Karlheinz Stockhausen

COSMIC PULSES
Electronic Music

In KLANG (SOUND), *The 24 Hours of the Day*, the **13th Hour** is entitled **COSMIC PULSES** (Electronic Music).

24 melodic loops, each of which has a different number of pitches between 1 and 24, **rotate** in **24 tempi** between 240 and 1.17 rotations per minute in 24 registers within a range of circa 7 octaves.

They are successively layered on top of each other from low to high and from the slowest to the fastest tempo and end one after another in the same order.

The loops were enlivened by manual regulation of the accelerandi and ritardandi around the respective tempo, and by quite narrow glissandi upwards and downwards around the original melodies. This was carried out by Kathinka Pasveer according to the score (see the form scheme).

What is completely new for me is the new kind of spatialisation: each section of each of the 24 layers has its own spatial motion between 8 loudspeakers, which means that I had to compose 241 different trajectories in space. That sounds very technical – and it is.

For the first time, I have tried out superimposing 24 layers of sound, as if I had to compose the orbits of 24 moons or 24 planets (for example, the planet Saturn has 48 moons).

For making this possible, I am grateful to Joachim Haas and Gregorio Karman, collaborators in the *Experimental Studio for Acoustic Art* in Freiburg.

The loops and the synchronisation were realised by my collaborator Antonio Pérez Abellán.

If it is possible to hear everything, I do not yet know. In any case, the experiment is extremely fascinating!
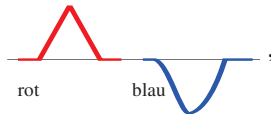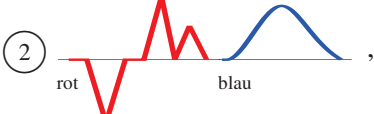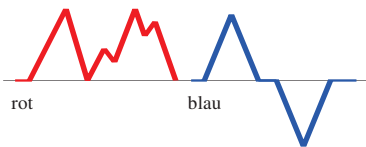
<div align="right">Stockhausen, Febr. 14th 2007</div>

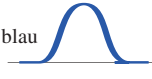**Distribution of the loudspeakers**
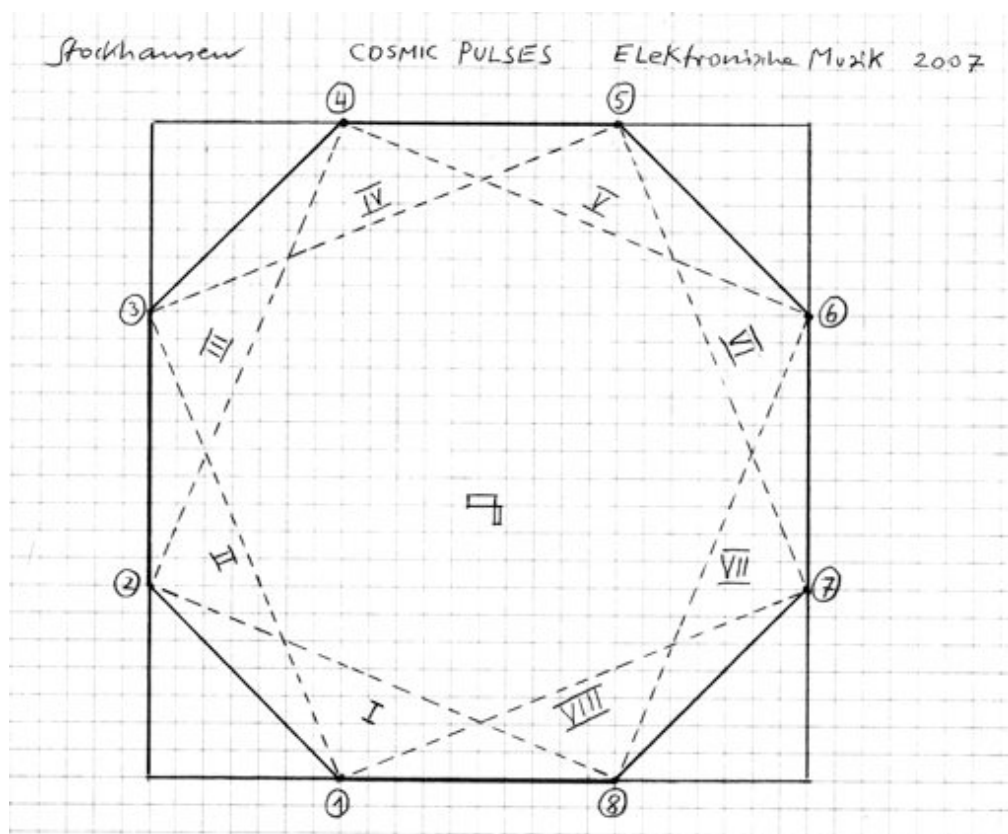
Explanation of the form scheme

COSMIC PULSES has **24 loops** ① to ㉔ with 24 initial pitches ① to ㉔ in **24 tempo layers** [24] – [1] (Tempi 240 – 1,17).

There are **10 motion models** (rot = red; blau = blue) ① ⟋\\ rot \\⟍ blau , ② /\\/\\ rot /\\ blau ,

③ /\\/\\ rot /\\\\/ blau etc.

