

John Bewley

Lejaren A. Hiller: Computer Music Pioneer

Lejaren Arthur Hiller, Jr. led a remarkable life. His learning encompassed the fields of chemistry, computers, electronics, acoustics, information theory, linguistics, and music. Acknowledged as being the composer of the first significant computer music, he spent much of his musical career fighting the musical establishment's perception of him as an amateur musician who was only capable of writing computer-assisted, mechanized music. His music remains largely unstudied even today, ten years after his death in 1994.

Hiller was born in New York City in 1924. His father was a noted illustrator and photographer. Hiller received musical training during his teenage years, including piano studies, saxophone, oboe, and clarinet lessons, harmony, and composition. He was admitted to Princeton University in 1941. He completed his studies in chemistry with the completion of his Ph.D. in 1947 at the age of 23.

Hiller also continued his musical training while at Princeton. He studied counterpoint, ear training, and composition with Milton Babbitt 1941-42 and composition, analysis, and fugue with Roger Sessions until Sessions left Princeton for Berkeley in 1945. Following his 1947 graduation Hiller went to work as a chemist for DuPont in Waynesboro, Virginia until 1952. During that period Hiller successfully created a process for dyeing acrylic fibers. Although Hiller decided to leave DuPont to return to an academic position at the University of Illinois, DuPont demonstrated their appreciation for Hiller's work on acrylics by writing him a bonus check for \$12,000, a considerable sum of money in 1952.

Hiller started his new position at Illinois in November 1952 after spending several months touring Europe with his wife, Elizabeth. He worked as a research associate on a government-supported project on synthetic rubber research. Frederick Wall, who had hired Hiller, requested that Hiller perform analyses on the newly available Illiac computer. This work was the catalyst for Hiller's application of his knowledge of computing to music beginning with the composition of the *Illiac Suite* with Leonard Isaacson in 1955-57.

After his work on the *Illiac Suite*, Hiller was no longer satisfied with teaching in the Chemistry Department. Frederick Wall offered him the opportunity to transfer to the Music Department in 1958 (Hiller had earned his Master's degree in music at the University of Illinois by then) and to establish the Experimental Music Studio, only the second center for

electronic music in the United States. He continued to teach in the music department at the University until 1968.

Biographical information form for the Encyclopedia of Modern Music with interesting description in Hiller's own words of his career and public standing.

ENZYKLOPÄDIE DER MODERNEN MUSIK / ENCYCLOPAEDIA OF MODERN MUSIC

Herausgeber / Publisher: Hans Ulrich Seeemann
D-534 Rad Bonhof, Hauptstrasse 31 (Federal Republic of Germany)

mit Unterstützung der Deutschen UNESCO-Kommission, Köln / with support of the German Commission for UNESCO, Cologne

1) Familienname / Name / Nom / Apellidos / Surnames

HILLER

2) Vorname / Christian's Name / Prénom / Nombre de pila / First name

LEJAREN

(ARTHUR)

no longer use professionally

3) Geburtsort und -datum / Place and date of birth / Lieu et date de naissance / Lugar y fecha de nacimiento / Место и дата рождения

NEW YORK, N.Y., USA. 23 FEB. 1924

4) Staatsangehörigkeit (früher und gegenwärtig) / Nationality (former and present) / Nationalité (d'origine et acquise) / Nacionalidad (de origen y adquirida) / Гражданство (прежнее и настоящее)

USA

5) Studien, Schüler von... / künstlerisch beeinflusst von... / Training - mention teachers who specially influenced you / Formation, études avec... / particulièrement influencé par / Tutorios, discípulo de... / especialmente influido por... / Ученики и... / особенно под влиянием...

