

Had a teacher's suggestion not backfired, one of the most extraordinary performers in twentieth-century music might have spent his musical life as a church organist. Born in Philadelphia on January 20, 1926, **David Tudor** began piano lessons at the age of six. Five years later, and stimulated by the sound and mechanics of the small reed organ his father played at the family church, he auditioned for H. William Hawke, the organist and choirmaster at Philadelphia's High Episcopal St. Mark's Church. Hawke accepted Tudor *gratis*, made him his assistant within a year, introduced him to the glories and mysteries of the organ, and, over a period of five years, provided him with a conservatory-level education in music history, theory, harmony, and counterpoint. At sixteen, Tudor became an associate member of the American Guild of Organists; a little over a year later, he was appointed organist at Trinity Church in Swarthmore. That winter, as he turned eighteen, he made his professional debut with a series of five weekly recitals at nearby Swarthmore College. Their success led to Tudor's appointment at Swarthmore College later that winter. His career as an organist seemed well under way.

In fact, it was already over. At some point, Hawke had recommended that his pupil resume piano lessons; greater flexibility at the piano could lead to work as an accompanist outside the church. Tudor's search for a piano teacher ended on the night he heard Irma Wolpe at a gathering of Swarthmore faculty and friends. Hearing her play the *Dance in the Form of a Chaconne* by her husband Stefan Wolpe, Tudor recalled a few years later, "completely changed the course of my life. When I heard her play I immediately and spontaneously decided to become a pianist." Chief among his reasons, he said, was the wish "to do something for contemporary music."

Irma and Stefan Wolpe taught weekly at Philadelphia's Settlement Music School, and Tudor's piano lessons there were soon supplemented by studies in composition and analysis with Stefan Wolpe. Wolpe insisted that all of his pupils, no matter what their nominal field or interest, learn about music by writing their own. In this regard, Tudor was a reluctant pupil. The two short works he completed under Wolpe's guidance, despite the amount of sketching and revising that went into them, show only that Tudor quickly grasped the principles of twelve-tone composition, no more. Though he continued to dabble in composition for several years, he never performed anything he wrote or, it seems, even showed them to fellow musicians.

But Wolpe had plenty of ambitious composition students, and Tudor soon became pianist for the Wolpe circle. With an ability to read the most complex scores at sight and what Wolpe called an "extraordinary grasp of contemporary music," he played the music other pupils brought to the weekly master classes in the Wolpes' apartment in New York City. The door to the large flat was always open, and Tudor increasingly spent his time staying with the Wolpes (the childless couple had quickly taken him under their wing) before moving to the city in August 1948. For the next few years, he eked out a living as an accompanist and took part in the occasional concerts Wolpe organized. In early 1948, he began a long association as accompanist to Sigurd Rascher, whom Tudor would remember as the greatest musical performer he had ever known.

The culmination of Tudor's work in those years came when he gave the first performance of Wolpe's *Battle Piece* on March 11, 1950. In the audience at Columbia University that evening was John Cage, who would remember Tudor's playing of the six-movement, twenty-five-minute, and in all ways difficult work, later that year when he needed a pianist for an even more challenging score.

In 1949, Cage had gone to Europe, ostensibly as a reporter covering summer music festivals and for research in the music of Erik Satie. But the most consequential event during his six months in France was meeting the twenty-four-year-old Pierre Boulez, and when Cage returned to New York in the fall he brought scores by his new friend and immediately began looking for people to perform them. Among the works was Boulez's Second Piano Sonata, composed in 1946-48 but still unplayed. Cage first turned to William Masselos, who had been performing music by modern American composers for several years.

But Masselos's repeated attempts to make headway with the innovative difficulties of the sonata were unsuccessful, and when Cage reported this to another new friend, Morton Feldman, the younger composer replied that the only pianist to consider for the project was his own friend and fellow Wolpe pupil, David Tudor.

Tudor had in fact been studying the sonata informally from a copy Feldman had lent him. But now, as he prepared the piece for its American premiere, he found himself in the unnerving predicament of being unable to play more than a few measures, anywhere in the score, before grinding to a stop. He looked for clues in the writings of Antonin Artaud, the radical French dramaturge Boulez had alluded to briefly and obliquely in his early essay, "Propositions." Charged by Artaud's vision of a theater governed not by language but by action, Tudor developed a sense of disciplined discontinuity in performance, where memory of past musical events and actions had to be obliterated in order to meet the requirements of the next, immediate moment. It was an insight he applied first to Boulez's sonata, then to all new music that began to appear in the early 1950s, and it led him to look back on the developments of that time as constituting "a change in the perception of music."

