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Author(s): Jeffrey Perry

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*Cage's Sonatas and Interludes for Prepared Piano:
Performance, Hearing and Analysis*

jeffrey perry

how to listen to cage

There seem to be at least two different ways to listen to the music of John Cage. The first way is well known and sanctioned by remarks made by Cage himself, who proposes a musical experience made up of discrete, paratactically organized moments or events unified mainly by the attention of the listener. In the course of his musical life Cage pioneered the exploration and elaboration of this type of listening, which leads logically to the work he called his “white painting,” the blank musical canvas 4 ‘33” (1952), on which the listener is invited to project any and all sounds that occur during the indicated span of time. Music we are intended to receive in this way invites us to construct an infinitely plastic set of continuities, different for each listener at each performance. Analysis that is faithful to this kind of listening might best be “limited to reconstructing, insofar as possible, the compositional process chosen for a piece,” as Rob Haskins has suggested.¹

There is, however, another way to listen to Cage, namely by attempting to place the musical events he sets in motion in the context of a temporally determinate, order-dependent

compositional unity. We assemble the character of this unity from cues and clues provided en route by the composer—by noting repetitions, balances, imbalances, and trajectories of growth. We can hear Cage, in other words, in much the same way that we might listen to a work by any other composer from his, or an earlier, century. If this is true, more interpretive methods of analysis become essential. In this essay I will take it as axiomatic that this second mode of listening to Cage is not only possible, but indeed essential, particularly with respect to the works that predate his adoption of chance procedures in 1950–51.²

The dualism proposed by these two modes of listening to Cage is, of course, imprecise, their relationship more complex than my simple binary opposition might suggest. This dualism rests, however, on a considerable body of scholarship on musical unity, continuity, and the challenges that music like Cage’s pose to these notions. Jonathan Kramer has termed some of Cage’s music antiteleological, stating that it “presents static, endless Nows.” He further notes, however, that composers of moment-form music, and presumably Cage also, “have not given up continuity entirely; that would

An earlier version of this essay was read at the joint meeting of the New England Conference of Music Theorists and the Music Theory Society of New York State at Yale University on April 27, 2003.

¹ Haskins 2003, 66.

² Haskins, however, notes that even in very late chance works such as *Two*² for two pianos (1989) Cage employs compositional devices that invite listeners to pay attention to continuities built into the listening experience by the composer himself, albeit as only a single ingredient in the listening process. Haskins 2003, 73–78.

be a fiction . . . continuity is no longer part of musical syntax, but rather . . . an optional procedure.”³ Elsewhere Kramer characterizes musical unity “not simply as a characteristic of music itself but also a means of understanding music, a value projected onto music.”⁴ As I hope to show, the possibility of interweaving my second mode of listening (a listening strategy, and thus a sense of musical form, that is continuity-based) with my first mode (which deals in Kramer’s “endless Nows,” but without necessarily endorsing his use of the modifier “static”) is provocative enough to suggest the necessity of exploring the former as thoroughly as possible.

Perhaps the best place to begin this exploration is with the *Sonatas and Interludes for Prepared Piano*, composed between 1946 and 1948 for the pianist Maro Ajemian, a monumental work in twenty movements that completes the first phase of Cage’s compositional development.⁵ This essay proposes some essentially conventional ways of hearing and understanding this cycle of pieces. Example 1, which illustrates the mirror symmetry with which Cage ordered the *Sonatas and Interludes*, is suggestive; by ordering the work’s components as he does, Cage seems to indicate that he considers the *Sonatas and Interludes* to be a cyclic whole, rather than a mere collection of pieces, or a series of disjointed Nows unified (like the four movements of Cage’s *Music of Changes*) only by being the product of repeated iterations of the same compositional processes. I shall return to the significance of the cycle’s overall construction below.

Part one of this essay briefly investigates the two main precompositional factors that condition each of the move-

ments of the cycle, namely the table of preparations provided for the work and the rhythmic macro/microstructure that served as Cage’s governing constructive principle throughout the 1940s. Part two focuses on the internal coherence of single movements within the cycle, and considers *Sonatas I* through *IV* as a single entity—Act I of the *Sonatas and Interludes* as a whole. Part three touches on details in subsequent movements of the cycle as a means of confirming conclusions reached in part two about the coherence and cohesion of the *Sonatas and Interludes* as an integral cycle. Cage documented the rhythmic processes that underlie his compositional practice rather extensively, and subsequent scholars, many of whom I cite below, have analyzed these processes in considerable detail.⁶ I therefore take the primacy of rhythm and its role as a guiding dimension of musical form in Cage’s music as a given, and focus on patterns of pitch relationship in the *Sonatas and Interludes* to a degree that is somewhat unprecedented. This is both possible and essential if one attempts to adopt the second mode of listening in engaging this work. An understanding of how timbre and pitch interact therein, and an appreciation of the rhythmic processes that shape both of these other elements, are necessary preliminaries that are addressed in the next two sections of this study.

the table of preparations

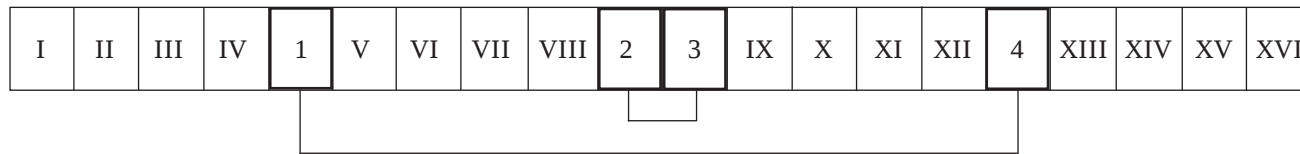
In this cycle forty-five of the piano’s eighty-eight notes are altered by preparation. Example 2 reproduces the table of preparations provided with the 1960 Henmar score. Except in the bass register, each note on most concert grand pianos

3 Kramer 1978, 178–79.

4 Kramer 2001, 8.

5 My use of the word “movement” needs some justification, since in general a work called “sonata” is not a movement of a larger work. Since (as I hope to show) the twenty component works of the *Sonatas and Interludes* represent ordered parts of a single cyclically organized work, the term movement as applied to any one of the twenty would seem an acceptable divergence from normative practice.

