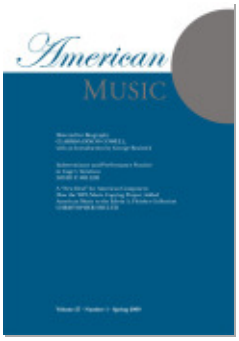
Indeterminacy and Performance Practice in Cage's *Variations*



David P. Miller

American Music, Volume 27, Number 1, Spring 2009, pp. 60-86 (Article)

Published by University of Illinois Press

DAVID P. MILLER

Indeterminacy and Performance Practice in Cage's *Variations*

Many admirers of John Cage's work know little of the number and variety of works he wrote in the series he titled *Variations*. Consider this brief summary: *Variations I* was composed in January 1958 for the pianist (and, later, electronic composer) David Tudor, but the score is marked "for any kind and number of instruments." *Variations II,* "for any number of players and any sound producing means," was written in February and March 1961, as a further development of the notational concepts of *Variations I*. *Variations III,* "for one or any number of people performing any actions," notated between December 1962 and January 1963, was frequently given as a solo performance by Cage himself.[1] *Variations IV,* "for any number of players, any sounds or combinations of sounds produced by any means, with or without other activities," was notated in July 1963.[2] *Variations V,* subtitled "thirty-seven remarks re an audio-visual performance," was created in collaboration with the Merce Cunningham Dance Company and premiered in July of 1965. *Variations VI,* "for a plurality of sound-systems (any sources, components and loudspeakers)," was notated in 1966; early performances were again given by Cage and Tudor. *Variations VII* was performed in 1966 and a draft score (as yet unpublished) was notated in 1972. *Variations VIII,* published in 1978, was developed and performed by Cage in 1967, on very short notice, at the Skowhegan School of Painting and Sculpture.[3] The score

David P. Miller is Associate Professor and Head of Technical Services for the Levin Library, Curry College, Milton, Massachusetts. He holds an MSLIS from Simmons College, an MA in theater from Emerson College, and a BA in theater from the University of Massachusetts at Amherst. He was a member of the Mobius Artists Group from 1980 to 2007, and has studied the work of John Cage for over thirty years.

American Music Spring 2009

for this work focuses on the process of creating a performance without prepared materials.

Now consider a matter that to many will seem oxymoronic: the question of appropriate performance practice for these works. Given the *Variations*' genesis in the milieu of the late 1950s through mid-1960s, the very concept of "appropriateness" in performance might itself seem inappropriate: don't these pieces, above all, incarnate Cage's famed openness to whatever may happen to happen? This question, while understandable, may be more of an artifact of the mid-twentieth-century avant-garde than it is relevant to the *Variations* in particular. At the beginning of the twenty-first century, more interesting questions include: What are these works as *compositions*? What distinguishes them not only from each other but also from generically imagined "happenings" or multimedia events?

As background, three basic points are useful to consider when discussing the *Variations* as a group. The first is that the works trace an arc, beginning with self-contained concert pieces (*Variations I* and *II* in particular) and culminating in theatrically ambient works that draw on an increasingly broad range of source material. The pivotal work is *Variations IV,* which takes the distribution of sound sources within and outside a given space as its primary point of interest, laying the ground for the commitment to total environments that marks *Variations V* and *VII* (and arguably *VI*).

The second point is that these are compositions that are "indeterminate with respect to performance." This phrase designates something different from Cage's use of chance operations proper. James Pritchett provides a succinct distinction between indeterminacy and chance: while chance "refers to the use of some sort of random procedure in the act of composition," indeterminacy "refers to the ability of a piece to be performed in substantially different ways."[4] Cage used chance operations in preparing the *Variations* scores, but did not always instruct performers to do so when realizing them. For example, *Variations V* and *VII* do not call for the use of chance operations at all, although there is scope for devising them if desired, in the choreography for *Variations V* or the distribution of sounds in space in either work, to name only two possibilities. Five of the *Variations* require the use of overlaid transparencies as the primary means of generating each performer's individual score, and while one might assume that a state of nonintentionality is desirable when handling these materials, this is not explicitly called for. In a manner analogous to chance operations proper, the complexities of these works tend to frustrate impulses toward individual self-expression. This is so because of the intricate processes required to transform detailed sets of measurements into sound events, as in the first two *Variations,*

or the unpredictable interactions of multiple simultaneous systems, as mandated by *Variations V* through *VII*.

The third point is that each work in the series requires the performers to supply the source material—to devise the universe of sound sources at play in any given realization, to devise movement for *Variations V,* to address the question of what a "sound system" consists of in *Variations VI,* and so on. From the general audience's point of view, this is where indeterminacy is most obviously manifest. For example, even those who have studied these compositions in depth may not recognize Malcolm Goldstein and Matthias Kaul's *Variations II* for violin and glass harmonica as being the same composition as David Tudor's for amplified piano, given the differences in instrumentation and the specific sound events that transpire.[5] This example, one of many that could be given, is mentioned simply to hint at the range of possibilities inherent in compositions indeterminate with respect to performance.

Scores as "Specifications"

The radically open-ended nature of the *Variations* presents the would-be performer with several conundrums. The first is to understand what constitutes appropriate performance practice or, to put it another way, to understand how to live within indeterminacy while creating a realization that is distinctly of a specific work. Indeterminacy is not synonymous with an absence of boundaries. Related to this is the question of how to assess or evaluate specific realizations. It may be contended by some that, given the scores' lack of conventional specifications, evaluation of a given realization is impossible. Further, skeptics may assert that if a given realization cannot be assessed in relation to anything normative, the *Variations* cannot be called compositions at all. I do not share this view. Although there is no doubt that evaluation is difficult, it is also self-evident that none of the *Variations* scores consists of blank sheets of paper. The critical matter is to pay close attention to Cage's specifications.

Use of the term "specifications" may help to elucidate the concept of "score" in this context, given that the *Variations* scores consist largely of written remarks. While it is true that one does not generally think of musical scores as consisting entirely of linguistic material and, in the case of five of these works, nonperformable graphics, there is no doubt that these works are rife with specifications. One small example can be drawn from the score for *Variations III*. This score consists of a page of written instructions and a transparency sheet with forty-two identical circles. Cage instructs the performer to cut the transparency so that each circle is separated, then to "let [the circles] fall on a sheet of paper. . . . If a circle does not overlap at least one other circle, remove it."[6] This detail is important when considering the focus of this work on the performance

of "actions," as is stated on the title page. Cage outlines the method by which the pattern of dropped circles is to provide a basis for the performance: "Starting with any circle, observe the number of circles which overlap it. Make an action or actions having the corresponding number of interpenetrating variables (1 + n)." Leaving aside the question of how one determines the variables constituting an action, we can see that the specification to remove isolated circles is a requirement to consider the variables of *every* action. If a performer allowed isolated circles to remain as part of the performance score, it could be tantamount to performing the corresponding action without the requisite mindfulness. This small specification guards against thoughtlessness of this sort.