As for Cage, he found in Tudor more than an ideal performer. Tudor's disposition toward the new, the unusual, and the unpredictable, and his apparently limitless technical abilities, combined with a natural reticence and secretive manner, made him at once indispensable and remote, the essential ingredient in the music Cage and the young composers—Feldman, Christian Wolff, and eventually Earle Brown—sympathetic to his ideas wrote over the course of the following decade. More than simply a performer, he was a catalyst: Brown credited Tudor with spurring him to devise his proportional notation, and Cage went so far as to state that Tudor "invited the whole thing of indeterminacy." There was also a provocative aspect to this new composer-performer relationship: "what you had to do," Cage, added, "was to make a situation that would interest *him*. That was the role he played."

Tudor's performances of Wolpe's *Battle Piece*, the Boulez sonata, and, in 1952, Cage's first major chance-derived composition, *Music of Changes*, launched his extraordinary and surprisingly brief career as a pianist. For three summers, he taught and performed at Black Mountain College, leaving his mark on such artists as the poet Charles Olson, who went so far as to declare that Tudor, through the simple advice to "read what is on the page," taught him how to read poetry, and the dancer Katherine Litz (Tudor went to Black Mountain as Litz's accompanist, but she found herself more deeply influenced by hearing him as a soloist. "I believe this experience," she wrote after his first recital at the experimental college, "will change my direction in art & life from now on."). In the summer of 1953, Merce Cunningham was also on the faculty at Black Mountain, and when in August he created a new dance company at the experimental school before returning to New York, Tudor became its accompanist, and remained with the company for the rest of his life.

As the decade progressed, Tudor became a touchstone for both the American and the European experimental avant-garde. His unparalleled dexterity, his openness to new ideas of the nature and purpose of music, of what music could be, and his dazzling solutions to the daunting problems of the new music and its notation placed him in the forefront of what Frank Hilberg has called "the eye of the hurricane."

In 1954, he went with Cage to Europe. Reception in the press was often sarcastic (though coverage was enormous: Amy Beal found about sixty reviews of their first concert in Germany), but Tudor and Cage established a beachhead, especially in the person of Karlheinz Stockhausen. In Stockhausen Tudor found the most invigorating musical mind since Cage's, and he introduced Stockhausen's music to the United States almost as soon as he and Cage returned to New York. Stockhausen, in turn, acted as an intermediary for the two Americans, working particularly hard to bring Tudor back to Europe. (When he learned that Tudor was to play at the 1956 International Summer Courses for New Music at Darmstadt, the center of the European avant-garde in the 1950s, he exclaimed, "Der Tudor kommt!" and greeted Irma

Wolpe, who was also at Darmstadt that summer, with the words, “*Thank you for David Tudor!*”)

Again, Tudor assumed a familiar role. “You ask if I have a wish concerning a particular performer,” Franco Evangelisti wrote to Darmstadt director Wolfgang Steinecke in 1958. “This wish is named David Tudor.” For the next half decade, Tudor saw himself as an emissary between the American and European avant-garde. The European composers responded in the same way as the Americans had done, taking advantage of Tudor’s extraordinary gifts and unique musical personality. In the introduction to his *Five Pieces for David Tudor* of 1959, Sylvano Bussotti noted that his title was not a dedication but an indication of the instrument for which he had written the music; Roman Haubenstock-Ramati claimed that Tudor “could play the raisins in a slice of fruitcake.” These were European echoes of New York, where Tudor had long been regarded less as a performer than an instrument, an exploratory instrument for musical experimentation.