6 Many of the essays in which Cage addresses the rationale for, and technical details of, his rhythmic structure as it evolved in the years prior to composition of the *Sonatas and Interludes* are compiled in Cage 1961, including “Grace and Clarity” (1944), 89–93; “Forerunners of Modern Music” (1949), 62–66; “Lecture on Nothing” (1950); and “Composition as Process: Changes” (1958), 18–34. In addition, “Defense of Satie” (1948) in Cage 1970, 77–84 is of interest in this regard.



KEY

I, II, etc. = Sonata

1, 2, etc. = Interlude

example 1. *Layout of Sonatas and Interludes, showing mirror-symmetrical spacing of Interludes.*

is produced by the simultaneous action of three strings tuned to the same pitch. In some cases, the prescribed preparation affects all three strings; often, however, only the second and third strings are prepared, creating a mixture of the original pitch and the prepared sound. The table of preparations imposes several qualitatively different kinds of alteration. Some of the preparations called for by the table change mainly the tone color; others dampen the fundamental pitch to which the strings are tuned, causing different upper partials to speak in its place in an unpredictable manner. Some preparations detune only one or two of each note's three strings. The result in the latter case is similar to the ring modulation familiar from electronic music of the 1960s, which produces a fuzzy composite of the difference tones of two not-quite-identical pitches. In other cases, the preparations seem to dampen the pitch almost completely, adding only a percussive attack plus a subtle resonance to other pitches that sound in temporal proximity. Permutations of the different kinds of timbral alteration are also possible, since certain preparations may cause not only detuning of a pitch, but dampening of its fundamental as well.⁷ The pianist who

seeks to perform this work must carefully consider the degree and kind of detuning for each note. As we shall see, the choices that emerge in light of these factors must inevitably confront problems of grouping. The cycle's many ostinato-like figures create one type of grouping problem, while motivic units create another, and simultaneities a third. What a pianist decides concerning these grouping problems—whether or not to seek homogeneity with respect to certain prominent chordal formations, melodic figures or ostinati—will either facilitate or discourage the grouping together of musical spans at different temporal levels. Such groupings are also affected by one's perception of the rhythmic structure of each movement within the cycle.

Pedaling, about which Cage is quite specific, introduces still more complexities. The *una corda* pedal causes the hammer to strike only two of the three strings that produce each note; if one of the strings for a note is more heavily affected

⁷ Technically, much of what I describe here as detuning is heterodyning, as many preparations affect only two of the three strings of the given

note. The Internet *Telecom Glossary 2000* defines heterodyning as "To generate new frequencies by mixing two or more signals in a nonlinear device such as a vacuum tube, transistor, or diode mixer." As Cage demonstrates, the strings, soundboard and action of a concert grand piano comprise a nonlinear device *par excellence*. See Alliance for Telecommunications Industry Solutions 2001, http://www.atiss.org/tg2k/_heterodyne.html.

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				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
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				SCREW	2-3	1%			
				SCREW	2-3	1%			
1-23	ROBBER	1-23	26%	SCREW	2-3	1%	ROBBER	1-23	8%
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
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				SCREW	2-3	1%			
				SCREW	2-3	1%			
1-23	ROBBER	1-23	27%	SCREW	2-3	1%	ROBBER	1-23	8%
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
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				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
1-23	ROBBER	1-23	28%	SCREW	2-3	1%	ROBBER	1-23	8%
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
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				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
1-23	ROBBER	1-23	29%	SCREW	2-3	1%	ROBBER	1-23	8%
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW	2-3	1%			
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				SCREW	2-3	1%			
				SCREW	2-3	1%			
				SCREW					

by preparation than its mates, shifting it in relation to the hammer will either intensify or minimize the amount of modification produced by preparation. The note C_5 (where middle C = C_4) is an excellent example. Although this note is prepared, when the *una corda* pedal is not depressed it is still discernable as a C_5 , as in Sonatas I, II and IV, where it is a prominent event. When the *una corda* pedal is depressed, as is the case in Sonata III (mm. 9 and 19) and throughout the First Interlude (where the *una corda* pedal is used almost from beginning to end), depressing the C_5 key elicits a metallic sound with scarcely any fundamental. Sonata V features an interplay between the two kinds of C_5 : the heavily prepared, detuned, *una corda* C_5 dominates the first reprise, while the more recognizable C_5 without the *una corda* pedal comes to the fore in the second reprise.

Although the various kinds of preparations Cage specifies produce qualitatively different kinds of modification in the piano's intonation, timbre, and response, a rough sorting into three types is possible. Type one notes are those that Cage chooses to leave unprepared; type two are minimally prepared notes, which still project a clear sense of fundamental pitch and are only minimally detuned. Finally, type three notes are those that are extensively prepared, their fundamental frequency dampened and/or detuned to the point that they are effectively removed from the continuum of pitch relationships formed by the union of the first two types.⁸ Cage devotes most of his attention to the upper reaches of the piano's range; forty-two of the forty-five prepared notes are above $F\sharp_3$, and in the three lowest octaves Cage prepares

only three notes— D_3 , D_2 , and D_1 . All of the recordings of Sonatas I and II I have listened to confirm that the position Cage specifies for the screw and rubber with which the note D_2 is to be prepared— $4\frac{7}{16}$ inches from the damper—approximates the location of a harmonic node, resulting in a sounding pitch two octaves higher.⁹ The result in Sonata I is the availability of both a heavily prepared D_4 (the one that results from depressing the D_4 key) and a less heavily prepared D_4 (the one that results from depressing the D_2 key).

