

Heinz Weber

RAUM DER ZAHLEN

Room of Numbers

Raum der Zahlen

(Room of Numbers)

A Sound Piece for the Spritzenhaus

The Spritzenhaus, located in the Ottensen district of Hamburg was until 1990 a warehouse of a firm manufacturing precision tools. Built towards the end of the 19th century as a facility with spaces for rent, the building was initially occupied by "Semmelhack" a manufacturer of boxes.

When the abandoned rooms were occupied by its present tenant, Spritzenhaus Society, they were like a palimpsest full of material signs--both documents and wounds--which the building had received through its uses over the years: for instance, crushed, discarded packages of cigarettes lay in corners of wooden ceiling supports of the rooms, identification labels, scraps of tools and a production catalogue of the 1960`s as well as patterns of marks on the walls and scars or impressions on ceiling beams and floors caused by ripped out electric cables, water damage and heavy machinery were all to be seen.

Such scars and other clues of the past are the source material upon which I based compositional rules and transformational manipulations in order to fashion a sound-piece aurally expressing the building.

I did not attempt to create music *for* rooms, which is to say, intuitively or subjectively organize or generate sounds in the rooms to satisfy a set of parameters based on their architecture and acoustics. I sought music *of* rooms as an acoustical equivalence of architectonic and other visual evidence. My personal reaction to these details was of greatest significance and directed my very personal decisions at nearly every step of my creative work even though, nonetheless, the visual, architectural facts at hand dominated the parameters of the acoustical results. I utilized actual noises of the present-day rooms along with instrumental transpositions produced by a succession of recorded tape fragments reproducing the physical sounds in the rooms, which I then manipulated acoustically.

The Compositional Strategy: Game-Play

Occasionally, I invented compositional rules based on the available graphic and situational material at hand to which I submitted myself as musical performer. A mistake, like the violation of a game-rule, was to be avoided while making music. On the other hand, an error committed in applying a game-rule was to be tolerated. For example, I established the compositional rule that, in the visual realm, one meter of room length will correspond in the acoustical realm to a length of recording tape four centimeters long. Since, however, the use of a simple ruler marked with millimeters and a lead pencil allowed but a relatively exact marking, a resulting tape segment could only be approximate. But such inaccuracy remains unimportant because it does not violate the rules of the game.

The sound installation "Raum der Zahlen" (Room of Numbers) consists of four movements which correspond to the four floors of the Spritzenhaus. Thanks to loudspeakers installed in the stairway on each floor it is possible to hear each movement in such a way that the listener is invited to ascend the building together with the music. Alternatively, within a room in the basement it is possible to hear the entire sound-piece movement by movement in a strictly musical, conventional way.



SPRITZENHAUS

Photo: Dörte Eißfeldt

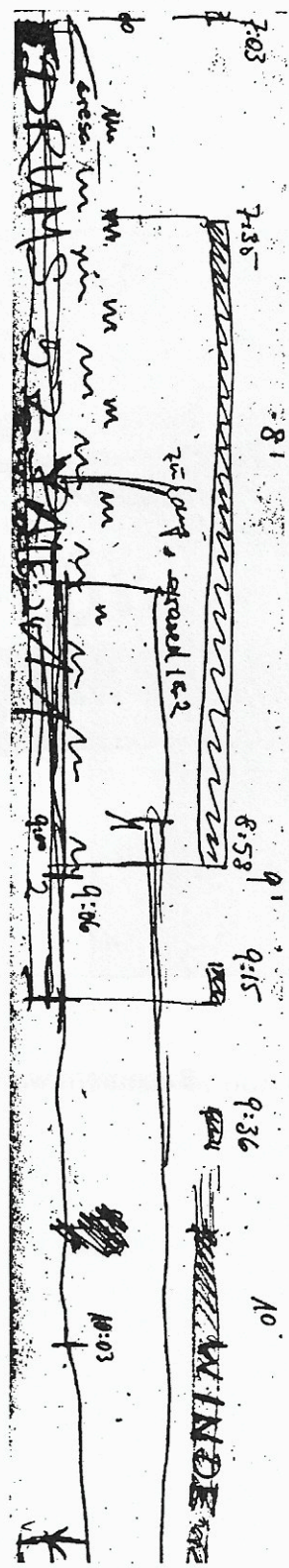
First Movement: The Basement.

The thematic material associated with the basement supplies the basis for the entire installation, *The Room of Numbers*. Having served during the war as an air-raid shelter, the basement rooms still displayed this condition: air-tight ventilator, emergency exits, fresh-air pump with filters and a hand crank as well as directions on the walls and over the doors "Emergency Exit," "Room 4 for 36 Persons," "Emergency Beds," "Drinking Water," "Toilet," and "No Smoking." On all the walls of the backroom at a level of about two meters were handwritten numbers in black. The numerical values were located between 3.90 and 13.20. The smallest integer between ciphers was .05 (for example, 9.95--7.45--7.8--6.45...). The individual numbers denied any mathematical logic, as did the respectively differing distances between adjacent numbers. (A possible notating by workmen of a wall's thickness, of distances for water-pipe installations or for other construction work is, due to the frequency of the numbers and of their black color and shape, out of the question. What is more, there is no indication as to the date when the series of numbers were written.)