If one understands John Cage to have been a composer (an axiomatic proposition here), then one is interested in the specifications he presented, formally, as published scores. These are not always easy to interpret, and for assistance it is possible to turn to the historical record, as well as the memories of those who knew and worked with him. The relationships between these three elements—published scores, material available via historical research, and personal recollections—require discussion. Background research can help to elucidate the cultural context in which the works were created, or the *Zeitgeist* in which they originally participated, as well as providing information about the specific circumstances that gave rise to the works. As an example, when preparing a realization of *Variations II,* it may be of value to understand that Cage notated this score after realizing that, in doing so, he could provide "much more freedom" than the closely similar *Variations I* score allows.[7] The "oral tradition" may also provide valuable guidance, either for interpreting Cage's sometimes gnomic instructions or for deciding among the options he provides. In an interview during a broadcast of a Boston Symphony Orchestra program including Cage's *Atlas Eclipticalis,* conductor James Levine recalled that Cage provided this advice:

> First of all, don't be afraid of long silences. They are never as long as you think, and they're fascinating because they have a lot of suspense and they cause the listener to focus on very soft sounds. Don't be afraid of soft sounds and short sounds, because this is a kind of thing which is not in the vocabulary of nineteenth-century music, which makes up the vast majority of what symphony orchestras play. . . . He had determined that the electronic aspects of it [the score as published] were a distraction and he would just as soon eliminate them and use them only in other works.[8]

The combination, then, of historical research material on the one hand, and documentation of Cage's actual practice (or later reflections) on the other, frequently provides for a richer understanding of the potentials inherent in these scores, as well as their requirements.

Nevertheless, the scores themselves contain specifications in a form not dependent on background research or the recollections of others. This body of supplementary material could be considered the "archive" for a particular work. There is no reason to suppose that the "archive," no matter how rich, should be allowed to override or negate the formally published material. In the first instance above, despite realizing "much more freedom" with *Variations II,* Cage did not withdraw *Variations I,* nor did he revise the earlier score. It would be incorrect to ignore the relative strictures of *Variations I* when preparing a realization. In the case of *Atlas Eclipticalis,* again, we see that despite Cage's later thoughts about electronics, he did not revise the published score to eliminate the options for amplification, and one may legitimately continue to find value in an electronically enhanced performance. All of this is a means of saying that, as a composer, Cage communicated his intentions first and foremost via his published notations, no matter how unusual they may be in form. To explore his intentions one begins with, and returns to, the notations.

We must assess the archive in that light. Personal recollections necessarily stem from earlier conditions or past practice: they provide evidence of how the problems presented by a score have been solved in the past, or how the history of changed circumstances affected a composer's reflections on a work at the moment they were articulated. Recollections do not necessarily provide sound guidance for future practice. It is important, also, to guard against one of the dangers of relying on the oral tradition: the possibility that bodies of anecdote will harden into foundational texts (a kind of holy writ) as the generations pass. Returning to *Atlas Eclipticalis,* the technical means of amplifying acoustic instruments have changed so radically since the early 1960s that the potential for technological "distraction" has been greatly reduced. Similarly, while historical research aids with understanding how and why a given score came to exist, such research will not necessarily address the possible repositioning of that score under changed conditions.

Indeterminacy operates not only in realms such as instrumentation and determination of broad parameters such as performance length, but also with regard to the means by which a realization is created. In other words, indeterminacy is responsive to changing technological, art-historical, or sociological conditions. It is in the scores themselves that the works' responsiveness resides. Other sources of information provide a context for understanding what the works *have meant,* but not necessarily for what they may *come to mean.* I maintain that the *Variations* scores—Cage's formal statements about these works—should be taken as points of departure and of periodic return in the course of developing realizations. They are the documents that express, however enigmatically at times, the works' potentials and particularities.

In a 2003 paper discussing *Variations I* and *II,* I asked, "[W]hat is determined by indeterminate music compositions? The question may seem inherently absurd, since it is in the nature of such compositions to specify less and less, the greater the indeterminacy they exhibit."[9] That paper attempted not only to describe the specifications for those two works, but also to understand their manifestations in actual practice.[10] Direct work with the scores themselves revealed the specifications' subtler implications, providing a richer understanding of what these works not only allow but also, in fact, require. This practice-based analysis, paying close attention to the given specifications, led me to write:

> Both works concentrate the performer's and listener's attention on discrete and discontinuous sound events. They also take the action of measuring and the quality of measurability as premises. Finally, when the *Variations* transparencies are used in a relatively simple and direct manner, with little or no forethought or deliberate manipulation, the result will be a performance characterized by an asymmetrical distribution of parameter values.
>
> It is unlikely that anyone reasonably familiar with Cage's work will mistake a realization of *Variations I* or *II* for *Litany for the Whale, Europera 5, Solo for Voice 2, Four*[6]*, Aria,* or a great number of other works. The first two *Variations* are indeed compositions: their many realizations comprise an extended family with a shared inheritance, however divergent their surface appearances may appear to be.[11]

It appears that for indeterminate works such as the *Variations,* the fundamental challenge is to explore the dialectic between the elements that give each work its distinct character and the freedoms provided by the scores' "undetermined" elements. The former can be derived from an examination of the scores, supported by research when possible. The latter are sometimes actually notated—such as the phrase in the *Variations III* score, "Anything else is going on at the same time"—and may also be suggested by past practice. However, neither aspect of this dualism should be neglected. A performance of one of the *Variations* that is primarily "in the spirit of John Cage" or following the oral tradition, without investigation of the scores' specificities, may be, at best, an in-name-only or hearsay realization. (Many actors will recognize that being "Shakespearean" rarely results in adequate performances of Shakespeare.) By contrast, an attempt to work only with what is specified will most likely result in either an abandonment of the project or, after great effort and expense, a wax-museum reproduction of a long-gone event. Appropriate performance practice might be better considered as appropriate *methodological* practice, in fact. In any case, the body of practice that we require to determine the limits of "appropriateness" will only be created through repeated engagements with the scores.

A Posteriori Scores

In a conversation with Richard Kostelanetz, Cage described the *Variations V* score as "*a posteriori*—written after the piece" and asked, "Do you see the implications of this? . . . [It] changes our idea of what a score is. We always thought that it was *a priori* and that the performance was the performance of a score. I switched it around completely so that the score is a report on a performance. These are remarks that would enable one to perform *Variations V*."[12] It is not necessary to accept Cage's possible claim of having invented the *a posteriori* score (or even to assume that he was really making that claim). Rather, what is significant here is the role within his own *oeuvre* of this approach to notation, and particularly within the *Variations* series. The challenges presented by the scores of *Variations V, VII,* and *VIII* differ qualitatively from those of the other works in the series. To determine the relevant specifications becomes, in large part, to unearth those elements of *a posteriori* scores that may be freshly treated as *a priori,* with a vitality derived from but free of the historical circumstances of the original performances. Cage presents us with this question: could these works be performed by others, despite the nature of the score as a "report"? What follows is a tentative answer, based on the experience of the Mobius Artists Group of Boston in mounting performances of *Variations V* and *Variations VII.*

The Mobius Artists Group is an interdisciplinary group of performing and visual artists working in a variety of media. Among its members are musicians, sound artists, and composers with experience in intermedia, performance art, and what still might be called "new music." After John Cage's death in 1992, several members of the group began to present certain of his works, beginning with an all-night performance of *Empty Words* in 1993. In subsequent performances, the group presented *Fontana Mix* with *Solo for Voice 2*, *Four*[6], and trombone-centered pieces including *Ryoanji* and *Two*[5]. Beginning in the mid-1990s, group members and invited guest artists began a long-term project to investigate the *Variations* series, with the aim of learning in depth about this perhaps most radical and esoteric subset of Cage's work. The *Variations* have been realized sequentially, so as to discover what they have to reveal in the order of their original creation, and to discover in practice the continuities and ruptures among them. *Variations I* was first presented in a version for two voices in 1996, followed by a program of multiple versions of *Variations I* and *Variations II* in 1998 titled *Variations and Silences*. *Variations III* and *IV* were presented simultaneously in 2000 under the title of *Anything Else Is Going On at the Same Time*. *Variations V* was presented in 2002, *Variations VI* in 2004, and *Variations VII* in 2007 and 2008. An investigation of *Variations VIII* is planned for 2009.