Yet as early as 1960 there were signs that Tudor’s interest in the piano was waning. In the spring, he gave three concerts at The Living Theatre in New York, and that summer saw his first appearance in the historic series of performance events in the Cologne atelier of the artist Mary Bauermeister. The programs featured works by the new generation of the American and European avant-garde—Bussotti, Bo Nilsson, Cornelius Cardew, David Behrman, La Monte Young, George Brecht, Toshi Ichihyanagi, Kurt Schwertsik, and Gottfried Michael Koenig. But in August he confessed to his longtime companion, the poet and ceramist M.C. Richards, “I’m not terribly pleased with any of my activities of recent months or of those I see in the very near future.” As the music composers continued to send him became less and less challenging, he felt, he later said, “like an actor playing the same role.” Nor was he the kind of performer who probes further into a core repertory, and unless a piece acquired an extended life when Cunningham used it for one of his dances, it soon disappeared from Tudor’s programs.

In early 1962, he appeared on many of the recordings Brown produced for the Time/Mainstream label, participating in all of the works by the New York group included in the landmark series. But when Brown asked him to record some of the major large-scale works of the twentieth-century piano literature, including the Boulez Second Sonata and Cage’s *Music of Changes*, Tudor declined. Appearances as a pianist were becoming infrequent, usually in connection with a Cunningham repertory dance or with Stockhausen, who continued to press an increasingly reluctant Tudor into service, even though he had not composed a new piano work since *Klavierstück X* of 1961 (a work Tudor secretly detested). By 1966, Cage could tell an interviewer that Tudor now played the piano only “when it’s necessary.”

What *was* attracting his attention increasingly was the new world of live electronics (neither he nor Cage had any interest in the parallel evolution of taped electronic music being produced by the academic avant-garde). His fascination with the medium went back at least as far as his work as part of Cage’s “Project for Music for Magnetic Tape” of the early 1950s. Now, he saw new possibilities as a result of his recent work with Cage, especially in the potential of contact microphones he used in the 1960 *Cartridge Music* and continuing with *Variations II* (“a piece,” Cage said, “entirely due to his presence on Earth.”) and *Variations IV*.

The turning point came during the Cunningham Company’s six-month world tour in 1964, when Tudor made his first appearance as a composer in his own right. Typically, it was an anonymous debut, and only later did Tudor look back and acknowledge that he had crossed the line from performer to composer. (Long before, critics confounded by the indeterminate scores Tudor performed as a pianist were lamenting that the line had already been erased.) Robert Rauschenberg, officially the Cunningham Company’s set and costume designer, had won the Venice Biennale, and as a result of his new celebrity was invited to stage his own performance event at Stockholm’s Moderna Museet. When he asked Tudor to contribute music to the event, Tudor enlisted the help of several members of the museum’s staff, who spent nearly three days attaching contact microphones to more than two hundred fluorescent light bulbs in

two gallery ceilings. At the performance, Tudor amplified the sounds made not by the bulbs but by their switching on and off, as Rauschenberg entered the gallery on the back of a Brahma bull and then immersed himself in a barrel of water. Rauschenberg called the event “Elgin Tie.” Tudor did not name his contribution (he later gave it the functional title *Fluorescent Sound*) or even mention it in his letters to Richards during the tour. He still thought of himself not as a composer but a performer.

The change of identity was gradual, though a dispute with Cage over the authorship, or co-authorship, of the 1965 *Variations V* may have spurred Tudor’s reconsideration of his role; certainly, his deteriorating relationship with Stockhausen did. In late 1965 he began using amplification and electronic modification in a series of collaborations with the composer and laser artist Lowell Cross. In the following summer he and Gordon Mumma electronically transformed the bandoneon (an accordion-like Argentine instrument Tudor had taught himself to play in the early 1960s) in Mumma’s *Mesa*, composed for Cunningham’s dance *Place*. And in the fall of 1966, when Rauschenberg and the electronics engineer Billy Kluver planned a series of performances at New York’s 69th Street Armory for their new organization, Experiments in Art and Technology, Tudor designed his own work for the instrument, again in collaboration with Cross. Although *Bandoneon!* (the exclamation mark is the mathematical symbol for “factorial,” not a sales pitch for the music) was a striking and spectacular contribution to *Nine Evenings: Theater and Technology*, it was another isolated endeavor. For all its complexity, it seemed, like *Fluorescent Sound*, to be an occasional piece.

But *Bandoneon!* had given Tudor the opportunity to develop two ideas that had been in his mind for more than a year. One was that loudspeakers need not simply be transmitters of prerecorded sound but can become instruments, “sound sculptures” with individual characters and personalities like conventional instruments. The other was the intriguing possibility of generating sound without an external source of input.

