

More information about Entartung

Abart – the Music:

At the beginning of the composition section "**Abart**", the instrumentalist lies on a black blanket on the floor. Above him, the delay machine and the crossbar field are set up in a cross shape. A digital counter is screwed onto a microphone stand, which allows the clarinetist to manually control the structure of the delay entered into the computer.

"Abart" deals with the generative process of sound creation, i.e. breathing, swallowing - air with mouthpiece, with instrument - air tremolo, flutter tonguing, glottal beats and so on. A throat microphone is used to make these sounds audible.

The composition is made audible on the left and right speakers alone. The spatial composition plays an important role. From mono to rotation (left, centre left, centre right, right), a musical process takes place. The noise sounds are also given into the 8 filters, which are controlled by the computer as described above. a contrast is thus created between the sounds improvisationally produced by the bass clarinetist and the pre-planned controlled filter positions.

Actions:

The player is lying on the floor. he is dressed in a suit. (Colours black, grey, red). The sound actions take place in very calmness. Everything seems natural.

01. breathing
02. breathing with emphasis, i.e. exhaling or inhaling more strongly
03. swallowing
04. tongue thrust with inhalation, thrusts stronger
05. exhale with hollow mouth deep
06. breathing with pursed lips, whistling, high
07. put on tongue and breathe
08. trill tongue
09. inhale deeply
10. tongue trill with mouth filter
11. deep breath
12. smacking lips
13. breathing with mouth filter, sound
14. lip smack inhale and exhale
15. air between teeth
16. pursed lip
17. attempt to shape tone
18. play tone c briefly
19. hold tone c for a long time (circular breathing)

Entart - the music:

Most of the musical sequences used result from a sound program. This sound program generates harmonic constellations from a repertoire of 64 pitches, namely 8 fundamental tones and their 7 overtones. As with the circle of fifths, the computer calculates up to

8-voice sounds. With this harmonic framework, I have designed the composition Entartung, I have tried to reformulate harmonic sequences. The rhythms are conceived according to my own aesthetic taste.

The second set "Entart" is a further development of Minimal.

- On the one hand, the loop technique (in Minimal it was 1 loop) was further developed with a specially made delay machine equipped with 8 sound heads. In "Entart", the bass sounds, switched live by the computer (see switchbox), could be equipped with different delay times. Although the analogue tape technology was still used, since the tape then ran over the 8 sound heads, which could be switched on and off. But the use was digitalised. It was thus possible to determine exactly when and how long delays were to be executed.

- While in Minimal it was the beats of the bass clarinet that were made audible with a drum transducer, in "Entart" the computer followed the bass clarinet sounds live, detected them with a frequency demodulator (FDM) and let the live played harmonics of the bass clarinet be heard with a filter bank.

In the following computer score we see on the left the time progression (Time) and the played notes of the bass clarinet (Clarinet). Furthermore, we see the 8 filters which (indicated by 1) are opened synchronously by means of computer software.

```

;
; FILE PARTITUUR INPUT ANF2... 10.9.
; TIME CLARINET- FILTER1 FILTER2 FILTER3 FILTER4 FILTER5 FILTER6 FILTER7 FILTER8
1 |5 C 1 1 1 1 1 1 1 1
2 | | | | | | | | | |
3 | | | | 1 1 1 1 1 1
4 | | | | | | | | | |
5 | | | 1 1 1 1 1 1 1 1
6 |4 C#1 1 1 1 1 1 1 1
7 | | | | | | | | | |
8 | | | | 1 1 1 1 1 1
9 | | | | | | | | | |
; TIME CLARINET- FILTER1 FILTER2 FILTER3 FILTER4 FILTER5 FILTER6 FILTER7 FILTER8
10 |4 D 1 1 1 1 1 1 1 1
11 | | | | | | | | | |
12 | | | | 1 1 1 1 1 1
13 | | | | | | | | | |
3/4
14 |4 D#1 1 1 1 1 1 1 1
15 | | | | | | | | | |
16 | | | | 1 1 1 1 1 1
17 | | | | | | | | | |
18 |5 E 1 1 1 1 1 1 1
19 | | | | | | | | | |
; TIME CLARINET- FILTER1 FILTER2 FILTER3 FILTER4 FILTER5 FILTER6 FILTER7 FILTER8
20 | | | | | | | | | |
21 | | | | 1 1 1 1 1 1
22 | | | | | | | | | |
23 |4 F 1 1 1 1 1 1 1
24 | | | | | | | | | |
25 | | | | | | | | | |
26 | | | | 1 1 1 1 1 1
27 |4 F#1 1 1 1 1 1 1 1
28 | | | | | | | | | |
29 | | | | | | | | | |
; TIME CLARINET- FILTER1 FILTER2 FILTER3 FILTER4 FILTER5 FILTER6 FILTER7 FILTER8
30 | | | | 1 1 1 1 1 1
31 | | | | | | | | | |
3/4
32 | | | | | | | | | |

```

In the next score, we recognize the bass clarinet notes (Bkl) and the overtones played with them (1-8), which are filtered by the live bass sound, as already mentioned.

