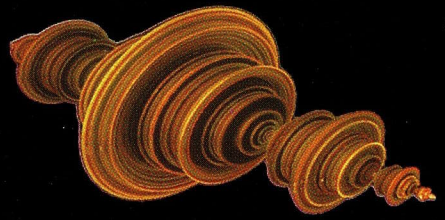
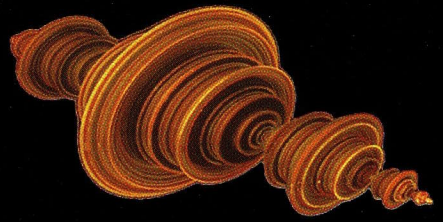
NEUMA



NEUMA Records
71 Maple Street, Acton, MA 01720 U.S.A.

# ELECTRO ACOUSTIC MUSIC III



NEUMA

Kaija Saariaho
Richard Karpen
Jon Christopher Nelson
Linda Dusman
Wesley Fuller
Jean-Claude Risset

# ELECTRO ACOUSTIC MUSIC III

1 **Kaija Saariaho—*NoaNoa*** (1991) 9:10
for flute and electronics
Camilla Hoitenga, Flute

2 **Richard Karpen—*Terra Infirma*** (1992) 17:44
computer-realized tape

3 **Jon Christopher Nelson—**
***Waves of Refraction*** (1992) 7:55
for guitar and tape
William Buonocore, Guitar

4 **Linda Dusman—*Dindirindin*** (1990) 8:31
Maria Tegzes, Soprano

5 **Wesley Fuller - *The Camargo Trio*** (1990) 11:10
for piano, percussion and computer
Jacques Linder, Piano
Robert McCormick, Percussion

6-13 **Jean-Claude Risset—**
***Eight Sketches: Duet for One Pianist*** 14:37
Jean-Claude Risset, Piano (Disklavier)

| | | | |
|---|---|---|---|
| 1 Double | 1:01 | 5 Stretch | 1:36 |
| 2 Mirrors | 1:25 | 6 Resonances | 2:16 |
| 3 Extensions | 0:59 | 7 Up Down | 2:41 |
| 4 Fractals | 1:09 | 8 Metronomes | 3:29 |

## KAIJA SAARIAHO—*NOANOA*
### for flute and electronics
### Camilla Hoitenga, Flute

*Kaija Saariaho's* principal works are *Verblendungen* (orchestra and tape, 1982-84), *Lichtbogen* for chamber ensemble and electronics (1985-86), *Jardin Secret I* (tape, 1984), *Jardin Secret II* (harpsichord and tape, 1984-86), *Io* (for ensemble, tape and electronics, 1986-87), *Nymphea* (for string quartet and electronics, 1987, a commission from the Lincoln Center), a radiophonic work *Stilleben* (1987-88) and orchestra pieces *Du cristal* (1989-90, a commission from the Los Angeles Philharmonic Orchestra and Helsinki Festival) and *...a la fumee* (1990, a commission from the Finnish Radio).

The latest larger scale piece is *Amers* (1992), a piece for cello, ensemble and electronics which was commissioned by IRCAM and the Barbican center.

In addition to producing works of her own, Kaija Saariaho has taken part in a number of multimedia productions involving the various arts. The most recent work of this kind is the ballet *Maa* (1991), a collaboration with the choreograph Carolyn Carlson for the Finnish National Ballet.

Kaija Saariaho is receiving an artist's salary for her compositional work from the Finnish Government. In 1986 she was awarded the Kranichsteiner Preis at the new music summer courses in Darmstadt, and in 1988 the Prix Italia, for her work *Stilleben*. In 1989 her works *Stilleben* and *Io* were awarded with the Ars Electronica Prize.

