

= Karlheinz Stockhausen =

Karlheinz Stockhausen ( German pronunciation : [ ka?l?ha?nts ??t?kha?zn ? ] ; 22 August 1928 ? 5 December 2007 ) was a German composer , widely acknowledged by critics as one of the most important ( Barrett 1988 , 45 ; Harvey 1975b , 705 ; Hopkins 1972 , 33 ; Klein 1968 , 117 ) but also controversial ( Power 1990 , 30 ) composers of the 20th and early 21st centuries . Another critic calls him " one of the great visionaries of 20th @-@ century music " ( Hewett 2007 ) . He is known for his groundbreaking work in electronic music , aleatory ( controlled chance ) in serial composition , and musical spatialization .

He was educated at the Hochschule für Musik Köln and the University of Cologne , later studying with Olivier Messiaen in Paris and with Werner Meyer @-@ Eppler at the University of Bonn . One of the leading figures of the Darmstadt School , his compositions and theories were and remain widely influential , not only on composers of art music , but also on jazz and popular music . His works , composed over a period of nearly sixty years , eschew traditional forms . In addition to electronic music ? both with and without live performers ? they range from miniatures for musical boxes through works for solo instruments , songs , chamber music , choral and orchestral music , to a cycle of seven full @-@ length operas . His theoretical and other writings comprise ten large volumes . He received numerous prizes and distinctions for his compositions , recordings , and for the scores produced by his publishing company .

His notable compositions include the series of nineteen Klavierstücke ( Piano Pieces ) , Kontra @-@ Punkte for ten instruments , the electronic / musique @-@ concrète Gesang der Jünglinge , Gruppen for three orchestras , the percussion solo Zyklus , Kontakte , the cantata Momente , the live @-@ electronic Mikrophonie I , Hymnen , Stimmung for six vocalists , Aus den sieben Tagen , Mantra for two pianos and electronics , Tierkreis , Inori for soloists and orchestra , and the gigantic opera cycle Licht .

He died of sudden heart failure at the age of 79 , on 5 December 2007 at his home in Kürten , Germany .

= = Biography = =

= = = Childhood = = =

Stockhausen was born in Burg Mödrath , the " castle " of the village of Mödrath . The village , located near Kerpen in the Cologne region , was displaced in 1956 to make way for lignite strip mining , but the castle itself still stands . Despite its name , the building is not actually a castle at all , but rather was a manor house built in 1830 by a local businessman named Arend . Because of its imposing size , locals began calling it Burg Mödrath ( Mödrath Castle ) . From 1925 to 1932 it was the maternity home of the Bergheim district , and after the war it served for a time as a shelter for war refugees . In 1950 , the owners , the Düsseldorf chapter of the Knights of Malta , turned it into an orphanage , but it has subsequently returned to private ownership and is today a private residence again ( Anon. n.d. ; Anon . 1950 ) .

His father , Simon Stockhausen , was a schoolteacher , and his mother Gertrud ( née Stupp ) was the daughter of a prosperous family of farmers in Neurath in the Cologne Bight . A daughter , Katherina , was born the year after Karlheinz , and a second son , Hermann @-@ Josef ( " Hermännchen " ) followed in 1932 . Gertrud played the piano and accompanied her own singing but , after three pregnancies in as many years , experienced a mental breakdown and was institutionalized in December 1932 , followed a few months later by the death of her younger son , Hermann ( Kurtz 1992 , 8 , 11 , 13 ) .

From the age of seven , Stockhausen lived in Altenberg , where he received his first piano lessons from the Protestant organist of the Altenberg Cathedral , Franz @-@ Josef Kloth ( Kurtz 1992 , 14 ) . In 1938 his father remarried . His new wife , Luzia , had been the family 's housekeeper . The couple had two daughters ( Kurtz 1992 , 18 ) . Because his relationship with his new stepmother was less