PRIVATE, NEW YORK CITY, - HARVEY OFFICER
PRINCETON UNIVERSITY - MILTON BOBBITT AND ROBERT SESSIONS
UNIVERSITY OF ILLINOIS - HUBERT KESSLER
- OTHERWISE I WAS MOSTLY SELF-TAUGHT

6) Stützung der Kompositionstechnik / Style and tendency of composition technique / Style et technique de son langage musical / Estilo y tendencia de la técnica de composición / Направление моего стиля, техника композиционной техники

I STARTED AS A COMPOSER ORIENTED TO TRADITION, BECAUSE I ALSO HAD SCIENTIFIC TRAINING, I THOUGHT I SHOULD MASTER MY CRAFT BEFORE I EXPERIMENTED. THEREFORE, MY EARLY WORKS ARE CONSERVATIVE RELATIVE TO MY PEERS. BUT THEN I MOVED GRADUALLY TOWARD INNOVATION, TOWARD SERIALISM, ELECTRONIC MUSIC, COMPUTER MUSIC, MULTIMEDIA, ETC. I FIND THAT THE OLDER I BECOME, THE MORE I DIVORCE MYSELF FROM TRADITION, QUITE THE OPPOSITE OF THE CONVENTIONAL PATTERN OF YOUNG ICONOCLAST MATURING TO REACTIONARY "OLD MASTER".

7) Kompositionspreise und Auszeichnungen, Stipendien / Composition prizes and awards, scholarships / Prix de composition musical, distinctions, bourses / Premio de composición y distinciones, becas / Коммунараторские премии, стипендии

NOT TOO MANY. IN THE U.S., I AM REGARDED AS TOO DISRESPECTFUL OF THE MUSICAL ESTABLISHMENT TO MERIT AWARDS. I HAVE NEVER ENTERED COMPOSITIONS IN CONTESTS, NEVER. I HAVE HAD AWARDS LIKE FULBRIGHT LECTURE TO POLAND (1972/74) THAT I CONSIDER IMPORTANT TO BE FAIR, BUT IN GENERAL, I AVOID SUCH STUFF.

RESEARCH CHEMIST, U.S. DEPT. OF AGRICULTURE, WASHINGTON, D.C. (1947-52)
PROFESSOR OF CHEMISTRY, UNIVERSITY OF ILLINOIS, URBANA, ILL. (1952-58)
PROFESSOR OF MUSIC AND DIRECTOR OF EXPERIMENTAL MUSIC STUDIES, UNIVERSITY OF ILLINOIS (1958-1960)
FACULTY & SLEET PROFESSOR OF MUSIC AND CO-DIRECTOR (with Lukas Foss) of Center of the Creative and Performing Arts, State University of Buffalo, New York, Buffalo, N.Y. (1968-)

9) Entschliessende Lebensämter / Landmarks in your career / Postes décisifs dans votre carrière / Sources decisivas de su vida / Преобладающие должности в жизни

1st MUSIC: Composing Eliac Suite for String Quartet (now called String Quartet No. 4) as first important computer music, not only because it was a first, but also because it provided means of switching professionally from science to music as a career.

10) Hauptverleger (Adresse) / Principal publisher (address) / Editeur principal (adresse) / Editor principal (dirección) / Главное издательство (адрес)

Theodore Presser Company, Bryn Mawr, Pennsylvania, 19080

I compose (1) for all types of traditional ensembles and instruments (chamber music, symphony orchestra, vocal groups, solo piano, etc.) (2) Also for theater, TV, cinema and multimedia (3) Experimental music; electronic, computer, indeterminate. I have in the past even done some arranging of popular music for dance bands, TV commercials etc. Attached is a complete list of works listed chronologically. If you wish a reduced list with only "principal works", use these with * in front of title. However, in a way I consider all the pieces on the list important enough to save. The others I leave "there" busy.

12) Bitte geben Sie Analysen Ihrer wichtigsten Werke auf beiliegenden Bogen «A»! / Analyse your key works, please, on the enclosed sheets «A»! / Donner, s.v.p., des analyses d'œuvres de vos œuvres clés sur les feuilles «A» adjacentes! / Envíenlos, por favor, una Analisa del autor de sus obras más importantes sobre las hojas "A" adjuntas! / Дайте, пожалуйста, авторские анализы Ваших важнейших произведений на прилагаемых листах А!

13) Literatur über Sie (Autor, Titel, Jahr, Seite / Jahr Seite / bei Zeitschriften) / Writings about you (author, title, year, page, vol. of periodic) / Ecris sur vous (auteur, titre, année, page, vol. de journaux) / Literatura sobre Ud. (autor, título, año, revista, volumen de la revista) / Литература о Вас (автор, название, год, стр. том журнала)

Many references in books on contemporary and experimental music. A good example are the entries in Dictionary of Contemporary Music, edited by John Vinton.