*NoaNoa* is a piece for flute and the IRCAM Signal Processing Workstation (ISPW, based on the Next computer). Different flute materials were recorded in the sample memory of the card, and are triggered and processed in specific places of the score, either with the aid of an automatic score follower (from pitch and envelope following of the flute), or by a pedal controlled by the performer. It also controls real time processing tools, including harmonizers, reverbs, delays, and finally, *'models of resonance'* (bank of filters whose parameters are derived from a specific analysis technique developed at IRCAM by J.B. Barrière, Y. Potard, P.F. Baisnée), which were

transported on the IRCAM Workstation at the performance of this piece. Generally speaking, the electronic part extends the musical ideas of the solo instrument.

The title refers to a wood cut by Paul Gauguin called *NoaNoa*. It also refers to a travelling diary of the same name, written by Gauguin during his visit in Tahiti 1891-93. The fragments of phrases selected for the voice part in the piece come from this book.

*NoaNoa* is also a team work. Many details in the flute part were worked out with Camilla Hoitenga, to whom the piece is dedicated. The electronic part was developed by Xavier Chabot, in the IRCAM Musical Workstation Max environment, with the supervision of Jean Bauliste Barrière. Another version for Macintosh was realized by Alexandre Mihalic: here the performer sends triggers to Max, thus controlling a direct-to-disk, on which all the transformations have been recorded, and a digital reverberation whose parameters are transformed by the amplitude of the flute.

—*Kaija Saariaho*

***Camilla Hoitenga*** performs as a soloist and gives master classes in Europe, Scandinavia, the United States, Japan and South America. She is a self-taught avant-garde specialist and presents programs combining classical music with her own pieces based on the work of painters and sculptors such as Ansgar Nierhoff (Cologne) and Lusici (Berlin). Appearing regularly with the Swedish percussionist Jonny Axelson, she has recently recieved a grant from the Canadian Council for the Arts to commission fron John Winiarz for flute, percussion, bassvoice and electronics. In addition to her solo work, Ms. Hoitenga is performing with the Stockhausen Ensemble in the *Tuesday from Light*, the opera by Stockhausen. She also teaches at the Duisberg campus of the Folkwang Hochschule Essen. She has lived in Cologne, Germany since 1980 and has recorded for BIS, MusiKiste, APM, WNYC, and WDR. Her teachers include Darlene Dugan, Alexander Murray, and Marcel Moyse; she holds degrees from Calvin College and the University of Illinois.

---

## RICHARD KARPEN—*TERRA INFIRMA*

### for computer-realized tape

***Richard Karpen*** (b. New York, 1957), is on the faculty of the School of Music at the University of Washington in Seattle where he teaches composition, computer music and music theory and is co-director of the School of Music Computer Center. Karpen's works are widely performed in the U.S. and internationally. He has been the recipient of many awards, grants and prizes including those from the NEA, the ASCAP Foundation, the Bourges Contest, NEWCOMP, the Luigi Russolo Contest , the National Flute Association, and the American New Music Consortium. Fellowships and grants for work outside of the U.S. include a Fulbright to Padua, Italy, Stanford University's *Prix de Paris* to work at IRCAM, and a Leverhulme Visiting Fellowship to Scotland. He studied with Charles Dodge, Gheorghe Constinescu, and Morton Subotnick and received his doctorate in composition from Stanford University, where, during 1985-1989, he worked at the Center for Computer Research in Music and Acoustics. In addition to Karpen's work in electronic media, for which he is best known, he has composed symphonic and chamber works for a wide variety of ensembles. His compositions are performed throughout the United States and Europe as well as in Australia and Canada in both concerts and radio broadcasts. Major international festivals which have included performances of his works are the Gaudeamus International Music Week in Amsterdam, the Warsaw Autumn Festival, the Sidney Spring Festival, the Bourges Festival, the International Computer Music Conferences and others. His compositions have been recorded on CD by Le Chant du Monde/Cultures Electroniques 2 & 4 (*Exchange*, for flute and tape; *II Nome*, for soprano and tape), Wergo/Computer Music Currents 3 & 7 (*Eclipse*, for computer-realized sound; *II Nome*), Centaur/CDCM-12 (*Saxonomy*, for saxophones and tape, *Denouement*, for computer-realized sound), and NEUMA (*Terra Infirma*, for computer-realized sound).