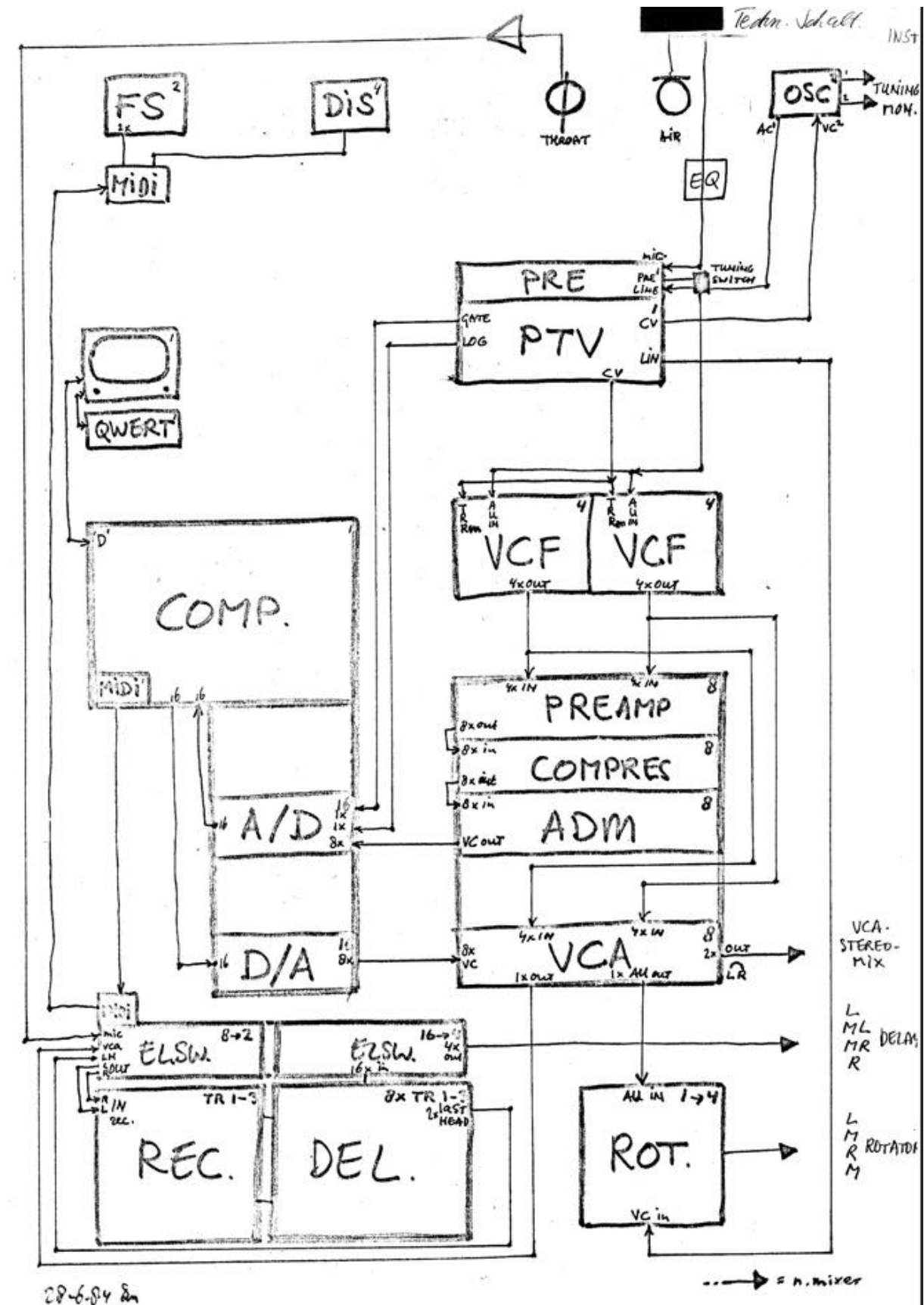
The image shows a handwritten musical score for bass clarinet (Bkl). The score is written on multiple staves, with measures numbered from 115 to 299. The notation includes notes, rests, and dynamic markings. There are several annotations and markings throughout the score, including circled notes and arrows. The score is titled "3" in a circle at the top left. Other markings include "Bowl Spring", "Tal 2", "2.8 21/02", "Vn/ly Co - C4", "Eicher Wagnery", "DIE 65", "131-137", "135-148", "228-240", and "Andara". The score is written in a cursive, handwritten style.