In early 1968, Cunningham created a new dance whose apparent impetus was Colin Turnbull’s *The Forest People*, with its account of life among the Mbuti Pygmies of the Ituri Forest in Zaire. The story also sparked memories of Cunningham’s childhood in the Pacific Northwest and its Olympic rainforest. But like any Cunningham dance, there was nothing programmatic about the choreography or, for that matter, the décor, which drew on Andy Warhol’s installation *Silver Clouds*, the clouds being helium-filled pillows that floated above the stage. For the music, Cunningham turned to Tudor and for the first time asked him for an original work. When he learned that the dance was to be called *Rainforest*, Tudor said, “Oh, then I’ll put a lot of raindrops in it.” Raindrops were just the beginning: Using eight audio transducers (originally designed by the Navy for hearing under and above water simultaneously), phonograph cartridges, and two sets of loudspeakers, Tudor created a world of sound in perpetual but unpredictable motion, a steady state at once abstract and evocative.

First performed by Tudor and Gordon Mumma on March 9, 1968, when the Merce Cunningham Dance Company appeared at the Second Buffalo Festival of the Arts Today at the State University College, *Rainforest* soon acquired an independent life. Freed from the time limits of the dance, Tudor and Mumma gave a 42-minute performance of the work in a concert at Cornell University in March 1969; that performance is part of this compact disc. New versions of the work followed, including two Tudor made as complements to sound-text pieces by Cage (one of these duo performances, released on New World 80540-2, misidentifies Tudor’s part as *Rainforest II*; it is the third version). In 1973, Tudor transformed the work into a group composition and “an electroacoustic environment” using a multitude of objects as sound sources; any signal input was acceptable, Tudor wrote, “except composed musics.” In addition to filtering and mixing, the sounds were redistributed throughout the performance space, leading Mumma to call *Rainforest IV* “an ecologically balanced sound system.” In addition to workshops and live performances, plans are under way to make *Rainforest* permanently available through an interactive Web-based version and a self-operating installation.

“More and more,” Tudor recalled of the early 1960s, “I found I was playing my own sound imagination.” *Rainforest* belongs to the first phase of Tudor’s career as a composer, and several years passed before his imagination took full flight in the remarkable series of works from the stunning *Toneburst* of 1974 (a piece he described as a direct translation of his mind into music) to the final *Soundings: Ocean Diary* of 1995. Almost four decades after its creation, it remains his most frequently performed work by musicians who worked with Tudor and gained enough insight into his methods to re-create his sonic world. It marks the turning point in the evolution from performer-interpreter to composer-performer.

—John Holzaepfel

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Notes on *Rainforest*

Gordon Mumma

David Tudor’s performance life was supplemented, and eventually supplanted, by his developing activities as a “composer of sound resources” during the 1960s (his own verbal phrase when speaking to me in 1966). The creative roots of *Rainforest* (1968) run deep into Tudor’s collaborative creative work of that decade, with John Cage, the Merce Cunningham Dance Company, Pauline Oliveros, Lowell Cross, Alvin Lucier, myself, and others. This was a shared and diverse garden of ideas, with minimal fences, harvested by many individual and collaborative creative artists.

The genesis of Tudor’s sound-processing ideas in *Rainforest* was underway during his contributions to Cage’s *Cartridge Music* (1960). Cage’s premise was the use of amplified small sounds from resonating objects. In assisting with the preparation and rehearsals, Tudor obtained many obsolete transducers from junk shops, applied them to resonating devices such as suspended “Slinkies,” and worked with elementary mixers and amplifiers. His collaborations with Cage for the latter’s *Variations II* (1962) and *Variations V* (1964) would also nourish Tudor’s later experiments with amplified small sounds, acoustical resonances, and feedback processes.

These activities contributed to Tudor’s sound-installation titled *Fluorescent Sound*, for Robert Rauschenberg’s *Elgin Tie* theater-sound production in Stockholm. This September 1964 collaboration was a notable part of Tudor’s moving away from activities as a pianist. He said of the Stockholm project that he was happy doing something entirely of his own, and acknowledged it as perhaps his “first real composition.”