***Terra Infirma***, for computer-realized sound, is the prelude to *The Earth on Fire!*, a cycle of pieces which in varying degrees of directness (some are based on specific texts or "programs," while others are more "abstract"), express a rather dark vision. *Terra Infirma*, which was completed in 1992, has no specific program other than what the title might evoke, but sets the scene, as it were, for some of the works which follow. Other works in this cycle are, *II Nome*, for soprano and tape, *The Silence of Time*, for

percussion ensemble and tape, and *Camera Cantorum,* for four singers and computer-realized sound.

*Terra Infirma* was realized on a NeXT Computer system in the School of Music Computer Center (SMCC) at the University of Washington in Seattle using Csound and Lisp. All of the sound materials were derived in some way from *acoustic* sources and most are "hybrids" in that they combine digitized sound samples with purely synthetic material using digital signal processing techniques developed by the composer for use in past pieces with some improvements and enhancements for the current work.

---

## JON CHRISTOPHER NELSON—*WAVES OF REFRACTION*

**William Buonocore, Guitar**

***Jon Christopher Nelson*** (b. 1960) received his B.A. at Bethel College and his Ph. D. in Composition and Theory at Brandeis University. His compositional studies include work with Arthur Berger, Martin Boykan, Charles Dodge, Barry Vercoe, and Allen Anderson. In addition to his academic studies, Nelson is a board member of the South Florida Composers Alliance and is a founding member of the *LUMEN Contemporary Music Ensemble.* He is currently an assistant professor of music theory and composition at Florida International University in Miami where he is a co-director of the May in Miami Festival, the FIU Electronic Music Studio, and the FIU New Music Ensemble. His compositions have received performances and awards from the following organizations: National Endowment for the Arts, Memphis Symphony Orchestra, New World Symphony, Fulbright Foundation, ASCAP, Atlantic Center for the Arts, Meet the Composer, International Computer Music Conference, the Society for Electro-Acoustic Music in the U.S., International Society for Contemporary Music, Wellesley Composers Conference, and others. His electro-acoustic works have been performed throughout the United States, Europe, Latin America, and Japan.

***Waves of Refraction*** (1992) for guitar and tape creates aural illusions that are analogous to the visual illusion of light waves refracted through water. Just as an object submerged in water appears slightly warped and unstable, the guitar refracted by the computer-generated tape seems altered and mutable. At the beginning of the Dusman sition, the tape accurately replicates the guitar sounds. However, the tape quickly undergoes a metamorphosis, becoming more unusual and exploratory as the composition unfolds. The guitar presents material that alternates between nervous, disjunct figuration and more lyric lines. The computer-generated tape was produced in the Florida International University Electronic Music Studio.

***William Buonocore***, guitarist, has concertized extensively in a wide variety of settings ranging from appearing as concerto soloist with orchestra to playing guitar, mandolin, and banjo for such shows as *Evita, A Chorus, LineFiddler on the Roof, Porgy and Bess* and *West Side Story.* He has given recitals in Seoul, Korea, Caracas, Venezuela and has performed at the Guitar-Fest programs in New York, Toronto and Boston. *The Strad* magazine said, "Buonocore proved to be a guitar player of considerable virtuosity and lovely sound" and the *Boston Globe* said he "played with taste and mastery."

Mr. Buonocore is currently Chairman of the Guitar Department at The Boston Conservatory and also holds faculty appointments at the University of Massachusetts and Boston College. He has recorded for Koch International and Centaur.

