

David Tudor, John Cage, and Comparative Indeterminacy

John Holzaepfel

Presented at the Getty Research Institute Symposium, “The Art of David Tudor,” in 2001.

© 2001 by John Holzaepfel. All rights reserved. Not to be reproduced without permission of the author.

Note: A slightly longer version of this paper appeared under the title, “Cage and David Tudor,” in *The Cambridge Companion to John Cage*, ed. David Nicholls (Cambridge: Cambridge University Press, 2002), pp. 169-85.

ABSTRACT

Completed in January 1957, John Cage’s *Winter Music* marked a new stage in the evolution of the composer’s music and, consequently, in the performance practice of its most important interpreter, David Tudor. Although Cage had used chance operations as the basis of his compositional technique since 1951, *Winter Music* was his first work to extend indeterminacy from the composition of his music to its performance. And it was the first Cage score to which Tudor applied his practice of writing out his own performance material, or realization, of a composer’s indeterminate notations.

Based on primary sources in The David Tudor Papers at the Getty Research Institute, this paper is a close reading of Tudor’s two methods of realizing *Winter Music*. It begins with a brief survey of Tudor’s performance practices in American experimental music of the early 1950s, then traces the steps that led to his decision, beginning with Morton Feldman’s *Intersection 3* (1953), to perform from his own notations rather than those of the composer.

The core of the paper is an analysis of Tudor’s realization. It includes a description of Cage’s notation of *Winter Music*, the problems that notation presents to the performer, and Tudor’s solutions. Tudor’s methods in preparing his realization both paralleled those of the composer and went beyond them, for in several cases Tudor combined his readings of two or more pages of Cage’s score into composite realizations, a technique he would use again, with enormous elaboration, in his realization of the *Solo for Piano* from Cage’s *Concert for Piano and Orchestra* (1957-58).

FULL PAPER

His interest in puzzles invited the whole thing of indeterminacy. And so what you had to do was to make a situation that would interest him. That was the role he played. *John Cage*

David Tudor’s stupendous gifts as a pianist would have been a blessing to any composer of difficult new music. For John Cage, who in 1951 embarked on a journey of musical exploration that would for at least a decade place him beyond the pale even of his previous colleagues (“even that music estranges my former friends,” he wrote to Tudor in 1951, after a poorly received informal performance of his delicate *Six Melodies for Violin and Keyboard*, “what will they feel next year?” [Cage 1951a]), they were a godsend. “One assumed he could do everything,” Cage later said of the pianist. “In fact, hearing him perform was proof” (Cage 1989). On that assumption Cage proceeded to compose, over the course of the next two decades, a series of works whose radical experimentalism increased in direct proportion to Tudor’s involvement in them.

As he came to know the young pianist in the fall of 1950, Cage found, as he told Boulez, “an extraordinary person” (Nattiez and Samuels 1993: 77). Tudor’s secretive, often mysterious demeanor and his taciturn personality stood in marked contrast to Cage’s natural gregariousness. “He seemed to me to be a mystery,” Cage recalled, “to wish to be a mystery, which shouldn’t be looked at” (Cage 1989). But in the serious, even spiritual nature of Tudor’s character — an aspect that struck everyone who knew him — the composer found a kindred soul. Tudor shared Cage’s belief in the spiritual properties of sound independent of any expressive character a composer might attempt to place upon them by fashioning musical relationships. And his understanding of the task of the performer was nothing short of profound. “For me,” Tudor wrote to a friend,

Music exists as a spiritual reality which will continue to exist after every composer and every page of notes and dynamics are destroyed, and every performer must struggle to make the positive facts of this reality audible to a listener. Otherwise, what excuse has the poor pianist for existing? (Tudor ca. 1960)

At the same time, Tudor's firm faith in the sacred nature of music — "music must be a direct spiritual experience!!" he insisted (*ibid.*) — was grounded in a love for what William Blake, in an indelible phrase, calls "the holiness of the minute particular." Upon anything that attracted his interest — music, cooking, the labyrinths of electronic circuitry, even window-shopping — Tudor bestowed an unhurried, sustained, and awesomely comprehensive attention. When Cage sent him a list of errata in the first part of *Music of Changes*, Tudor wrote back that he had already discovered them, and then presented the composer with a long list of questions about additional ambiguities he had found in Cage's score. After responding to Tudor's queries, Cage confessed that the notation of *Music of Changes* "is inadequate since it does not refer to relations (but only seems to)..." (Cage 1951b). This, both the composer and the pianist recognized, was the result of using conventional notational signs within a new notational framework that equated space on the page with musical time. The composer's simple advice for surmounting the obstacles he had placed before the performer reflected his trust in Tudor's skill and imagination: "let it be lively," he told the pianist (*ibid.*).