The following discussion does not pretend to codify an understand-

ing of what performance practice of these works may entail. Instead, I describe the Mobius work to suggest a model of appropriate methodological practice. Because the latter *Variations* in particular have been performed so infrequently, no body of practice exists that is sufficient to make any sort of judgment about "ideal" or even optimal realizations of these works. What one needs most at this point is a practice-based engagement with the scores, with a focus on discovering (and, no doubt, debating) their key specifications.

Variations V

Variations V is an intermedia work originally created in collaboration with the Merce Cunningham Dance Company. Besides Cunningham, Cage worked with an impressive group of collaborators, including Robert Moog, Stan VanDerBeek, David Tudor, Gordon Mumma, Nam June Paik, and Malcolm Goldstein, among others. As Cunningham later described it, "John decided to find out if there might not be ways that the sound could be affected by movement, and he and David Tudor proceeded to find out that there were."[13] The dancers' movements were sensed by five-foot-long theremin antennae; movement also intersected light beams, with the interruptions sensed by photoelectric cells. The output from these devices fed into a complex sound system that included multiple tape machines and shortwave radios, affecting in turn the output and distribution in space of these sound sources. Film, slide projections, and distorted television images were projected, and although these visual images were not modified in real time by movement, at least some of the original film footage was drawn from dance rehearsals.[14] Gordon Mumma attested to the work's groundbreaking aspects: "With virtually no precedent, this work established at once a coexistence of technological interdependence and artistic nondependence. . . . Every complicated production of *Variations V* was logistically precarious. . . . I loved the work and absolutely dreaded the exhausting preparation of every performance."[15]

Cage's score consists of thirty-seven "remarks" written after its premiere. On first reading, it seems to be an after-the-fact description of a particular collaboration at a specific point in time, documenting a moment in the avant-garde milieu of the mid-1960s. For example, the second remark (with footnotes incorporated in brackets) reads, "Audibility of sound-system dependent on movement of dancers [choreography by Merce Cunningham], through interruption of light beams [photo-electric devices devised by Billy Klüver] [6+], proximity to antennas [devised by Robert Moog] [6+]." Another reads, "Changed function of composer: to telephone, to raise money." Again: "October 6, 1965."[16] No doubt it is notations of this sort, providing specifications of a historical nature, which have led some to believe that the score is not functional: that is, that it

does not represent something intended for performance now. William Fetterman, for example, regards the score as not "indicative of future performance" and states, "*Variations V* is as unrepeatable as the 1952 untitled event [the Black Mountain "proto-happening"] and is unlikely to be revived by others." I know of no other realization of this piece between the late 1960s, when the composer Robert Moran produced a version, and the Mobius performances of 2002. However, the assertion that this document, from Cage's music publisher, represents an event that cannot be further realized, is inherently unsatisfying. Cage spoke about the function of this score, saying that it "explain[s] to those who might want to play the work how to go about it."[17]

We wished not to commemorate the 1965 event, but to "go about it" in the year 2002. Our focus was not on replication (a fool's errand in any event), but on an attempt to get at the work's core. This required different approaches to the different types of the score's thirty-seven "remarks." Leta E. Miller categorizes these as those "that specify resources (film images, a system of tapes and radios, etc.), sound generation methods (e.g. dancers controlling the sounds), and compositional attitudes ('irrelevance,' 'adapt to circumstances,' 'non-focused')."[18] The first two of these categories include footnote references to the original collaborators; these references, although visually prominent, are elements of the score most obviously bound to time and circumstance and, although historically important, are by the same token ephemeral. Additionally, there are remarks, such as the one quoted regarding the composer as fundraiser, which seem like rueful comments or lessons learned, but that need not be prescriptive.

As we considered the remarks in Leta Miller's first category, we understood them to represent possible and likely potential sources of sound and visual imagery. But we saw no reason to be bound by the exact technical indications. For example, the first remark (without footnotes) reads: "Sound-system having continuously operating (tape machines [6+]), oscillator[s]) and, optionally, non-continuously operating (electronic percussion devices [6+]) sound-sources." From this remark we can derive the following: a sound system, tape machines, at least one oscillator, and, potentially, some sort of percussive electronic input. In 1965, of course, there was really no practical option for specifying computer-generated sound, and "tape machines" were the most practical option for providing prepared sound material. These specifications, then, point to a variety of means for simultaneous and continuous input of electronic sound, with the possibility of other more intermittent sources. The specific need for six or more tape recorders per se is debatable, but by contrast, a sound system that takes only sporadic input, separated by lengthy silences, may be considered outside the realm of the work. The second of Miller's categories, sound-generation methods, is somewhat less bound in its details to what was available in

1965. The second remark, specifying the basic relationship of movement to sound through mediating electronic technology, has been quoted above. As another example, the remark, "Change tuning of shortwave receivers selectively, favoring non-referential noise areas," is as applicable in our time as it was in the 1960s (although, ironically, more difficult to achieve with digital shortwave equipment). The third category, "compositional attitudes," is by its nature the most broadly suggestive. We found, for example, that "Perform at control panels in the role of research worker" suggested a fruitful approach to improvisation in altering sound and visual material. Although some members of the team did develop chance operations for use in performance, the "research worker" specification made it possible to improvise out of curiosity rather than self-expression.

Our response to the *Variations V* score followed the lines suggested above. We discarded references that seemed only to refer to the original performances and generalized the references to specific audio and visual technologies. We concentrated on the remarks dedicated to sound-generation methods, and considered both those remarks and those regarding visual elements ("Silent film") in light of the technologies available to us at the opening of the twenty-first century. These included not only digital technologies, but still-available analog technologies. Each individual discussed and made use of the remarks suggesting compositional (and performative) attitudes as needed. It became clear that the heart of *Variations V* is real-time interaction among media, with movement as the primary activating medium. Movement, or dance, is mentioned in only five of the thirty-seven remarks (and one footnote). However, virtually every historical source, from personal reminiscences to audiovisual documentation, suggests its central importance. Leta Miller emphasizes this point, referring to the "unprecedented concept of dance movement activating sound."[19] In 1965 direct interaction among media was limited to the impacts of movement on electronic sound processing. This is evident in the German-Swedish television production from 1966, where film and slide imagery is seen projected on the walls of the studio, and television imagery is superimposed on the picture plane, but with no evident interaction between these media and the dance or sound.[20] Given indeterminacy's responsiveness to changing conditions, we saw no reason to be bound by these limitations in the year 2002. In short, by focusing on those aspects of the score not tied to people and technologies of the mid-1960s, we developed *Variations V* as a work in which linked systems operated among several media, each affecting the others. Movement remained "first among equals," and its centrality served as a defining principle.

The Mobius *Variations V* did, of course, observe the principle of movement affecting sound through proximity to electronic devices.[21] Larry Johnson, who devised the sound-processing system, recalls:

> I was using analog synthesizer gear. The modules, which were made by Aries and Moog, were patched into a moderately unpredictable system of envelope generators, oscillators providing control voltages, and voltage controlled filters. The theremins provided control voltages that sometimes directly controlled the filters and envelope generators, but also the control oscillator frequencies, some durations, and some amplitudes. The motion detectors tripped relays that provided triggers for the envelope generators.