Tudor’s imagination evolved beyond simple amplification to the use of acoustical objects as resonating devices to modify sounds of electronic origin. Part of this interest was stimulated by his collections of defective and low-grade small loudspeakers that produced “distorted” sounds. He was also enthusiastic about similar ideas in the work of others, notably Pauline Oliveros in her *Applebox Double* (1965), which Tudor and Oliveros performed together at a ONCE Festival Concert on March 28, 1966, in Ann Arbor, Michigan. In 1966, Tudor was also collaborating with Lowell Cross on a compositional idea for the Nine Evenings project of EAT (Experiments in Arts and Technology) later that year. That collaboration became Tudor’s *Bandoneon!* (read “bandoneon factorial”), an interactive sound and visual production with the unique technical designs of Cross, premiered in New York City on October 14, 1966.

During the years from 1960 to 1966, much of my work with Tudor was assisting him with technological procedures for Ann Arbor productions of works by Cage, such as Cage’s 128-story version of *Indeterminacy* (May 14, 1960), *Variations II* (February 17, 1963), and *Talk 1* (September 19, 1965). From

September 1965 onwards Tudor and I were at work on preparing my *Mesa*, a composition he requested for his bandoneon and my cybersonic electronic-processing. Still in process by early 1966, *Mesa* was commissioned by Merce Cunningham as music for his forthcoming choreography *Place*, premiered at the Fondation Maeght in St.-Paul-de-Vence, France, on August 6, 1966.

1964 was also a significant year for Tudor's sound-explorations, as it was the first year of an ongoing series of Cunningham's choreographic *Events*. These individual *Event* performances began in Vienna in June 1964, and developed through the following decades. The Cunningham Dance Company composer-musicians collaborated to create unique *Events* music that involved both structural planning and improvisation. Tudor developed his resonant sound recycling experiments in these *Events*, beginning in 1966 with Cage and myself as collaborators. One reason Tudor and I worked well together is that we shared space, time, ideas, and production activities with minimal conflicts between us. The concepts of our compositional work were mostly different. Whereas I explored the electronic modification of acoustical sounds, Tudor explored the acoustical modification of sounds of electronic origins, often by resonating objects to which vibrating small loudspeakers were physically attached. Only "mostly" because we crossed paths, overlapped, and sometimes used each other's sound-resources for further creative work with our own procedures.

In 1968 Cunningham commissioned Tudor to do individual music for his forthcoming choreography titled *Rainforest*. The March 9, 1968 premiere in Buffalo, New York, was a great success, an extraordinary combination of Cunningham's gently romantic choreography, Andy Warhol's enchanting décor of floating helium pillows, and Tudor's gently lyrical music for which he adopted Cunningham's *Rainforest* title. Thereafter, *Rainforest* grew, and different versions emerged over the years. Eventually it was historically necessary to assign numbers to the *Rainforest* title when the differences were substantial.

The *Rainforest* performance in Rio de Janeiro was notable. It was part of the Cunningham Dance Company's Latin American tour in the summer of 1968. That tour actually started in the high altitudes of Boulder during a summer residence at the University of Colorado. This period of preparation was crucial: The first performance of the South American tour was to be in Mexico City (above 7,000 feet in elevation), where the summer Olympics were also underway. Like the athletes, the dancers needed altitude adjustment in advance—as did Warhol's helium-filled pillows, which were resized in Boulder so as to float properly on stages in high altitudes.

Besides Mexico City and Rio de Janeiro, the South American tour included performances in Buenos Aires and Caracas. Everywhere the political situations were intriguing or challenging, in Rio de Janeiro because of requirements to perform for the police censors before public access to our work. Even more interesting was obtaining helium for the *Rainforest* floating pillows. The United States controlled the production of helium at that time, and it was prohibited for production in Brazil. Arriving at the Teatro Novo for the setup and first rehearsals, Tudor and I found the orchestra pit filled with pressure-tanks of hydrogen and many large fire extinguishers. We rearranged this melange as best we could so as to have room for our electronic performance equipment, and we assembled the basic *Rainforest* instruments that had been used in the Buffalo premiere. Tudor was a bit nervous, not so much about the hydrogen causing a fire, as that the water from the fire extinguishers might get his equipment wet. He took time off from that first rehearsal, returning with a collection of large rubber and plastic gloves, which he planned to pull over his small *Rainforest* devices in case of emergency.