This relative avoidance of the bass registers reflects his compositional preferences, since, despite frequent flights to the highest registers, most of the cycle's melodic foreground lies in the range of the soprano human voice, and in the fourth or so immediately on either side of it. (Stockhausen was to favor the same "high middle" range in his works of the 1950s, perhaps seeking to avoid excessive bass activity and thus the implication of chord roots and harmonic functions. We will see how Cage confronts this issue below.) Given the fact that the change of pitch resulting from most preparations is downward, furthermore, much (notated) high-register activity sounds as though it is in the middle register. Example 3(a) shows which notes between E_4 and E_6 are left unprepared; 3(b) shows which notes within this range are minimally prepared, and are thus (despite their altered state) still available, absent the use of the *una corda* pedal, to form intervallic and melodic connections. (Every note in the sixth below E_4 is heavily prepared.) Example 3(c) combines the two groups of notes into a single gamut of clearly pitched

8 This typology is distinct from, but informed by, the one that Cage articulates in "To Describe the Process of Composition Used in *Music of Changes* and *Imaginary Landscape No. 4*" in Cage 1961, 58 as a means of sorting the kinds of prepared piano and other sounds in the charts he used to compose the works named in the essay's title. Pritchett seems to imply that this typology is derived from Cage's prepared piano music, and that the composer later generalized it to include all sounds used in his compositions. See Pritchett 1988, 54.

9 The recorded performances used as points of reference for this essay include Maro Ajemian's 1958 concert recording in Town Hall (Wergo 286 247–2), Robert Miller's recording of excerpts from the cycle (released in 1976 by New World Records as NW 80203–2), Aleck Karis's masterful 1998 recording (Bridge 9081A/B), and Boris Berman's 1999 release (Naxos 559042). These are but a sampling of the available recordings of this most-recorded of Cage's large works. Karis's commentary in the booklet that accompanies his recording is particularly useful in providing insight into the practical problems attending any attempt to realize Cage's table of preparations and perform the cycle.



(a) Inventory of unprepared notes in treble register.



(b) Inventory of minimally prepared notes in treble register.



(c) Combination of (a) and (b) (White noteheads = unprepared notes; black notes = minimally prepared notes.); the melodic gamut of the cycle.

(d) Melodic matrix suggested by Cage's emphasis on certain treble-register unprepared and minimally prepared notes in the cycle as a whole. It consists of one minimally prepared dyad between two mixed dyads. Note its intervallic structure (four interlocked perfect fifths) and its symmetrical construction around the dyad B_4/C_5 .example 3. Cage, *Sonatas and Interludes*.

sounds.¹⁰ Interplay between this set of pitches with both extensively prepared notes and with pitches in the notated F_6

10 The term "gamut" is used here to represent a collection of pitches within the given range belonging to types one and two as defined above. My use of the term here is thus at variance with Cage's own usage with reference to his first prepared piano work, *Bacchanale* (1940). In describing the process of preparation used for the latter work, Cage apparently described the notes he *did* prepare (twelve in number) as forming a gamut. See Bernstein 2002, 78.

to C_8 range is essential to the cycle's means of unfolding. We (as experienced listeners) are likely to be acutely attuned to notes that strongly project a sense of fundamental pitch and to intervals that suggest some approximation of a discernable tuning scheme. As we shall see, Cage deploys the notes of the gamut shown in Example 3(c) in a way that makes clear his appreciation of their special status. Even if it became valid at some subsequent point in his life, the notion of Cage as someone who is open to any and all sounds at all times,

without bias and without discrimination, is completely at odds with his compositional ethos as revealed in the *Sonatas and Interludes*.¹¹

Not all of the eighty-eight notes Cage has at his disposal, then, are given equal stress. In particular, as the cycle progresses the importance of the matrix of semitone dyads shown in Example 3(d) gradually emerges. The timbral match between the notes that comprise each of these dyads is striking, placing at Cage's disposal a set of salient semitonal relationships that he might exploit for purposes of surface—or long-term—cohesion.

rhythmic structure

Cage expounded the workings of rhythmic structure, which he simply called Structure, in a series of essays in the 1940s and '50s. Its role as a determinant of how his music unfolds has been closely examined by a number of writers, beginning with the composer, and including James Pritchett, Chadwick Jenkins and Paul van Emmerik.¹² The concept of macro/microstructure is at the center of Cage's rhythmic practice in the 1940s. Every composition from this period consists of a macrostructure whose duration may be expressed in reference to a freely chosen unit of measurement as a series of integers or rational numbers. Within each division of this macrostructure (henceforth called a macrounit), the proportions of the entire macrostructure are replicated in

miniature, creating a microstructural level isomorphic with the macrostructure. Although Cage derives microstructural units (or microunits) from his macrounits in a variety of ways (and sometimes compromises exact correspondence between macro- and microlevels for any of a number of compositional purposes, including performability), the general result is a work whose rhythmic construction is multi-leveled and self-derived, often evoking fractal methods of design.

Cage employs the macro/microstructural principle with more subtlety and wit in the *Sonatas and Interludes* than in any of his prior works. Evidence of this is found in the durational series, which is more complex, and in the subtler interpenetration of rhythmic architecture and musical surface. The durational series that governs the proportions of Sonata I on both the macro- and the microlevels is $1\frac{1}{4}$, $\frac{3}{4}$, $1\frac{1}{4}$, $\frac{3}{4}$, $1\frac{1}{2}$, $1\frac{1}{2}$; at the macrolevel, 1 is equivalent to seven measures of 2/2, or 7 times 4 quarter notes, as shown by the groupings at the very bottom of Example 4. On the microlevel, one unit is equivalent to a measure of 2/2, or four quarters. This is shown on the next highest level in the example.