The latter also altered the lighting to a limited extent, by triggering individual spot lights:

> I initially used the lamps for debugging, to aid in placement of the motion detectors so they responded to the dancers and did not overlap too much in their ranges. But when I saw that they could provide another visual layer, I kept them in the performance.[22]

The "movement structures" devised by Marjorie Morgan, and choreographed by the ensemble Not Frida, were inspired both by Cage's example and by Morgan's study with the choreographer Deborah Hay.[23] Morgan wrote:

> The movement component of this version of *Variations V* is made up of seven original dance practices: *Return, Happybirthday, Bows, Deconstructing Space/Reconstructing Beauty, Giraffe and Lion, Solos (pieces of me),* and *Tap Tag*. I have created these practices with great inspiration from and deep respect for the works of John Cage and the choreographer Deborah Hay. John Cage's ideas of art "not as a means of self expression but of self alteration" and as "purposeless play" informed me in my process of making many of the structures. In other sections, I have employed Deborah Hay's notion of "choreographing the consciousness." This dance is mentally challenging, physically tiring, emotionally uplifting, and impossible to replicate or even perform correctly.[24]

A set of notes provides brief characterizations of these movement structures, the order of which was predetermined. For example, *Bows* is described as "bowing to the theremin antennae / quirky to meditative / 5 minutes." *Tap Tag* is described as "deconstructing time with tap shoes and movement / 15 minutes," and *Return* is a "movement structure based on a mindfulness practice / quiet / 15 minutes."[25] Outside of these practices, and as a playful *hommage* to Cunningham, a dancer pedaled a Big Wheels tricycle around the performance space at the conclusion. This echoed Cunningham's riding a bicycle around the stage at the same point in the original choreography.

Inspired by the technology described in the *Variations V* score, Forrest Larson developed a system he described in the performance program as

> primitive analog devices . . . interconnected to facilitate an indeterminate output. The short wave radio has two audio outputs: one routed to a chain of analog effects processors, the second output routed directly to the mixing board. Electronic percussion sounds will come from scraping the spring coils of a primitive reverb unit. Old fashioned oscillators will also be employed.[26]

Audio outputs from this system also fed into the video-processing system. Larson's use of analog shortwave made it possible to favor "non-referential noise areas," as Cage suggested.

The second source of electronic sound consisted of fourteen location recordings I recorded, ranging from a ride on a San Francisco cable car to a walk along a rural hiking trail and a powerful thunderstorm in my neighborhood. The specific selections chosen, and their durations, were governed largely by chance operations, but I improvised the volume of playback, taking the role of the "research worker" Cage suggests. As a parallel to the film footage of Cunningham Company rehearsals used in the original production, one of the audio recordings was of a Not Frida rehearsal. (Use of this material in performance sometimes resulted in audio overlaps between the rehearsal recording and the same material performed live.) The third audio input was provided by Landon Rose, who spoke text taken from the *Variations V* score into a microphone, the choice of words based as well on chance operations. He also provided MAX programming that routed the output from Johnson's sound-processing system randomly among eight speakers arranged throughout the performance space—reminiscent of Cage's remark: "Mixer: volume, tone, and distribution to any of 6 loud-speakers."

In addition to the electronic sound sources, Tom Plsek prepared an acoustic score for live trombone, drawn from three Cage trombone works. The selection and timings of this material were cued by the interruptions of three laser beams caused by movements of dancers or audience members. This constituted another form of interaction between movement and sound.

Bob Raymond devised a complex system of live video capture and processing, making use of multiple cameras distributed throughout the space, and two that "roamed." One of these, a very small and wireless camera, was worn by one of the dancers and provided shifting views of the surrounding space. This translated the following score "remark" from the audio to the video realm: "Some objects used by dancers (objects with contact microphones affixed) entering into multi-channel system, not into additional system." The second roaming camera was attached to

the end of a long pole, used for "fishing" for imagery in the performance area. All video inputs were part of a system Raymond described as

> a lot of (mostly) very old and heavy analog video equipment for this performance of *Variations V*, in an effort to revive some of the spirit of the original, yet adding a few modern elements. One of the core technologies used is a copy of the Sandin Image Processor (IP). The IP allows for a degree of real-time control similar to that afforded by analog audio synthesizers. This particular copy of the IP was built by myself and a number of other artists at the Boston Film/Video Foundation in the early eighties. I have restored the instrument for this performance.[27]

The video imagery shifted rapidly among sources, often with two or more sources displayed and processed at the same time. The output was viewed on a large standing projection surface as well as a television monitor on a movable dolly.

Although the Mobius *Variations V* had points of commonality with the Cage/Cunningham production, including references to specific details, we reconceived and extended it in the types of technical actions employed, the decision-making processes involved, and the use of multiple generations and types of technology. The whole work constituted a "performance without score or parts," as Cage specifies in his third "remark." We were fortunate in having at least one audience member who was not only informed about the Cage/Cunningham *Zeitgeist,* but who had also seen the original performances. This was the dance critic Marcia B. Siegel, who observed that while our presentation "didn't look anything like the original work . . . it felt like the original."[28] While one should not draw too many conclusions from this statement, it was of interest that someone who had witnessed two versions done by completely different companies, and separated by thirty-six years in time, recognized them as instances of the same work, and not merely in name only.

The principle of real-time interaction of multiple media suggests further developments of what might still be considered *Variations V:* for example, the direct generation of sound material by movement or video, and the dynamic alteration of environmental lighting, as compared with spot lighting triggered by motion detectors. Even so, the core of *Variations V* would remain a complex interactive system, seeded by movement, audio, and (potentially) visual material prepared in advance, with movement as the primary activating element. In the description of the Mobius work, I have given examples of some of Cage's "remarks" as we related to them in developing the work. Other groups would undoubtedly put emphasis on different subsets of remarks, producing realizations of different flavors. The resulting corpus of realizations, if adequately

documented, would provide a basis for discussion, testing my contention about this work's core elements.

Variations VII

In 1966 John Cage developed *Variations VII* with another team of collaborators, including David Tudor, David Behrman, and performance engineer Cecil Coker. It was performed as part of the series *9 Evenings: Theatre and Engineering*, presented at the immense New York City Armory under the auspices of Experiments in Art and Technology (E.A.T.). *9 Evenings* was, to quote Catherine Morris, "a significant group of performances that encompassed not only a unique set of collaborative experiences between artists and engineers but a critical attempt to integrate into contemporary performative practices the technology of the day beyond simply utilizing gadgetry as a form of theatrical embellishment."[29] It was, by all accounts, a fiendishly ambitious project, which unfortunately developed a reputation as having been largely a series of technical failures. At present, that reputation is in the process of being corrected, or at least balanced, with a major exhibition at the MIT List Visual Arts Center in 2006 and a series of DVD documentaries produced by E.A.T. and Artpix and devoted to each of the *9 Evenings* projects.[30] *Variations VII,* including a documentary film of the original performances, interviews, and an eighty-five-minute audio recording, is the second release in this series.[31]

As of early 2009 there is no published score for *Variations VII,* a fact that complicates the relationship between the concepts of "score" and "archive." In addition to the recently released documentary, there is plentiful archival/documentary material held at E.A.T., the New York Public Library for the Performing Arts, and La Fondation Daniel Langlois.[32] These archives include at least two documents that arguably serve as good drafts of what could have been a published score. Both versions consist entirely of brief written statements, as do the scores of *Variations V* and *VIII*. One of these documents can be considered as ready for publication. It was prepared by Cage in 1972, is subtitled "7 statements re a performance six years before," and is a formally presented typescript, complete with a copyright statement.[33] A less formally presented statement, titled "Variations VII: 12 remarks re musical performance," is undated but seems to have been written earlier.[34] Cage's subtitle is reminiscent of the *Variations V* score: "thirty-seven remarks re an audio-visual performance." In contrast, the subtitle from 1972 is terse. Despite the camera-ready presentation of the later text, Cage did not pursue its publication in either score or essay form. I have not located any direct evidence to explain Cage's apparent reluctance to publish this score. It appears, however, that the many problems the project faced left Cage with negative memories. As late as 1990, in an

interview with William Fetterman, Cage said, "It makes me angry to just think about it."[35] Lowell Cross also recalls that preparations for the initial performance on October 15 left Cage "a bit frantic" and said, "Two years later, in Oakland, California, he told me that he was dissatisfied with the performances of *Variations VII*."[36] Whatever the reason may be for the score's unpublished state, the two drafts, complemented by the range of archival material available and by the more serious contemporary published accounts, provide sufficient material for contemporary realizations. The all-but-published presentation of the 1972 draft makes it a likely candidate for consideration as the *Variations VII* score. The earlier draft, with its linkage in style to the *Variations V* score and its careful wording, is a strong supplementary document.

