

ELEKTRONISCHE MUSIK

Cologne

- * Result of a collaboration between several interested parties drawn from both musical and technical backgrounds.
- * In 1948, Dr. Werner Meyer-Eppler (mathematician, physicist) was visited by Homer W. Dudley, a research physicist at Bell Labs who demonstrated a new device called the Vocoder (Voice Operated reCOrDER).
- * Meyer-Eppler demoed a tape of vocoder sounds at a lecture on electronic sound production at North-West German Music Academy in 1949. Robert Beyer (inventor and author) from West-German Radio (WDR) was in the audience.
- * Beyer and Meyer-Eppler gave a lecture on 'The Sound World of Electronic Music' at the Darmstadt Music Festival. Beyer focused on design and manufacturing of electronic equipment and Meyer-Eppler concentrated on research in speech synthesis. They were joined by Herbert Eimert, a composer

- * In 1951, WDR in Cologne broadcast a program called 'The Sound World of Electronic Music', with Eimert, Beyer and Meyer-Eppler. The director of the station Fritz Enkel was impressed and formed a committee which agreed that the WDR should finance the creation of an electronic music studio "to pursue the processes suggested by Meyer-Eppler and compose directly to tape".
- * The studio was fully functional after two years, with Eimert as director. This became one of the most important centres of activity over the next two decades.
- * In 1952, Bruno Maderna produced 'Musica su due Dimensioni', for flute, percussion and taped tones, played through a loudspeaker. This was performed at the Darmstadt Summer School (the most important gathering of composers in Germany). In the audience was Stockhausen. (who was studying with Messiaen at the time), along with Gottfried Michael Koenig and Giseler

- * According to Eimert, the central mode of operation was to be based on the additive concept using electronics recorded to magnetic tape to create compositions. Eimert's goal was to implement the newly-christened Elektronische Musik to realise serial music.
- * This was in direct contrast to the philosophy of Schaeffer's studio in Paris, which focused on the use of microphone-recorded sounds to create subtractive forms of sound creation.
- * Once Elektronische Musik became earmarked as a solution to serial problems it became an integral part of serial thought. Electronic components allowed the ultimate degree of control over musical features. Now, elements such as the number of harmonics of a tone, or its attack time could be precisely controlled as elements of a serial matrix.

In electronic serial music ... everything to the last element of the single note is subjected to serial permutation ... Examination of the material invariably leads one to serially ordered composition. No choice exists but the ordering of sine tones within a note, and this cannot be done without the triple unit of the note. A note may be said to 'exist' where elements of time, pitch, and intensity meet; the fundamental process repeats itself at every level of the serial network which organizes the other partials related to it ... Today the physical manifestation of a sound is known, quite apart from any musical, expressionist psychology, as exact scientific data. It cannot, however, be the function of electronic music to make the sine tone the living parasite to feign similarity where disparity exists. Talk of 'humanized' electronic sound may be left to unimaginative instrument makers.

- Herbert Eimert, Die Reihe (vol. 1 1955)

- * In contrast to the fast paced development of Musique Concrete, Elektronische Musik moved at a very slow pace.
- * Many composers created only one or two pieces of Elektronische Musik and then abandoned the medium.

Criticism

Eimert is opposed to all metaphorical synaesthetic interpretation, that is he is opposed to the idea of composition and interpretation by association and reference.

Aesthetic understanding of the new art is not facilitated by this attitude. It cannot be denied that the associative effect, which the initiator denies as being of any relevance, has been the principal reaction of the majority of listeners faced for the first time with electronic music. There appears to be a considerable discrepancy between postulation and reception, a discrepancy which must be of the very nature of the new art form... in that nothing pertaining to electronic music is analogous to any natural existent phenomenon of traditional music, associations have to be evoked from elsewhere. Instead of being integrated, they remain an ever-increasing conglomeration of mentally indigestible matter. Thus the listener's reaction in broad outline corresponds to his relationship to a humanly transfigured world.

- H. H. Stuckenschmidt, Die Reihe. (vol I 1955)

- * The practical and conceptual implementations and subsequent development of Elektronische Musik is best demonstrated by the experiences and thought of composer Karlheinz Stockhausen. His was the most successful attempt at implementing and harnessing this labour-intensive form of creation.
- * Stockhausen is central to any discussion on post-war electronic music in Europe. His work illustrates the differences between French and German methodologies as well as demonstrating the foldover between them. He was in a unique position having worked with Messiaen and Schaeffer.
- * It was only at the end of the fifties that the two opposite genres, the electronic, purely synthetic music of Cologne and the music concrete in Paris came a bit closer.