14) Eigene theoretische Schriften / Writings by you / Ecris par vous / Escrituras teóricas de Ud. / Книжки и статьи написанные Вами

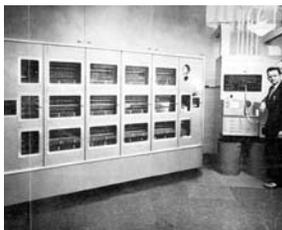
PRINCIPAL BOOKS:

- (1) Experimental Music (co-author Leonard Isaacson), McGraw-Hill Books Co., N.Y., 1959
- (2) Informations-theorie und Computermusik, Darmstädter Beiträge zur Neuen Musik, v. Schott's Sichtung, Mainz, 1964
- (3) 40 articles in music journals, magazines, record albums, etc. mostly in experimental music. I can supply list if you desire.

Lejaren Hiller joined the Music Department faculty at the University at Buffalo in 1968. He served as Co-Director of the Center for the Creative and Performing Arts 1968-1974. Ill health forced Hiller to retire from the faculty in 1989. He was the author of three books, more than 80 articles on music, electronics, computer applications, and chemistry, and composer of more than 70 scores. Lejaren Hiller died January 26, 1994.



Hiller's first foray into computer music was his *String Quartet No. 4*, also known as *Illiac Suite*, for the Illiac computer on which it was programmed. Hiller worked on the piece 1956-57 while still working full time in the Chemistry Department at the University of Illinois. He was assisted in the project by fellow chemist, Leonard Isaacson. The piece is recognized as being the first significant computer music composition.



Photograph of Lejaren Hiller with Illiac computer, University of Illinois, ca. 1956

10-4-62

My dear friend,

Thanks a lot for your letter and the two tapes.

Could you send me articles on electronic music and computers? I would like very much also to read your book on the Illiac suite I think which has belongs to Holo. But he is very secret, and in any way I would like to have it myself. IBM will present ^{in May} (to world press

a piece of "Free Stochastic composition" for 10 players entitled ST 10-1, 080262.

I have not yet written a paper on this but only a small explanation which will be published in the IBM review. I'll send it to you when it comes out.

Do you receive the Gr. Blatter? If not, just a note and I'll send you the letter Nov 23/24 containing the last summer's encounter at Gravesano.

Best wishes to you and your wife

Yours

Xenakis

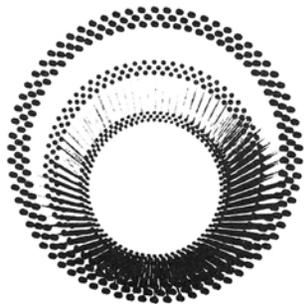
Letter from Iannis Xenakis, April 10, 1962 in which he asks Hiller to send a copy of his book, *Experimental Music*, with its description of *Illiac Suite*.

In 1967 Hiller arranged for John Cage to be appointed an Associate Member of the Center for Advanced Study at the University of Illinois. When the original plan for Cage to work with a programmer at the university fell through, Hiller began assisting Cage with the computer aspects of his planned composition, a work for harpsichord, commissioned by Swiss harpsichordist Antoinette Vischer. Hiller's role gradually grew to the level of true collaboration so that he and Cage now receive equal credit for the resulting work, *HPSCHD*.

HPSCHD is an enormous multi-media event. The premiere performance required 7 harpsichords, 208 tapes (4 copies of each of the 52), 52 tape-players (13 stations with 4 each), 59 amplifiers and loudspeakers, 6,400 slides (5,000 from NASA), 64 slide projectors, 40 films, 8 motion picture projectors, 11 100 x 40 foot silk screens and a 340 foot circumference circular screen made by Calvin Sumsion. It was attended by approximately 8,000 people and lasted for close to 5 hours.

Program for May 16, 1969 premiere performance of *HPSCHD* at University of Illinois.