than happy , in January 1942 Karlheinz became a boarder at the teachers ' training college in Xanten , where he continued his piano training and also studied oboe and violin ( Kurtz 1992 , 18 ) . In 1941 he learned that his mother had died , ostensibly from leukemia , although everyone at the same hospital had supposedly died of the same disease . It was generally understood that she had been a victim of the Nazi policy of killing " useless eaters " ( Stockhausen 1989a , 20 ? 21 ; Kurtz 1992 , 19 ) . The official letter to the family falsely claimed she had died 16 June 1941 , but recent research by Lisa Quernes , a student at the Landesmusikgymnasium in Montabaur , has determined that she was gassed along with 89 other people at the Hadamar Euthanasia Centre in Hesse @-@ Nassau on 27 May 1941 ( Anon . 2014 ) . Stockhausen dramatized his mother 's death in hospital by lethal injection , in Act 1 scene 2 ( " Mondeva " ) of the opera *Donnerstag aus Licht* ( Kurtz 1992 , 213 ) . In the autumn of 1944 , he was conscripted to serve as a stretcher bearer in Bedburg ( Kurtz 1992 , 18 ) . In February 1945 , he met his father for the last time in Altenberg . Simon , who was on leave from the front , told his son , " I 'm not coming back . Look after things " . By the end of the war , his father was regarded as missing in action , and may have been killed in Hungary ( Kurtz 1992 , 19 ) . A comrade later reported to Karlheinz that he saw his father wounded in action ( Maconie 2005 , 19 ) . Fifty @-@ five years after the fact , a journalist writing for the *Guardian* newspaper stated unequivocally , though without offering any fresh evidence , that Simon Stockhausen was killed in Hungary in 1945 ( O 'Mahony 2001 ) .

= = = Education = = =

From 1947 to 1951 , Stockhausen studied music pedagogy and piano at the Hochschule für Musik Köln ( Cologne Conservatory of Music ) and musicology , philosophy , and Germanics at the University of Cologne . He had training in harmony and counterpoint , the latter with Hermann Schroeder , but he did not develop a real interest in composition until 1950 . He was admitted at the end of that year to the class of Swiss composer Frank Martin , who had just begun a seven @-@ year tenure in Cologne ( Kurtz 1992 , 28 ) . At the Darmstädter Ferienkurse in 1951 , Stockhausen met Belgian composer Karel Goeyvaerts , who had just completed studies with Olivier Messiaen ( analysis ) and Darius Milhaud ( composition ) in Paris , and Stockhausen resolved to do likewise ( Kurtz 1992 , 34 ? 36 ) . He arrived in Paris on 8 January 1952 and began attending Messiaen 's courses in aesthetics and analysis , as well as Milhaud 's composition classes . He continued with Messiaen for a year , but he was disappointed with Milhaud and abandoned his lessons after a few weeks ( Kurtz 1992 , 45 ? 48 ) . In March 1953 , he left Paris to take up a position as assistant to Herbert Eimert at the newly established Electronic Music Studio of Nordwestdeutscher Rundfunk ( NWDR ) ( from 1 January 1955 , Westdeutscher Rundfunk , or WDR ) in Cologne ( Kurtz 1992 , 56 ? 57 ) . In 1963 , he succeeded Eimert as director of the studio ( Morawska @-@ Büngeler 1988 , 19 ) . From 1954 to 1956 , he studied phonetics , acoustics , and information theory with Werner Meyer @-@ Eppler at the University of Bonn ( Kurtz 1992 , 68 ? 72 ) . Together with Eimert , Stockhausen edited the journal *Die Reihe* from 1955 to 1962 ( Grant 2001 , 1 ? 2 ) .

= = = Career and adult life = = =

= = = = Family and home = = = =

On 29 December 1951 , in Hamburg , Stockhausen married Doris Andreae ( Kurtz 1992 , 45 ; Maconie 2005 , 47 ) . Together they had four children : Suja ( b . 1953 ) , Christel ( b . 1956 ) , Markus ( b . 1957 ) , and Majella ( b . 1961 ) ( Kurtz 1992 , 90 ; Tannenbaum 1987 , 94 ) . They were divorced in 1965 ( Rathert 2013 ) . On 3 April 1967 , in San Francisco , he married Mary Bauermeister , with whom he had two children : Julika ( b . 22 January 1966 ) and Simon ( b . 1967 ) ( Kurtz 1992 , 141 , 149 ; Tannenbaum 1987 , 95 ) . They were divorced in 1972 ( Rathert 2013 ; Stockhausen @-@ Stiftung [ 2013 ] ) .