Karlheinz Stockhausen

Gesang der Junglinge (1955-56)

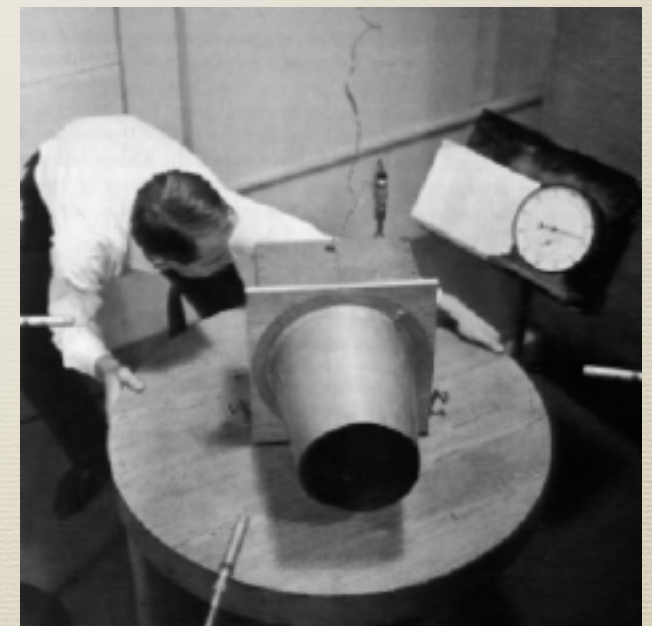
- * World premiere in the large auditorium of Cologne's West German Radio. May 30th, 1956.
- * Considered the first real masterpiece of electronic music.
- * Uses electronically generated material and sounds of a boy's voice.



- * Stockhausen formulated two timbral scales, one electronic and one concrete, made from the boy's voice. He sought not only to relate the electronic and voice material but also to further develop klangfarbenmelodie. Each timbral scale has eleven categories of timbre.
- * Stockhausen constructed analogies between the two timbral scales, for example, simple vowel sounds are similar to sine waves and harsh consonants such as 'ch' are similar to white noise. He also created scales for ordering the aspects of pitch, duration and dynamics, so he could serially compose the piece.

Kontakte

- * Stockhausen's next major work Kontakte, premiered in 1960. With this piece he made use of the now commercially available four-track tape recorders. Performing it live he achieved sound distribution techniques with a rotation table with a monophonic speaker on top. Four microphones were placed around the table. As he played back sounds, he rotated the table and the mics would send signals to four tape tracks.



- * Kontakte addressed the major criticism of the 'performance' of Gesang; that an audience does not communicate well with a set of performers who are lifeless loudspeakers.
- * Kontakte used musicians and tape to create seamless lines or 'contact' points between the sound of the new electronic sound world and that of the live performers.

Gyorgy Ligeti

Artikulation (1958)

- * Expressions of speech patterns and inflections in electronic sound to produce a 'conversation' of electronic sounds.
- * Visual score by Rainer Wehinger

Zeichensystem

Systems of symbols

A		B		C	D	
Rauschen		harmonische und subharmonische Spektren		ungefilterter Impuls	gefilterter Impuls	
noise		harmonic and subharmonic spectra		unfiltered impulse	filtered impluse	
erkennbare Tonhöhe recognizable pitch	6		Sinuston sinus tone		Tonhöhe pitch	
	5		20 Hz-gefiltert 20 Hz-filtered			
	4		terzgefiltert third-filtered		hoch high	16 
	3		oktavgefiltert octave-filtered		mittel middle	15 
	2		grob gefiltert rough-filtered		tief low	14 
	1		weißes Rauschen white noise			
keine erkennbare Tonhöhe no recognizable pitch		weniger geräuschhaft lesser proportion of noise				
		7				
		8				
		9				
		10				
		11				
		12				
		mehr geräuschhaft greater proportion of noise		13 		