For his part, Tudor's preparation of *Music of Changes* would lead to more than eighty pages of charts, lists, computations, and timings. To solve the puzzling notations of Cage's score, he enlisted the aid of the mathematician Hans Rademacher, who devised two formulas for calculating the durations of each of the works structural units, one formula for those units in which the tempo remains constant, another for those in which it is internally modified by an *accelerando* or *ritardando*. Tudor then copied the resultant timings into his copy of the score, and in performance read the notation proportionally by referring to a stopwatch placed on the music rack.

Music of Changes marked the beginning of what artist and psychologist Irwin Kremen has called "a working partnership of exquisite accomplishment" (Kremen 2000). No sooner had Tudor given the first performance of the work on the auspicious date of New Year's Day in 1952 than Cage enlisted his help in a new project. Commissioned apparently on short notice to compose a new work for Jean Erdman's dance "Portrait of a Lady," the composer called upon the pianist to help him transfer chance-determined portions of forty-two phonograph records to magnetic tape in order to create *Imaginary Landscape No. 5*. The experience was Tudor's first taste of electronic music, and, Cage reported to Boulez, the pianist "so enjoyed the work that he said he would prefer to do such work to teaching, as far as making a living was concerned" (Nattiez and Samuels 1993: 130). The brief project (Cage said that *Imaginary Landscape No. 5* was produced in eighteen hours) was a harbinger of the direction their work together and, later, Tudor's work alone, was eventually to take.

Imaginary Landscape No. 5 inaugurated a productive and important year in Cage's creative life. In the spring of 1952, the composer received a grant from Paul Williams, his principal benefactor in the early 1950s, to support a long-term project for the creation of tape music by several composers. When Cage found himself so inundated with work on his own contribution, he again called on Tudor for help, and the two musicians recorded and transcribed the myriad sounds of *Williams Mix*. Although other people also assisted in the preparation of the final tape, Tudor's contribution extended to the writing of the score itself, where his hand is evident in several passages of the notation. But electronic technology had nothing to do with another work Cage wrote in 1952, a work the composer considered his most important. Certainly, it remains his most controversial.

In the latter part of August, Cage returned to New York from Black Mountain College, where he had viewed Robert Rauschenberg's new series of all-white paintings. If it was the implications of Rauschenberg's radical act — that a canvas need include neither image nor even, as the abstract expressionists had hoped, gesture — that emboldened Cage to begin composing the piece, it was Tudor who gave him the encouragement he needed to finish it. When the composer expressed doubts about presenting, as a serious work of music, a chance-generated sum of silences, the pianist replied that he hoped Cage would complete the work in time for a recital he was planning to give in Woodstock, NY, at the end of the month.

When he received the score of "4'33" a few days later, Tudor gave careful consideration to its place on the program, experimenting with the program order several times before putting the new work (the only premiere on the program) in the penultimate position. In practicing the piece itself, he found that he needed a means of delineating the three

movements of the work and decided to raise and lower the keyboard lid of the piano between the three time-lengths of thirty seconds; two minutes, twenty-three seconds; and one minute forty seconds. Whether his gestures clarified the structure of 4'33" to the audience that heard its first performance is doubtful. The printed program for the recital at Maverick Concert Hall on August 29, 1952, shows 4'33" consisting of "Four Pieces." Whether this was simply a printer's error (and this is not as obvious as some commentators have assumed), it was an additional source of confusion for listeners already baffled by the music itself.