Variations VII was an experiment in "mak[ing] the inaudible audible" and transforming the results via electronic sound processing.[37] The "inaudible" included sounds from the world outside the Armory (for example, the kitchen at Luchow's restaurant), sounds available in the space itself but inaccessible (sounds of the body), sounds produced by objects brought into the space (such as a radio and a blender), and sounds produced by the transformation of nonaural inputs. In an early note to David Tudor beginning "So far only ideas I have," Cage brainstormed about using

> things happening at the performance time (not prepared tapes) via TV, radio, telephone, telegraph?, mike, police . . . ; from us . . . ; from audience; from city; from zoo or fabricated one . . . ; from outer space if possible . . . ; from a hanging mobile materialistic garden with fans making objects collide . . . & mikes; water (fountains, dripping, etc) etc. & electronic sds (non manipulated but tuned in so to speak i.e. feedback, single static frequencies, no quasi melodic deals).[38]

The 1972 score draft includes such indications as "Inside composers picking up outside sounds / Fishing," "Telephones," "enlargement of activities / photocells / Geiger counters," and "Quantity instead of quality."[39] The earlier draft includes "No playbacks used, tape machines i.e. no previously prepared sounds," "catching sounds from air as though with nets not throwing out however the unlistenable ones," "making audible what is otherwise silent," and "telephone lines, radio receivers square generators, etc. no special theatrical or visual activities."[40] Together, these statements consistently indicate that systems for discovering and gathering sound are the focus of *Variations VII,* and, by contrast, advance composition of audio material is out of bounds.

The Mobius Artists Group presented one performance of *Variations VII* in March 2007 and two performances in April 2008. The notes that follow are drawn from the 2008 version, which featured a somewhat different group of collaborators and revised approaches to "fishing" for sound

(and visual) material. The 2008 version benefited from having a full week available for setup and testing in the Mobius performance space in the South End neighborhood of Boston. We found, from our experience in 2007, that having this much time available was by no means a luxury. One of the statements included in the earlier, undated score draft, "Checking each thing used to make sure it works," is reminiscent not only of the difficulties encountered in the *9 Evenings* project, but in *Variations V* as well. Leta Miller points out that one of the latter score's thirty-seven "remarks," "Two rehearsal periods eight hours each on two days at least two days apart," is a response to the completely inadequate time available before the 1965 premiere for both rehearsal and troubleshooting.[41] Our 2007 performance of *Variations VII,* while successful enough to encourage us to take the work further, was at the same time rougher around the edges than we would have liked, due in part to the time available for "checking each thing used."[42]

As with *Variations V,* our challenge was to produce a contemporary realization of this piece, investigating its distinct identity while avoiding an aura of attempted recreation. By contrast with *Variations V, Variations VII* does not emphasize interaction among media (although that may be involved to some extent). In the *9 Evenings* performances, the performance platform was lit from below, and the interruption of light beams by movement was part of the sound-processing system. This lighting may be seen in the E.A.T./Artpix documentary.[43] But as the specifications indicate, the focus is on discovering and incorporating material, generally that existing outside the performance space, and for the most part in real time. In *Variations V* prepared material was the seed for a complex interactive system, with movement as the primary activating medium. Here the system itself is the seed, prepared to receive and further process spontaneously discovered material. In our group discussions about what "material" means today, we focused not only on sound but also on data, particularly online data, visual as well as aural. That is, considering sound in its digital form as a data stream, we expanded our investigation to other types of data streams, and imagined how we might "fish" in other media than sound. As discussed above, an important part of examining the *Variations* to determine their identities as works is understanding how indeterminacy operates within each separate work in the series, including indeterminacy's responsiveness to historical and technological change. At the same time, we generalized the core concepts of "fishing" and preparation of systems to include non- or minimally technological processes.

For both the 2007 and 2008 realizations of *Variations VII,* the majority of team members provided sound using a variety of means. Visual elements and live actions, described below, were part of the mix as well. In general, those of us working with sound responded to the first of the 1972

"statements": "Inside composers picking up outside sounds Fishing." Tom Plsek used two laptop computers as technical means, and described his process as follows:

> One [laptop] was used to search for *mostly* live sounds, e.g. radio stations, [Air Traffic Control] transmissions, online microphones like the hydrophones on the west coast; but also some archived materials, e.g., the sermons from <www.biblepreaching.com> and the Harry Partch virtual instruments that were just too fruitful to pass up. All of these I kind of searched for on the whim. . . . The other computer was my "Skype" machine which was used to establish contact with folks who would then insert sounds into the system. . . . When I had these up and running, I would use a matrix of numbers derived from the natural log e as a guide for structuring parameters such as duration or number of repetitive sounds.[44]

Plsek also noted that "Quantity instead of quality" and "Telephones" were other statements from the 1972 draft to which his work responded—with Skype software serving as a contemporary form of telephone connection.[45]

Forrest Larson, working again with shortwave radio as a primary sound source, responded primarily to statements in the early "12 remarks" draft:

> Cage's score says "no previously prepared sounds," "catching sounds from air . . . not throwing out . . . the unlistenable ones," "modulation means," "radio receivers." My performance is based in large part on these key phrases. The "sounds from air" are shortwave radio sounds. The "modulation means" are various analog and digital signal processors. At various times the audio output from the shortwave radio will act as a control signal to an analog oscillator. An intriguing phrase in the score says "free manipulation of available receivers and generators," which seems to suggest that the performer can make free choices in manipulating the equipment, and not subject the parameters to chance operations. But then he also says "no interposition of intention just facilitating reception." I attempt to work both sides of Cage's paradox of choice and non-intention. The radio frequencies, which signal processor to use, and cues of when to make sound or have silence will be chosen by chance operations. The signal processors will be "freely manipulated," but the audio chain will be such that the output cannot be precisely controlled, which will likely result in some "unlistenable sounds."[46]

Alisia Waller developed a suite of six activities, chosen by a combination of coin tosses and the rolling of dice, that was partially integrated with those of other team members (Margaret Bellafiore and Joshua Jade).

Responding to the "telephones" indication of the 1972 draft, she asked audience members arriving at the performance for their cellphone numbers and requested (in an inversion of expected protocol) that they leave their phones on during the performance. This allowed two possibilities for audio activity: "Play the cell phone ring tone of an audience member [or] ask, via cellphone, for an audience member to 'gather' sound for me that I will then amplify [. . .] into the performance space."[47] A third audio activity by Waller partially related to Margaret Bellafiore's task: to visit, during the performance itself, the loft apartments of artists living in the building occupied by Mobius, and to record brief interviews. The interviews, recorded on audiocassette, were added to the sound mix via both the main sound system, devised by Landon Rose and described below, and also through Waller's boombox. Waller latter also used the boombox to select positions on the radio dial at random for playback. Her other three activities were to "determine which lights in the performance space should be turned on or off or left as they are; take no action for a randomly chosen period of time; roll [a six-sided die] again." Joshua Jade developed the lighting design, determining at random the orientation of the room's track lights and the colors used. He decided, however, to leave potential lighting changes for others to carry out, detaching these normally unified aspects of performance lighting.