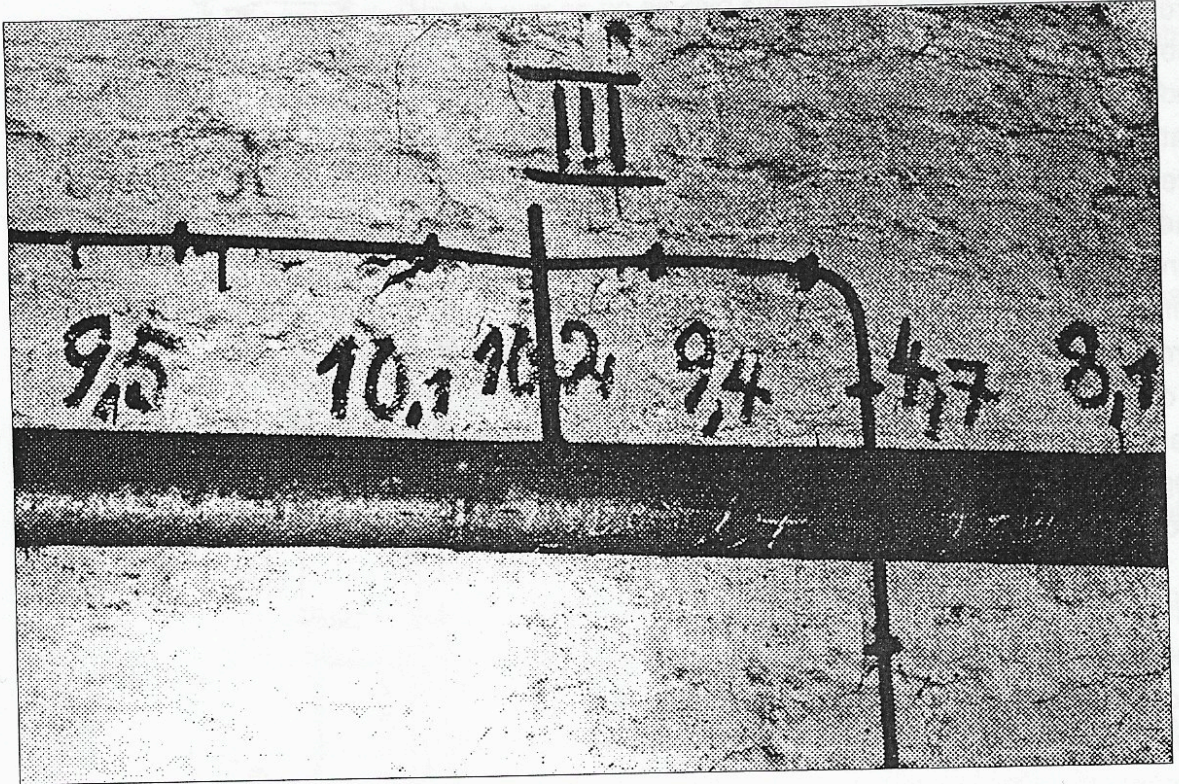
I have used these numbers as a basis for the first movement. As my first game-rule I assigned the numerical interval .05 to be the equivalent of the musical interval of a chromatic half-step. A second game-rule located the size of further musical intervals by comparing successive numbers written on a wall to produce two- to four-part harmony. The spacial separation of the numbers on the walls were translated into a temporal scale which in turn was set in a meter of 4/4 time. The length of each chord extends to the end of the measure in which it is notated. (For example, while one measure corresponds to 16 centimeters of recording tape, the position of a number is at a point 10 centimeters from the start; thus, a notated dotted-quarter will be preceded by a half- plus eighth- rest.) From where it ends to the next number or musical chord, the reverberation of the preceding chord will continue.

In order to achieve what was for me the most neutral of instrumental sounds, I selected the piano. In this context I mention an additional game-rule regarding the attack of the piano sound and the relative strength of individual pitches: all dynamic accents were eliminated. Every chord, therefore, was produced by recording single tones which were then combined in playback into the present end-mix, but only after cutting off the attack of each individual note.

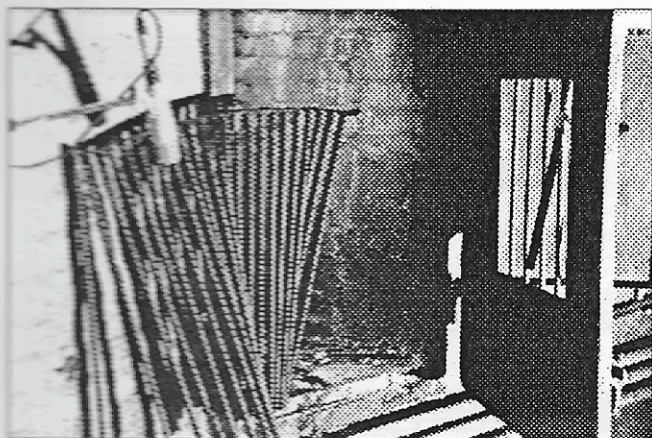
Additional sonorous material in the movement was percussively played pieces of metal grates and wall-hooks located in the basement, the whir of a fresh-air machine and, as a background sound for the entire building, the rhythmic transposition of the tables of numbers in the Fette-Catalogue (see *Movement Four*). This sonorous material was shaped according to the matrix of the numerical rhythm described above.



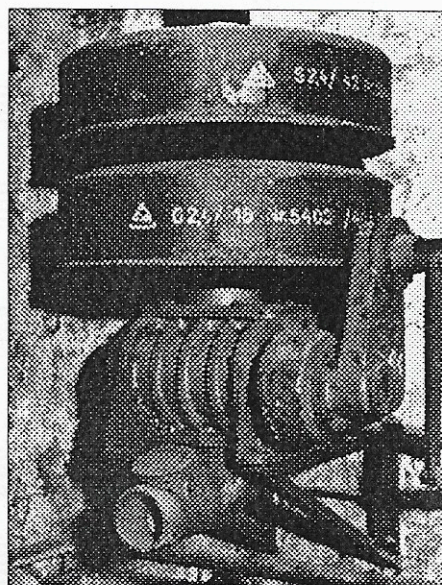
cutting plan (detail)



Basement wall showing sequence of numbers



Grate



Fresh-air pump

RAUM DER ZAHLEN

WEST I

Seite 1

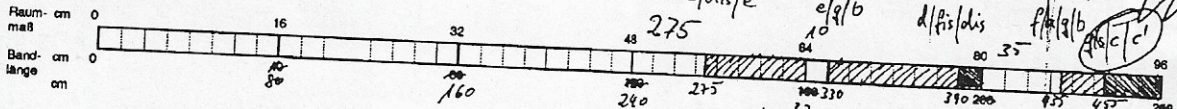
Takt 1-12

Abschnitt 0-192 cm

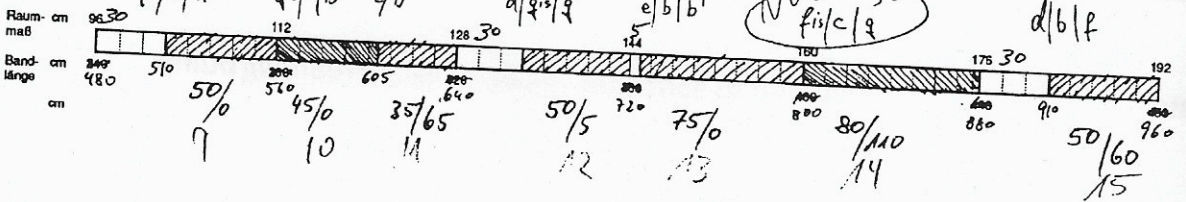
~ 7:25

7:35

Musical notation for measures 1-4. Treble clef, notes: $\sharp 0$, $\sharp 2$, $\sharp 0$, $\flat 0$. Bass clef, notes: $\flat 0$, $\flat 0$, $\flat 0$, $\flat 0$.



Musical notation for measures 5-8. Treble clef, notes: $\flat 0$, $\flat 0$, $\flat 0$, $\flat 0$. Bass clef, notes: $\flat 0$, $\flat 0$, $\flat 0$, $\flat 0$.



Keyboard score

RAUM DER ZAHLEN

WEST I

Seite 2

Takt 13 - 15

Abschnitt 193 - 233 cm

~ 8:09

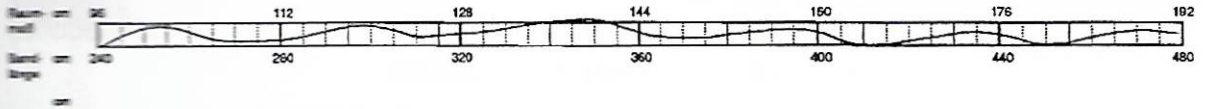
gis/f/e
a/f/a/d

W1 W3

16 32 48 64 80 96

70/75 1040 1075 1120 1140 1170 1200 1280 200 240

16 .17 18 19



Second Movement: The Main Floor.