Tudor always insisted that Cage composed 4'33" on staff paper, a score now lost. The composer, he said, laid out the three movements in proportional notation on empty staves whose silence Tudor read by a stopwatch, just as he had read the sounds (and silences) of *Music of Changes*, the parent work of 4'33". Many years later, in support of his claim Tudor made two reconstructions of Cage's original score. They differ significantly not only from all published editions of 4'33" but from each other as well. In the first reconstruction, one-half inch is equivalent to M.M. = 60, or one second, and the single continuous staff that runs through the three movements is partitioned into measures of seven and one-half inches' length, with measure equal to fifteen seconds and the leftover time-space in the second and third movements represented by proportionally shorter measures. In his second reconstruction, Tudor used a grand staff, complete with treble and bass clefs and the time signature 4/4. Each measure is now ten centimeters long, and the tempo marking shows that a quarter-note equals both two and one-half centimeters and M.M. = 60. Since this is exactly the same system of measurement Cage used in notating *Music of Changes*, it would seem that if Tudor's recollection of an earlier version is correct, his later reconstruction accurately reproduces Cage's lost score.

The question is not only important to establishing the genesis of Cage's most challenging artistic statement. It also points to the issue of notation as Cage used it in the 1950s and early 1960s — the period of his greatest dependence on the participation of David Tudor.

In notating his early chance compositions, Cage employed two basic techniques. The earliest was the space-time method used in *Music of Changes*, 4'33" and the "time-length" pieces such as 34'46.776" for a Pianist of 1954. In the summer of 1952, Cage devised a quicker means of generating a chance composition by placing the notes on the page either with random templates, as in the *Music for Carillon No. 1*, or where he found tiny pocks and bumps in the paper he used to write the work, as in the *Music for Piano* series of 1952-56.

Yet both methods resulted in scores that are no less (and no more) fixed in their notation than are Cage's pre-1951 works. With a few variations, the composer continued to use the two techniques through the spring of 1956, when he composed the last of the *Music for Piano* pieces. Then, Cage's productivity suddenly dropped off. His works list for the remainder of that year is empty.

In the absence of reliable biographical information, it would be presumptuous to ascribe the absence of a single new composition by Cage over a period of seven months to some kind of crisis. Cage dated the score of *Winter Music* "January 1957," but since he and Tudor gave the premiere of this large and ambitious work on January 12, he probably began working on it well before the beginning of the year, perhaps as early as the fall of 1956. Whatever the date of its genesis, *Winter Music* both looks back to the compositional and notational techniques Cage had developed in the early 1950s and marks the path he would explore for the next decade or more: it is the first work in which he extended indeterminacy from the composition of his music to its performance. Consequently, it also marked a new phase in David Tudor's approach to preparing his performances of Cage's scores.

In the early 1950s, Tudor had no reservations about playing Cage's music from the composer's sometimes idiosyncratic but always functional notation. In part this was because, for all its ambiguities, the notation was fixed and determinate of its performance. Furthermore, this was no more than a reflection of Tudor's general philosophy of performance. He told me that not only did he read from every composer's notation whenever possible, he also kept his own scores "clean as a whistle" (Tudor 1992). Indeed, one finds in his library of music, both old and new, remarkably few annotations, usually nothing more than a few timings, especially for dance pieces; fingerings are next to non-existent. He wanted, he said, unobstructed access to the printed page; anything not placed there by the composer was a distraction. As a pianist, Tudor read the music as if its life depended on it, as if the art of performance itself consisted of reviving the composer's thought, whose only mediation was the notation in which it was temporarily suspended.

But as other composers joined Cage in allowing increasing freedom to the performer (and it should be remembered that during the 1950s “the performer” almost always meant David Tudor), he began to find himself faced at times with an overflow of choices to make in the reality that is musical performance. No friend to improvisation (his meticulous nature required him to see what he was to translate into sound, even when, in the case of *4'33"*, he saw nothing), Tudor turned to a different solution. Undertaking a rigorous series of preparatory steps including measurements, computations, conversion tables — whatever he found useful to the task — he translated the results into a more or less conventional notation, or realization, for his own use in performance. Tudor began writing realizations in 1954 for his performances of Morton Feldman’s *Intersection 3* and Earle Brown’s *Four Systems*. Three years later, he applied the practice again.

