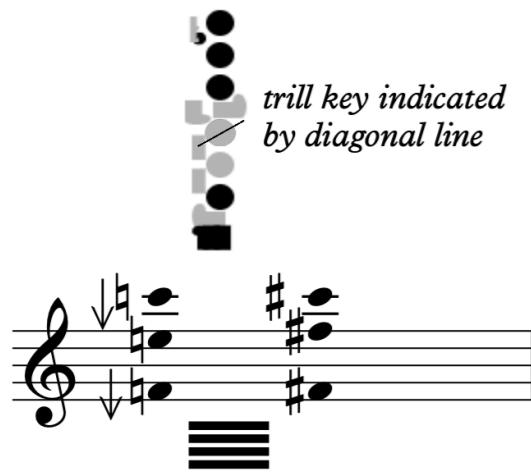
(h) *Glissando* with lips to a non-specific pitch.



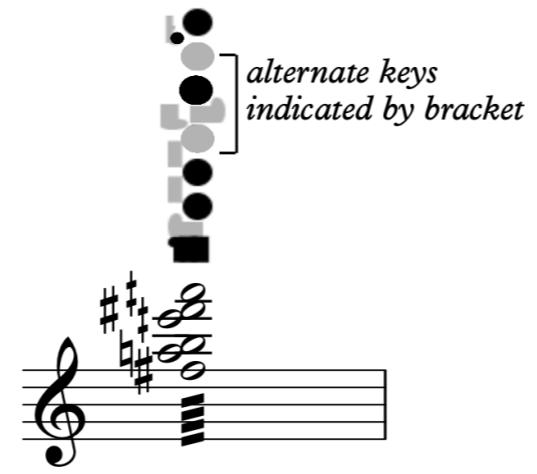
(i) *Bisbigliando*: alternation of different fingerings for the same pitch.



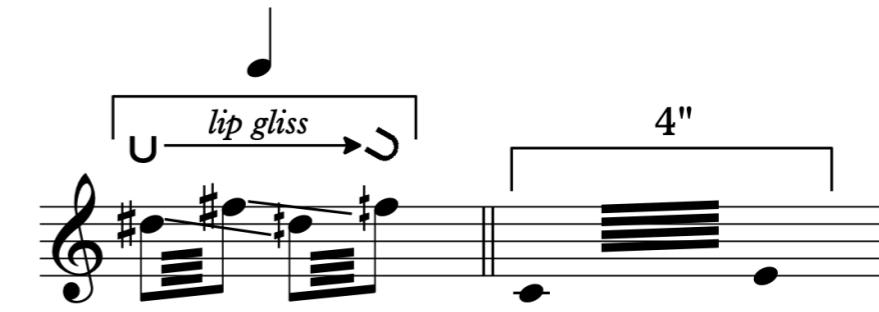
(j) Play the gesture as fast as possible.



(k) Multiphonic trill: trill key indicated by diagonal line.



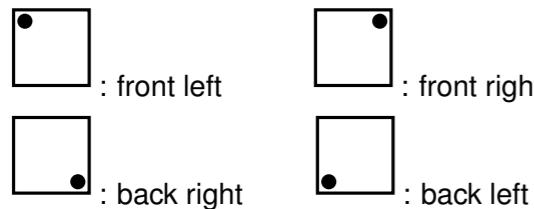
(l) Multiphonic tremolo: alternate keys indicated by bracket.



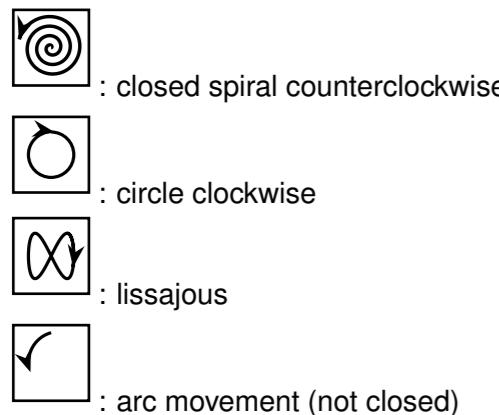
(m) Non-measured events must respect the approximate duration indicated above (rhythmic duration or seconds).