The repeat signs group together the four components of Sonata I's rhythmic structure into two pairs: the first playing of the first reprise presents $1\frac{1}{4}$ and $\frac{3}{4}$, and the repeat expresses the next two terms, which are also $1\frac{1}{4}$ and $\frac{3}{4}$. Each iteration sums to $1\frac{1}{4} + \frac{3}{4} = 2$. The same applies to the second reprise, which twice iterates $1\frac{1}{2}$ macrounits. The durational series as a whole thus sums to the proportion 4:3, which, as shown in the upper portion of the example, expresses itself at myriad temporal levels, and through subdivision, augmentation, and diminution determines the duration of many of the surface gestures. The precompositional hierarchy of micro- and macrostructures does not necessarily determine the surface phrase structure of the music at every level; however, to a large extent Cage uses conventional pitch connections and gestures to project either parts of the structure or the simpler 4 to 3 ratio that results from it, the latter often subdivided into 2 to 2 to 3, on and below the surface of the sonata.

11 Pritchett's account of the evolution of Cage's compositional thought from 1946 through 1951, or from the inception of the *Sonatas and Interludes* through the composition of the *Music of Changes*, is essential if one is to grasp this point. See Pritchett 1993, 60–73.

12 Important essays by Cage on this topic are cited above (see footnote 6). The best overview of Cage's compositional development is Pritchett 1993. Nicholls 2002 and Patterson 2002 are recent collections of essays on Cage of immediate relevance to this study; see in particular the essays by van Emmerik and Jenkins in the latter and by Bernstein in the former.

4
(56)

3
(42)

4
(16)

3
(12)

4
(12)

3
(9)

4
(8)

3
(6)

4
(4)

3
(3)

2/2

7/4

6/4

8/8

2/2

2/4

(1=4x): $1^{1/4}, 3/4, 1^{1/4}, 3/4, 1^{1/2}, 1^{1/2}$

(microstructure not clearly articulated)

$1^{1/4}, 3/4, 1^{1/4}, 3/4, 1^{1/2}, 1^{1/2}$

(microstructure presented in diminution)

1

1/4

1 1/4

3/4

1

1 1/2

1/2

example 4. Cage, *Sonatas and Interludes*, *Sonata I*. Above the staff: embedded occurrences of the governing 4:3 ratio at various levels of durational grouping. (||: 1 1/4, 3/4 :|| = 4; ||: 1 1/2 :|| = 3.) Below the staff: the macro- and microstructure of the movement.

sonata i: two analyses

If we are interested in approaching the *Sonatas and Interludes* from an analytical perspective, we need to consider not just groupings that derive from rhythmic/metric macro- and microstructure, but also other groupings of the sort mentioned above—those created by ostinati, melodic motives, and simultaneities. We also need to understand how the table of preparations works with and against surface continuities, often creating groupings not evident from the score. The

ability to separate notes of similar registral, accentual and dynamic quality from a more heterogeneous context in such a way as to create perceptual streams of continuity has been well documented and extensively studied. Roger Shepard summarizes the results of several decades of relevant music-cognition research on this topic when he states that

When [several tones forming a series] are separate in timbre, they are difficult to hear as a coherent stream, and tones with the same timbre segregate out from the stream and are heard independently. Further, when repeating sequences of three or four tones are used, the order of

the tones becomes difficult to identify. The analog in the visual domain is to present rapidly repeating sequences of different colors: observers are easily able to identify the colors being presented, but are not able to identify the *order* of the colors.¹³

Shepard's observations seem especially germane to the kaleidoscopic timbral play of the *Sonatas and Interludes*. When one listens to these pieces, notes that possess similar degrees of pitchedness seem to stream together in the manner Shepard describes. "Pitchedness" refers to the degree of preservation of the original tuning of, and a relative absence of dampening with respect to, a note's fundamental; notes that form part of the gamut shown in Example 3(c), for instance, possess a similar degree of pitchedness, separating them from other notes in the same range, and allowing them to form coherent, scalar melodic (and harmonic/melodic) streams.

Such streaming creates a rich interplay with the rhythmic life of the music, and creates a sense of form and design. Here follow two analyses of the first sonata, one that explores gestural continuities, and another that focuses on medium- and long-term associations. Example 5 provides the score to the first half of Sonata I. Here, the often-paired notes $F\sharp_5$ and A_5 are heard as a motivic unit because they share the same type of preparation, and thus the same degree of pitchedness. The performer prepares both of these notes by inserting a screw between the second and third strings. Given their frequent motivic pairing in the first sonata, it would be logical for the performer to make sure that if the process of preparation detunes them, it does so by a comparable amount. By contrast, the quiet arrival of E_4 in m. 12 is striking because this note, although minimally prepared, speaks as clearly as any of the handful of unprepared notes in the treble register shown in Example 3(a).¹⁴ In addition to the many pairings and group-

ings of pitches and motives, Cage's cycle occasionally introduces singular events of this sort. Their singularity in a local context does not necessarily mean that they have no subsequent history in later parts of the cycle; indeed, this quiet arrival of E_4 forecasts the eventual assembly of the matrix of pitches shown in Example 3(d), a process that is an essential part of the cyclic continuity of the *Sonatas and Interludes*.