This floor was, at the time of my occupancy of the house, the only one somewhat equipped, what with its single electrical outlet, electric lights and functioning radiators. The lighting consisted of florescent tubes not directly attached to the ceiling but from supports circa 70 centimeters below. In all, there were two rows of six tubes plus two more at 90 degree angles to the others along a wall parallel to the windows. These latter two were suspended by chains. Probably, the florescent tubes were in straight rows and at right angles when first installed. Over the years, however, they presumably shifted to produce a zig-zag pattern.

As a basic plan to express the main floor I used a photograph that shows a portion of the ceiling with its florescent lights. Assisted by a computer I converted this photograph into a polarized and negative picture that eliminated shades of grey and highlighted the lines of tubes for use as notational material. This visual information was translated into a pitch level / durational grid and then converted into a digital pattern by hand.

Game-rules:

- Horizontally: 1 mm. in the musical score corresponds to 5 cm. of recording tape moving at 38 cm. (15 inches) per second;
- Vertically: there are 16 pitches;
- Instrumentally: contrabass-viol and violin;
- Melodically, the contrabass ascends by semitones while the violin descends by parallel whole steps;
- Additional sounds: real noises of the old heating system, a continuous dripping of water produced by age-weakened and leaking spigots.

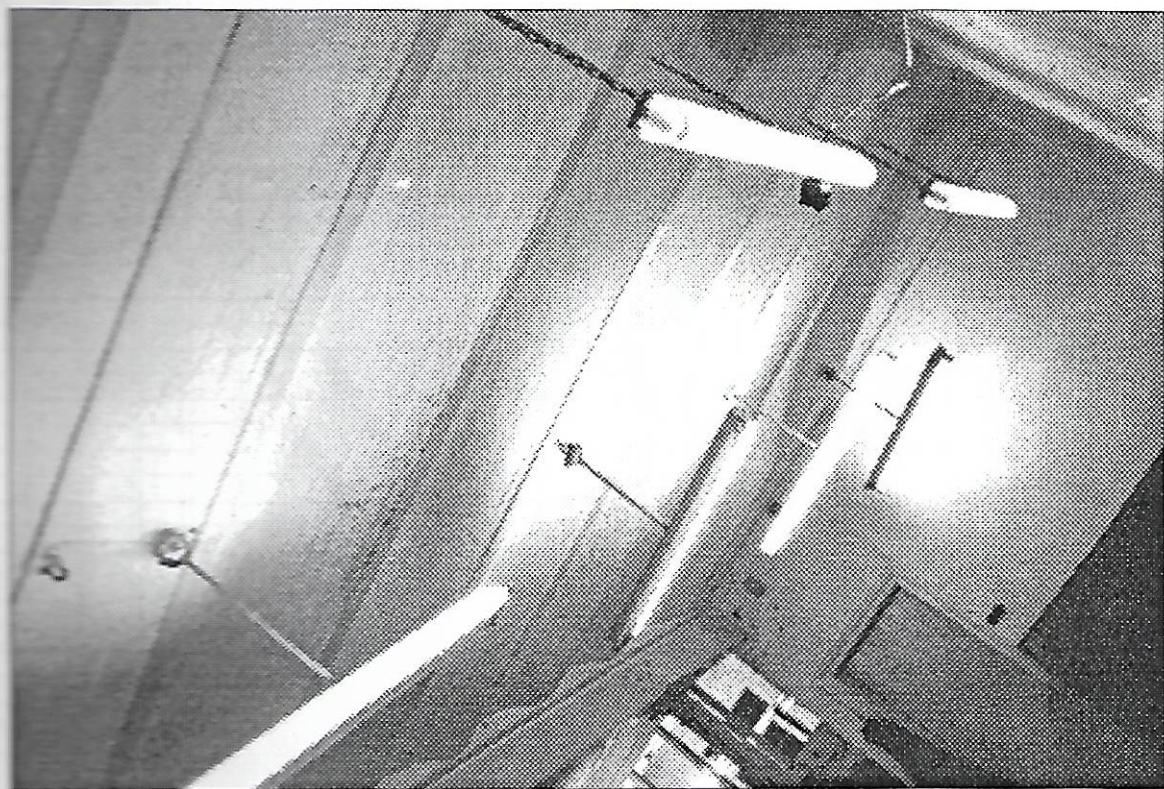
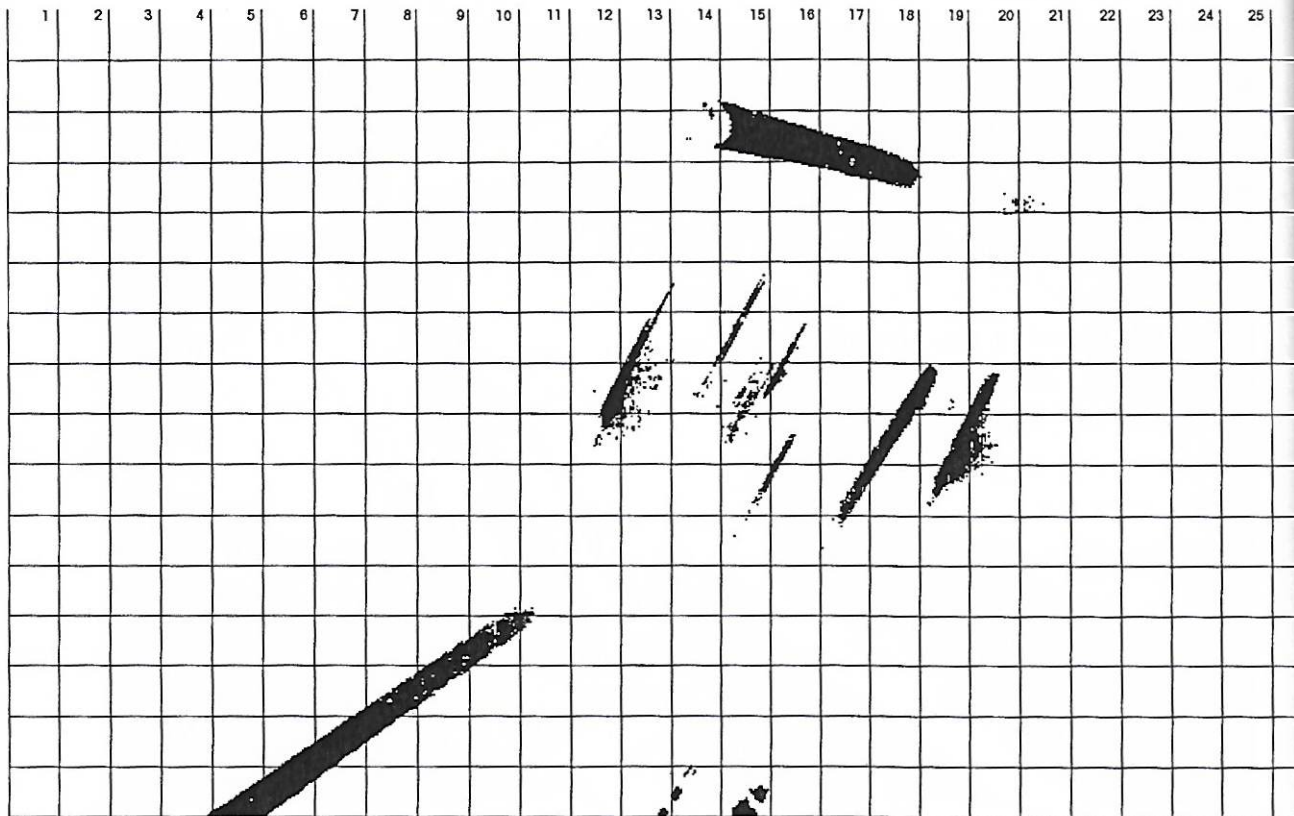
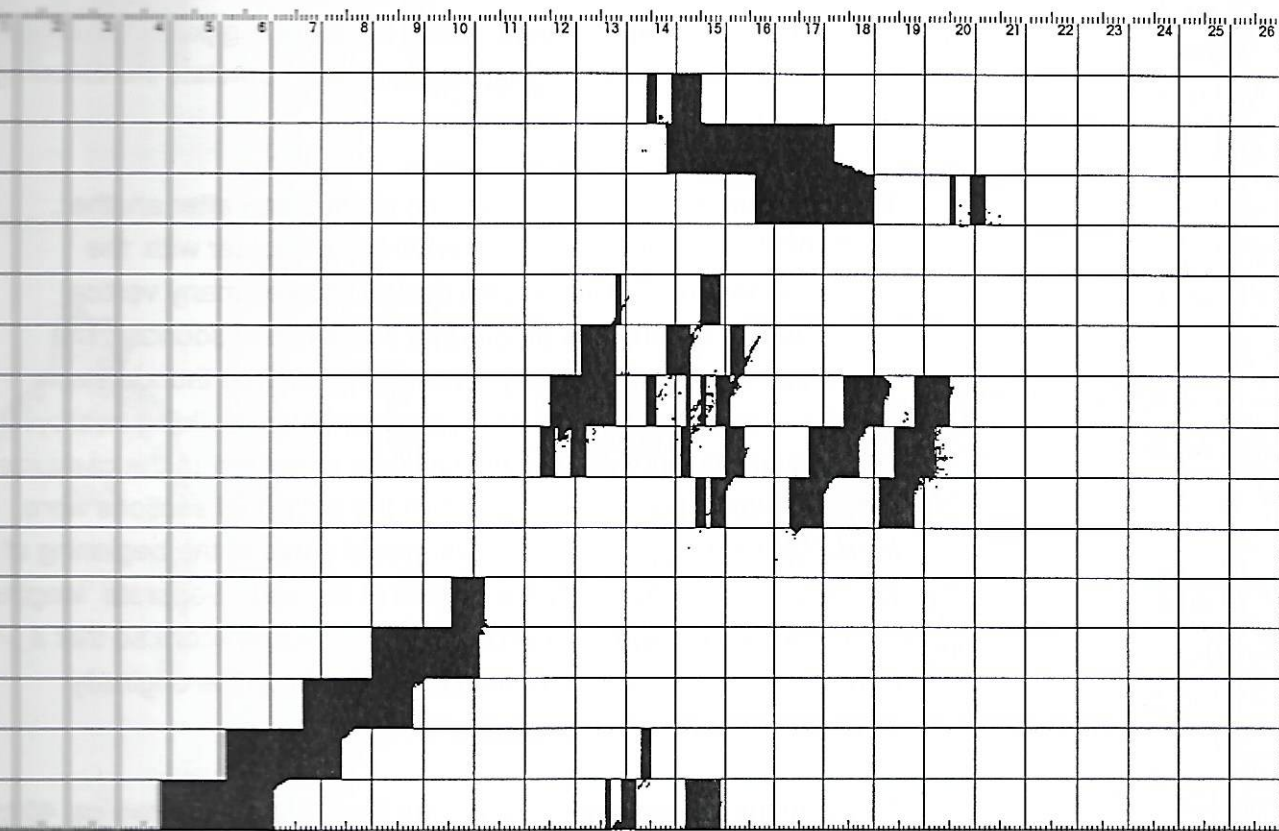