Four of Stockhausen 's children became professional musicians ( Kurtz 1992 , 202 ) , and he

composed some of his works specifically for them . A large number of pieces for the trumpet ? from Sirius ( 1975 ? 77 ) to the trumpet version of In Freundschaft ( 1997 ) ? were composed for and premièred by his son Markus ( Kurtz 1992 , 208 ; M. Stockhausen 1998 , 13 ? 16 ; Tannenbaum 1987 , 61 ) . Markus , at the age of 4 years , had performed the part of The Child in the Cologne première of Originale , alternating performances with his sister Christel ( Maconie 2005 , 220 ) . Klavierstück XII and Klavierstück XIII ( and their versions as scenes from the operas Donnerstag aus Licht and Samstag aus Licht ) were written for his daughter Majella , and were first performed by her at the ages of 16 and 20 , respectively ( Maconie 2005 , 430 , 443 ; Stockhausen Texte , 5 : 190 , 255 , 274 ; Stockhausen Texte , 6 : 64 , 373 ) . The saxophone duet in the second act of Donnerstag aus Licht , and a number of synthesizer parts in the Licht operas , including Klavierstück XV ( " Synthesi @-@ Fou " ) from Dienstag , were composed for his son Simon ( Kurtz 1992 , 222 ; Maconie 2005 , 480 , 489 ; Stockhausen Texte , 5 : 186 , 529 ) , who also assisted his father in the production of the electronic music from Freitag aus Licht . His daughter Christel is a flautist who performed and gave a course on interpretation of Tierkreis in 1977 ( Stockhausen Texte , 5 : 105 ) , later published as an article ( C. Stockhausen 1978 ) .

In 1961 , Stockhausen acquired a parcel of land in the vicinity of Kürten , a village east of Cologne , near Bergisch Gladbach in the Bergisches Land . He had a house built there , which was designed to his specifications by the architect Erich Schneider @-@ Wessling , and he resided there from its completion in the autumn of 1965 ( Kurtz 1992 , 116 ? 17 , 137 ? 38 ) .

===== Teaching =====

After lecturing at the Internationale Ferienkurse für Neue Musik at Darmstadt ( first in 1953 ) , Stockhausen gave lectures and concerts in Europe , North America , and Asia ( Stockhausen @-@ Verlag 2010 , 2 , 14 ? 15 ) . He was guest professor of composition at the University of Pennsylvania in 1965 and at the University of California , Davis in 1966 ? 67 ( Kramer 1998 ; Stockhausen @-@ Verlag 2010 , 2 ? 3 ) . He founded and directed the Cologne Courses for New Music from 1963 to 1968 , and was appointed Professor of Composition at the Hochschule für Musik Köln in 1971 , where he taught until 1977 ( Kurtz 1992 , 126 ? 28 , 194 ; Stockhausen @-@ Verlag 2010 , 3 ) . In 1998 , he founded the Stockhausen Courses , which are held annually in Kürten ( Stockhausen @-@ Verlag 2010 , 6 ? 9 , 15 ) .

===== Publishing activities =====

From the mid @-@ 1950s onward , Stockhausen designed ( and in some cases arranged to have printed ) his own musical scores for his publisher , Universal Edition , which often involved unconventional devices . The score for his piece Refrain , for instance , includes a rotatable ( refrain ) on a transparent plastic strip . Early in the 1970s , he ended his agreement with Universal Edition and began publishing his own scores under the Stockhausen @-@ Verlag imprint ( Kurtz 1992 , 184 ) . This arrangement allowed him to extend his notational innovations ( for example , dynamics in Weltparlament [ the first scene of Mittwoch aus Licht ] are coded in colour ) and resulted in eight German Music Publishers Society Awards between 1992 ( Luzifers Tanz ) and 2005 ( Hoch @-@ Zeiten , from Sonntag aus Licht ) ( Stockhausen @-@ Verlag 2010 , 12 ? 13 ) . The score of Momente , published just before the composer 's death in 2007 , won this prize for the ninth time ( Deutscher Musikeditorspreis 2009 ) .

In the early 1990s , Stockhausen reacquired the licenses to most of the recordings of his music he had made to that point , and started his own record company to make this music permanently available on Compact Disc ( Maconie 2005 , 477 ? 78 ) .

===== Death =====

Stockhausen died of sudden heart failure on the morning of 5 December 2007 in Kürten , North Rhine @-@ Westphalia . Just the night before , he had finished a work ( then recently

commissioned ) for performance by the Mozart Orchestra of Bologna ( Bäumer 2007 ) . He was 79 years old .

