Polyspatial Sonogram Score

Gesang der Jünglinge Karlheinz Stockhausen Elektronische Musik 1955/56



John-Philipp Gather

Sonogram score by John-Philipp Gather Copyright © 2002

## Introduction

Gesang der Jünglinge is a space-time composition. Stockhausen distributed the sounds in space – at a certain distance, in a certain direction from the hearer and moving from one place to another. In the first layout of the composition he wanted to realize these spatial aspects by placing loudspeaker around and above the listener. The original score calls for four loudspeaker in the horizontal plane and one loudspeaker in the higher plane. In the sonogram score I indicate a beginning spatial sound movement by a dotted circle; this means that one sound travels across staff systems. I show the direction of that movement with an arrow next to the dotted circle.

Stockhausen constantly varies the duration of his "measures" - so these structural units lack a uniform time length as are common for traditional measures. I propose the term *timeasures* to refer to the *numbered temporal segments* throughout the score. Bars indicate the beginning of a timeasure and sometimes indicate the beginning of a sound within a timeasure, the accompanying numbering scheme making clear which is which.

*Gesang der Jünglinge* contains human singing and speech as well as electronic timbres. The sound symbol names in the sonogram score—derived from the electronic composition of the sonic microstructure—are musical elements. They correspond to Stockhausen's naming in the composition and realization sketches. The many distinct patterns of the sonograms graphically reflect the wealth of tone colors in this particular musical universe.

I was inspired to use sonograms in approaching electronic music by learning about the historical *Visible Speech* project, which blossomed under the auspices of the classified *Project X* during the last years of the Second World War. I feel that musicology have much to learn from sonogram reading and I hope that this sonogram can advance our understanding of the inner world of sound—of its vibratory and spectral characteristics.

Stockhausen knew about the Visible Speech project and had access to a Kay spectrograph at the Phonetic Institute of Bonn University, but his fascination with the inner sound world dated back to 1952, when he first confronted the seemingly limitless chaotic universe within a single sound during his time in Paris, where he met Pierre Schaeffer. From 1954 to 1956 he studied with the scientist Dr. Meyer-Eppler and said that he regarded him as one of the important teachers in his life. Dr. Meyer-Eppler was current with all relevant research in phonetics, acoustics, communications, and general physics including major aspects of quantum physics. He advised Stockhausen on all topics of interest and readings that might have come up in their private conversations, guite beyond the scheduled study and seminars. But while the Kay spectrograph was available at the Phonetic Institute, this wonderful instrument was not directly used in the composition of Gesang der Jünglinge. Rather, Stockhausen's understanding of the nature of sound dated back to key experience mentioned above, his ensuing intense study of acoustics ever after, and the completion of two electronic studies and one study of *musique concrète*. During this period he was *devoted* to all aspects of positivistic science that could help him in his work. At the same time, and beyond the world of technology involved in this project, Stockhausen has exclusively been motivated by a metaphysical purpose. While this may hold for each composition he wrote, Gesang der Jünglinge seems a very striking and direct expression of this fundamental spiritual outlook. Positivistic science and catholic belief in now way seem incompatible.

A few of the notational symbols are explained in the legend on the next page. For a complete discussion of the issues involved in creating the sonogram score from the composer's sketch materials, as well as a historic introduction and a more thorough analysis of the music with examples of sonogram readings, I refer the interested reader to the written part of this dissertation.