---

## LINDA DUSMAN—*DINDIRINDIN*

**Maria Tegzes, Soprano**

***Linda Dusman's*** works have been performed across the United States and in Europe in new music festivals and by various new music ensembles, including the Contemporary Music Forum in Washington, D.C., the Piccolo Spoleto Festival in Charleston, SC, and the Montenea Summer Music Festival in France. She recently received Second Prize in the First International Composition Competition 1992 sponsored by the Frauenmusik-Forum Schweiz FMF for her composition "Thunder, Perfect Mind," as well as a publishing commission from Lingua Press for a new work for voice. She is the recipient of two consecutive Individual Artist Grants from the District of Columbia, and was a finalist for an Artist-as-Producer Grant from the National Endowment for the Arts for the production of her chamber opera *Fustina* in 1992. Dr.

received her DMA from the University of Maryland in 1988 where she was a student of Thomas DeLio. She has taught at The American University and the University of Maryland and is currently an Assistant Professor at Clark University in Massachusetts where she is co-director of the Group Electro-acoustic Music and the Center for Contemporary Performance.

*Dindirindin* is a re-setting of an anonymous Spanish renaissance text, and is the third in a series of works which explore the combination of music and language. In this piece I have combined a phonemic treatment of the text with timbres developed using FM synthesis to create an essentially monophonic line. The two elements of that line, the voice and the tape, can be heard as both reflections and developments of one another. Another conceptual catalyst for the creation of *Dindirindin* is the very idea of taking an old song and re-using it. On one hand, I have treated it as an organic substance that can grow and develop, and on the other hand as an organic substance that has died and is in a state of decay.

*Maria Tegzes* (soprano) received her Bachelor of Music from Peabody Conservatory in 1986 and her Master of Music from New England Conservatory in 1988 with Distinction in Performance. Ms. Tegzes has an extensive background in the performance of opera and chamber music. She has performed under the auspices of Opera Company of Boston and Maryland Educational Theatre, as well as with chamber music groups including The Boston Musica Viva, the Princeton Ensemble of Princeton University and ACCESS Chamber Ensemble, of New York City. Ms. Tegzes has received critical acclaim in the United States and Europe for her interpretations of contemporary music as well as opera. Her New York City appearances include performances at Merkin and Carnegie Recital Halls, Town Hall, The Miller Theatre and CAMI Hall. She has been a coach of instrumentalists as well as singers and has given lectures on the performance of contemporary music. In 1992, Ms. Tegzes was a recipient of an Arts International Grant for a performance in the Grand Hall of the Conservatory in Bern, Switzerland at a festival honoring women composers. Her recordings on NEUMA Compact Discs include a disc entitled *Urban Cabaret* featuring the works of Hanns Eisler. Ms. Tegzes teaches voice at the College of the Holy Cross.

---

## WESLEY FULLER—*THE CAMARGO TRIO*

**for piano, percussion and computer**
**Jacques Linder, Piano**
**Robert McCormick, Percussion**

*Wesley Fuller* did his undergraduate work at the Oberlin Conservatory of Music and graduate work at Boston University. In 1961 he was a fellow in Composition at the Berkshire Music Center at Tanglewood where he studied with Wolfgang Fortner. In 1974 he studied computer music with Leland Smith at a summer workshop at Colgate University. He was subsequently invited back to Colgate to write a piece for piano and computer, *Time Into Pieces* (1976), which was performed at the Computer Music Conference at UCLA at La Jolla in 1977. A later work for violin and computer, *Concertpiece* was performed at the first International Computer Music Conference at Venice, Italy in 1982. Other works include *Affirmations* for chorus, instruments, and Buchla Synthesizer to texts of Kandinsky; *As the Flute Flies* for flute and tape (Concrete); *Four Pieces for One Clarinet, One Player; Triple Concerto* for piano, percussion, computer and chamber orchestra; *Variations for Piano; Trio for Piano, Percussion, and Computer.* Works of the composer are recorded on Redwood, Spectrum and Neuma labels, published by Edition Modern, and performed internationally and frequently. He has undertaken research, composition and teaching projects supported by the National Endowment for the Humanities, National Endowment for the Arts, The Camargo Foundation, the Digital Equipment Corporation, the Mellon Foundation, and the Clark in Europe Program. Fuller is George N. and Selma U. Jeppson Professor of Music (Emeritus) at Clark University in Worcester, Mass., where he taught and directed the Electronic Music Program. In 1990 the composer took an early retirement from teaching and now works in his studio near his home on the west coast of Florida.