= = Compositions = =

Stockhausen wrote 370 individual works . He often departs radically from musical tradition and his work is influenced by Olivier Messiaen , Edgard Varèse , and Anton Webern , as well as by film ( Stockhausen 1996b ) and by painters such as Piet Mondrian ( Stockhausen 1996a , 94 ; Stockhausen Texte , 3 : 92 ? 93 ; Toop 1998 ) and Paul Klee ( Maconie 2005 , 187 ) .

= = = 1950s = = =

Stockhausen began to compose in earnest only during his third year at the conservatory ( Kurtz 1992 , 26 ? 27 ) . His early student compositions remained out of the public eye until , in 1971 , he published Chöre für Doris , Drei Lieder for alto voice and chamber orchestra , Choral for a cappella choir ( all three from 1950 ) , and a Sonatine for Violin and Piano ( 1951 ) ( Maconie 1990 , 5 ? 6 , 11 ) .

In August 1951 , just after his first Darmstadt visit , Stockhausen began working with a form of athenatic serial composition that rejected the twelve @-@ tone technique of Schoenberg ( Felder 1977 , 92 ) . He characterized many of these earliest compositions ( together with the music of other , like @-@ minded composers of the period ) as punktuelle ( " punctual " or " pointist " music , commonly mistranslated as " pointillist " ) Musik , though one critic concluded after analysing several of these early works that Stockhausen " never really composed punctually " ( Sabbe 1981 ) . Compositions from this phase include Kreuzspiel ( 1951 ) , the Klavierstücke I ? IV ( 1952 ? the fourth of this first set of four Klavierstücke , titled Klavierstück IV , is specifically cited by the composer as an example of " punctual music " ( Stockhausen Texte , 2 : 19 ) ) , and the first ( unpublished ) versions of Punkte and Kontra @-@ Punkte ( 1952 ) ( Stockhausen Texte , 2 : 20 ) . However , several works from these same years show Stockhausen formulating his " first really ground @-@ breaking contribution to the theory and , above all , practice of composition " , that of " group composition " , found in Stockhausen 's works as early as 1952 and continuing throughout his compositional career ( Toop 2005 , 3 ) . This principle was first publicly described by Stockhausen in a radio talk from December 1955 , titled " Gruppenkomposition : Klavierstück I " ( Stockhausen Texte , 1 : 63 ? 74 ) .

In December 1952 , he composed a Konkrete Etüde , realized in Pierre Schaeffer 's Paris musique concrète studio . In March 1953 , he moved to the NWDR studio in Cologne and turned to electronic music with two Electronic Studies ( 1953 and 1954 ) , and then introducing spatial placements of sound sources with his mixed concrète and electronic work Gesang der Jünglinge ( 1955 ? 56 ) . Experiences gained from the Studies made plain that it was an unacceptable oversimplification to regard timbres as stable entities ( Stockhausen Texte , 1 : 56 ) . Reinforced by his studies with Meyer @-@ Eppler , beginning in 1955 , Stockhausen formulated new " statistical " criteria for composition , focussing attention on the aleatoric , directional tendencies of sound movement , " the change from one state to another , with or without returning motion , as opposed to a fixed state " ( Decroupet and Ungeheuer 1998 , 98 ? 99 ) . Stockhausen later wrote , describing this period in his compositional work , " The first revolution occurred from 1952 / 53 as musique concrète , electronic tape music , and space music , entailing composition with transformers , generators , modulators , magnetophones , etc ; the integration of all concrete and abstract ( synthetic ) sound possibilities ( also all noises ) , and the controlled projection of sound in space " ( Stockhausen 1989b , 127 , reprinted in Schwartz , Childs , and Fox 1998 , 374 ) . His position as " the leading German composer of his generation " ( Toop 2001 ) was established with Gesang der Jünglinge and three concurrently composed pieces in different media : Zeitmaße for five woodwinds , Gruppen for three orchestras , and Klavierstück XI ( Kohl 1998a , 61 ) . The principles underlying the latter three compositions are presented in Stockhausen 's best @-@ known theoretical article , " . . . wie die Zeit vergeht . . . " ( " . . . How Time Passes . . . " ) , first published in 1957 in vol . 3 of Die Reihe (

Stockhausen Texte , 1 : 99 ? 139 ) .