HPSCHD



HPSCHD

for Antoinette Vischer

Music: John Cage and Lejaren Hiller (1967-69)

Images: Ronald Nameth and Calvin Sumsion

Presented at the Assembly Hall, University of Illinois at Urbana-Champaign, on May 16, 1969, from 7:30 P.M. to Midnight, by the School of Music, University of Illinois, and by the Assembly Hall. This first performance was designed especially for the Assembly Hall, and the production was made possible by grants from the University of Illinois Research Board and the Thorne Music Fund, Inc.

Music

Twenty-minute solos for one to seven amplified harpsichords and tapes for one to fifty-two amplified monaural machines to be used in whole or in part in any combination with or without interruptions, etc., to make an indeterminate concert of any agreed-upon length having two to fifty-nine channels with loud-speakers around the audience.

Solo I	Computer printout for 12-tone gamut	David Tudor Baldwin Solid Body Harpsichord
Solo II	Mozart Dicegame	Antoinette Vischer Neupert Double
Solo III	Dicegame with Mozart compositions used as replacements, treble and bass linked	William Brooks Challis Single
Solo IV	Dicegame with Mozart compositions used as replacements, treble and bass independent	Ronald Peters Brueggeman Double
Solo V	Dicegame with historical sequence used as replacements, treble and bass linked	Yuji Takahashi Dowd Double
Solo VI	Dicegame with historical sequence used as replacements, treble and bass independent	Neely Bruce Hubbard Double
Solo VII	Practice or performance of any Mozart compositions	Philip Corner Neupert Double

In addition to playing his own solo, each harpsichordist is free to play any of the others. Monaural tapes giving all divisions of the octave from five to fifty-six tones performed by: Al Blatter · Morgan Powell · Dennis Kamn · James Knapp · James Fulkerson · Mary Fulkerson · Thomas Howell · Jon Bauman · James Stroud · Dennis Eberhard · Joe Sekon · Udo Kazemetti · Clive Coen · Peter Salemi and others. At approximately 8:30 and 11:00 p.m. there will be a concert of all channels. The audience is free to move in and out of the building, around the Hall, and through the performing area.

Music credits

Sound system and recording: Jaap Spek and George Ritscher. Generation of computer sounds on tape accomplished with the assistance of: James Cuomo, Paul Krabbe, and James Stroud. Computer programming: Lejaren Hiller, John Cage, and Laetitia Snow. Music manuscripts: John Cage, Allan Hawlock, and Richard Herbert Howe. Tape editing: James Stroud. Computers: Iliac II, IBM 7094. Pressure-sensitive amplitude control: Rene Farley, National Research Board, Ottawa. Harpsichords loaned by: School of Music, University of Illinois · Mr. Waldemar Pollee, Benton Harbor, Michigan · Mr. Martin Rubinstein, Evanston · The Baldwin Piano Company, Cincinnati · The Baton Music Company, St. Louis · Mr. John Brueggeman, Cincinnati. Wollensak tape recorders courtesy of the 3M Company, St. Paul, Minnesota. Pre-amplifiers, microphones, and solophones courtesy of Shure Brothers, Evanston. HPSCHD published by Henmar Press of the C. F. Peters Corporation, New York City. Recorded version of HPSCHD with KNOBS program for listener playback control: Nonesuch Album (H-71224).

Image credits

Slide projectors courtesy of Sawyer's Slide Projectors, GAF Corporation, New York City. White opaque polyethylene screens: Union Carbide Company. Films and slides: National Aeronautical and Space Administration · Mr. Palomar Astronomical Observatory · Museum of Modern Art, New York City · University of Illinois Visual Aids Service · Ronald Nameth · Robert Frerck · Robert Breer · John Whitney and Sons · Stan Van Der Beek · Lejaren Hiller · Antoinette Vischer. Streamers and smocks: Calvin Sumsion. Additional images obtained by I-Ching operations.

Program design: Calvin Sumsion. Type: Caslon Old Style with roman capitals and italic face. Paper: 80 lb. Shasta. Program cover design based on an image produced by Robert Frerck. Production: University of Illinois Press.

General credits

Coordination: Jack McKenzie. Assembly Hall Management: Director: Thomas Parkinson. Assistant Director: Wayne Hecht. Publicity, Advertising: Herbert J. Dotten. Stage Manager: Jerry Nashlane. Box Office Manager: Glenn Crane.