Live Electronics

- Sampler **S** : recording, processing, and playing back sounds in real time. There are two instances of the sampler, which are indicated by the number inside the box (e.g., **S1** for Sampler 1, **S2** for Sampler 2).
- **3F** : sound synthesis algorithm producing harmonic and inharmonic sounds. Two 3F instances are used. In the score, they are indicated as **3F1** and **3F2** (synthesis processing created by Miller Puckette).
- **HARM** : harmonizer for real time pitch shifting and harmonization.
- **REVERSE** : recording and playing back sounds in reverse in real time.
- **PQMF** : pseudo quadrature mirror filter bank, to split the sound signal into multiple frequency bands for processing and spatialization.
- **TCVAE** : transformer-based variational autoencoder for controlling textures and gestures in real time.
- **GAITA** : computer modeling of the colombian gaita, allowing real time synthesis sounds (processing created by Juan Felipe).
- spatialization **SPAT** : a long short term memory (LSTM) neural network controls the spatialization and creates spatial trajectories in real time:
the specific position of the sound source is indicated by the following icons:

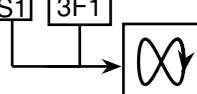


the spatial movements are noted as follows:



- **1, 2, 3**, etc.: indicates the electronics events that must be triggered manually in the Pure Data patch. These numbers indicate the order in which they should be triggered (the patch loads the electronics score automatically).

- **S1 3F1** : lissajous trajectory apply for sampler and 3F synthesis.



- **TCVAE → S1** : transformer based variational autoencoder **TCVAE** connected to Sampler 1 **S1** and spatialized with spiral trajectory.



Eutrópia III

Vinícius Cesar de Oliveira

IA

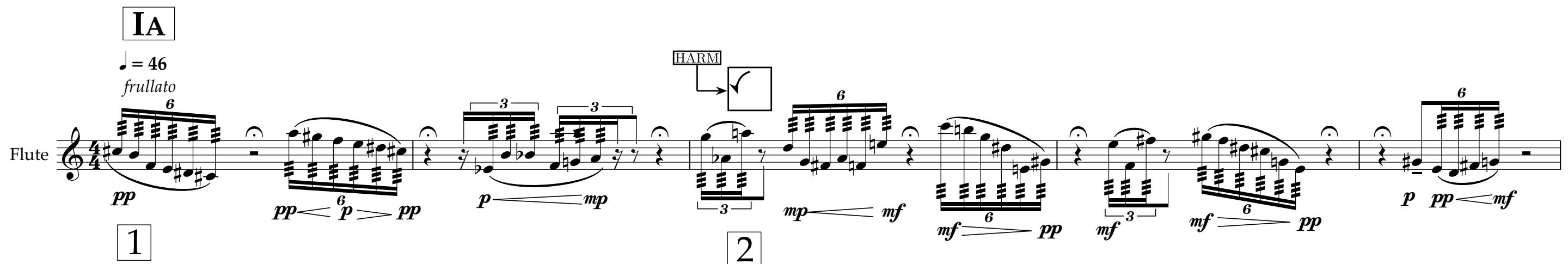
$\text{♩} = 46$
frullato

Flute

pp $\overset{6}{p}$ *pp* $\overset{3}{p}$ $\overset{3}{p}$ $\overset{6}{p}$ $\overset{3}{p}$ $\overset{6}{p}$ $\overset{3}{p}$ $\overset{6}{p}$ $\overset{6}{p}$ $\overset{6}{p}$