His work with electronic music and its utter fixity led him to explore modes of instrumental and vocal music in which performers ' individual capabilities and the circumstances of a particular performance ( e.g. , hall acoustics ) may determine certain aspects of a composition . He called this " variable form " ( Wörner 1973 , 101 ? 105 ) . In other cases , a work may be presented from a number of different perspectives . In Zyklus ( 1959 ) , for example , he began using graphic notation for instrumental music . The score is written so that the performance can start on any page , and it may be read upside down , or from right to left , as the performer chooses ( Stockhausen Texte , 2 , 73 ? 100 ) . Still other works permit different routes through the constituent parts . Stockhausen called both of these possibilities " polyvalent form " ( Stockhausen Texte , 1 : 241 ? 51 ) , which may be either open form ( essentially incomplete , pointing beyond its frame ) , as with Klavierstück XI ( 1956 ) , or " closed form " ( complete and self @-@ contained ) as with Momente ( 1962 ? 64 / 69 ) ( Kaletha 2004 , 97 ? 98 ) .

In many of his works , elements are played off against one another , simultaneously and successively : in Kontra @-@ Punkte ( " Against Points " , 1952 ? 53 ) , which , in its revised form became his official " opus 1 " , a process leading from an initial " point " texture of isolated notes toward a florid , ornamental ending is opposed by a tendency from diversity ( six timbres , dynamics , and durations ) toward uniformity ( timbre of solo piano , a nearly constant soft dynamic , and fairly even durations ) ( Stockhausen Texte , 2 , 20 ? 21 ) . In Gruppen ( 1955 ? 57 ) , fanfares and passages of varying speed ( superimposed durations based on the harmonic series ) are occasionally flung between three full orchestras , giving the impression of movement in space ( Maconie 2005 , 486 ) .

In his Kontakte for electronic sounds ( optionally with piano and percussion ) ( 1958 ? 60 ) , he achieved for the first time an isomorphism of the four parameters of pitch , duration , dynamics , and timbre ( Stockhausen 1962 , 40 ) .

== = 1960s == =

In 1960 , Stockhausen returned to the composition of vocal music ( for the first time since *Gesang der Jünglinge* ) with *Carré* for four orchestras and four choirs ( Stockhausen @-@ Verlag 2010 , 18 ) . Two years later , he began an expansive cantata titled *Momente* ( 1962 ? 64 / 69 ) , for solo soprano , four choir groups and thirteen instrumentalists ( Stockhausen @-@ Verlag 2010 , 18 ) . In 1963 , Stockhausen created *Plus @-@ Minus* , " 2 x 7 pages for realisation " containing basic note materials and a complex system of transformations to which those materials are to be subjected in order to produce an unlimited number of different compositions ( Stockhausen @-@ Verlag 2010 , 20 ; Toop 2005 , 175 ? 78 ) . Through the rest of the 1960s , he continued to explore such possibilities of " process composition " in works for live performance , such as *Prozession* ( 1967 ) , *Kurzwellen* , and *Spiral* ( both 1968 ) , culminating in the verbally described " intuitive music " compositions of *Aus den sieben Tagen* ( 1968 ) and *Für kommende Zeiten* ( 1968 ? 70 ) ( Fritsch 1979 ; Kohl 1981 , 192 ? 93 , 227 ? 51 ; Kohl 1998b , 7 ; ( Toop 2005 , 191 ? 92 ) ) . Some of his later works , such as *Ylem* ( 1972 ) and the first three parts of *Herbstmusik* ( 1974 ) , also fall under this rubric ( Maconie 2005 , 254 , 366 ? 68 ) . Several of these process compositions were featured in the all @-@ day programmes presented at Expo 70 , for which Stockhausen composed two more similar pieces , *Pole* for two players , and *Expo* for three ( Kohl 1981 , 192 ? 93 ; Maconie 2005 , 323 ? 24 ) . In other compositions , such as *Stop* for orchestra ( 1965 ) , *Adieu* for wind quintet ( 1966 ) , and the *Dr. K Sextett* , which was written in 1968 ? 69 in honour of Alfred Kalmus of Universal Edition , he presented his performers with more restricted improvisational possibilities ( Maconie 2005 , 262 , 267 ? 68 , 319 ? 20 ) .