I wished to bring sounds of the immediate environment into the performance space, experimenting with microphones of different sorts placed inside various containers and connected to remote transmitting units. Output from the corresponding receivers was fed into the main system. These experiments unquestionably benefited from the time available to us, as I had to test "each thing used" a number of times. In the end I devised what one would have to call contraptions, placed immediately outside the performance space, and chosen solely on the practical basis of reliability. The first consisted of a simple stereo microphone, suspended inside a plastic hemisphere, facing inward toward the center. The second was made of two lavaliere microphones, each placed inside one of the tubes of a bamboo wind chime. The third consisted simply of a remote transmitting microphone, attached to a handrail and pointing directly at one of the floor-to-ceiling glass windows opening from the performance space onto the street. Each of these devices filtered "outside sounds"—those just outside the space—in idiosyncratic ways, often providing a pervasive but difficult-to-identify noise floor underlying the other contributions. At times, the sudden amplification of sounds already audible from the street (such as ambulance sirens) recalled Cage's 1972 statement, "enlargement of activities." The choice of which sources would be audible at any given moment and their durations were determined by a chart of correspondences between my three sources and the schedules of three city bus lines that ran outside during performance times. Amplitude, however,

was determined on the spot, again keeping in mind Cage's *Variations V* remark about using the controls in the role of a "research worker."

Landon Rose designed the main sound system, taking input from Tom Plsek, Forrest Larson, Margaret Bellafiore, and me, and routing these independently of each other to five speakers arranged in the performance space. In the performance program, he wrote:

> I am approaching *Variations VII* as a work about placing sounds which are occurring simultaneously within a common aural field. The wonderful thing about Cage is that his work allows the performer to articulate and practice procedures and techniques within a discipline (music, dance, video) without the hierarchy of meeting a particular expressive goal.[48]

Afterward, he described his working process in more detail:

> I used one computer, one discrete channel amplifier, a firewire mixer and five raw loudspeakers placed in the performance space. . . . In SuperCollider [a program for the Macintosh computer] I made a patch for each input which cycled through a random output routine. Consequently five input channels were independently panned across five speakers for the duration of the performance. . . Within SC, in each routine each input was subjected to a number of random settings—speed of panning, rotational direction, contiguous and pointillistic panning, and random durations for the group of settings. . . . I did a bit of tweaking the input levels [at] the beginning of each night so that, especially with continuous sounds, everybody's sounds were heard, or I should say, no one person's sound grossly masked everybody else's. I think Cage would approve of that sort of transparency or maybe democracy.[49]

It should be noted that the process Rose describes is the total extent to which electronic sound was centrally processed. In the original *9 Evenings* realization, the collected sound was subject to a much greater degree of manipulation, as the documentary evidence shows. Herb Schneider's "engineer drawing" for the *9 Evenings* performances have been reproduced in print and online, and the E.A.T./Artpix DVD, as noted, includes a complete soundtrack recording.[50] The Mobius group preferred to present the sound sources more transparently, although in a mix that was generally thick with juxtaposition. Additionally, of the remarks and comments included in Cage's score drafts, only one—"modulation means"—may suggest a degree of central sound processing. This remark is itself from the undated early draft and does not appear in the 1972 "statements."

Thus far, I have described the contributions of the six team members who were primarily concerned with sound. The work of three others explored *Variations VII* as applied to other media, and in one instance

tested what may be the work's conceptual limits. Larry Johnson worked with video projection, and developed

> a gradually evolving collage of appropriated news images and texts, chosen and placed using chance processes closely modeling John's practices. Although his "score" for *Variations VII* does not specifically call for images, the ubiquity of images on the Internet, and the near-certainty that he would have used the Internet were it available in 1966, suggests their use in our 2008 version. John did extensive work in printmaking through Crown Point Press, and I am extending his methods to make the collage, which is automatically generated using PHP programming.

He extended the metaphor of "fishing" to include not only visual imagery, but also observation of real-time conditions as a means of developing the work during the performance:

> Aware of the extraordinary openness of the Mobius space to the outside world, I have developed a method of observing outside phenomena (traffic, pedestrians, etc.) through the windows and entering these observations into a webpage that will generate the *I Ching* hexagrams driving the collage. The importance of staying focused on the phenomena of this moment, in this place, is one of many things I have learned from John.

Johnson built a three-dimensional projection screen, after realizing that the Mobius space, dominated by floor-to-ceiling windows, had no suitable wall surface available for conventional projection:

> I realized that I was assuming that I must project on a flat and continuous surface. With this realization, I gained the freedom to choose a surface that was flat or not, and that was continuous or not. I thought that if I divided a rectangular screen into triangles and used chance processes to move each vertex of each triangle forward or backward I could produce a complex 3D sculpture that viewed along the axis of the projector would appear to be a continuous screen, but, viewed off-axis, would appear to be an "explosion in a shingle factory," a hostile critic's description of Marcel Duchamp's painting, *Nude Descending a Staircase*. To my knowledge, John made no sculpture; I have done my best to make what he might have made if he had chosen to make a sculpture.[51]

One of the "statements" from the 1972 draft reads, in part, "Add machinery Add automation." The ubiquity of digital media in the first decade of the twenty-first century might seem to make this an almost banal suggestion. At the same time, it provides another opening for the realm of indeterminacy to operate in *Variations VII,* when we remember

that it is the "machinery" and automation of our own era, as well as all previous eras, that are potentially available for us to use. The automation of our own time makes it as simple to fish for, and process, visual as well as aural data (leading, perhaps, to *Variations VII* as John Cage's "Web 2.0" mashup?).[52]

Joshua Jade was an audience member for the 2007 performance of *Variations VII*. For the 2008 performances, he devised a suite of actions that was the most complex of anyone on the team, and also responded most explicitly to indications in both of the score draft documents. It is best to let him speak for himself:

> I primarily relied on "7 Statements re a Performance Six Years Before" to create a composition of ACTIONS that would . . . occur based on specific chance procedures determined during the performance and realized by myself and members of the audience. The act of rolling die/dice and flipping coins was amplified with contact microphones in a wooden bowl and recorded into a "looping pedal" to continually play (though only audible during ACTION moments) and be added upon by all subsequent dice and coins.
>
> The 2 chance determined ACTIONS.
>
> 1. To add, subtract and reconfigure audience seats.
>
> 2. To call payphones that allegedly received incoming calls and record onto the looping pedal the entirety of the phone call. A 100 sided die was used [corresponding] to a list of 100 payphones in the 10 closest states that received incoming calls.
>
> These two ACTIONS occurred by chance based first on the rolling of 3 dice that corresponded to 3 sand-timers (1, 2 & 3 minute), then by the roll of a 6 sided metal die, then by $1 coin. I used small green plastic 6 & 10 sided dice to determine a seating location in the performance space (based on a grid that was pre-set using a chance procedure prior to the performance), if there was a person at that location I would ask them . . . if they wished to participate. If so there were the instructions necessary for completing the action. If there was no person at the location I would perform the steps myself.
>
> A separate non-chance ACTION.
>
> At the golden mean of the performance I walked to the closest convenience store and used a 20 sided coin to purchase a lottery ticket (there were 20 options). I used a portable device to record the entire action and then played the action through my speaker while "playing" the lottery ticket. Any winnings were to be shared equally among the audience.

From [Cage's] "score" to mine: "Inside composers picking up outside sounds

Fishing Telephones" = Using a cell phone to call payphones and listen. As well as recording the walk to purchase a lottery ticket.

"Space seats and no seats" = Both the initial configuration of the audience seating and then the removal and reconfiguration throughout the performance

"enlargement of activities" = Is primarily about the contact mics as a way of making the sound of dice and coins larger

"Quantity instead of quality" "Add machinery" "Add automation" = All primarily related to my use of the looping pedal. Obviously machinery, obviously automated in particular ways. But also the continual addition of sounds allowed for a build-up of quantity.