1 **2**

HARM



3 **4** **5** **6**

IB

$\text{♩} = 66$

7

8 **9**

13

3F1 $\overset{\circlearrowright}{\square}$

accel. *rall.* *accel.* *rall.* *accel.*

$\overset{5}{p}$ $\overset{5}{p}$ $\overset{5}{p}$ $\overset{5}{p}$ $\overset{5}{p}$

pp *f* *pp* *f* *mp* *f*

non measured

ord. *a.s.*

$\overset{5}{p}$ $\overset{5}{p}$ $\overset{5}{p}$

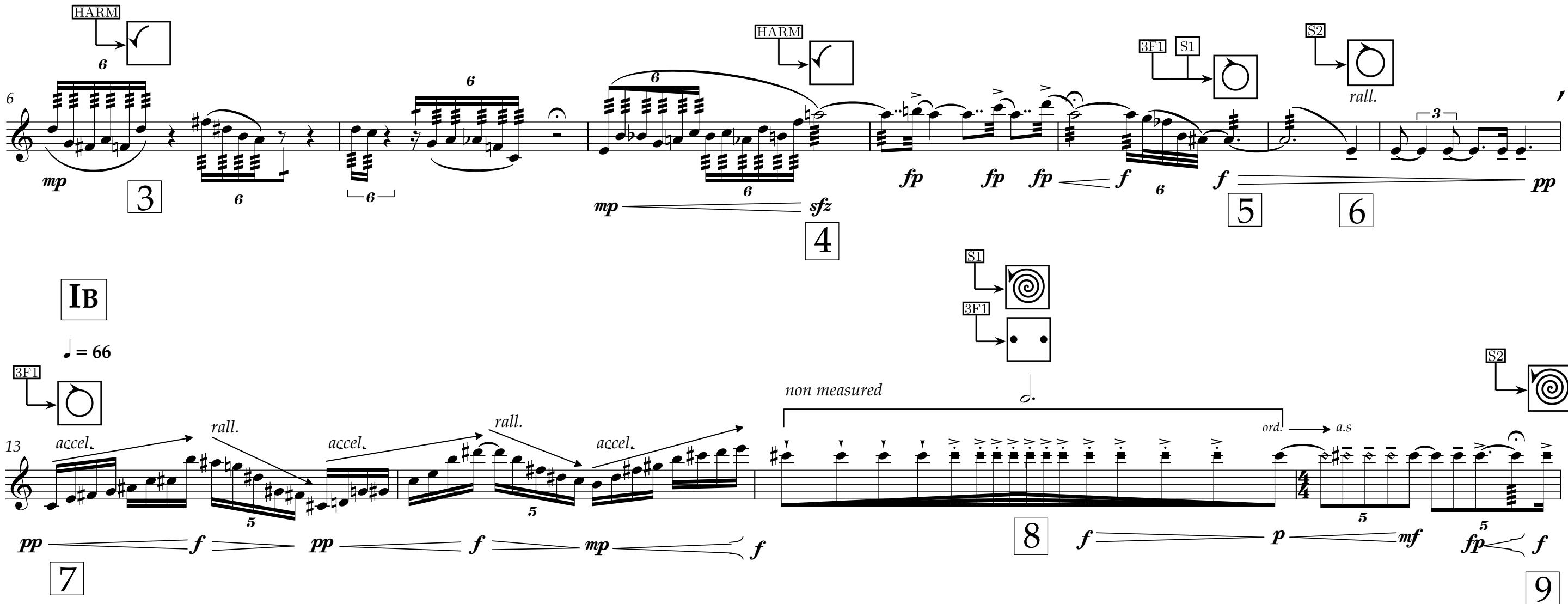
f *p* *mf* $\overset{5}{fp}$ *f*

3F1 $\overset{\circlearrowright}{\square}$

S1 $\overset{\circlearrowright}{\square}$

S2 $\overset{\circlearrowright}{\square}$

rall.