He pioneered live electronics in *Mixtur* ( 1964 / 67 / 2003 ) for orchestra and electronics ( Kohl 1981 , 51 ? 163 ) , *Mikrophonie I* ( 1964 ) for tam @-@ tam , two microphones , two filters with potentiometers ( 6 players ) ( Maconie 1972 ; Maconie 2005 , 255 ? 57 ) , *Mikrophonie II* ( 1965 ) for choir , Hammond organ , and four ring modulators ( Peters 1992 ) , and *Solo* for a melody instrument with feedback ( 1966 ) ( Maconie 2005 , 262 ? 65 ) . Improvisation also plays a part in all

of these works , but especially in Solo ( Maconie 2005 , 264 ) . He also composed two electronic works for tape , Telemusik ( 1966 ) and Hymnen ( 1966 ? 67 ) ( Kohl 2002 ; Stockhausen @-@ Verlag 2010 , 21 ) . The latter also exists in a version with partially improvising soloists , and the third of its four " regions " in a version with orchestra ( Stockhausen @-@ Verlag 2010 , 21 ) . At this time , Stockhausen also began to incorporate pre @-@ existent music from world traditions into his compositions ( Kohl 1981 , 93 ? 95 ; Stockhausen Texte , 4 , 468 ? 76 ) . Telemusik was the first overt example of this trend ( Kohl 2002 , 96 ) .

In 1968 , Stockhausen composed the vocal sextet Stimmung , for the Collegium Vocale Köln , an hour @-@ long work based entirely on the overtones of a low B @-@ flat ( Toop 2005 , 39 ) . In the following year , he created Fresco for four orchestral groups , a Wandelmusik ( " foyer music " ) composition ( Maconie 2005 , 321 ) . This was intended to be played for about five hours in the foyers and grounds of the Beethovenhalle auditorium complex in Bonn , before , after , and during a group of ( in part simultaneous ) concerts of his music in the auditoriums of the facility ( Maconie 2005 , 321 ? 23 ) . The overall project was given the title Musik für die Beethovenhalle ( Maconie 2005 , 296 ) . This had precedents in two collective @-@ composition seminar projects that Stockhausen gave at Darmstadt in 1967 and 1968 : Ensemble and Musik für ein Haus ( Gehlhaar 1968 ; Ritzel 1970 ; Iddon 2004 ; Maconie 2005 , 321 ) , and would have successors in the " park music " composition for five spatially separated groups , Sternklang ( " Star Sounds " ) of 1971 , the orchestral work Trans , composed in the same year and the thirteen simultaneous " musical scenes for soloists and duets " titled Alphabet für Liège ( 1972 ) ( Maconie 2005 , 334 ? 36 , 338 , 341 ? 43 ) .

= = = " Space music " and Expo ' 70 = = =

Since the mid @-@ 1950s , Stockhausen had been developing concepts of spatialization in his works , not only in electronic music , such as the 5 @-@ channel Gesang der Jünglinge ( 1955 ? 56 ) and Telemusik ( 1966 ) , and 4 @-@ channel Kontakte ( 1958 ? 60 ) and Hymnen ( 1966 ? 67 ) . Instrumental / vocal works like Gruppen for three orchestras ( 1955 ? 57 ) and Carré for four orchestras and four choirs ( 1959 ? 60 ) also exhibit this trait ( Stockhausen Texte 2 : 71 ? 72 , 49 ? 50 , 102 ? 103 ; Stockhausen 1989 , 105 ? 108 ; Cott 1973 , 200 ? 201 ) . In lectures such as " Music in Space " from 1958 ( Stockhausen Texte , 1 : 152 ? 75 ) , he called for new kinds of concert halls to be built , " suited to the requirements of spatial music " . His idea was

a spherical space which is fitted all around with loudspeakers . In the middle of this spherical space a sound @-@ permeable , transparent platform would be suspended for the listeners . They could hear music composed for such standardized spaces coming from above , from below and from all points of the compass . ( Stockhausen Texte , 1 : 153 )

In 1968 , the West German government invited Stockhausen to collaborate on the German Pavilion at the 1970 World Fair in Osaka and to create a joint multimedia project for it with artist Otto Piene . Other collaborators on the project included the pavilion 's architect , Fritz Bornemann , Fritz Winckel , director of the Electronic Music Studio at the Technical University of Berlin , and engineer Max Mengerhausen . The pavilion theme was " gardens of music " , in keeping with which Bornemann intended " planting " the exhibition halls beneath a broad lawn , with a connected auditorium " sprouting " above ground . Initially , Bornemann conceived this auditorium in the form of an amphitheatre , with a central orchestra podium and surrounding audience space . In the summer of 1968 , Stockhausen met with Bornemann and persuaded him to change this conception to a spherical space with the audience in the centre , surrounded by loudspeaker groups in seven rings at different " latitudes " around the interior walls of the sphere ( Kurtz 1992 , 166 ; Föllmer 1996 ) .