"I* II* III IV* V VI(?)" = My use of the six sided metal die to determine action. 1, 2, 4, meant no action. 3 or 5 meant action. 6 meant re-roll. *=crossed out [by Cage]

"Make unemployment possible" = Sharing the winnings of a lottery ticket.

Ideas taken from "12 remarks re musical performance":

"Seated or unseated indicating this freedom by non-verbal means" = A laptop with powerpoint questions and instructions to use with the audience members rather than speaking. And the initial unconventional seating configuration.

"no previously prepared sounds" = Dictated my choices about how to use the phones to fish for sounds. No ringtones or 800 numbers, etc.

"not throwing out the unlistenable ones." = Recording everything into the looping pedal and letting it remain there for the duration of the performance.

"composition socialized" = I used to justify my involvement in the audience. Both as participants but also as "composers" by performing the chance procedures that affected actions' outcomes."[53]

To enlarge a bit on the details of Jade's remarks: during the first performance, five dollars of lottery winnings were shared during the last few minutes of the performance. Audience members were given quarters, which they used for a spontaneous sound improvisation, mainly by striking them against the concrete floor. Jade's reference to the "unconventional seating arrangement" refers to his initial placement of audience seating in a grid pattern throughout the open space, with the orientation of each seat determined by chance operations. The audience members, who through this arrangement were initially sitting separated from each other, were free to move or change their seats during the performance, although many chose not to do so. In short, Jade developed a set of performative actions based on consideration of the specifications

given in both score drafts. One subset of his actions resulted in sound events, and an overlapping subset fulfilled the "fishing" metaphor otherwise dominant in both Mobius versions of *Variations VII*. The sounds and actions he generated complemented those of the other team members, and his design of lighting and seating arrangements provided a shell for the performance's physical environment. At the same time, his engagement with the score provoked actions unanticipated by the work's history—renewing the question of the relationship between the score as a fixed but living document and the "archive" as a developing resource necessarily referring to past practice.

It was the performance actions of Lewis Gesner, however, that most challenged the conceptual boundaries of *Variations VII*. In 2007, during the performance, Gesner roamed through the residential neighborhood in which the New Art Center is situated, searching for physical objects which he brought back into the space and used for generating sound. Among these retrieved objects were pieces of metal debris set out for trash collection and tree branches lying on the ground. This was undoubtedly a "fishing" activity, making use of specific aspects of the surrounding environment, and unprepared in advance.[54] In 2008, however, Gesner extended this collecting activity even further. For the performance program, he wrote:

> In our first performance of *Variations VII,* I chose my role to be a fisherman. I went into the outside world and brought back physical material to activate in the performance space proper. It was a joy to do this, to offer this kind of punctuation in the proceedings. I was inclined to repeat this, because of this pleasure, yet I know . . . that pleasure is a button that can still our growth, and the growth of the things we touch. As there is ample sound opportunity [from other contributors to the 2008 performances], and to allow for a potential of a balance with silences, I chose this time to try to bring back something rarified from outside the space. Indeed, not really a "thing" or things at all. I will go out into the community and vicinity and attempt to find a *circumstance or circumstances* that I can bring back to the performance. I don't know what it will be, and I will not be looking specifically for one kind of event. I will be open to what might be revealed.[55]

During the first performance, Gesner discovered a pizza shop in the neighborhood and brought back food, which he distributed to the audience. (This was the same performance during which the audience received lottery winnings.) During the second performance, he left the space and returned with a neighborhood barber whom he had met during the day. Sitting near the door, he received a professional haircut, with his hair left on view on the floor after the performance.

Gesner's actions on both nights delighted the audience and other members of the team, and were received in a spirit of "non-obstruction and interpenetration."[56] For all that, it might still be questioned whether, with these choices, he went beyond the boundaries of *Variations VII*. Gesner himself addressed this possibility, in a comment following the performance: "Actually, I would like to do my 'variation' of Variations as a separate performance—maybe, [a] variation of Variations (VII)."[57]

This description of the Mobius Artists Group's work on *Variations VII* shows the wide-ranging eclecticism in team members' approaches to the specifications provided by Cage's score drafts. It appears that perhaps the very brevity of the 1972 draft, even in combination with the earlier "12 remarks," has stimulated a greater degree of latitude than was evident in our version of *Variations V*. Nevertheless, the basic challenges presented by the scores of both works remain: to determine the areas in which indeterminacy operates by understanding the scores' specifications, to seek those aspects of each work that provide a distinct identity, and to distinguish those *a posteriori* score elements that may be bound to the era of their creation from those more responsive to changing conditions.

Conclusion

The question of what constitutes appropriate performance practice in the case of the *Variations* may be considered in at least two respects. This essay has been concerned with determining the elements that give each work its distinct identity, by paying close attention to Cage's provided specifications, even when expressed with great brevity. In the case of the *a posteriori* scores for *Variations V, VII,* and *VIII,* this task is complicated by the scores not being altogether prescriptive, in the sense that even the transparency-based *Variations* (*I–IV* and *VI*) prescribe specific sets of steps by which to prepare one's performance material. The *a posteriori* scores serve both as descriptions of specific past realizations and stimulations for future work, requiring different approaches to reading them. One can create versions of this set of indeterminate works in a manner that respects their underlying qualities, resulting in perceptibly distinct experiences. To accept this challenge is not to go in quest of new orthodoxies, but rather to assert that the challenge must be deliberately faced without resorting to the "John Cage as Puckish Zen prankster" excuse for doing whatever occurs to one. Apart from the matter of determining specifications, appropriate performance practice seems to involve not only the skills pertinent to each work, but also the ethical values about which Cage spoke so often, including personal dedication to the task at hand, avoidance of self-aggrandizement, and an approach to performance that models "anarchy in a place that works."[58]

But again, I believe assessment of compositions indeterminate in their

performance depends on the existence of a body of practice, with documentation of the decision-making involved. This article provides that for the Mobius *Variations V* and *VII*, while my earlier article (cited above) attempted the same for earlier work on *Variations I* and *II*. In these and other cases, in order for realizations to be documented and the limits tested, the works must be performed, not merely discussed. Their potentials must be made manifest. The dialectic between the scores' specifications and the freedoms provided by their "undetermined" elements needs multiple realizations to explore their boundaries. Anyone interested in the full scope of Cage's work should take the *a posteriori* scores off the shelf. Our rich experiences with them suggest that the day for regarding the latter *Variations* as historical curiosities has passed.

NOTES

1. John Cage, *Variations I* (New York: C. F. Peters, 1960), *Variations II* (New York: C. F. Peters, 1961), and *Variations III* (New York: C. F. Peters, 1963); William Fetterman, *John Cage's Theatre Pieces: Notations and Performances* (Amsterdam: Harwood, 1996), 198–202.

2. John Cage, *Variations IV* (New York: C. F. Peters, 1963). The best-known realization of this work is probably the audio environment created by Cage and Tudor and presented at the Feigen-Palmer Gallery in Los Angeles in 1965. Excerpts from this performance were first released on LP (Los Angeles: Everest 3132, [1966?]) and have been reissued on CD by Legacy International (CD 439, 2000).

3. John Cage, *Variations V* (New York: C. F. Peters, 1965), and *Variations VI* (New York: C. F. Peters, 1966); Fetterman, *John Cage's Theatre Pieces,* 135, 202; John Cage to Judith Bliuken [?], Aug. 22, 1967, John Cage Correspondence Archive, Northwestern University Music Library, item C36.9.