From the seemingly disjointed texture of the first sonata's surface, a few brief melodic figures of simple diatonic character (indeed, of nursery-rhyme simplicity) emerge. The first of these figures appears in m. 4; it is a simple C–B–A–G, fa–mi–re–do formula that appears quite unattached to the percussive events that surround it. The first macrounit of the movement (mm. 1–7; refer to Example 4) is unified by the multiple iterations of the chords labeled (a), (b) and (c), and introduces the $F\sharp/A$ pairing mentioned above. Indeed, here $F\sharp_5$ sounds almost continuously. In m. 8 the second macrounit presents a synopsis of the overall 4+3 (or 2+2+3) deep macrostructure. Here again, $F\sharp_5$ is a unifying detail. After a brief absence, the third macrounit, in mm. 9–12, reintroduces the $F\sharp/A$ unit as part of a second melodic figure (B–A–B–A–A– $F\sharp$ in mm. 9–10) that recalls the straightforward C–B–A–G figure of m. 4. As mentioned above, the unprepared E_4 of m. 12, timbrally and registrally isolated, provides a plausible closing gesture for the first reprise.

After one has become acquainted with the way in which the passage's melodic figures succeed one another, a certain gestural narrative suggests itself. To me, chord (a) and the $F\sharp$ -oriented episode of mm. 1–3 sound like an assertion of principle, an "Es muß sein" to which m. 4's fa–mi–re–do under E_6 is the cautiously neutral response. Chord (c) makes a more circumspect assertion of $F\sharp$ in alternation with the

13 See Roger Shepard, "Stream Segregation and Ambiguity in Audition," in Cooke 1999, 122.

14 The table of preparations indicates that the strip of plastic used to prepare $D\sharp_4$ should be twisted around E_4 as well; this, at least, is the best

reading of the E_4 in parentheses that Cage places in the table next to $D\sharp_4$. However, careful listening to recordings by Ajemian, Karis and Berman reveals such a close timbral resemblance between E_4 and F_4 that twisting $D\sharp_4$'s plastic strip around E_4 either results in minimal preparation, or affects F_4 as well.

mm. 1–4: G major collection

$\text{♩} = 76$

$F\sharp - F\sharp - A - F\sharp$

"fa-mi-re-do" melodic figure (G major)

(a) (a) 16va (a) 4 (b) (c) (b) (b) (b)

f mf mp

$F\sharp - F\sharp - A$ (d)

second melodic figure: B-A, B-A-A-F $\sharp$

16va 8va 10 11 12

ritardando

Minimally Prepared E

loco pp ppp

$A - F\sharp$

B_4/C_5 (foreshadows mm. 13–14)

example 5. Cage, *Sonata I*, mm. 1–12, showing recurring chords, pairings of $F\flat_5$ and A_5/A_7 , melodic figures in m. 4 and mm. 9–10, and minimally prepared E_4 in m. 12. Copyright © 1960 renewed 1988 by Henmar Press. Used by permission. All rights reserved.

periodic thud of chord (b) in mm. 4–6. Due to the indefinite pitch of the latter, one hears (c) as an irrelevant or at least ineffective response to (b), and vice versa; the sudden triplet scurry of m. 8 seems an irate or impatient recognition of this dialectic impasse, and chord (d) in m. 8, emerges as a final response to the latter, but—perhaps because it is higher in pitch than (a)—sounds like a response in the form of a question. The first half of the sonata thus neatly inverts the question-and-answer paradigm of Western musical phrase and period structure: here, an assertion is answered by a question, the absolute with the conditional.

Example 6(a) gives the score to the movement's second half. The disjunct gestures at the start of this section provide a digression comparable to that found at the corresponding point in Classical rounded binary forms; indeed, the re-emergence of chord (a) in mm. 18 and 19, serving the function of thematic return, reinforces this comparison. The most graspable surface connection in the early part of the movement's second half is the semitone between the sustained B_4 of m. 13 and the C_5 of m. 14. It is one of Cage's singular events—at least upon first hearing. It must satisfy our appetite for overtly melodic formations until we get to m. 20,



The musical score for 'The Rose Tree' is presented in two systems. The first system consists of a treble and bass staff. The treble staff contains a melody with a 4-measure phrase (marked with a bracket and '4') and a 3-measure phrase (marked with a bracket and '3'). The bass staff contains a bass line with a 3-measure phrase (marked with a bracket and '3'). The second system also consists of a treble and bass staff. The treble staff contains a melody with a 2-measure phrase (marked with a bracket and '2') and a 3-measure phrase (marked with a bracket and '3'). The bass staff contains a bass line with a 2-measure phrase (marked with a bracket and '2') and a 3-measure phrase (marked with a bracket and '3'). The tempo is marked 'gva' (grave) and the time signature is 3/4.

example 6. *Sonata I. Copyright © 1960 renewed 1988 by Henmar Press. Used by permission. All rights reserved.*

(c) mm. 20–26, showing 2+2+3 (= 4+3) segmentation in 2:1 augmentation.

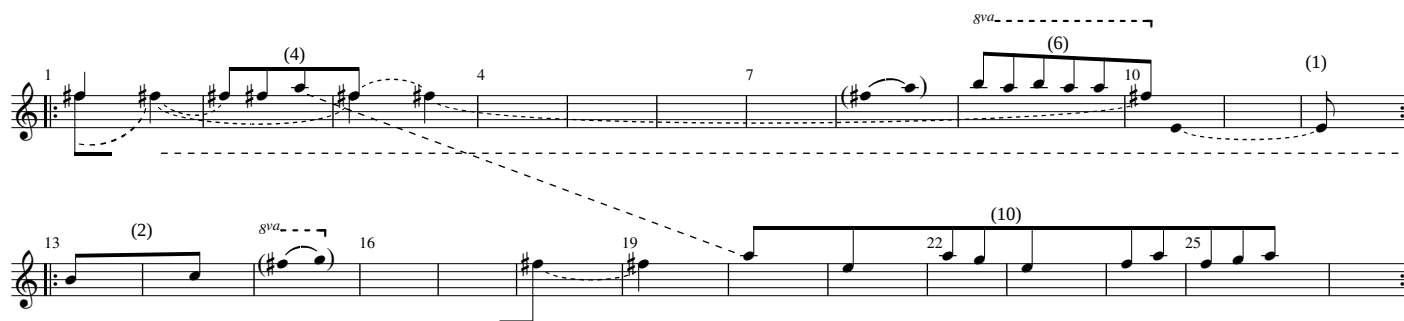
example 6. [continued]

although it is echoed by the interval between the last two right-hand pitches in m. 15. Although in the score the latter looks like the descending semitone $E\flat_7-D_7$, due to the effects of preparation in the highest register it sounds, at least in the recordings I have studied, like the ascending semitone $F\sharp-G$ —one of the cycle's many unexpected contour inversions.