Photograph of John Cage, Lejaren Hiller, and Morton Feldman, ca. 1980
Photograph by Irene Haupt

Program for 1980 performance of *HPSCHD*
 at Albright-Knox Art Gallery.



Photographs of 1980 performance of *HPSCHD* at Albright-Knox Art Gallery. Yvar Mikhashoff playing harpsichord.

Photographs by Irene Haupt

HPSCHD

for Antoinette Vischer
Music: John Cage and Lejaren Hiller (1967-69)
Images (original slides): Ronald Nameth and Calvin Sumsion, NASA

EVENINGS FOR NEW MUSIC - sixteenth season

Music

Twenty-minute solos for one to seven amplified harpsichords and tapes for one to fifty-two amplified monaural machines to be used in whole or in any combination with or in part in any combination with or without interruptions, etc., to make an indeterminate concert of any agreed-upon length having two to fifty-nine channels with loud-speakers around the audience.

Solo I	Computer printout for 12-tone gamut	Baldwin Solid Body Harpsichord	David Tudor
Solo II	Mozart Dicegame		David Fuller
Solo IV	Dicegame with Mozart compositions used as replacements, treble and bass independent		Aki Takahashi
Solo V	Dicegame with historical sequence used as replacements, treble and bass linked	Paul Terry's Handbuilt Harpsichord	Yvar Mikhashoff
Solo VI	Dicegame with historical sequence used as replacements, treble and bass independent		Neely Bruce

In addition to playing his own solo, each harpsichordist is free to practice or perform any Mozart composition, or to play any of the other solos. Monaural tapes give all divisions of the octave from five to fifty-six tones. At approximately 9:00 and 11:00 p.m., there will be a concert of all channels. The audience is free to move in and out of the performance space.

MUSIC/SOUND CREDITS Computers: Illiac II, IBM 7094

Sound system: Unstage of Buffalo, SUNYAB Audio-Visual, Media Study/Bufallo, SUNYAB Department of Music.
Harpsichords loaned by Paul Terry, Buffalo Academy of the Visual and Performing Arts, Baldwin Keyboard, Kenmore, N.Y., SUNYAB Department of Music. **HPSCHD** published by Henmar Press of the C.F. Peters Corporation, New York City. **Technical director:** Joel Chadabe, Albany, N.Y., **Center technical assistant:** Ron Kuivila, Buffalo, N.Y., **technical recordist:** David Held, Buffalo, N.Y. **Sound assistants:** Stewart Werner, Albany, Michael Zak, John King, Mitch Robinson, Paul Gallagher, Charles Ames, Rick Kazmierczak, all Buffalo Recorded version of **HPSCHD** with **KNOBS** program for listener playback control: Nonesuch Album (H-71224).

IMAGE CREDITS Projection screens: John Toth, Buffalo

Slide Projectors: Eastman Kodak, Rochester, N.Y., SUNYAB Audio-Visual. **Film projectors:** Delaware A-V, SUNYAB Audio-Visual. **Dissolve units/stands:** Delaware A-V, Holland-Wegman, Buffalo. **Slides:** C.F. Peters, Lejaren Hiller, SUNYAB ECC. **Films:** Erie County Library Film Department, Buffalo Museum of Science Films, SUNYAB Media Library, NASA, Robert Brier, Paul Sharits, John Whitney, George Melles, Peter Kubelka, Norman McLaren, Lejaren Hiller. **Projection Director:** Tom Busch, Buffalo. **Projectionists:** Bruce Alessa, Richard Brown, Ray Broniszewski, Robert Coggershall, Sylvano Colombano, Liz Grossman, Joe Gutt, Mandi Landis, Barbara Lantanz, Marcelle Pecot, Chris Privateer, all Buffalo. **Photo reproduction:** M&W Photo Lab, Buffalo. **Invitation/logo design:** Violet Lee. **Program typography/layout:** Greg Schuler, Sara Hornbacher. **Photography:** Charles and Irene Haupt, Buffalo, David Beal, NYC. **Micro-computer program/display:** David Held, Sara Hornbacher. **Sign:** John Schweikard. **Projection stands:** Beck's Creamery, Blasdell, N.Y.