The twenty pages of *Winter Music* comprise a set of notations based on the same method Cage had used in the *Music for Piano* series: wherever he found an imperfection in the paper, he placed a solid note head, then overlaid the results with a single staff that turned the note heads into notes. So far, this was nothing new. But whereas in *Music for Piano* he had fixed the notes with clefs on a grand staff, now Cage “floated” the clef signs with chance operations and thereby rendered the pitch content of *Winter Music* indeterminate. So that the performer could decide which of the clefs to apply to the notes that follow them, Cage included a pair of numbers as a guide. The first number applies to the higher of the two clef signs, the second to the lower. One finds, for example, on the first page of *Winter Music* a ten-note chord, or “aggregate,” preceded by a bass clef over a treble clef, together with the numbers 1 and 9; that is, the pianist is to select one note to read in the bass clef and the remaining nine notes in the treble.

Reading this notational system can make for rough going in performance.

(Example 1. Cage, *Winter Music*, page 4)

Nor are Cage’s performance instructions entirely helpful:

The 20 pages may be used in whole or part by a pianist or shared by 2 to 20 pianists to provide a program of an agreed upon length. The notations, in space, 5 systems left to right on the page, may be freely interpreted as to time. An aggregate must be played as a single ictus. Where this is impossible, the unplayable notes should be taken as harmonics prepared in advance. Harmonics may also be produced where they are not so required. Resonances, both of aggregates and individual notes of them, may be free in length. Overlappings, interpenetrations, are also free. The single staff is provided with two clef signs. Where these differ, ambiguity obtains in the proportion indicated by the 2 numbers notated above the aggregate, the first of these applying to the clef above the staff. Dynamics are free. An inked-in rectangle above a pair of notes indicates a chromatic tone-cluster. The fragmentation of staves arose simply from an absence of events.

For their duo performances of *Winter Music*, Cage entered his own readings of the notations he had written in the score. Tudor took more elaborate measures.

Working from a pre-publication copy, in which Cage had not yet numbered the twenty pages of the score, Tudor assigned the pages letters from A through T. Because these letters do not always correspond to Cage’s later pagination of the score, I will refer to a given page both by Tudor’s letter-name and its number in the published edition (Peters Edition 6705 [1961]). Page A (3), for example, means Tudor’s A/Peters page 3; B (4) refers to Tudor’s page B/Peters page 4, and so on.

Tudor next sorted out a pitch content for his realization by compiling an index of his readings of all of Cage’s notations. If a notation was sufficiently straightforward, he simply transcribed it, at times clarifying it enharmonically and frequently dispensing with Cage’s numerous ledger lines. These lines show correspondence between the notations and the paper imperfections that are their source, but in performance they are an obstruction to reading. Cuing them by pitch name, which is what Cage may have done, only makes the score more unwieldy. So Tudor used *delta* signs as well as two modified clefs, a treble clef with an arrow pointing up to show *delta sopra*, and a bass clef with a downward arrow for *delta bassa*.

(Example 2. Tudor, realization of *Winter Music*: first page of pitch index)

The index identifies each group of readings by the page and then the system in which the notations appear. Individual note heads represent single notes and aggregates; two note heads connected by a stem signify a chromatic key-cluster. In the first entry for page A (3), the circled number 1 refers to the first system on that page of Cage's score, the ten-note aggregate I noted above. The index reflects Tudor's thorough treatment of Cage's notation. Rather than simply read one note in one clef and then assign the remaining nine notes to the other clef by default, Tudor wrote out complete readings in both clefs, then added the appropriate numeral to go with each. This extra step allowed him to consider the pitch content of both readings before selecting those ingredients, so to speak, which would go into his realization.

Next, Tudor needed to determine the timing, or attack point, of each notation in *Winter Music*. Cage wrote his score on large sheets of 11" by 17" paper. Because all of the notations in the work fall within a horizontal span of sixteen inches, Tudor used a scale of inches in tenths to measure the distance of each note head from the beginning of the page in a module of sixteen, or mod. 16. The first aggregate on page A (3), for example, appears in system two and is 1.05 inches from the beginning of mod. 16. The second aggregate appears in system four at 13.6 inches. Tudor began entering the measurements in his pitch index but stopped after writing those for the first system of page B (4) and instead drew up a list of complete measurements for all twenty pages of Cage's score. As in his pitch index, he arranged the measurements by page, system, and order of occurrence.