Each model is valid for 3 layers (loops): 24 - 23 - 22 | 21 - 20 - 19 etc.
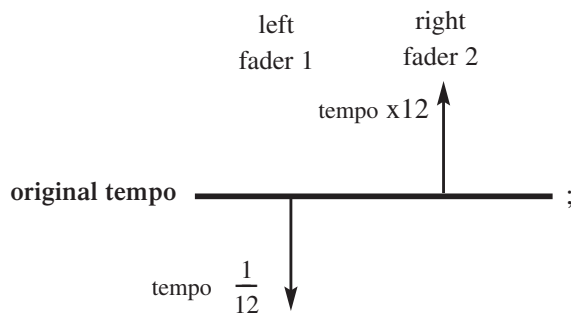
A loop is altered using **2 faders for pitch glissandi**:

right fader for the **upward glissandi** blau ⟋⟍ , the **left** fader for the **downward glissandi** blau ⟍⟋ ,

and **2 faders for the tempo variations**: the **right** fader moved upwards rot /\\ *accel. - rit.* - original tempo,
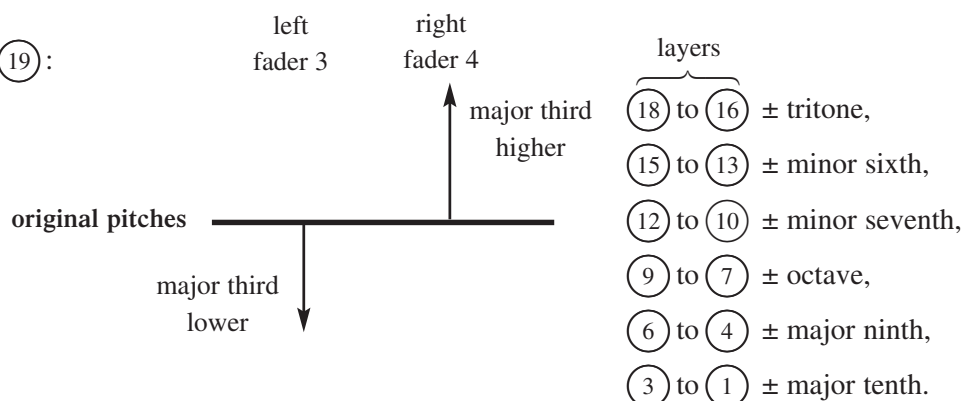
left fader moved **downwards** rot \\/ *rit. - accel.* - original tempo.

The number of the alterations in each section is free, but the **melodies** and **metres** of the loops are varied through the motion models.

For loops ㉔ to ① the
tempo-control range was set as follows:

left fader 1 right fader 2

tempo x12 ↑

original tempo —————————— ;

tempo $\frac{1}{12}$ ↓

pitch-control range ㉔ to ⑲ :

left fader 3 right fader 4 layers

major third higher ↑ ⑱ to ⑯ ± tritone,

⑮ to ⑬ ± minor sixth,

original pitches —————————— ⑫ to ⑩ ± minor seventh,

⑨ to ⑦ ± octave,

major third lower ↓ ⑥ to ④ ± major ninth,

③ to ① ± major tenth.

Form scheme

COSMIC PULSES

3

5.X. 07 Liste der Verteilung der 8 Ausgänge des OKTEG pro Raumbewegung:

① [1 2 3 1 4 5 1 6]	㉗ [4 5 6 4 7 8 4 1]
② [4 5 6 4 5 6 4 5]	㉘ [7 2 1 8 7 8 1 2]
③ [7 8 1 2 7 2 1 8]	㉙ [2 3 4 5 6 2 5 6]
④ [2 3 4 5 6 2 4 3]	㉚ [5 2 1 8 7 6 5 6]
⑤ [5 6 7 8 1 2 1 2]	㉛ [8 1 2 3 4 5 1 2]
⑥ [8 1 2 3 4 5 8 1]	㉜ [3 4 5 6 7 8 3 4]
⑦ [4 5 6 7 8 2 1 2]	㉝ [6 5 4 3 2 1 8 7]
⑧ [6 5 4 3 2 1 8 7]	㉞ [1 2 3 2 1 3 1 2]
⑨ [2 3 4 2 5 6 2 7]	㉟ [7 8 1 2 7 2 1 3]
⑩ [5 6 7 8 5 6 5 7]	㊱ [5 8 7 6 5 7 8 6]
⑪ [8 1 2 3 8 1 3 2]	㊲ [8 3 2 1 8 2 3 1]
⑫ [3 4 5 6 7 6 5 4]	㊳ [3 7 6 5 4 3 7 6]
⑬ [6 7 8 1 2 3 6 7]	㊴ [6 3 2 1 8 7 6 7]
⑭ [1 2 3 4 5 6 7 2]	㊵ [1 7 6 5 4 3 1 2]
⑮ [4 5 6 7 8 1 8 2]	㊶ [4 2 1 8 7 6 5 4]
⑯ [7 8 1 2 3 4 5 6]	㊷ [7 3 4 2 5 1 6 8]
⑰ [7 6 5 4 3 2 1 8]	㊸ [2 4 3 2 4 2 3 2]
⑱ [3 4 5 3 6 7 3 8]	㊹ [8 3 2 1 8 3 1 2]
⑲ [6 7 8 1 6 8 6 7]	㊺ [3 4 5 6 7 6 5 4]
⑳ [1 2 3 4 5 4 3 2]	㊻ [1 2 3 4 5 4 3 2]
㉑ [4 5 6 7 8 4 6 5]	㊼ [4 5 6 7 8 6 7 8]
㉒ [7 8 1 2 3 4 7 3]	㊽ [7 8 1 2 3 4 7 8]
㉓ [2 3 4 5 6 7 8 7]	㊾ [2 3 4 5 6 2 8 2]
㉔ [5 6 7 8 1 2 3 4]	㊿ [5 6 7 8 1 1 3 4]
㉕ [8 4 1 5 7 3 6 2]	⑤① [8 4 1 5 7 3 6 2]
㉖ [3 4 8 2 6 1 5 7]	⑤② [3 4 5 3 4 5 3 4]
	⑤③ [1 2 3 4 1 3 1 4]
	⑤④ [4 5 6 7 8 7 8 5]