*The Camargo Trio* is a continuous structure of unfolding, relatively short phases, each with its own texture, colors, and pitch-rhythm personality. (Only the last phase of the trio summons memories of previous shapes.) Although "through composed", the individual phases are all part of an overall plan of tempo and rhythmic relationships, and the trio can be perceived in three larger sections. Section One begins with a phase of energetic trio texture which is momentarily slowed by a brief percussion

and computer duo, only to regain its energy and move to a sudden short silence leading to phase 2, a quieter, more lyric piano and computer phase. The third phase of Section One is a rather gracious, polyphonic trio passage. (In this passage the computer uses a 24 pitch equal tempered scale against the instruments' use of the traditional 12 pitch E.T.S.) Phase 4 has two alternations of computer and piano solos, followed by a 6 second silence marking the end of Section One. Section Two begins with the piano eddying rhythmically a small group of permuting pitches, soon interrupting itself with a declarative statement, and continuing this colloquy into a pitch, range, and dynamic expansion which leads into the second phase of Section Two—the passage of greatest quietude in the piece. The computer quietly joins the last sounds of phase 2, leading into phase 3, a reflective piano-computer duo of quiet piano sounds against filtered white noise dyads. In this phase the piano and computer each sound a unique textured version of the main pitch source of the piece. This phase is the quiet, ordered center of the Trio, and the close of Section Two. The percussion begins phase 1 of Section Three, murmuring quietly under the last of the piano and computer sounds, and after a few short eruptions, fading into phase 2, a gentle marimba melody. After brief silence, the percussion solo continues, moving into the more agitated, disjunct and unpredictable phase 3 which culminates in an explosive outburst, in the final decay of which the computer begins the last phase of Section 3. The computer's music invites the piano and percussion to join in, this time in a rather free-wheeling melee which remembers parts of earlier gestures. This final trio texture stops at the computer's command, and the piece ends with three quiet, short, and silence-separated computer gestures receding into the distance and final silence. The composing of The Camargo Trio was made possible in large part by a residency grant from the Camargo Foundation of Cassis, France. The computer sound synthesis was realized using Microtechnology Unlimited's Microsound Digital Audio Workstation, and the program Csound. The computer timbres were created with the use of the synthesis techniques of frequency modulation and ring modulation, white noise instruments, and various filters. The music is dedicated to my eldest daughter, Kim Alexandra Fuller, and my eldest granddaughter, Alexandra Dominique Botti.

***Jacques Linder*** received his Master's degree in piano from the University of Illinois and subsequently studied privately with Harriet Shirvan and Gabriel Chodos. He performs extensively including recitals at the University of Maryland, Colgate University, Hamilton College, Clark University, University of South Florida, The Camargo Foundation (Cassis, France), and the Worcester Art Museum (Mass.). As featured soloist his performances include those at Clark Center at Luxembourg, the University of Miami, the University of Maryland, and on French National Culture Television. He has taught at Clark University and is presently Staff Accompanist at the University of South Florida and Co-Chairman of the Piano Department of the University of South Florida Community Music Division.

***Robert McCormick*** is Professor of Music at the University of South Florida where he teaches percussion and directs the University Percussion Ensemble. He is principal percussionist with the Florida Orchestra, and performs frequently as a member of the McCormick Percussion and Flute Duo with his wife, flutist Kim McCormick. The duo performs contemporary music extensively and had numerous works composed for it.