(Example 3. Tudor, realization of *Winter Music*: first page of measurement list)

Tudor was now ready to write out his realization. For those pages of *Winter Music* containing numerous notations, he transcribed his readings to gatherings of staff paper cut and folded into small bifolios. Each gathering consists of five bifolios, one for each system on a page of Cage's score. On each half of a bifolio, Tudor marked a space of eight inches, so that a complete bifolio is equivalent to sixteen inches, corresponding to the mod. 16 of his measurements. Then he entered each reading from his pitch index, adding short strokes at the top of the page to ensure the proper location of the reading in his score. In this way, the module of 16 inches became a time line, and the measurements of Cage's note heads became attack points to be read with a stopwatch, just as Tudor had done when playing Cage's earlier music beginning with *Music of Changes*. If, for example, mod. 16 is equivalent to thirty-two seconds, then one inch equals two seconds. If mod. 16 equals one minute, the timings are a bit more complicated but no less exact, since one inch then equals one-sixteenth of sixty seconds, or 3.75 seconds.

Example 4 shows the first bifolio of Tudor's realization of page B (4) of *Winter Music*.

(Example 4. Tudor, realization of *Winter Music*, page B (4), first bifolio)

In those cases where Tudor combined elements of two readings of a single notation, we can identify the sources by referring to Tudor's pitch index. Cage's second notation in system one of page B (4), for example, consists of four note heads, both a treble and a bass clef, and the numbers 3 and 1; i.e. three notes are to be read in the treble clef and one in the bass. In his pitch index, Tudor wrote this aggregate in both clefs, renotating them for ease of reading, then entered the appropriate numbers below each. The realization shows that he selected the notes f , $e^{b''}$, and c from his treble-clef reading and the remaining note, b'' , from his reading in the bass clef.

(Example 5. Tudor, realization of *Winter Music*, page B (4): reading of system 1, notation 2 in pitch index (1) and realization in performance score (2))

Cage's performance instructions allow "overlappings" and "interpenetrations," which probably means that sustained sonorities may mingle with new ones, since he also stipulated that "durations are free." Tudor extended the meaning of "interpenetration" by combining several readings of two or more pages of Cage's score into composite realizations. Probably because they contain comparatively few notations, he combined the five pages A (3), L (13), O (1), R (19), and T (18) in this way. The first bifolio of the gathering marked "ALORT" contains Tudor's readings of the first systems in which notations appear on each of these pages. Readings of the second systems are combined in bifolio 2, of the third systems in bifolio 3, and so on.

(Example 6. Tudor, realization of *Winter Music*: composite realization of systems 2, pages A (3), L (13), O (1), R (19), and T (18), first bifolio)

In two of his composite realizations, those of pages J (11) and Q (16) and of pages E (7), F (6), and I (9), Tudor used a different method for notating his combined readings. He replaced the homemade with small music manuscript books whose pages are overlaid with coordinate graph squares, or *Hilfslinien*, as the German manufacturer called them. Each square is roughly .5 centimeter long, with thirty-four squares on a page. On each page of his composite realizations, Tudor bracketed thirty-two of these squares and left one square empty at either end of the resulting frame. This gave him thirty squares in which to place his notations. To make a time frame corresponding to his measurements of Cage's score, he grouped the squares in units of five, with sixteen of these units representing one of Cage's systems in mod. 16.

The new format offered several advantages. With the larger-sized paper, Tudor could use four staves instead of two, one for each of his four clef signs. (He did not enter these clefs in his composite realizations, but they are easily inferable from his pitch index.) Bound notebooks meant that he could write out a realization of all five systems from a page of Cage's score continuously rather than in individual bifolios. Replacing the strokes that had facilitated placing the attack points, he divided the graph squares into four equal parts and entered his readings at their proper place within the square. It is possible that Tudor equated a graph square with a unit of time, perhaps one second, in which case he could read the four-part division of the squares even without relying on proportional notation, since a quarter of a second is equivalent to a conventional sixteenth-note at the tempo M.M. = 60. This is admittedly speculation, but it would be consistent with Tudor's methods in other realizations. What is certain is that he was less interested in the space measured by the graph squares, or even in any temporal-spatial relationship they might suggest visually, than in the alignment provided by their coordinates.