The last seven measures provide closure in a number of ways. First, as shown by comparing Examples 6(b) and 6(c), they replicate the 2–2–3 durational succession of m. 8 in 2:1 augmentation, providing a reprise of yet another first-half detail. Note how metric accent articulates this segmentation: the attacks on beats 1, 3, and 5 of m. 8 become the downbeat attacks of mm. 20, 22, and 24. Second, the final phrase ends with the return of the quarter-eighth-eighth-quarter rhythm of m. 4 and a transposition of m. 4's descending fa–mi–re–do tetrachord; this helps group mm. 24 through 26 together and project the 2–2–3 pattern just mentioned. Third, given that the sonorities of mm. 20–26 are all either (detuned) triads or tertian polychords, the last seven measures refer back to (and intensify) the diatonic simplicity of the two melodic figures of m. 4 and mm. 9–10, and thus provide another kind of recapitulation. Fourth, the closing phrase of the sonata (mm. 20–26), with its resonant octaves and fifths, is a timbral and harmonic intensification of the question framed by chord (d)

in mm. 9 and 10. Peter Yates, cited by Pritchett, notes that “more highly pitched sounds tend to unrest and sounds of lower pitch to rest.” The impact of this ending thus derives, in part, from the juxtaposition of triads in the three highest octaves of the piano, ultimately subsiding into the Sonata's “home register,” that of the soprano human voice. Finally, just as the sonata's first four bars comprise a complete G-major statement of the diatonic collection, the last three bars comprise a complete C-major statement of the same collection, suggesting that the seeds of both the opening's aggressiveness and the ending's sense of energetic repose are to be found in the same place. Note that the A_5 that is so often paired with $F\sharp_5$ in the sonata's first half is melodically salient at the end as well.

The following analysis of the movement is based on attempts to stream together sonorities that, although prepared, retain definite pitches. Example 7 filters out all events save those whose pitch content and timbre is sufficiently unaltered to allow them to form melodic connections with other notes of similar character. The example employs a variety of graphic conventions to indicate the connections between the events singled out in the example. I privilege the movement's several brief melodic formations by beaming their component pitches together. I indicate the number of notes in each



- Notes with upward stems or flags are part of melodic formations; the number of notes in each such formation is shown above the beam.
- Notes with unbeamed stems are salient pitches aurally retained through direct or indirect iteration; the long-term retention of $F\sharp_5$ is shown with downward stems.
- Unstemmed, slurred noteheads in parentheses are motivically related to one or more of the beamed melodic formations.
- The diagonal dotted line between mm. 2 and 20 indicates the return of $A\flat_5$ as a melodically active pitch class.

example 7. *Graphic analysis of Sonata I.*

such formation above its beam to draw attention to the movement's progression from the brief four-note formation of mm. 2 and 3 to the six-note figure in mm. 9 and 10, and finally to the ten-note formation that ends the movement, and thus towards a state of more extensive melodic utterance. Meanwhile, note the persistence of the pitch $F\sharp_5$ throughout mm. 1–10. It is not fanciful to hear its return, as part of chord (a) in m. 18, as effecting a long-term encapsulation of the first eighteen measures of the piece. This is not to make any argument in favor of prolongation of that pitch or pitch class; suffice it to say that one of the myriad ways that Cage has of shaping the surface of the pieces in this cycle is a long-term bracketing of this sort. Note that the A_5 of the first melodic formation in m. 2 returns as the first and most persistent pitch of the final melodic formation in mm. 20–26, suggesting a connection between those events oriented towards $F\sharp$, like the first melodic figure, and those ori-

ented towards the diatonic collections that dominate the sonata's closing section.

The direct, timbrally homogeneous intervallic connection between the two notes of the semitone B_4 – C_5 in mm. 13–14 contrasts sharply with the enigmatic, fragmentary thuds that surround it. Although it seems to have no consequent or consequences in the remainder of the movement, this semitone is an important detail for three reasons. First, it foregrounds the melodic mode of listening that intermittently dominates the movement's surface. The melodic mode is reasserted with finality in the last seven measures, where it provides a culminating subordination of rhythmic and timbral modes of listening to the melodic mode, and thus a convincing degree of closure. Second, this B–C half step foreshadows the C-major collection that saturates the end of the movement. Finally, it, along with the $F\sharp_5$ that brackets much the movement, forms part of the pitch matrix shown

in Example 3, foreshadowing connections with subsequent movements of the cycle that will be described below.

sonata ii: a dance

This highly rhythmic movement suggests a stylized dance. At first listening it evokes the music of Java or Bali, perhaps a tip of the hat by Cage towards the gamelan that is often said to have been a model for the prepared piano.¹⁵ Of the nine *rasas*, or permanent emotions—the erotic, the heroic, the odious, anger, mirth, fear, sorrow, the wondrous, and tranquility (towards which the other eight tend)—mirth would initially seem the closest match for the mood of this sonata. Upon closer study, however, a subtler, more characteristically transient, Cagean blend of melancholy and giddiness seems to reveal itself.