---

## JEAN-CLAUDE RISSET—
## *EIGHT SKETCHES: DUET FOR ONE PIANIST*

**Jean Claude Risset, Piano**

***Jean-Claude Risset*** was born in 1938 in Le Puy, France. His musical studies included piano with Robert Trimaille and Huguette Goulion, composition with Suzanne Demarquez and André Joilvet. He also studied science at Ecole Normale Supérieure, Doctorat ès-Sciences with Pr. P. Grivet, 1967. The composer worked three years with Max Mathews at Bell Laboratories to develop the musical resources of computer sound synthesis: imitation of real timbres (brass synthesis, 1965; pitch paradoxes, synthesis of new timbres and sonic development processes, 1967-1969). He published a catalog of computer synthesized sounds in1969 and set up computer sound systems at Orsay (1970-1971), at the University of Marseille-Luminy in 1974, and at IRCAM. Pierre Boulez asked him to head the Computer Department at IRCAM from 1975 to1979. He was a Professeur at the Faculté de Luminy, University of Aix-Marseille (1979-1985). Risset is presently "Directeur de recherche", CNRS and works on computer music in Marseille.

Risset has received many awards including: 1st UFAM piano prize, 1963; Prix du

Groupement des Acousticiens de Langue française, 1967; Laureate of Dartmouth International Electronic Music Competition (1970) (with *Mutations I*, entirely synthesized by computer); CNRS Medal (1972); 1st Prize for Digital Music and Euphonie d'Or at Bourges International Electronic Music Competition (1980, 1992); Grand Prix SACEM de la promotion de la musique symphonique (1981); Golden NICA, ARS ELECTRONICA, 1987; Silver medal, Centre National de la Recherche Scientifique 1988; Grand Prix National de la Musique, 1990.

His main musical works include: *Prelude*, for orchestra (1963); *Instantanés*, pour piano (1965); *Music for Little Boy*, a play by Pierre Halet, for voice, instruments and tape* [1](1968); *Mutations I*, for tape* [2](1969); *Dialogues*, for 4 instruments and tape* [2] (1975); *Inharmonique*, for soprano and tape*[2] (1977); *Moments newtoniens*, for 7 instruments and tape* (1977); *Mirages*, for 16 instruments and tape** (1978); *Songes*, for tape**[1] (1979); *Aventure de lignes*, for electronic instruments ensemble and tape* (1981); *Passages*, for flute and tape*[1](1982); *L'autre face*, for soprano and tape*[4,5] (1983); *Profils*, for 6 instruments and tape* (1983); *Contours*, for tape [3](1983); Filtres, for 2 pianos (1984); *Sud*, for tape**[1,2] (1985); *Seule*, for soprano solo (1985); *Dérives*, for chorus and tape* (1985/1987); *Voilements*, for tenor saxophone and tape**[6] (1987); *Phases*, for orchestra (1988); *Attracteurs etranges*, for clarinet and tape (1988); *Duet for Piano*: eight sketches (for Yamaha Disklavier acoustic piano and Macintosh II computer, realized in M.I.T.)[10] (1989); *Electron-Positron* for 8 track tape** (1989) (for the inauguration of the L.E.P.. accelerator, C.E.R.N., Genève); *Rounds for piano* (1990)[7]; *Echo for John Pierce* (1990)[8]; *Trois études en duo* (1991); *Mais déjà vient la nuit*, for 15 instruments (1991); *Triptyque* for clarinet and orchestra (1991); *Lurai*, for celtic harp and computer (1992); *Saxatile*, for soprano saxophones and computer (1992); *Une aube soleil*, for soprano and percussion (1992).

*Eight Sketches* was realized in 1989 as I was composer in residence in the Music and Cognition Group, Media Laboratory, M.I.T., thanks to a grant of the Massachusetts Council of the Arts. It was implemented with real-time program MAX written by Miller Puckette at M.I.T. and at IRCAM. I acknowledge the invaluable help of Scott Van Duyne.

The title is intriguing, but so is the process used, since this is probably the first piano "duet" for a single pianist. In addition to the pianist's part, a second part is played on the same piano—an acoustic piano, with keys, strings, and hammers—by a computer which follows the pianist's performance. This requires a special piano—here a Yamaha Disklavier—equipped with MIDI input and output. On this piano, each key can be played from the keyboard, but it can also be activated by electrical signals: these signals trigger motors which actually depress or release the keys. Each key also sends out information as to when and how loud it is played. The information to and from the piano is in the MIDI format, used for synthesizers. A Macintosh computer receives this information and sends back the appropriate signals to trigger the piano playing: the programming determines in what way the computer part depends upon what the pianist plays.