The Brazilian audience was as open to innovation, intrigue, and danger as was much of Rio de Janeiro that summer. They had learned at a preceding news conference that the Cunningham Dance Company had succeeded in refusing a censorship performance for the police. They were delighted when some of Warhol's hydrogen-filled *Rainforest* pillows drifted into the audience during the performance, and were enchanted by the lyrical character of Tudor's music, Cunningham's choreography and the superb dancers.

Perhaps the mystique of “explosive hydrogen” had also contributed to the great enthusiasm of Rio’s audience.

This recording, made from that Teatro Novo orchestra pit on July 30, is an excellent document of the sound character of Tudor’s *Rainforest* work when we performed it with the Cunningham Dance Company in those early years. It also has occasional sounds of the dancers’ feet on the stage.

The first concert performance of *Rainforest*, in March 1969, was several months after the Rio de Janeiro dance performance (and a year after its premiere performance). The venue was a large conference space at Cornell University in Ithaca, New York. The equipment was set on tables in the center of the space, with the audience seated around the performers. Four separate channels of sound were used (not always possible in Cunningham touring performances) and widely spaced, with two in the foreground and two in the background. The sound sources had also expanded from the earlier Cunningham performances, with Tudor now adding recordings of small sounds from insects and birds, in conjunction with the previous electronic sounds, all modified by his acoustical resonant devices. The interactive circuitry was fundamentally the same as previously, but expanded with new devices and interactive connections. Tudor’s initial technical concept for *Rainforest* was a system of one to eight input and output sources, as illustrated on one of his 1968 block-diagram sketches. In the touring practicality, at most four of these sources were used, as in this first *Rainforest* concert performance.

We rehearsed parts of this first concert performance, for assurance that we could fly by ourselves in the absence of dancers and floating pillows. About the duration: Just before we started Tudor said to me: “we will end at the right time.” For me the lyrical gentleness still predominates, even with Tudor’s occasional, celebrated sound-bursts. The resulting performance was about twice the length of the danced version.

Years of further development continued until the summer of 1973, when the large ensemble of the Chocorua, New Hampshire, workshop included instruments built and performed on by many others, guided by Tudor and eventually titled *Rainforest 4*.

Notes on the Composition and Recordings of *Gestures II* and the *Mographs*

Gordon Mumma

Gestures II and the *Mographs* are two sets of pieces for two pianists, composed between 1958 and 1964. During the 1960s Robert Ashley and I toured with our concerts of New Music for Two Pianos, including parts of *Gestures II* and some of the *Mographs*. Later, some of these two works were performed in recording experiments by myself and David Tudor.

Gestures II was conceived as a vast interplay between two pianists, structured in eleven contrasting sections, to be performed in any order chosen by the performers. Some of the sections require extended performance techniques, including performing inside the pianos, sometimes with electronic modifications. Not all of the planned eleven sections were completed, but a group of six were premiered by Ashley and myself at the 1962 ONCE Festival (issued on the New World Records 5-CD set titled *Music from the ONCE Festival 1961–1966* [80567-2]).

Two sections from the Mumma and Tudor recordings, *X* and *7*, are presented on this CD. These two sections are performed directly on the piano keyboards. The first, *Section X*, is a game piece of intertwining single lines, in a graphic encoding that condenses hundreds of possible combinations. The very narrow ambitus is an octave and a half. One pianist starts and the other follows, both moving rapidly. When a mistake is made the performance ends. *Section 7*, by contrast, spans the entire ambitus of the piano keyboards. It is a strictly notated fixed structure, brisk with dense sonorities reflecting back and forth between the two pianos.

Each of the eleven completed *Mographs* includes the year of composition in its title. The first two words of each title indicate the general length of that particular composition, ranging from *Very Small Size Mograph 1962* to the only solo piece, *Large Size Mograph 1962*.

The structure and activities of each *Mograph* were derived from seismographic recorded P-waves and S-waves of earthquakes and underground nuclear explosions. These seismograph patterns were part of 1960s cold-war research that attempted to verify the differences between their seismic disturbance sources. The structural relationships of the time-travel patterns of P-waves and S-waves, and their sound-reflections, had for me the compositional characteristics of musical sound-spaces. One compositional decision was limiting the pitch-vocabulary and intervals for each work, allowing more attention to the complex time and rhythmic activity of the sound events.