GENERAL CREDITS:

The Center of the Creative and Performing Arts: production coordinator for HPSCHD and managing director, Sara Hornbacher. **Artistic directors:** Morton Feldman, Jan Williams. **Research Consultant:** Lejaren Hiller, SUNYAB Department of Music. Dr. William Thomson, chairman, **Albright-Knox Gallery:** Robert T. Buck Jr., director, Douglas Schultz, curator; Serena Rattazi, public relations; John Kushner, technical arrangements. Special thanks for production support to: Alyssa Grossman, Center assistant, ArtServices of NYC; Mimi Johnson, Susan Szeilga, Lisa Mahoney, Baldwin Keyboard of Kenmore, Mark Tarbell, Parthen's Press, Kenmore, Dr. Gerald O Grady, Center for Media Study/SUNYAB, T.J. Hargrave, Jack Hayes, Sheldon Holland, Bob Becker, Robert Lovejoy, Kenmore Builders; Jack Dies, Ryder Truck; Ned Evans. **Transportation coordination:** David Seman. **Hospitality:** Mr. and Mrs. Charles Barta, Sheldon Berlow, Buffalo.

These performances are made possible in part by grants from the National Endowment for the Arts, and the Slee Endowment.

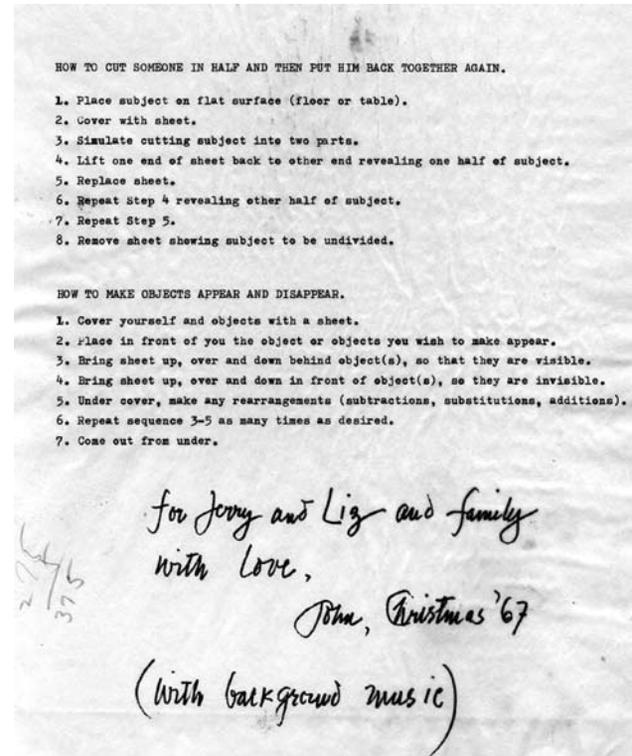


Excerpt from Hiller interview with Vincent Plush, November 12, 1983.

Hiller and Cage spent uncounted hours together working out the complex details of *HPSCHD*. Much of that time was spent in a trailer that Hiller used as a workshop in his backyard. Hiller and Cage may seem an unlikely pair of collaborators, but Hiller's description of their work together proves otherwise.

*"I must say, the ideas would flow back and forth. It was a very different collaboration, according to John, from what he did with Lou Harrison on Double Music, for example, in the sense that we did meet – I wouldn't say daily, because he was off with Merce Cunningham on tours now and then, and things of that sort, but frequently, and we would hash these ideas out together. The idea of actually using a musical dice game popped into my head one day, for example. I don't know – I said, "Well here's the obvious chance piece with which we start," and he loved the idea, you see? And then the I-Ching to make substitutions was his idea, and so on and so forth. It just seesawed back and forth. Most of the theatrical things later on he added to it, but again, he knew that I was more than sympathetic to that because of my own theatrical experience. He had seen some of my theater pieces, including *Avalanche*. He was at the premiere of that, and I think he was impressed with its humor, among other things. I would say this is one of the crucial things in a collaboration like that. I found with various people, particularly with a person with as strong a personality as John's, it would have been impossible if both of us didn't have a good sense of humor. That makes an enormous difference. Although we were and have been different in many ways in the way we write, we find a big degree of overlap in terms of – of humor, personality, and also, really our ideas are not that far different in many ways. It was a lucky coincidence, because it wouldn't have worked otherwise."*