In these sketches, I have tried to explore and demonstrate different kinds of live interaction between the pianist and the computer.

***Double.*** The pianist plays alone, then on the repeat the computer adds ornaments. These are prerecorded: they are called when the pianist plays certain notes; their tempo can be influenced by the tempo of the pianist.

***Mirrors.*** Each key played by the pianist is echoed by a key stroke, symmetrical with respect to a certain pitch—a process used in Webern's second *Variation opus 27*, quoted at the beginning (and also at the end with time reversal). The symmetry center and the response delays are changed during the piece to vary the effects.

***Extensions.*** To the arpeggioes played by the pianist, the computer adds additional notes transposed in pitch.

***Fractals.*** To each note played, the computer adds five notes spaced approximately—but not exactly—one octave apart. Thus the pitch patterns played by the pianist are distorted in strange ways; an octave jump is heard as a semitone descent.

***Stretch.*** Pitches are added, as in *Extensions*, but the intervals are not merely transposed: they are stretched by a factor ranging between 1.3 and 2.7. This extends the harmony as well as the melodies played by the pianist.

***Resonances.*** At the beginning and the end, the computer plays long sustained chords. In the middle section, the pianist plays mute chords: the strings are set in resonance by the sequences played by the computer.

***Up Down.*** Quasi-octave arpeggioes are triggered by the pianist, whose few notes can thus generate many notes. The tempo of the arpeggioes is set first by the tempo of certain patterns played by the pianist; later by the pitch he plays; then by the loudness.

***Metronomes.*** This begins by a short canon: the computer echoes the pianist on transposed pitches and at different tempos. It later plays simultaneousy different sequences at different tempos. Then it repeats the same pitches, but again at different metronomic tempos, either preset or set by the pianist.

On the occasion of the fifth anniversary of the Media Laboratory, I performed this piece in October 1990 at Bartos Theater, M.I.T., and my performance was recorded by Jonathan Wyner. Except for the sketch *Resonances*, which requires that the pianist and the computer play on the same piano, this recording actually used two Yamaha pianos: the pianist plays on the piano heard on the left channel, and the computer responds on the piano heard in the right channel.

—Jean-Claude Risset

---

**: computer-synthesized tape.*
***: tape obtained by computer synthesis and processing*

1. *Recorded on C.D. WERGO 2013-50 "Jean-Claude Risset"(distrib. Harmonia Mundi).*
2. *Recorded on C.D. INA C 1003 (distrib. Adda).*
3. *Recorded on C.D. NEUMA New Music Series vol. 1, 450-71 (with Xenakis, Scelsi, Korde, Lippe, etc.—distribution Harmonia Mundi).*
4. *Recorded by Irène Jarsky on C.D. WERGO "Computer Music Currents" n° 7 (with Bodin, Yuasa, etc—distribution Harmonia Mundi).*
5. *Recorded by Maria Tegzes on C.D. Neuma Electro Acoustic Music 1, 450-73 (with Lansky, Dodge, Saariaho...—distribution Harmonia Mundi).*
6. *Recorded by Daniel Kientzy on record "Sax-Computers" (with Racot, Teruggi), INA-GRM C2000 —distribution Adda).*
7. *Recorded by Michel Oudar on C.D. Copsi-Empreinte digitale 13007 (with Scriabino,Boeuf, Diennet, Berio—distribution Adda).*
8. *On C.D. ICMA/ICMC '92 (PRCD1300) (with Degazio, Kimura, Chasalow, Morales, Settel, Harrison).*

---

Cover Art • Allen Norton
Digital Editing • Northeastern Digital Recording, Southborough, MA
Design • Susan Calkins
Producer • Shirish Korde