10

17

10

REVERSE

11

c.a. 8"

accel.

rall.

lip gliss

12

lip gliss

13

14

non measured

15

lip gliss

REVERSE

16

17

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19

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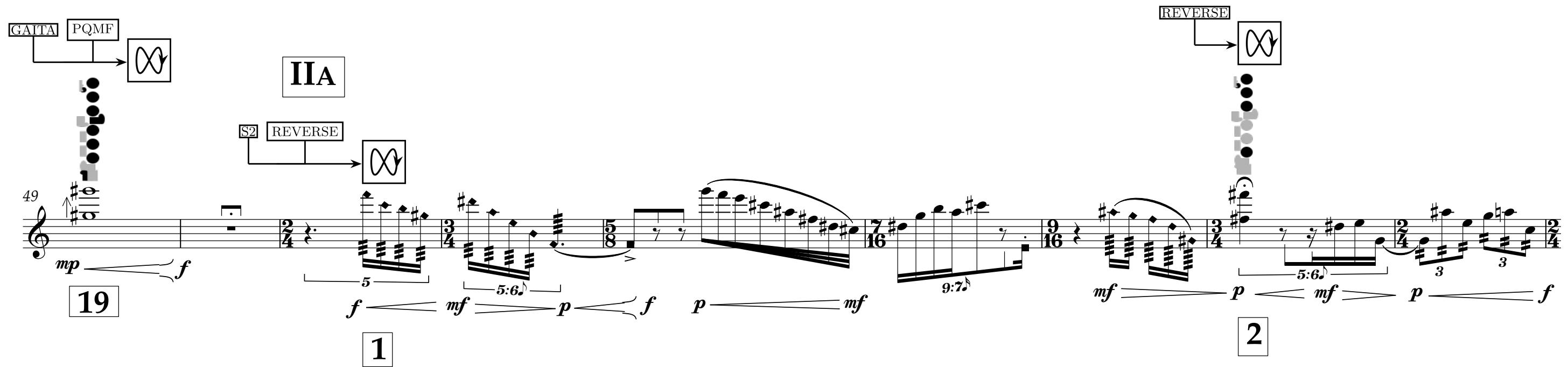
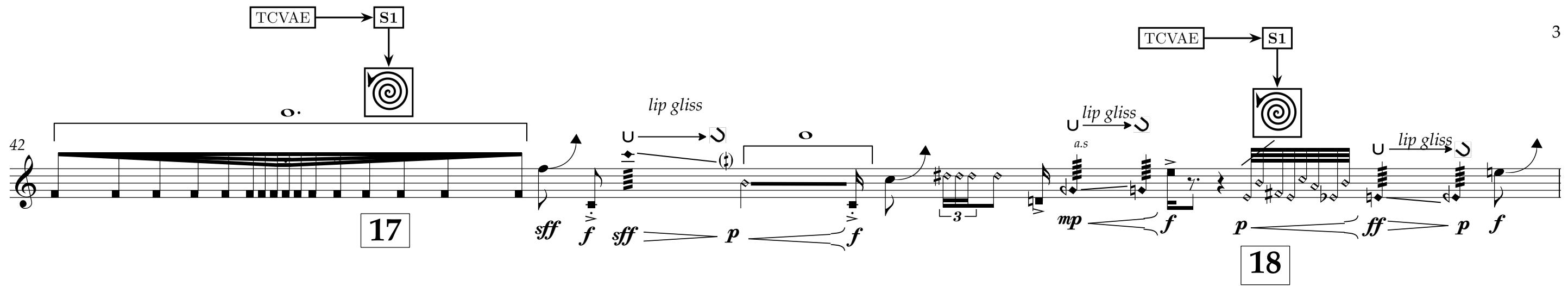