Letter from John Cage to Lejaren and Elizabeth Hiller, 1967



Fewer than 100 copies of each of the three *HPSCHD* posters were printed in 1969. The full-sized posters were so popular that they were stolen from bulletin boards and even from locked glass cases. The Music Library is grateful to David Eisenman for allowing the purchase of two of the three posters from him.

HPSCHD poster #1 was conventional, featuring a Viskeptic image of Cage (as dragonlayer). It is largely self-explanatory. Gary had previously produced similar large silk-screened posters for MUSICIRCUS. Notable is that Cage himself carefully applied a rubber stamp with the gaf corporation's logo to each copy of #1, in acknowledgment of gaf's generosity in lending dozens and dozens of slide projectors for the premiere. (Viskeptic's design had already incorporated 3M's logo — 3M had agreed to provide enough Wollensak tape players for HPSCHD's electronic tapes.) Cage was tireless in seeking all sorts of support for his projects, and meticulous in finding ways to thank those who responded.

--- David Eisenman, from *About the Artwork*, program notes to Electronic Music Foundation 2003 recording of *HPSCHD*.

HPSCHD poster no. 1



Posters #2 and #3 were novel compositions, richly employing chance operations. Cage and Sumsion began by collecting images from here and there. They chose encyclopedia pages at random and copied whatever images appeared on them. They asked various friends and associates to name the first image that came to mind.

All these various images and design elements were arranged into 8 × 8 grids, from which elements were selected for the posters by I Ching operations. Cage and Sumsion next used further chance operations to determine the locations, sizes, orientations, and colors of each of the randomly-selected graphics.

The results delighted Cage. Entirely by chance appeared a mushroom, bars of music, and a conductor, in the midst of a pocket watch, a woman burning books, an armadillo, and the Seal of the State of Indiana — which for some reason particularly tickled him.

--- David Eisenman, from *About the Artwork*, program notes to Electronic Music Foundation 2003 recording of *HPSCHD*.

Newspaper photograph taken at 1969 premiere of *HPSCHD* showing silk screen printing of smocks and other garments with the Beethoven/Cage design being distributed to the audience.



Silk-screened Tee-shirt courtesy of David Eisenman. Reproduction of design used at 1969 premiere of *HPSCHD*.



I-Ching chart used at 1969 premiere of *HPSCHD* to determine price of posters. Courtesy of David Eisenman.

	☰	☱	☲	☳	☴	☵	☶	☷
☰	1	34	5	26	11	7	14	43
☱	25	21	3	27	24	42	21	17
☲	6	40	25	4	7	59	64	47
☳	33	62	39	52	15	53	56	31
☴	12	16	8	23	2	20	35	25
☵	44	32	49	18	96	57	50	18
☶	13	55	63	22	26	32	30	49
☷	10	54	60	44	7	61	38	58

Top 3 coins
 2. coin 3 tails, tail } straight line
 3 heads, 1 tail } broken line

6 times
 → bottom up
 Row 1st, column

Read from bottom up
 Row 1st, column

4 3rd for single poster
 # x 15th for set

☰

Originally, Cage's new composition was planned for performance at the March 1968 concert celebrating the 100th anniversary of the University of Illinois. There is no way such a huge, free-form work could have been performed at such a formal, controlled event. Instead, the premiere took place May 16, 1969 at the University's Assembly Hall.

Telegram from John Cage notifying David Eisenman that his new composition for harpsichord will not be ready for March 1968 performance.