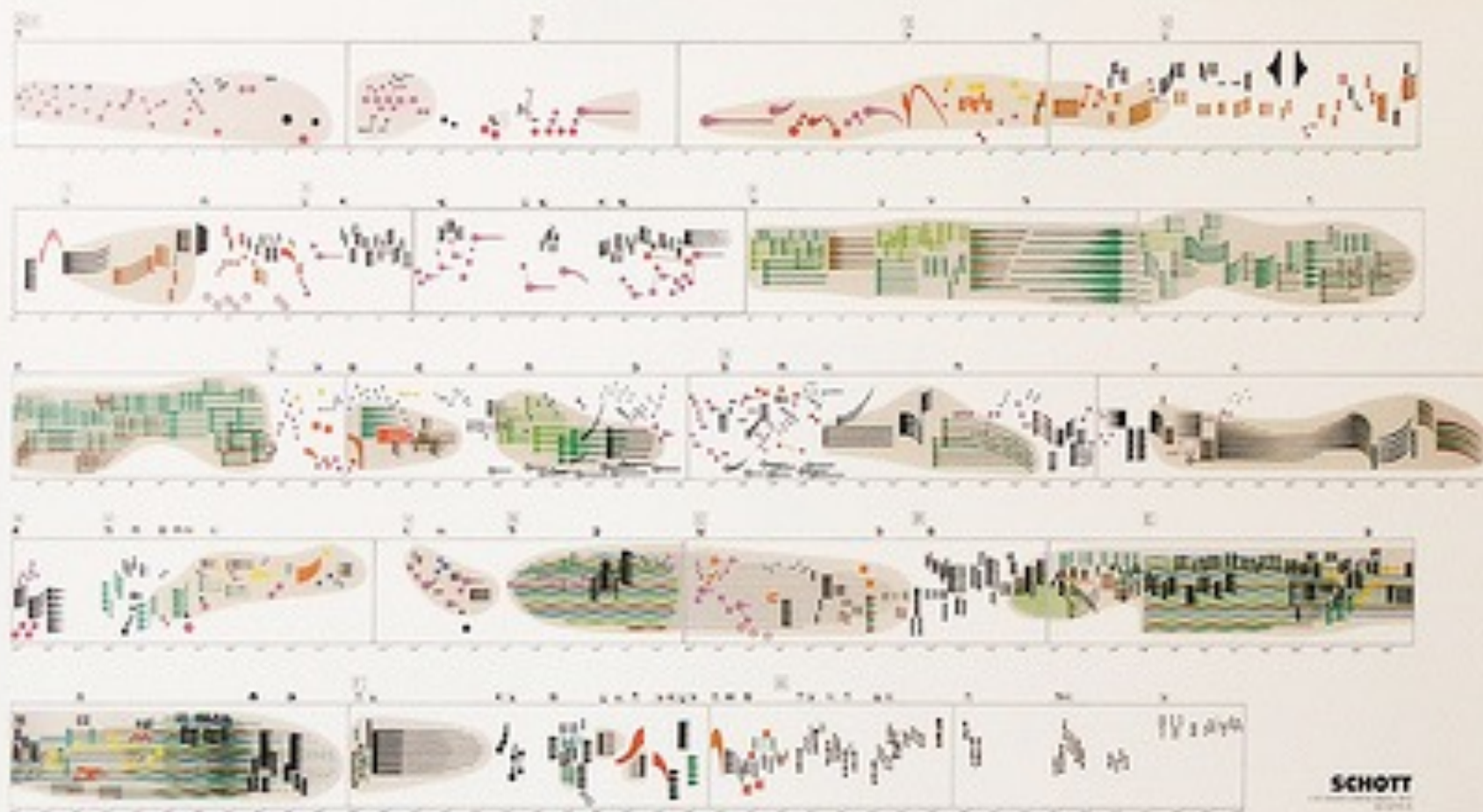
György Ligeti

Artikulation

Hörpartitur von Rainer Wehinger

Elektronische Musik
Electronic Music

Legende		Takt	
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100



SCHOTT

Doubletakes (1964)

The composer Jonathan Harvey, in his book *The Music of Stockhausen*, describes the form of *Originale*:

"It consists of eighteen scenes in the form of instructions for the dramatis personae carefully placed in timeboxes. Each character's actions, in other words, must take a specified number of seconds or minutes [*hence the frequent appearances of the clock in Peter Moore's film*]. These scenes are grouped into seven 'structures' which may be performed successively as 'normal', or simultaneously (up to three at once), or both."

The idea was to organize spoken language and stage actions in much the same way as musical materials had been organized in Stockhausen's previous pieces.

The stage actions consisted largely of normal activities undertaken by actors who were basically playing themselves: a poet played himself as "the poet," reading poetry on stage; a "painter" paints; a "film man" and "lighting man" and "models" go about their normal business, all within their allotted times (hence the title of the piece: "originals" playing themselves). A visual and aural complexity was created by the juxtaposition of these simultaneously occurring activities, creating an aura of absurdity which contrasted with the normality of the events themselves. In addition, some of the performers, such as the explosive performance artist Nam June Paik, went the opposite direction, performing bizarre actions within their roles. And certain elements of the set, such as goldfish swimming in a bowl hanging from the ceiling, contributed to this contrast between the mundane and the absurd.

Stockhausen added another layer of irony to the title by basing *Originale* on his previous work, *Kontakte*, rather than composing new music for the piece. So, at the beginning of *Originale*, we see a pianist and a percussionist (playing themselves, of course) performing *Kontakte*. However, there is a film camera and a tape recorder present, as well as a stage manager shouting instructions over the music. After a few minutes, the players stop and the tape of their performance is heard, along with the recorded shouts of the stage manager. Thus we see a pianist and percussionist, recording and filming themselves playing a composition which itself contains prerecorded sounds - performances within performances, by "originals" playing themselves.