4. James Pritchett, *The Music of John Cage* (New York: Cambridge University Press, 1993), 108.

5. John Cage, *Variations II* (Wergo 6636–2, 1999); Cage, *Variations II* (Columbia S34–60164, 1967) (album title: *Musique Electronique Nouvelle).*

6. Cage, *Variations III*.

7. Michael Kirby and Richard Schechner, "An Interview with John Cage," *Tulane Drama Review* 10, no. 2 (Winter 1965): 64.

8. James Levine, interview on WGBH-FM, broadcast Nov. 12, 1994.

9. David Miller, "The Shapes of Indeterminacy: John Cage's *Variations I* and *Variations II*," *Frankfurter Zeitschrift für Musikwissenschaft* 6 (2003): 18, http://fzmw.de/ (accessed Sept. 15, 2007).

10. That essay included an account of the decisions that I made to realize the specifications in my own versions: two versions of *Variations I* for voice (in collaboration with Larry Johnson) and a version of *Variations II* for an array of common objects and seven performers. As one example, in the *Variations I* score, Cage did not mark points at the edges of transparencies. This may materially affect the parameter values derived, depending on the method employed of transforming measurements into values. The transparencies provided are of two types: those with line segments and those with points. One transparency of each type is overlaid on the other, and measurements are made from lines to points. These measurements determine values for parameters such as volume, duration, and complexity of timbre. If one takes the edge of a transparency as being literally the boundary that determines maximum assumed values for volume, duration, etc., then a given realization

cannot include any sounds with those maximum values. On the other hand, if a range of values for each parameter is self-generated—that is, drawn not from any external defining point but from the measurements themselves—then it follows directly that every realization will include at least one instance of a maximum value for each parameter.

11. Miller, "The Shapes of Indeterminacy," 44.

12. Richard Kostelanetz, *The Theatre of Mixed Means* (New York: Dial Press, 1968), 62.

13. Merce Cunningham, *Changes: Notes on Choreography* (New York: Something Else Press, 1968), n.p.

14. Ibid.

15. Gordon Mumma, "From Where the Circus Went," in *Merce Cunningham,* ed. James Klosty (New York: Limelight Editions, 1986), 66.

16. Cage, *Variations V*.

17. Fetterman, *John Cage's Theatre Pieces,* 130; Kostelanetz, *Theatre of Mixed Means,* 63; John Cage and Daniel Charles, *For the Birds* (Boston: Marion Boyars, 1981), 170.

18. Leta E. Miller, "Cage, Cunningham, and Collaborators: The Odyssey of Variations V," *Musical Quarterly* 85 (2001): 546.

19. Ibid., 551.

20. *Variations V* (videorecording) (New York: Cunningham Dance Foundation, 1966).

21. The following description of the Mobius *Variations V* is of the second set of performances, in September 2002. An earlier set of performances, in April of that year, differed slightly in terms of personnel and processes.

22. Larry Johnson, personal communication.

23. The members of Not Frida were Alison Ball, Janet Slifka, Marjorie Morgan, and Jody Weber.

24. "*Variations V" by John Cage* (program booklet) (Boston: Mobius Artists Group, 2002), n.p.

25. "Variation [*sic*] V by John Cage. Movement structures by Marjorie Morgan," unpublished notes.

26. "*Variations V" by John Cage*.

27. Ibid.

28. Marcia B. Siegel, "Truth and Consequences," *Boston Phoenix*, April 12, 2002, 13.

29. Catherine Morris, "*9 Evenings*: An Experimental Proposition (Allowing for Discontinuities)," in *9 Evenings Reconsidered: Art, Theatre, and Engineering, 1966,* ed. Catherine Morris (Cambridge: MIT List Visual Arts Center, 2006), 9.

30. *9 Evenings Reconsidered*; *Experiments in Art and Technology: 9 Evenings: Theatre & Engineering* (videorecording), http://www.9evenings.org/ (accessed Sept. 15, 2007).

31. *Variations VII* (videorecording) (Microcinema International MC-749, 2008).

32. "John Cage," La Fondation Daniel Langlois, http://www.fondation-langlois.org/flash/e/index.php?NumPage=571 (click on "John Cage") (accessed Sept. 15, 2007).

33. John Cage, "Variations VII: 7 Statements re a Performance Six Years Before," dated December 1972, Experiments in Art and Technology (E.A.T.) Archives. Also available at New York Public Library for the Performing Arts, JPB 95–3 Folder 340, http://catnyp.nypl.org/record=b4108232 (accessed Sept. 15, 2007).

34. [John Cage], "Variations VII: 12 remarks re musical performance," undated, E.A.T. Archives. I would like to thank Julie Martin of E.A.T. for generously providing access to this material.

35. Fetterman, *John Cage's Theatre Pieces,* 137.

36. Lowell Cross, "Remembering David Tudor: A 75th Anniversary Memoir," *Frankfurter Zeitschrift für Musikwissenschaft* 4 (2001): 15–16, http://fzmw.de/ (accessed Sept. 15, 2007).

37. Pritchett, *The Music of John Cage*, 153.

38. Note from John Cage to David Tudor, dated 1966, E.A.T. Archives.

39. Cage, "Variations VII: 7 Statements re a Performance Six Years Before."

40. [Cage], "Variations VII: 12 remarks re musical performance."

41. Miller, "Cage, Cunningham, and Collaborators," 555.

42. The March 2007 performance was given at the New Art Center, Newtonville, Massachusetts. The team included Mobius Artists Group member Joanne Rice, who did not participate in the 2008 performances. We are grateful to the New Art Center, and to Eric Phelps, then Executive Director of the Center, for their support.

43. *Variations VII* (videorecording).

44. Tom Plsek, personal communication.

45. In view of the earlier "12 remarks" draft's prohibition against "previously prepared sounds," one might question the use of already discovered Web-based sound sources. It would be worthwhile to consider whether or not there is a difference between a bookmarked repertoire of audio sources prepared by others, and the deliberate inclusion of audio material prepared specifically for use in this performance (as were my sound sources for *Variations V*). One might also consider the potential similarity between predetermining a set of remote sound sources with more or less known content, accessible by telephone (as in the *9 Evenings* performances) and bookmarking a repertoire of Web-based resources.

46. *"Variations VII" by John Cage* (program booklet) (Boston: Mobius Artists Group, 2008).

47. Ibid.

48. Ibid.

49. Landon Rose, personal communication.

50. *9 Evenings Reconsidered,* 60; Herb Schneider, "Engineer Drawing for Variations VII," in "John Cage, Diagram," http://www.fondation-langlois.org/flash/e/index.php?NumPage=571 (click on "John Cage'; then click on "Diagram") (accessed Sept. 15, 2007).

51. *"Variations VII" by John Cage*.

52. Early developmental work on *Variations VII,* particularly that which supported Larry Johnson's visual work, was greatly aided by a 2006 commission from New Radio and Performing Arts, Inc., for the related Mobius Artists Group project *Variations VII: FishNet*. *FishNet* was presented on the Turbulence Web site, and in a December 2006 performance at Art Interactive, Cambridge, Massachusetts.

53. Joshua Jade, personal communication.

54. The complete lack of technological mediation might be questioned, in view of the 1972 score's indication to "add machinery." This in turn would raise the issue of whether the specifications of these *a posteriori* scores, written as both records of previous events and stimulations to future events, should all be considered equally prescriptive. We did not consider them to be so in either 2007 or 2008, nor did we regard all of the 37 "remarks" of the *Variations V* score as having equal weight. Nevertheless, this is a question which might benefit from further practice and discussion.

55. *"Variations VII" by John Cage* (emphasis added).

56. John Cage, *Silence: Lectures and Writings* (Middletown, Conn.: Wesleyan University Press, 1961), 36.

57. Lewis Gesner, personal communication.

58. John Cage, *Anarchy* (Middletown, Conn.: Wesleyan University Press, 2001), viii.