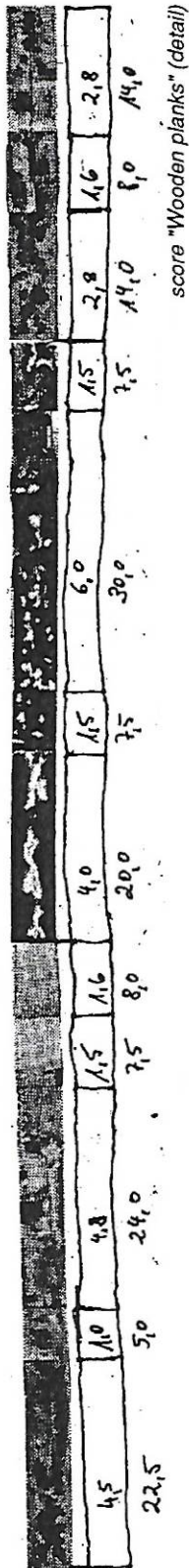
Photo: Dörte Eißfeldt



**Second of 8 manipulations of the preceding photo
both polarized and reversed in negative form**



the same digitalized

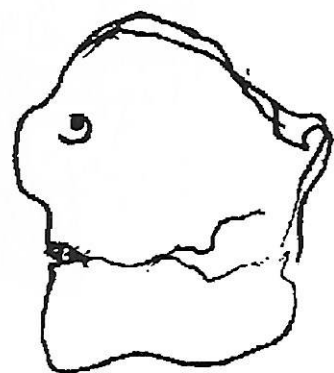
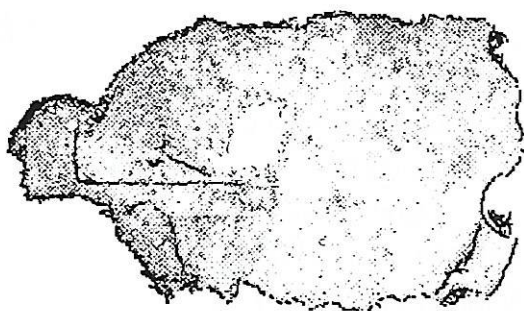
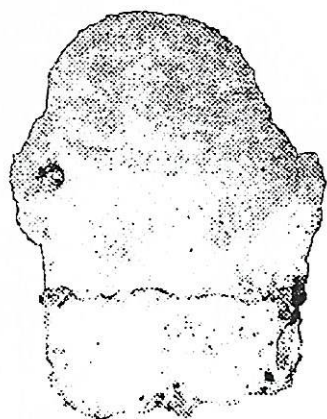
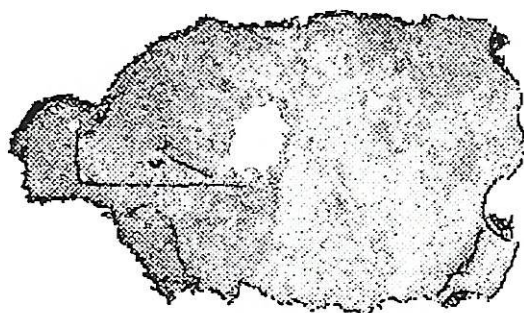
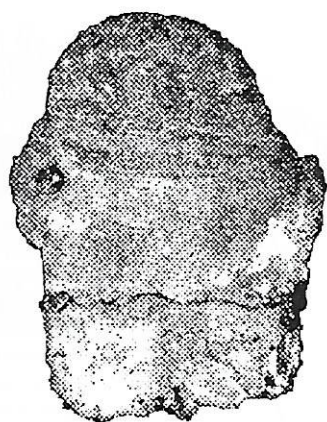


Third Movement: The Second Floor

In the basement and first floor the ceilings are of cement, the supporting columns of metal, and the floors of stone. The second floor, however, has wooden columns, a wooden ceiling and a floor covering of soft material. The wooden planks in the ceiling showed due to repeated water damage, stains in interesting patterns. The visual appearance of the ceiling planks let me formulate the following game-rules:

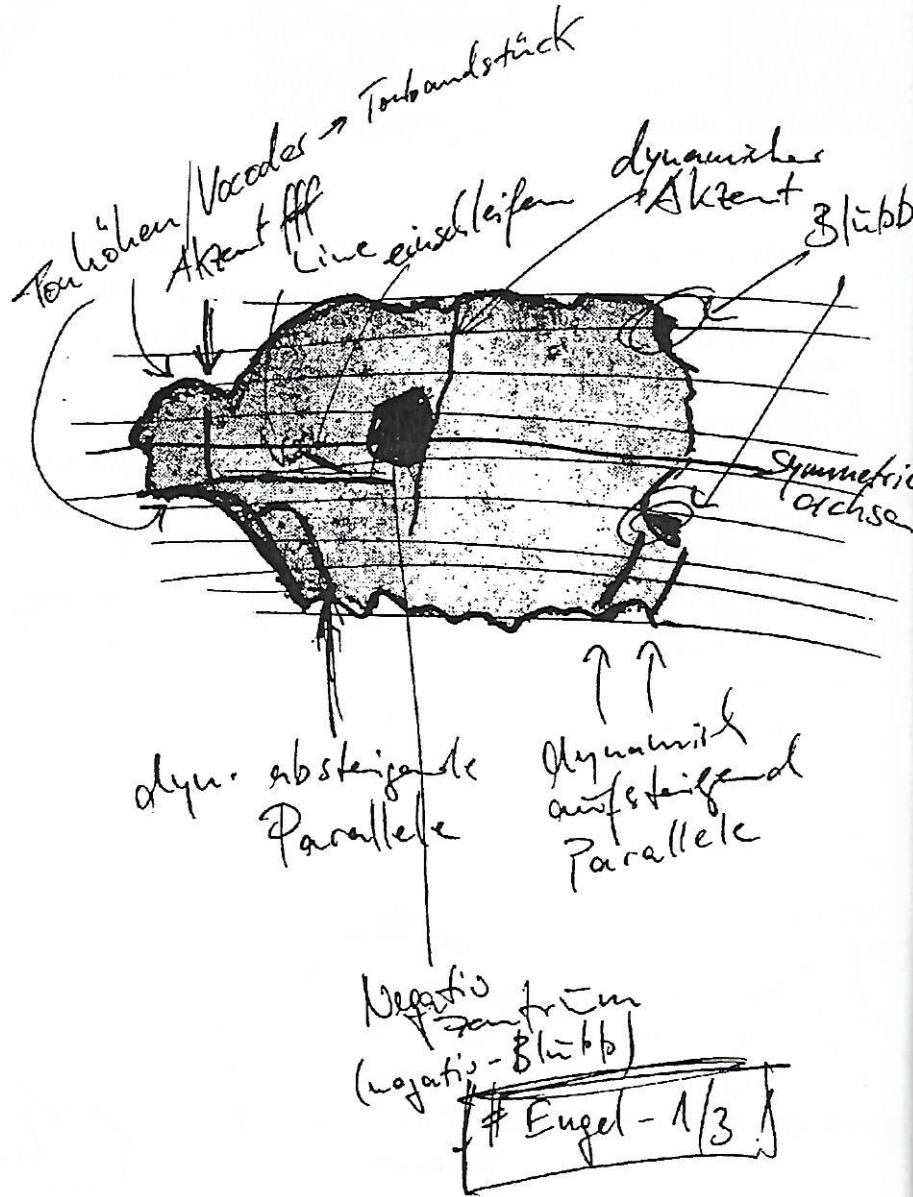
The individual planks are regarded as aligned one after another. Horizontally and pairwise, they provide the computer with the scheme ABABAB... This graphic design showed many vertical caesuras that became the breaks in a sequence of sounds. The sound source put on recording tape was a summer thunderstorm and the wrecking crew at an old department store building nearby. The sequences were divided into sections according to the caesura between planks just mentioned. Then the individual sections were sorted by length so that the shortest would serve at the beginning of the musical movement and the longest at the end. Separate lengths of tape were then again cut according to the visual score so that a new rhythmic organization would further divide up the originally continuous sound sources.