Example 7 shows the first page of Tudor's composite realization of pages J (11) and Q (13). I have identified the source of each reading and added the appropriate clef signs from his pitch index.

(Example 7. Tudor, realization of *Winter Music*: beginning of composite realization of pages J (11) and Q (13), first systems)

"David Tudor's qualities," Cage once wrote, "inspired many composers to introduce freedoms for the performer into their compositional means — indeterminate music which removes the conventional difference between composer and performer." Yet during his years as a pianist, Tudor never considered himself a composer or even a co-composer of the music he played. And his realizations of even the most abstruse notations — the puzzles of which Cage spoke, puzzles Tudor relished — are not compositions in themselves. In fact, they are not very different, in one sense at least, from the written realizations of figured bass or of diminutions in Baroque preludes; that is, they are practical solutions in the root sense, written with the aim of making a composer's notations practicable in performance.

They are also grounded in a concept of the relation of notation to performance that stems from the writing of Ferruccio Busoni, whose example as a pianist and as an artist Tudor took as a model during his formative years. "There is a passage in Busoni," he told an interviewer in 1972, "which speaks of notation as an evil separating musicians from music, and I feel everyone should know this is true" (Tudor 1972: 24). Tudor shared Busoni's skepticism about the capacity of notation to convey what the earlier pianist had called, in the title of his most famous essay, the essence of music. And he despised the kind of literalism that came to dominate music-making, especially in the United States, after the Second World War, expressing on one occasion his "hatred of those academics whose music consists of accurately played notes, phrases, dynamics, etc., 'the logical relations between every note' — that kind of player" (Tudor undated).

Tudor's realizations are nothing if not accurate — as well as systematic, methodical, and meticulous, terms eloquent of Tudor himself. And they are more than a source of solutions to Cage's sometimes perplexing notations and his often unclear instructions for reading them. They are models, to borrow a phrase from George Steiner, "of nuance and scruple." They show, by example after example, how Tudor found in indeterminate music a means by which he could expand his own "sound imagination" by creating an equilibrium between responsibility and freedom, between

the exigencies his close readings produced from a composer's text and the possibilities open to a virtuoso performer who could exercise a virtuoso imagination.

BIBLIOGRAPHY

- Cage, John 1951a Letter to David Tudor, summer 1951 (unpubl. ms., The David Tudor Papers, The Getty Research Institute, Accession No. 980039)
- Cage, John 1951b Letter to David Tudor, August 5, 1951 (unpubl. ms. The David Tudor Papers, The Getty Research Institute, Accession No. 980039)
- Cage, John 1989 Interview with author, New York City, July 31, 1989
- Cage, John 1991 Interview with author, New York City, August 26, 1991
- Cage, undated Draft of note on David Tudor (unpubl. ms., The David Tudor Papers, The Getty Research Institute, Accession No. 980039)
- Duckworth, William, 1988 "Anything I Say Will Be Misunderstood: An Interview with John Cage," *Bucknell Review: John Cage at Seventy-Five*, Lewisburg, pp. 15-33
- Harris, Mary Emma, 1987 *The Arts at Black Mountain College*, Cambridge
- Kremen, Irwin 2000 Interview with author, Chicago, July 10, 2000
- Nattiez, Jean-Jacques, and Samuels, Robert (eds.) 1993 *The Boulez-Cage Correspondence*, Oxford
- Tudor, David 1951 Draft of letter to John Cage, late July 1951 (unpubl. ms., The David Tudor Papers, The Getty Research Institute, Accession No. 980039)
- Tudor, David 1972 "From Piano to Electronics," *Music and Musicians* 20 (August 1972), pp. 24-26
- Tudor, David 1982 Interview with Austin Clarkson, Stony Point, NY, October 4, 1982
- Tudor, David 1992 Interview with author, Stony Point and Shady, NY, January 17, 1992
- Tudor, David undated Letter to unidentified correspondent (unpubl. ms., The David Tudor Papers, The Getty Research Institute, Accession No. 980039)