Although Stockhausen and Piene 's planned multimedia project , titled Hinab @-@ Hinauf , was developed in detail ( Stockhausen Texte , 3 : 155 ? 74 ) , the World Fair committee rejected their concept as too extravagant and instead asked Stockhausen to present daily five @-@ hour programs of his music ( Kurtz 1992 , 178 ) . Stockhausen 's works were performed for 5 ½ hours every day over a period of 183 days to a total audience of about a million listeners ( Wörner 1973 , 256 ) . According to Stockhausen 's biographer , Michael Kurtz , " Many visitors felt the spherical

auditorium to be an oasis of calm amidst the general hubbub , and after a while it became one of the main attractions of Expo 1970 " ( Kurtz 1992 , 179 ) .

=== 1970s ===

Beginning with *Mantra* for two pianos and electronics ( 1970 ) , Stockhausen turned to formula composition , a technique which involves the projection and multiplication of a single , double , or triple melodic @-@ line formula ( Kohl 1983 ? 84a ; Kohl 1990 ; Kohl 2004 ) . Sometimes , as in *Mantra* and the large orchestral composition with mime soloists , *Inori* , the simple formula is stated at the outset as an introduction . He continued to use this technique ( e.g. , in the two related solo @-@ clarinet pieces , *Harlekin* [ *Harlequin* ] and *Der kleine Harlekin* [ *The Little Harlequin* ] of 1975 , and the orchestral *Jubiläum* [ *Jubilee* ] of 1977 ) through the completion of the opera @-@ cycle *Licht* in 2003 ( Blumröder 1982 ; Conen 1991 ; Kohl 1983 ? 84a ; Kohl 1990 ; Kohl 1993 ; Kohl 2004 ; Stockhausen @-@ Verlag 2010 , 10 ) . Some works from the 1970s did not employ formula technique ? e.g. , the vocal duet " *Am Himmel wandre ich* " ( *In the Sky I am Walking* , one of the 13 components of the multimedia *Alphabet für Liège* , 1972 , which Stockhausen developed in conversation with the British biophysicist and lecturer on mystical aspects of sound vibration Jill Purce ) , " *Laub und Regen* " ( *Leaves and Rain* , from the theatre piece *Herbstmusik* ( 1974 ) , the unaccompanied @-@ clarinet composition *Amour* , and the choral opera *Atmen gibt das Leben* ( *Breathing Gives Life* , 1974 / 77 ) ? but nevertheless share its simpler , melodically oriented style ( Conen 1991 , 57 ; Kurtz 1992 , 192 ? 93 ) . Two such pieces , *Tierkreis* ( " *Zodiac* " , 1974 ? 75 ) and *In Freundschaft* ( *In Friendship* , 1977 , a solo piece with versions for virtually every orchestral instrument ) , have become Stockhausen 's most widely performed and recorded compositions ( Anon . 2007a ; Deruchie 2007 ; Nordin 2004 ) .

This dramatic simplification of style provided a model for a new generation of German composers , loosely associated under the label *neue Einfachheit* or *New Simplicity* ( Andraschke 1981 ) . The best @-@ known of these composers is Wolfgang Rihm , who studied with Stockhausen in 1972 ? 73 . His orchestral composition *Sub @-@ Kontur* ( 1974 ? 75 ) quotes the formula of Stockhausen 's *Inori* ( 1973 ? 74 ) , and he has also acknowledged the influence of *Momente* on this work ( Frobenius 1981 , 53 + note 59 ? 60 ) .

Other large works by Stockhausen from this decade include the orchestral *Trans* ( 1971 ) and two music @-@ theatre compositions utilizing the *Tierkreis* melodies : *Musik im Bauch* ( " *Music in the Belly* " ) for six percussionists ( 1975 ) , and the science @-@ fiction " opera " *Sirius* ( 1975 ? 77 ) for eight @-@ channel electronic music with soprano , bass , trumpet , and bass clarinet , which has four different versions for the four seasons , each lasting over an hour and a half ( Stockhausen @-@ Verlag 2010 , 24 ? 25 ) .

=== 1977 ? 2003 ===