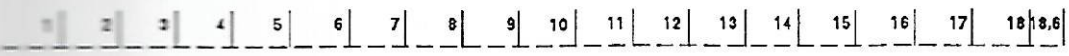
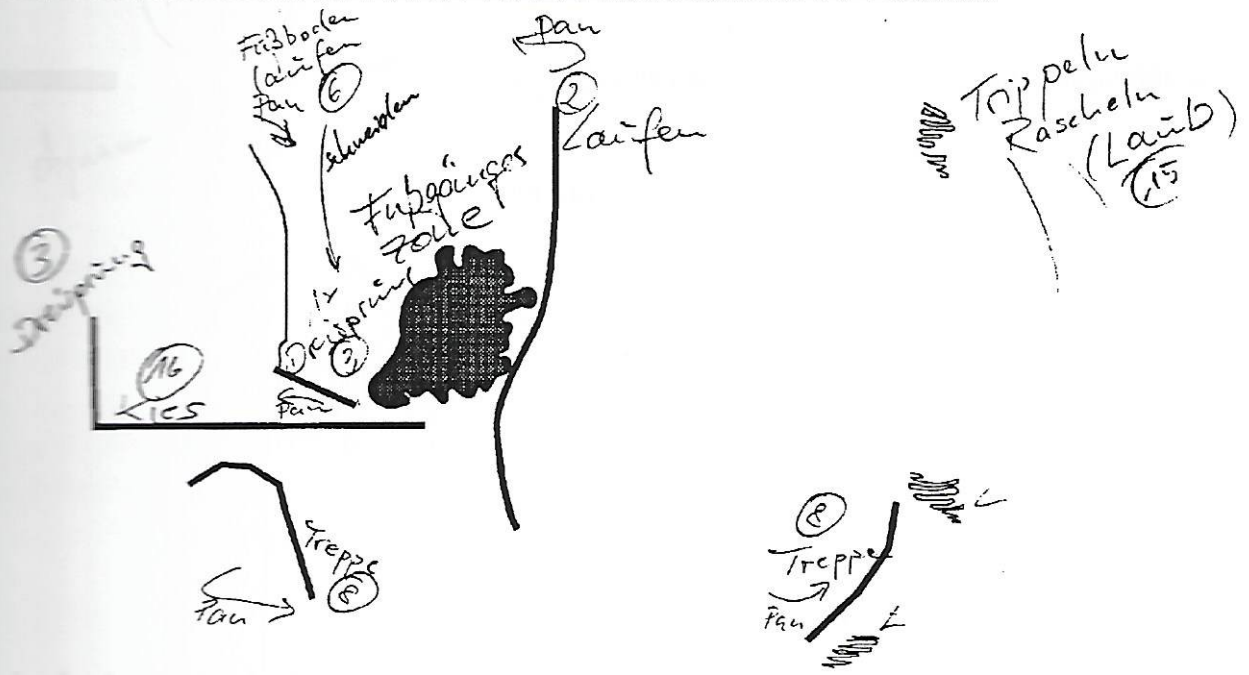
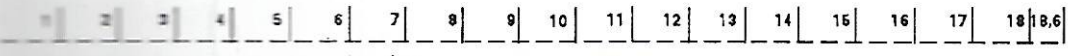
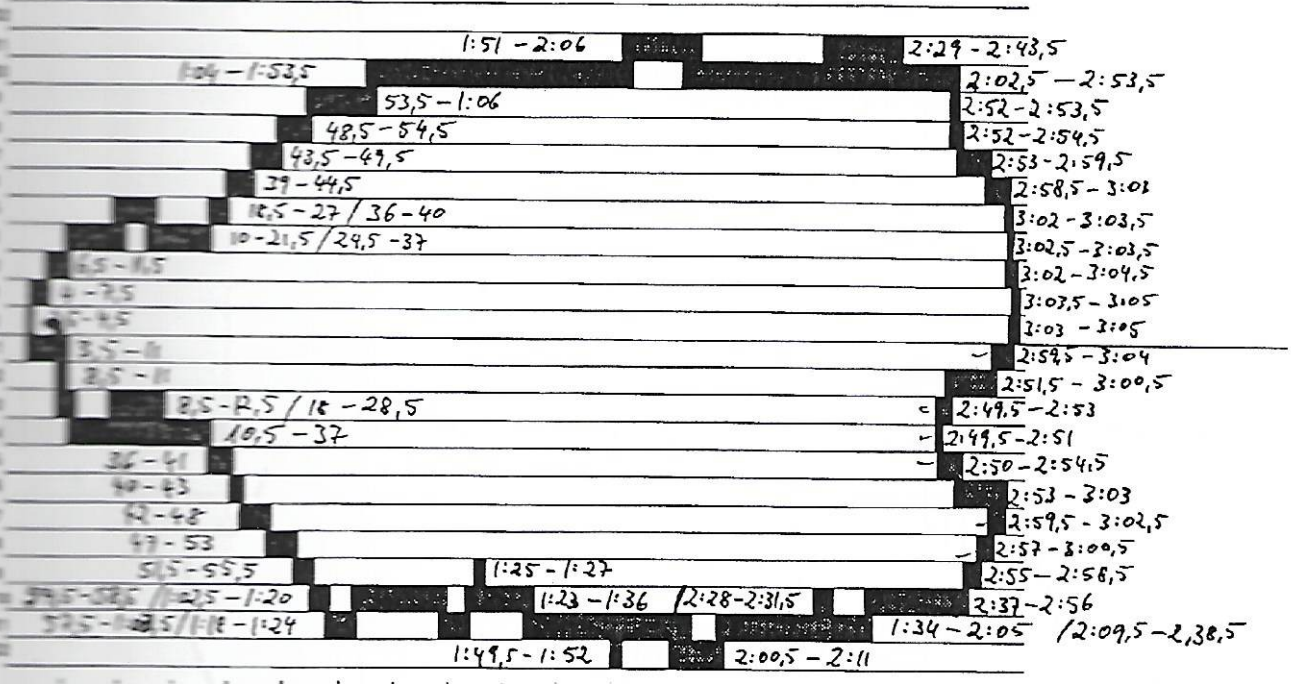
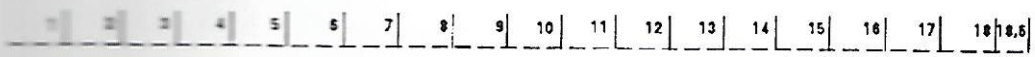
Due to many furrows and cracks in the floor, there were two ca. 40-30 centimeter large and conspicuous areas where the floor covering was especially torn. Perhaps these areas marked the location of an extremely heavy object. The one area looked like a head, the other like a bottle or, from a 90 degree angle, like an angel. From these figures, a "Head with Bottle" and a single "Angel," I extrapolated clear lines and areas. These were translated into musical sequences and organized according to game-rules.

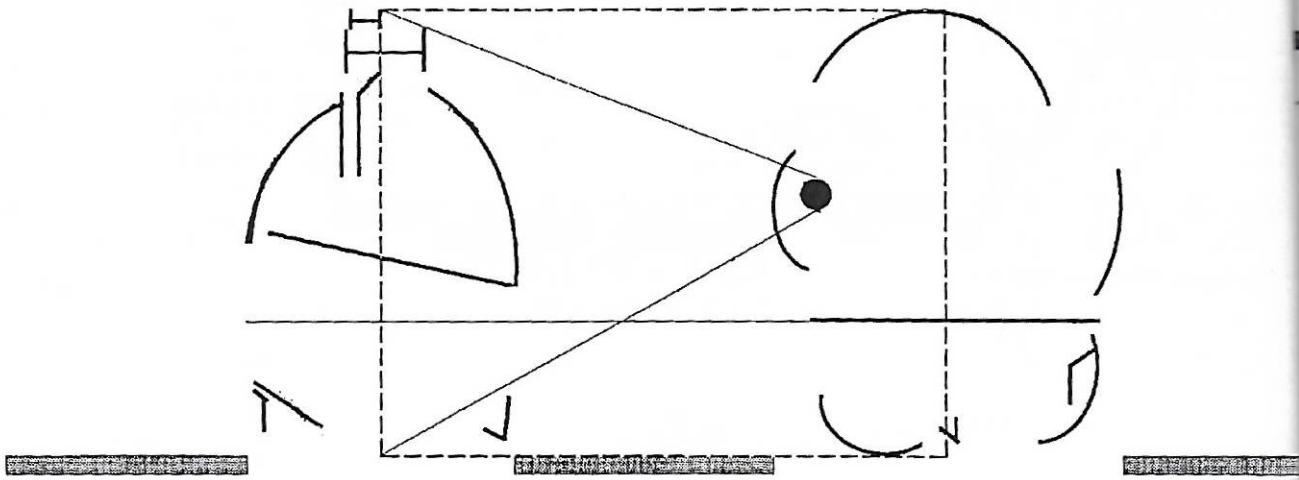


Game-Rules:

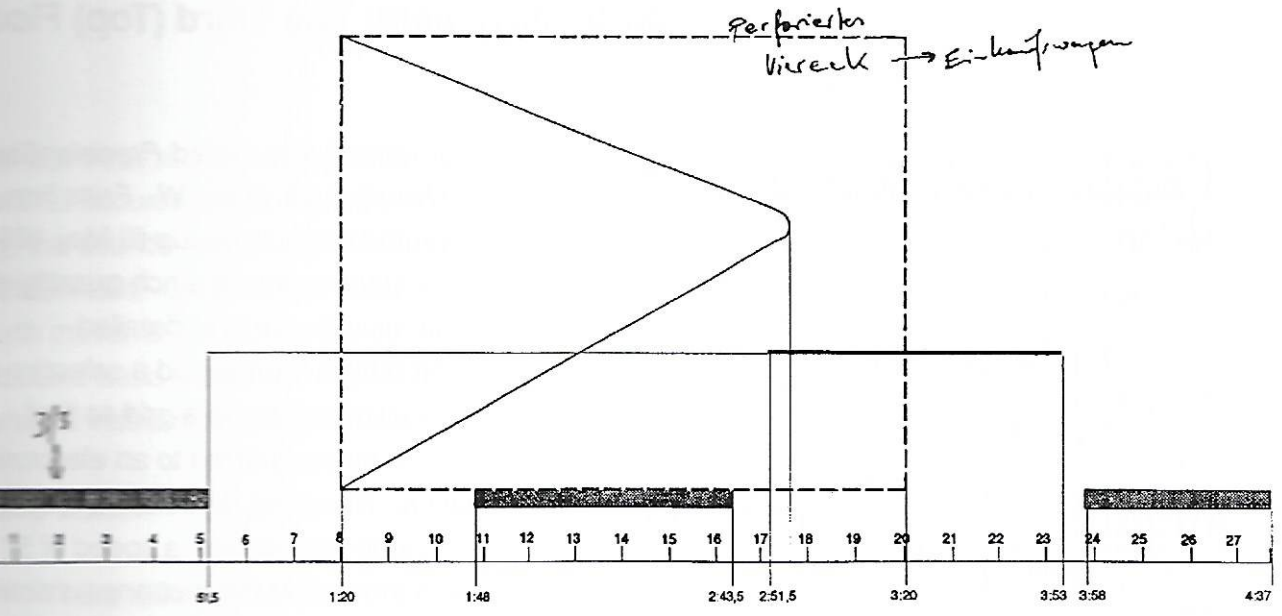
- 1 cm. of musical score equals 10 seconds of time;
- The sonorous source material consists of walking;
- The ensemble "Head with Bottle" yields a rectangle that is included into the acoustical procedure;
- The angel figure supplies an outline that is stereophonically described by two walking noises to produce a sound-line of changing pitches;
- Other visual lines are, according their shapes, dynamically (in loudness) or spacially (stereophonically), or in both ways, manipulated.