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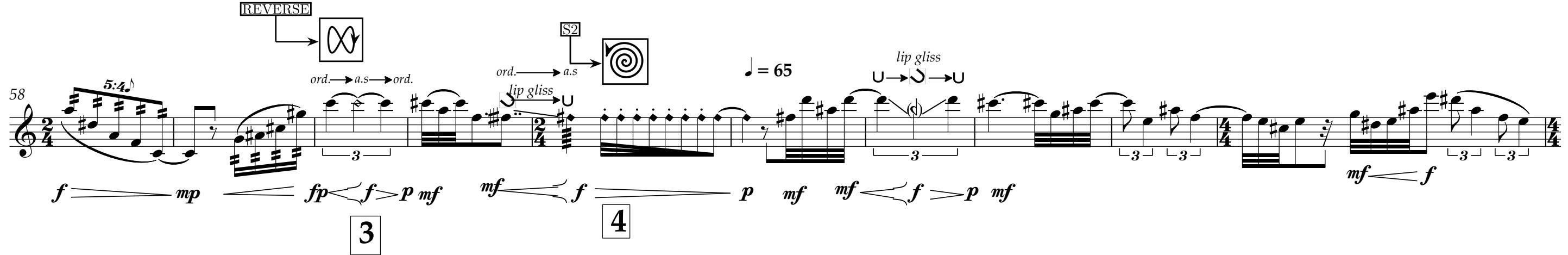
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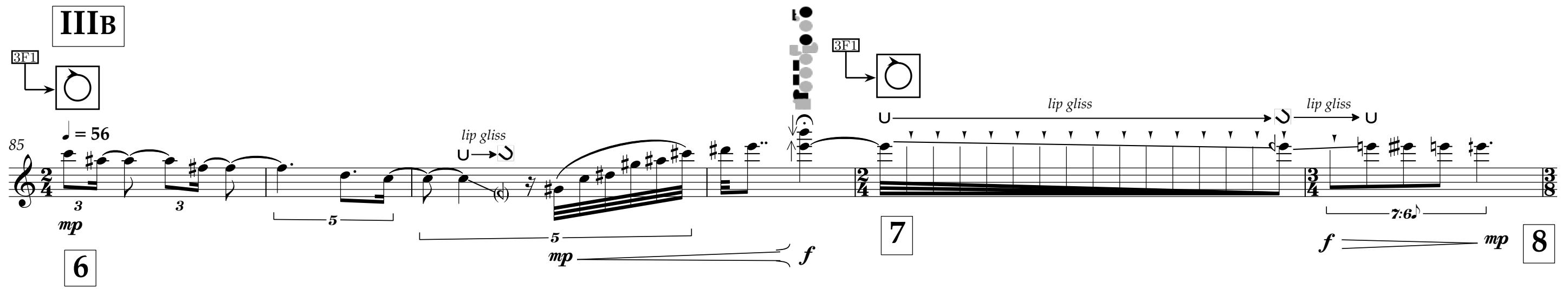
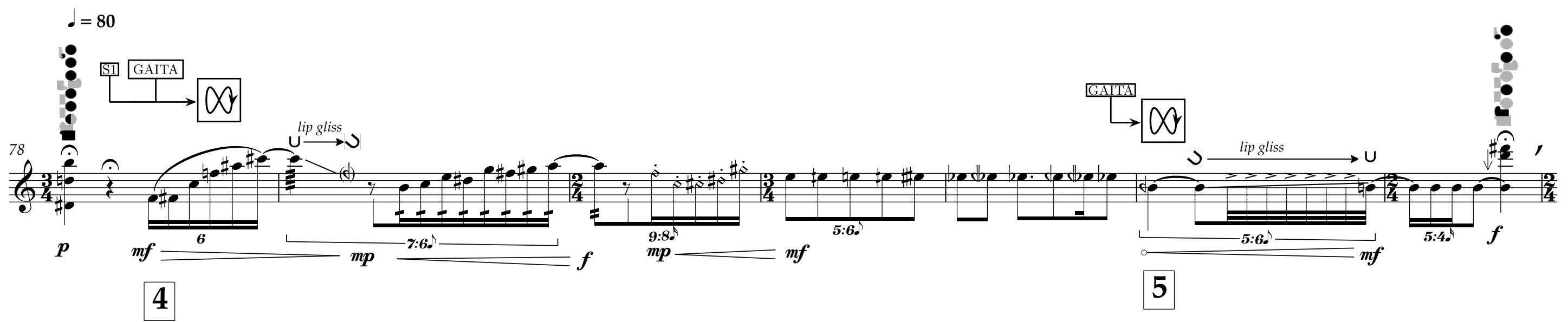
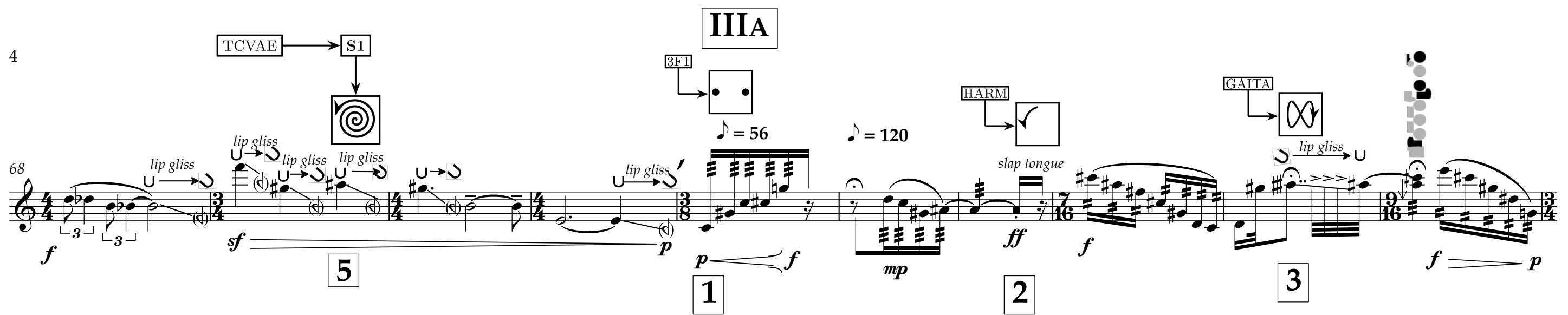
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IIIB