The rhythmic structure of this sonata is based on the non-whole-number sequence $\{1\frac{1}{2}, 1\frac{1}{2}, 2\frac{3}{8}, 2\frac{3}{8}\}$, which sums to $3:4\frac{3}{4}$, a near retrograde of the governing 4:3 ratio of Sonata I.¹⁶ Although the absence of any tempo changes or

inflections makes the rhythmic surface Sonata II seem simpler than that of the first sonata, its rhythmic structure presents a much more dynamic schema than that of the latter, one that directs attention to individual rhythmic cells rather than to overall proportions. Some of these rhythmic cells evoke the hesitation rhythm of early Jazz, contributing to the surface mirthfulness mentioned above. Of the twenty pieces that make up the cycle, this would be one of the easiest to choreograph.

Pitch relationships are, as in the first sonata, clearly delineated and cogently presented. With respect to the pitch matrix, Cage reuses the B_4 – C_5 semitone from the first sonata, which he echoes by highlighting the two unprepared notes in the C_4 – C_5 octave, E_4 and F_4 , in mm. 28–31. In m. 1 Cage lightly touches on the $F\sharp_5$ prominently introduced in Sonata I (here spelled $G\flat$), and in mm. 4–5 briefly uses G_5 . The latter note, but not $F\sharp_5$, is quite salient in mm. 18, 22 and 25–26; Cage's use of these pitches contributes to the emergence of the melodic matrix mentioned above as a point of reference that grows in importance as the cycle unfolds.

Working dynamically with and against this symmetrical matrix are more dynamic, asymmetrical melodic groupings. The treble register (roughly the soprano range, somewhat generously defined, of the human voice) is a kind of melodic lodestone throughout the cycle; Cage uses the lower register sparingly, and largely reserves the upper octaves (the “8va” and “16va” registers, to use his own notation) for percussive effects and coloristic excursions.

Example 8 provides a graphic analysis of the movement that focuses on the notes of the aforementioned matrix. A complete inventory of occurrences of the six matrix pitches is given at (a); (b) provides a reduction that clarifies the three-voice polyphony suggested by Cage's unfolding of the three

15 Cage's original goal was to discover an “African twelve-tone row” for the dance *Bacchanale*. Instead, he ended up preparing twelve notes of the piano and composing music that explored it as a surrogate for his percussion ensemble. He seems to have abandoned any intention of evoking African music when the prepared piano entered the picture. Comparisons of the prepared piano with gamelan seldom, if ever, originated with Cage himself; Alan Rich, for example, characterizes the prepared piano as used in *Bacchanale* as “a cross, perhaps, between an out-of-tune harpsichord and an Indonesian gamelan.” See John Cage, “How The Piano Came to be Prepared” in Cage 1980, 7–9; see also Rich 1995, 149.

16 The sonata's macrostructure is based on $7\frac{3}{4}$ measures of 4/4. The first macrounit, equivalent to the structure's $1\frac{1}{2}$ value, is divided into $1 + \frac{1}{2}$, the former corresponding to mm. 1–9, the latter to mm. 10–14. The next macrounit, divided into $2 + \frac{3}{8}$, is approximated by combining mm. 15–32 ($2 \times 7\frac{3}{4}$) with mm. 33–37 (roughly equal to $\frac{3}{8} \times 7\frac{3}{4}$, actually a fraction of an eighth note too short). As for most of the other sonatas, the repeats in the score account for the second and

fourth terms of the governing numerical series. Microunits unfold in mm. 1–9, 10–14, 15–23, 24–32, and 33–37 (the latter, again, a close approximation).

cage's *SONATAS AND INTERLUDES* for prepared piano: performance, hearing and analysis

49

Musical score for Cage's *Sonatas and Interludes* for prepared piano. The score is in 4/4 time and features various dynamics and articulations. The notes are marked with *f*, *pp*, *p*, *mf*, and *f*. The score is divided into measures, with some measures marked as *(to m. 22)*, *(to m. 24)*, and *(from m. 1)*. A box indicates $147/240 = \text{golden mean}$.

(a) Occurrences of notes from the melodic matrix $\{E_4, F_4, B_4, C_5, F\sharp_5, G_5\}$

Musical score for Cage's *Sonatas and Interludes* for prepared piano. The score is in 4/4 time and features various dynamics and articulations. The notes are marked with *p* and *f*. The score is divided into measures, with some measures marked as *(to m. 22)*, *(to m. 24)*, and *(from m. 1)*. A box indicates $147/240 = \text{golden mean}$.

(b) Reduction, showing disposition of matrix dyads.

example 8. Cage, *Sonata II*.

semitonal dyads of the matrix. The reduction eliminates most direct reiterations of pitches, and uses beams to clarify the matrix's dyadic structure. Considered from what might be termed a middleground perspective, the example proposes reception of the sonata as a series of bracketing neighbor figures. The ubiquitous alternations between B_4 and C_5 throughout the sonata's length provide a kind of shallow middleground continuity, while the $G\flat_5$ of m. 1 and the G_5 of mm. 22–25 bracket the first three-quarters of the piece in a more gradual manner; indeed, G_5 arrives in m. 22 at the sonata's durational golden mean (on the 147th of its 240 eighth notes). Occurrences of F_4 in mm. 15 and 24 foreshadow the forte arrival of the E_4 – F_4 melodic dyad in m. 28. Taken together, the strongly accented arrivals of G_5 in m. 22, its sustained return in mm. 25–26, and the arrival of E_4 – F_4 in m. 28 serve as a kind of three-part structural downbeat, providing (with the final F_4 – E_4 pair embedded in the descending left-hand line of mm. 30–31, which is otherwise mainly dampened and detuned) long-term voice leading closure.¹⁷