Berlin, 25 February 2003

## Legend

Sound	Sound						
Generator	Symbol	German	English				
Impulse	Ei	Einzelner Impuls, gefiltert	Single impulse, filtered				
	Eigr	Einzelne Impulse, Gruppe	Single impulses, group				
	IK	Impuls Komplex	Impulse complex				
	Igr	Impuls Gruppe	Impulse group				
	Hi	Hohe Impulse	High impulses				
	Mi	Mittlere Impulse	Middle impulses				
	Ti	Tiefe Impulse	Deep impulses				
	HIK	Hohe Impulse, Komplex	High impulses, complex				
	TIK T	Liefe Impulse, Komplex	Deep impulses, complex				
	Ir	Irommel (Impuls Akkord)	Drum (impulse chord)				
	15	Impuis Schlag	Impulse beat				
Voice	G	Gesang, einstimmig syllabisch	Chant, monodic syllabic				
	GK	Gesang Komplex	Chant complex				
	GKi	Gesang Komplex, interpoliert	Chant complex, interpolated				
	GA	Gesang Akkord	Chant chord				
	GT	Gesangston (lang gehalten)	Chant tone (sustained long)				
	GP	Gesang Polyräumlich	Chant polyspatial				
	GS	Gesang Schlag	Chant beat				
Noise	R	Rauschen, eng gefiltert (2%)	Noise, narrowly filtered (2%)				
	Ora	Oktav Rauschen	Noise, fitered in octave width				
	RK	Rausch Klang	Noise chord				
	RR	Rauschen, rhythmisiert	Noise, rhythmicized				
	RT	Rauschen, tief	Noise, low				
Sine	S	Sinuston (in F: auch als Klang)	Sine tone (in F: also as chord)				
Bass Sounds	В	Basston, gefiltert	Bass sound, filtered				
	BK	Bass Komplex	Bass complex				
	Bgr	Bassgruppen	Bass group				
Combination	BS	Bass Schlag	Bass beat				
Compination	SK	Statistischer Klang	Statistical Chord/Sound				
General Symb	ols						
$\odot$		Alerts to the beginning of spatial sound	fragmentation				
r (rückwärts, reverse)		An attached letter 'r' at the end of a symbol name indicates a reversed sound.					
K (Komplex, complex)		A complex has multiple synchronous temporal layers, mostly statistically formed.					
gr (Gruppe, gro	pup)	A group is set of elements characterize perceived as a unit.	d by a common trait and				
S (Schlag, beat)		As a secondary symbol component, S signifies percussive attack.					
P	-	Polyphonic singing distributed in space,	, similar to polychoral				
		Renaissance singing. The boy soprano	sings polyspatially; his long				
		sustained notes reach the audience fro	m up to five different speakers.				
Υ		Accent mark, onset of a percussive bear	t in mid-timeasure				
tr.		Secondary symbol component, indicates	s transposition				

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hms 10:14.5 F-87 F-89 {IK} {B, B	10:15.0 10:1 ) 3, B, B, G}	5.5 10.16.0 1 F-91 {IK, R}	0.16.5 10:17.0 10 F-93    {IK, IK, B} {IK,	17.5 10.180 10.18 F-95 IK,IK,IK} {R, R, R,	5 10:19.0 10:19. R,G} {	5 10:20.0 1 F-99 R, R, R, Ei}	0:20.5 10:21.0 F-101 F-102 {Ei, E	10:21.5 10:22.0 10:2 3 ii, Ei, Ei, SK-11r}	22.5 10.23.0 F-105 {Ei, Ei, Ei, R}
	jubelt	a tişkiri -		5.	<u>ju-</u>		-belt		
	Creek C					and a second			
	Ĩ								
			 101						
∏ <b>F</b> -88	F-90	F-92	F-04	E-96	F-98	F-1	00 E-102	F-104	
{B, Ei}	{B, B, B, SK	-15} {G}	{Ei}	{SK-10r}	{R, R, IK}	{B}	{R, R}	{Ei, Ei, Ei, Ei, G	i} en Herren jubelt ihr
+								E E	
					Baus President				
hms 10:14.5	10:15.0 10:1	5.5 10:16.0 1	0:16.5 10:17.0 10	1.17.5 10:18.0 10:18.	5 10:19.0 10:19.3	5 10:20.0 1	0:20.5 10:21.0	10:21.5 10:22.0 10:2	22.5 10:23.0



-- 28 --



10.550 10.560 10.570 10.580 10.590 11.000 11.010 11.020 11.020 11.040 11.050 11.060 11.070 \Einschub D/ \Einschub E/ F-146 {R, IS} F-156 {G} F-158 {G} F-164 {G} F-170 {G} F-148 {B, B, IS} F-150 {G} Eis Glut |F-160 {G} Werke|F-166 {G} ju-u-u-bel(t) F-152 {Tr} F-154 {RK} und jubelt des F-162 {G} |F-168 {G} Scharen ihr Herrn THEFT (GK-10) die über den Himmeln sind 11113 (GK-10) Scharen ihr alle 111 150000 140000 120000 120000 120000 100000 50000 100000 100000 10000 1 F-155 {Ora} F-157 {B, B} F-147 {SK-11} F-165 {IS, IS} F-149 {Ei, Ei, IS} F-167 {RK, RK, RK} |F-169 {IK} |F-171 {R} F-151 {Ora, IS} F-159 {SK-11} F-153 {IK, IK, IS} F-161 {Ei, Ei} F-163 {Tr, Tr, Tr} (GK-5) Jubelt dem Herrn ihr Engel des Herrn (GK-1) Jubelt dem Herrn 000 000 000 1013 10:54.0 11:00.0 11:01.0 11:02.0 11:03.0 11:04.0 11:05.0 11:06.0

-- 31 --









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