About the Recordings of *Gestures II* and *Mographs*

The recordings of the four *Mographs* and the two *Gestures II* sections were part of our experiments with sound-modification techniques for the piano. An early example was an on-tour performance by Tudor of Bo Nilsson's *Quantitaten*, for a revival of Cunningham's choreography *Nightwandering* (1958), performed by Cunningham and Carolyn Brown. A November 1966 performance was in the stuffy orchestra-pit of a London auditorium. Tudor had not played the piece very often, but it remained in his performing memory. During his afternoon rehearsal on an old piano in the pit, he suggested we experiment with some "exotic equalization." He had in mind the extra amplification of the top two octaves, rather than the entire piano range.

For the Nilsson piece I devised a special high-register amplifier system. The loudspeakers were too large to fit inside the piano—Tudor's original idea—so we mounted them facing upward under the piano. With adjustments, we obtained the bright high-end sound he desired, and it didn't sound as though the piano was being amplified. That procedure was also used (and recorded!) in a Cunningham Dance Company performance at the Brooklyn Academy of Music in the early 1970s.

These recordings of the *Gestures II* sections and four *Mographs* were made in various places during late 1960s Cunningham Dance Company tours in the United States. The two sections of *Gestures II* were recorded first, during a 1968 summer residency of the Cunningham Dance Company at the University of Colorado at Boulder. Cage, Tudor, and I gave a recital-hall concert separate from the Cunningham Dance presentations. For two nights after our concert recital, and well past midnight, Tudor and I experimented with recordings of *Section X* and *Section 7*. He practiced his piano-part of the two sections, perhaps a half hour each—substantiating for me his reputation as a fast learner. I was still able to perform my piano-part of the sections with only a few hours of rehearsal, as it was the same part I had performed previously for several years, beginning with Robert Ashley at the ONCE Festival in 1962. Then we rehearsed together and did several recording takes.

Tudor liked *Section X* best—the duo-game. After we'd done our initial recording takes of the *Gestures* sections, and now that we knew the work-game fairly well, he wanted to see how long we could perform it. We did nearly three minutes before I got lost (being very tired), and we gave up. An even worse mistake: It wasn't recorded. The takes on this recording, with very different microphone placements, were chosen because they had the least number of performance errors. The spatial difference between the two sections is obvious: *Section X* is fairly close up, and *Section 7* is at a considerable distance from the two pianos.

At a different tour-venue, in the Midwest, a recital hall was adjacent to the proscenium space used for the Cunningham dance performance. The recital hall had four grand pianos, and Tudor suggested we do some more recording experiments with them. Those "experiments" involved elaborate spacing of both the

pianos and the microphones. We made there several recordings of the simple—only one three-note chord—*Very Small Size Mograph 1962*. The four pianos were not all well in tune, thus encouraging us to arrange them far apart. Each of us would have two pianos that we could each perform, with wide arm-stretches, at nearly the same time. We assigned ourselves the task of playing the single chord, on one hand for each of the four pianos, almost but not exactly simultaneously. For this situation we arranged ourselves so that we couldn't see each other. The performance assignment was that one of us would play the chord and the other would respond to the sound with that same chord, then the first would respond again, and the second to the first. All very quickly, so that the chord sounds became as close together in time as possible without being exactly together. That *Very Small Size Mograph 1962* ends the duo-pianist series on this recording. Another version of *Very Small Size Mograph 1962*, with only two pianos but spaced widely apart, begins this duo-piano series. The *Very Small Size Mograph 1963*, on the same score page and for piano 4-hands, may have been recorded at the same venue.

Elsewhere during the United States tours of the late 1960s we did our experimental recordings of the other two-piano *Mographs*: *Small Size Mograph 1964* and *Medium Size Mograph 1964*. The *Medium Size Mograph 1964* was done with the pianos very widely spaced left-to-right, with one in the foreground and one in the background. We had the luxury of very tall and sturdy microphone stands, and used non-conventional expanded recording positions.

About the *Song Without Words* (1996)

The *Song Without Words* for David Tudor was composed rapidly, in the latter half of the day of his death. After being informed that day by telephone, I had only the impetus to create something. The musical language dearest to his early performing years was from the lesser-known of late nineteenth-century composers. I had no reluctance about whatever echoes from that part of his life might occur in this *Song Without Words*. Intertwining two- and three-voice lines with resonating wide intervals, all of that.