Problem:

The endeavour to use the computer as a complete live instrument and to do so with both analogue and digital means was put into practice, but the financial, production-technical as well as performance-technical problems (the set-up time, for example, took several hours) were so great that after the premiere in Tokyo and the further performances in Seoul and Budapest, I decided not to realise Entartung any further under these circumstances.

One has to imagine that in 1984 all software and all equipment were newly developed by us. There was a preparation time of 2 years, or in short, the time was not yet ripe to realise my thoughts functionally with the technology of that time. In the following circuit diagram, you can once again understand how technically complex Entartung was.

Technical circuit diagram:



Technique (detailed)

The composition Entartung is a live electronic work controlled by a "Heathkit h 11" computer.

The sound analyser:

At the moment of playing the bass clarinet, 8 band-pass filters analyse the instrument sound in real time, i.e. the fundamental, 7 overtones, the amplitude ratios and their changes. The sound spectrum is thus sampled by 8 filters. It is important that the "running" of the filters is synchronised to the bass clarinet sound with a "pitch to voltage converter". The musical information of the bass clarinet score is also translated into digital information with an "analogue to digital converter", which the microcomputer can use for further operations. On this technical basis it is possible to make the bass clarinet sound audible completely or partially, i.e. provided with e.g. only 2 or 3 overtones. This is because the computer controls the Vca's input filter, it can thus create a rhythmically structured overtone melody by opening and closing the amplifiers. Since the computer recognises the score of the bass clarinet, it can realise the filter melody synchronously with the corresponding bass clarinet sound. The computer thus waits for the corresponding sound of the bass clarinetist, it can tolerate the natural pauses between the played notes and then generate the corresponding filter structure in real time. With this technical constellation, it is possible to write an 8-part composition, although only one instrument produces the sound material.

The delay device:

The delay device is a tape delay, equipped with 8 stereo sound heads that can be moved on a rail. Thus, 8 different delay times can be realised (-20 seconds). The 8 stereo sound heads can be switched on and off with a computer-controlled crossbar field (switchbox). In addition, the computer controls whether the bass clarinet signal or the filter setting should be recorded on which of the 4 channels and then delayed. The bass clarinetist can thus play with himself.

The technical description of the crossbar panel (switchbox)

On the outside, the switchbox has 24 inputs (1. .24) and 6 outputs (a. f).

On the inside these are 48 and 3 respectively.

It is assumed that all inputs of units I, III and V are connected in parallel with those of units II, IV and VI are connected in parallel, so that there are 3 outputs via I, III, V (these are a..c) and another 3 outputs via II, IV, VI.

connecting the equipment.

Input 1	Throat Microphone	MICT
Input 2-	Microphone clarinet	MCC
Input 5	Filters left	FLTL
Input 6	Filters right	FLTR
Input 9...16	Playback head 1...8 left	PBL1...8
Input 17...24	Playback Head	PBL1..8.
Output a	(left)	OUT1
Output b		OUT2
Output c		OUT3
Output d	(right)	OUT4
Output e	Recording head left	RECL
Output f	Recording head right	RECR

Program Switch

This program controls the switchbox using a Matrix, shown on the screen. In this matrix, the rows represent outputs a-f and the columns represent inputs 1-24.

By entering coordinates for input (a-x) and output (a-f) the connection between the entered points is switched. So a connection is switched off when it is currently switched on and vice versa.

0. leads to switching off all connections.

1. causes the currently selected switching position to be stored in the memory (max. 99 positions). The counter (also present on the switchbox) keeps track of the number of positions. If a position was already saved, it is removed from the memory. !! Switching to AD11 has the same effect as key 1!!!!

2. Enables reverse travel through the position memory.

3. Allows you to save to disk or read back previously created files. on disk or to read back a previously created file. If, when writing, an already existing file name is given, this file will be overwritten. If, when reading, a non-existent file is requested, the program ends in an error message.

4. Cleans the memory. You will be asked whether this is really the intention, just to be on the safe side.

5. Ends the program.

Drawn up from available data 23 May 1986 by R.P.Cerjak

© Michael Fahres 13.4.1986

Conclusion:

In summary, it is of course a great pity that Entartung no longer exists. At that time, only poor sound recordings were made as well. The above-mentioned problems and others led to my decision to withdraw from the concert business in the autumn of 1985 and at the same time to write a new composition, called Entartung 2, which was intended on the one hand to solve the above-mentioned problems and on the other hand to achieve a different musical aesthetic. Entartung 2 was never performed.

Then in 1991 I returned to the music world with the radio play Nabla (commissioned by the Dutch radio station NOS).