James Pritchett
HPSCHD

Music (not Composition) (1962-1969)

The work that closes this period in Cage's career - *HPSCHD* for up to seven harpsichords and up to fiftyone tapes (1967-69) - presents an unusual case, a mixture of old-fashioned composition, multimedia event, and free-form circus. Composed at the request of the Swiss harpsichordist Antoinette Vischer, the piece was actually a collaboration between Cage and Lejaren Hiller, and these two facts - commission and collaboration - account for many of its seeming inconsistencies. Cage initially resisted the commission, not knowing how he could make the harpsichord an interesting medium. He decided to fulfill the commission only after he found an idea - the notion of a multiplicity of scales - that would bring the harpsichord into his contemporary world of abundance. Because of the short duration of harpsichord sounds, Cage felt the need for "an enrichment of the notion of scales . . . Necklaces of notes, or even rows of notes, and scales of notes, and modes of notes, and so forth: I would like to make a great multiplicity of such things. As he had in the 1945 *A Book of Music*, Cage identified this notion of the simultaneity of several different scales with the music of Mozart, in which diatonic and chromatic passages coexist with arpeggiations, and so forth.

At this point, Cage began his residency at the University of Illinois, where he was asked by Lejaren Hiller, a composer of computer music, to propose a project to be realized at their computer music studio. Cage responded to Hiller's request with his ideas for the harpsichord commission, feeling that the work involved in generating music with a plurality of tunings and scales was well-suited to the computer. Having no computer skills, Cage relied on Hiller to do the programming for his project; soon Hiller began to have his own ideas about the piece, and so Cage suggested that they make it a collaborative effort. The title was derived from the name of a computer-subroutine used in the program: in those days, the length of a subroutine name was limited to six upper-case letters, so that "harpsichord" was abbreviated to "HPSCHD".

The use of different scales was to be realized within the do-

NOTE-O-GRAM[®]
© THE ROYAL BANK / THE BELL TELEPHONE SYSTEM

JOHN CAGE
STONEY POINT, NEW YORK 10980 • PHONE (4/C 914) 847-3163
401 Edgebrook Drive 303, Champaign, Illinois 61820

MESSAGE	REPLY
TO Mr. David Eisenman 110 Student Services University of Illinois Urbana, Illinois 61801	DATE
DATE Jan. 18, 1968	
The harpsichord piece will not be ready in time for March 11. It is possible that my Variations II will be performed by David Tudor. That will require electronic equipment, but I will give that information to Jack McNameis and say that you have "contacts." I think I should be considered unavailable for the Teach-in-Across; I have performances in Buffalo March 8-10. As for the appearance of hard-urban in the Univ., strikes me something in the air would help; planes flying in the midst of balloons seeing which one could burst the most!	
BY <i>James Pritchett</i>	SIGNED

1. KEEP YELLOW COPY. 2. BRUSH WHITE AND PINK COPIES WITH CARBON IMPACT. 3. WHITE COPY. 4. GREEN COPY. 5. RED COPY. 6. BLUE COPY. 7. PURPLE COPY. 8. BROWN COPY. 9. BLACK COPY. 10. WHITE COPY. 11. YELLOW COPY. 12. RED COPY. 13. BLUE COPY. 14. PURPLE COPY. 15. BROWN COPY. 16. BLACK COPY. 17. WHITE COPY. 18. YELLOW COPY. 19. RED COPY. 20. BLUE COPY. 21. PURPLE COPY. 22. BROWN COPY. 23. BLACK COPY. 24. WHITE COPY. 25. YELLOW COPY. 26. RED COPY. 27. BLUE COPY. 28. PURPLE COPY. 29. BROWN COPY. 30. BLACK COPY. 31. WHITE COPY. 32. YELLOW COPY. 33. RED COPY. 34. BLUE COPY. 35. PURPLE COPY. 36. BROWN COPY. 37. BLACK COPY. 38. WHITE COPY. 39. YELLOW COPY. 40. RED COPY. 41. BLUE COPY. 42. PURPLE COPY. 43. BROWN COPY. 44. BLACK COPY. 45. WHITE COPY. 46. YELLOW COPY. 47. RED COPY. 48. BLUE COPY. 49. PURPLE COPY. 50. BROWN COPY. 51. BLACK COPY. 52. WHITE COPY. 53. YELLOW COPY. 54. RED COPY. 55. BLUE COPY. 56. PURPLE COPY. 57. BROWN COPY. 58. BLACK COPY. 59. WHITE COPY. 60. YELLOW COPY. 61. 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