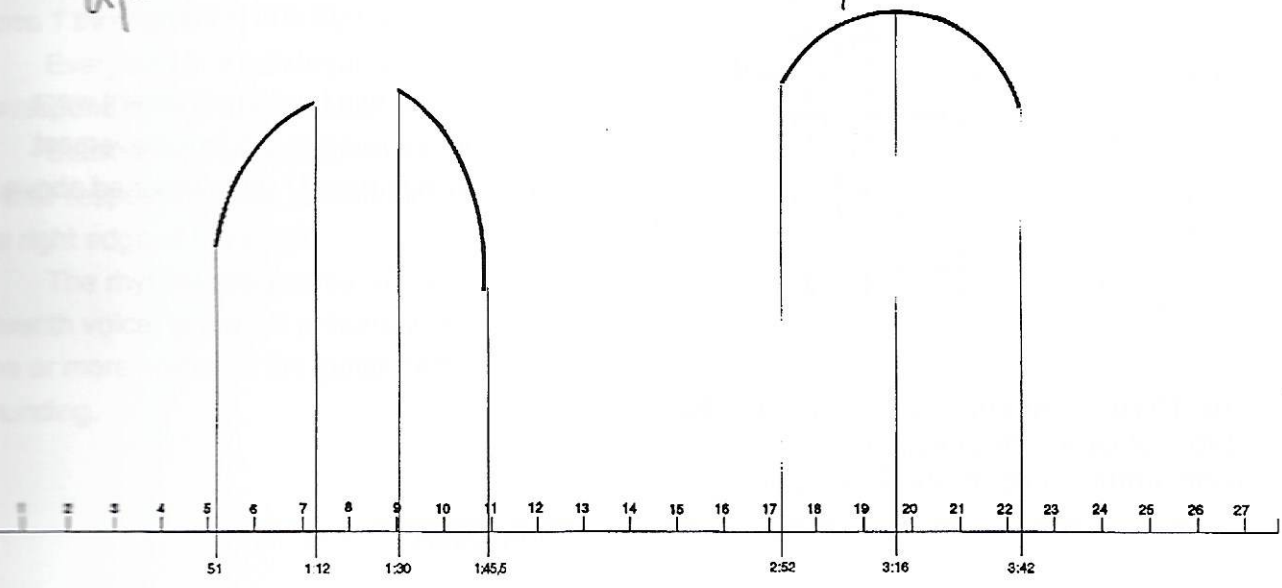
Head with bottle



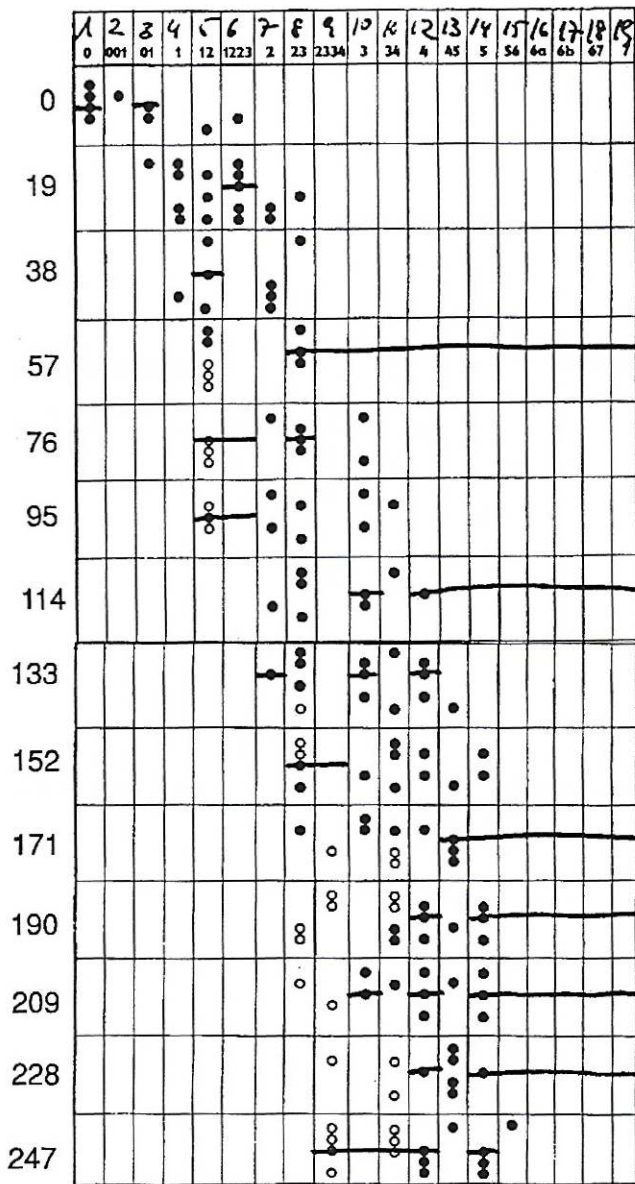
2.56

dynamisch

4-fach dynamisch



Fourth Movement: The Third (Top) Floor



Score: Third guitar channel as represented in the table of *Gewinderollkopfgrößen nach Gewindeabmessung* (Fette Catalogue)

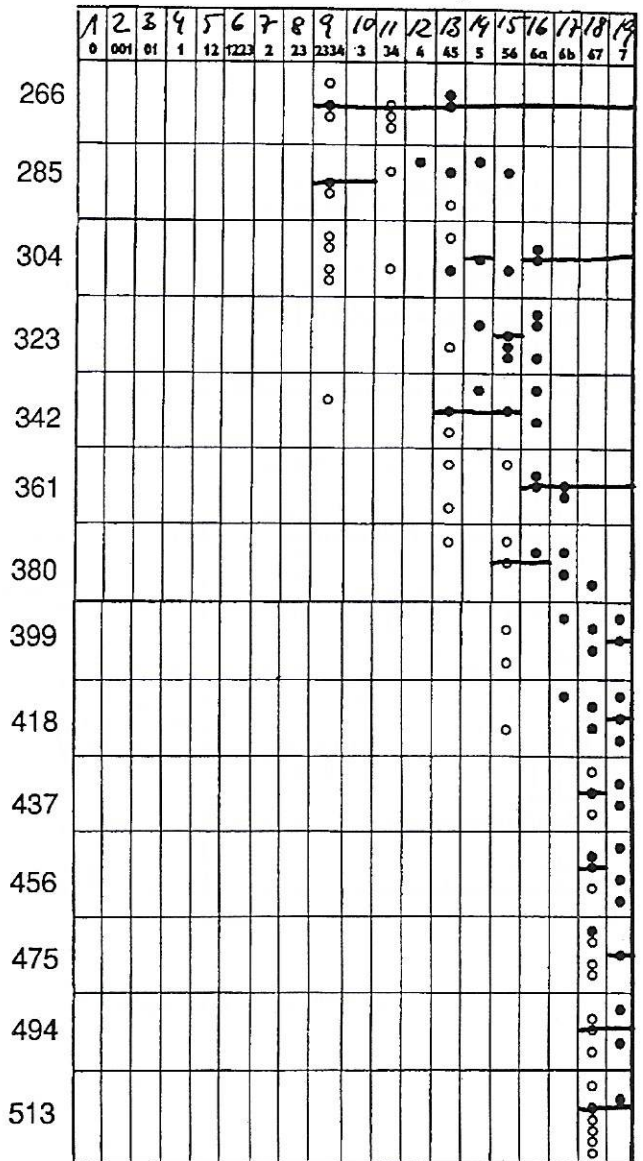
On this floor I found a so-called *PrecisionTool Catalogue: Number 69* of the W. Fette firm, which had rented the building up till May 1990. This stock catalogue offered a rich quantity of graphic material in the form of detailed drawings and tables. I projected a selection of twelve technical drawings on a grid so that each one could be transferred to an electronic drum machine. Resulting rhythms were then assigned in game-rule fashion a speed of 57 and multiples thereof on the metronome scale. This speed, according to my calculations, is the only one that nicely relates a temporal rhythmic meter with a spacial measure of whole integers assuming, of course, that the recording tape moves at a speed of 15 inches per second. The rhythms stored in the drum machine could be realized audibly by different timbres within this computer. The basic program involves eight pitch intervals produced by a conga and a triangle.

The rhythms of this fourth movement were already incorporated in the first movement called "The Basement," as mentioned above.

The first three movements utilized sonorous material documenting the past, which is to say, the sounds and noises belonging to the Spritzenhaus. On the other hand, for the fourth movement featuring a most abstract structural basis, I selected the sound of my personal instrument, the electric guitar.

Game-Rules:

- There must be five tape channels synchronized with an electric guitar and a sixth channel with an electric bass;
- Each channel of sound is based on the chart entitled Selected Sizes of *Gewinderollkopfgrößen nach Gewindeabmessung* (sizes of screws according to thread sizes) in the Fette Catalogue Number 69, pp. 322-23.;
- From top to bottom the cited values of the catalogue are assigned the recording tapes 1 through 6;
- Every box in a catalogue table correspond to one-half second;
- Black dots, that appear as the last ones in their respective rows, extend as values to the right edge of the chart;
- The rhythmic sequence, which is the seventh voice, is always present whenever one or more voices of the guitar part are sounding.



Titel: FETTE Maschinengewindebohrer mit Schälanschnitt / S. 287

Part.: 05

Datum: _____

Tempo: 57

Voice	Tune	Mix		Quant	00 12 24 36 48 60 72 84								00 12 24 36 48 60 72 84								00 12 24 36 48 60 72 84								00 12 24 36 48 60 72 84							
		Vol.	Pan		00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80	00 16 32 48 64 80															
					[Handwritten musical notation: A complex circular pattern with various lines and dots, resembling a stylized globe or a specific drum machine pattern.]																															

Score of the programming of an electronic drum machine