IIIc

The figure shows a musical score for measures 9 through 14. The score is in 3/8 time, key signature of A major (three sharps), and consists of two staves. Measure 9 starts with a dynamic *mp* followed by a crescendo to *mf*. Measure 10 starts with a dynamic *p* followed by a crescendo to *f*. Measure 11 starts with a dynamic *p* followed by a crescendo to *f*. Measure 12 starts with a dynamic *p* followed by a crescendo to *ff*. Measure 13 starts with a dynamic *p* followed by a crescendo to *ff*. Measure 14 starts with a dynamic *p* followed by a crescendo to *ff*. Above the music, a diagram illustrates a generative model: "TCVAE" feeds into "S1", which then feeds into a box containing a spiral symbol. Below the spiral is a tempo marking " $\text{♪} = 130$ ". Another box labeled "3F2" feeds into a box containing a double helix symbol. The score also includes a dynamic instruction "c.a. 8\"", a measure number "91", and a key signature indicator "3". Measure numbers 9, 10, 11, 12, 13, and 14 are enclosed in boxes at the bottom.

IV A

The figure consists of three main parts. On the left is a musical score for a wind instrument, labeled 'HARM' in the first measure. The score includes a tempo of $\text{♩} = 55$, dynamic markings (f, ffz, mp, p, f), and time signatures (3/4, 4/4, 2/4). Measure 15 starts with a forte dynamic (f) and a 7:6 time signature. Measure 16 starts with a forte dynamic (f) and a 5:6 time signature, followed by a piano dynamic (p). On the right is a diagram of a generative model architecture. It shows an input 'HARM' being processed by a 'TCVAE' block, which then feeds into a 'S1' block. From 'S1', two parallel paths emerge: one through a 'PQMF' block and another through a '3F2' block, which is associated with a 'non measured' output. Below the diagram, performance instructions are provided: 'lip gliss' with arrows pointing to specific notes, 'a.s.' (arco sordino) with a bowing line, and dynamic markings (ffz, mp, p, f, ffz, mp, >p, ffz, f, mp) corresponding to the notes in the score.

1

The diagram illustrates the generative process from a latent variable representation (TCVAE) through a series of transformations (S1, HARM, 3F2) to produce musical notation. The resulting score includes various performance techniques such as 'aeolian sound', 'bisbigliando', 'lip gliss', and dynamic markings like 'ff' and 'f'.