Gordon Mumma (born 1935, Framingham, Massachusetts) studied piano and horn in Chicago and Detroit, and began his musical career in the late 1940s as a horn player in classical symphonic and chamber music. In Ann Arbor, Michigan, from 1957 to 1966 he co-founded with Robert Ashley the Cooperative Studio for Electronic Music, performed with Milton Cohen's multi-media Space Theatre, and was one of the organizers of the historic ONCE Festivals of contemporary music.

From 1966 to 1974 he was, with John Cage and David Tudor, one of three composer- musicians with the Merce Cunningham Dance Company, for which he composed four commissioned works. From 1966 he performed with the Sonic Arts Union, whose members included Robert Ashley, David Behrman, and Alvin Lucier. He has also collaborated with such diverse artists as Tandy Beal, Anthony Braxton, William Brooks, Chris Brown, Marcel Duchamp, Fred Frith, Toshi Ichiyangi, Jasper Johns, Jann McCauley, Pauline Oliveros, Yvonne Rainer, Tom Robbins, Frederic Rzewski, Stephen Smoliar, Stan Van Der Beek, William Winant, and Christian Wolff.

Mumma has made concert tours and recordings in the Americas, Japan, and Europe. His writings on the contemporary performance arts and technology are published in several languages. His best-known engineering design was an electronic-music live-performance system for EXPO-70 (Osaka, Japan)—an extension of the 1968 EAT project, in collaboration with David Tudor and Fred Waldhauer.

Mumma's musical compositions include works for acoustical instruments (mostly piano, and small ensembles), as well as for electronic and computer resources. In 2000 he received the Biennial Award of the Foundation for Contemporary Performance Arts, and was the Jean Macduff Vaux Composer in Residence at Mills College. Since 2004 he has been a Canadian resident, living mostly in British Columbia.

Mumma's friendship and working relationship with David Tudor began in 1960, when John Cage and Tudor gave their first performances in Ann Arbor. Some years later Tudor reminded Mumma that they had first met in the early 1950s, at a recital by the great classical saxophone performer Sigurd Rascher. Previously, Mumma had played horn in a wind-band concert and met Rascher when he was a visiting soloist. At this later recital Rascher introduced Mumma to his accompanist David Tudor. No further connection was made by the two from that occasion: It was nearly a decade later, in the early 1960s, when Mumma and Tudor began their collaborative work and performing together. The first concert in which they performed together was in the premiere of Toshi Ichiyanagi's *Sapporo*, on the February 17, 1963 ONCE Festival. The chamber orchestra was conducted by John Cage, and included Mumma on horn and Tudor performing double bass.

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Gordon Mumma

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Live-Electronic Music. Tzadik TZ 7074.

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David Tudor

Microphone. Cramps CRSCD 116.

Neural Synthesis No. 2. Atonal ACD 3027.

Neural Synthesis Nos. 6–9. Lovely Music LCD 1602.

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David Tudor with John Cage

Indeterminacy. Smithsonian Folkways SF 40804.

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David Tudor (as performer)

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Richard Maxfield. *Piano Concert for David Tudor*. New World 80555-2.

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1. David Tudor (1926–1996)

Rainforest (1968) 20:10

July 30, 1968 performance with the Merce Cunningham Dance Company
Teatro Novo, Rio de Janeiro, Brazil

Gordon Mumma (b. 1935)

2. *Very Small Size Mograph 1962* :26
two pianos
3. *Small Size Mograph 1964* 2:09
piano four-hands
4. *Gestures II, section X* (1961) :23
two pianos
5. *Gestures II, section 7* (1960) :53
two pianos
6. *Medium Size Mograph 1964* 6:04
two pianos
7. *Very Small Size Mograph 1963* :15
piano four-hands
8. *Very Small Size Mograph 1962* :27
four pianos, four-hands

9. David Tudor

Rainforest (1969) 41:35
First concert performance, March 1969
Cornell University, Ithaca, New York

10. Gordon Mumma

Song Without Words (1996) 3:06
(in memoriam David Tudor)
solo piano

Total time: 75:34

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