In counterpoint to the calculated deployment of this symmetrical pitch matrix, surface melodic formations emerge in the second half of the sonata that are independent of both the matrix and of the rhythmic cells discussed in detail below. Listening for gamut pitches in the passage that begins in m. 15 and ends just before the final flurry of sixteenth notes in m. 28 yields the line shown on the top staff of Example 9. Upon repeated hearing, this shape emerges from the midst of the surrounding pulsation and timbral singularities, resembling (and recalling) the nursery-rhyme fragments heard in the first sonata, but evoking tonal convention

even more concretely. Indeed, the melodic line that emerges in this passage makes remarkably clear reference to C minor, culminating in m. 22 with the high-register $E\flat_6$ – $E\flat_6$ – D_6 – C_6 fragment that (with the subsequent measure of rest) concludes the sonata's third microunit. This passage recalls the Quodlibet finale of the *String Quartet in Four Parts* of 1949–50 as well as long passages from the *Six Melodies for Violin and Keyboard (Piano)* of 1950, in both of which Cage indulges in prolonged tonal allusions.¹⁸

Cage deploys surface rhythmic formations, too, in a way that evokes traditional idioms. A simplified version of the score to the second Sonata is presented as Example 10. Brackets above and below the score provide a motivic analysis of recurring rhythmic cells and their development throughout the work. This process of development is surprisingly conventional, recalling the liquidational narratives used by Schoenberg to analyze the music of Mozart, Brahms, and himself. Each motive is defined by a series of durational values and a contour, less so by precise pitch level, intervallic content, and metric position.

The opening gesture of the sonata is an ascending and descending pattern labeled as motive α in the example. Although on the printed page it appears to be a straightforward stepwise succession, due to the extensive dampening of E_5 , the first and last notes of the gesture have little or no fundamental pitch, and several of the intervals in the ascending and descending portions of the motive (labeled “head” and “tail” in the example) are somewhat detuned, establishing the rather exotic tone of the work from its inception. The

17 The brief appearances of G_5 in mm. 15–18, where it is repeatedly used as an upper neighbor to F_5 , set up its penultimate statement in m. 22 and its arrival as a goal pitch in m. 25. To this listener, Cage's several statements of this pitch in mm. 15–25 have an effect analogous to several contrapuntal dominants (the statements in 15–18) followed by a cadential dominant (the G in m. 22) and the same note recast as a tonic resolution in m. 25.

18 It is important to note that by “tonal allusion,” I do not mean “quotation of tonal music,” of which Cage's music is of course replete (from the possible use of appropriately patriotic music in 1942's *Credo in Us* to the grand opera parody of the *Europas* in the 1980s and '90s). The allusive tonal moments in Cage's music of the '40s and early '50s are original melodies, fragments and textures that arise organically and without conscious external reference from the materials and methods Cage selects for individual works. See Pritchett 1993, 44.

example 9. Cage, *Sonata II*, mm. 15–27, corresponding to the third of the work's five microunits and the start of the fourth. Emphasis on unprepared and minimally prepared notes (e.g. G_5 , C_5 , F_5 , C_6 and E_b_6) create a middleground melodic complex shown on the top staff. Note the strong reference to the *C* minor collection made by these pitches. Copyright © 1960 renewed 1988 by Henmar Press. Used by permission. All rights reserved.

two four-note groups that follow in the left hand consist of the dampened pitch $A\sharp_4$ and the minimally prepared B_4 and C_5 , leading to two iterations of an eighth-note B_4 – C_5 figure separated by four percussive attacks and a quarter rest. The pitched portion of this figure is labeled β , and recurs in a slightly reordered form (C_5 – B_4 – C_5 , C_5 – B_4 – C_5 , B_4 – C_5 – B_4) as part of a varied and expanded restatement of α in mm. 7–8. The three statements of α in mm. 1–8 are balanced by three iterations of a new idea (labeled γ in the example) that dominates mm. 10–14. The very loose sense of sequence that results from Cage's simultaneous alteration of the start-

ing pitch, component intervals and contour of these motives yields a very supple, elusive sense of line that distantly recalls certain of Schoenberg's early twelve-tone works, e.g. the *Suite for Piano*, op. 25 and the *Chamber Suite*, op. 29, where simple rhythmic ideas are continually recast through a similar prismatic interplay between pitch level, interval, and apparent metric position. The first half of the sonata ends with a pianissimo statement of the three-note head from γ followed by an empty measure of 3/8 through which the left-hand B_4 and C_5 of m. 13 resonate, setting up the fortissimo return of the same three-note motive after the double bar.

in the colorless pulses on $E\flat_5$ (and those in the left hand on $A\sharp_3$ and B_3) in mm. 18–27 represents the exhaustion of the motivic impulses that propel the earlier portion of the sonata. The emergence in mm. 15–22 of the C-minor melodic fragments discussed above overlaps with the motivic play of mm. 1–18, with mm. 23–27 (and, in the left hand, mm. 28–31) completing the cycle's melodic matrix.



19

24

29

32

β

$< \alpha$ head

$< \alpha$ tail

$< \text{head}$

$16va$

p

fz

f

$(16va)$

p

9

$G-A$ trill recalls β

pp

tr

f

$16va$

7

example 10. [continued]

of the pitches— A_7 , G_7 , F_7 , $E\flat_7$, C_7 —are prepared and noticeably detuned. Cage inserts a slight gap in this otherwise continuous ostinato to allow the left hand's F_4 to poke through in m. 28, but otherwise the wash is continuous. Beneath it winds

a nine-note descending line, a nonuplet that unfolds across the barline separating mm. 30 and 31. This line does not speak well on most of the recordings consulted; due to the different types and degrees of transformation wrought by the

table of preparations on its nine pitches, it is more a collection of nine diverse musical objects—some of which have an audible fundamental pitch and some of which, under the circumstances, do not—than a melody.

Successions like this one (and similar scalar and gapped-scalar passages in Sonatas III, VIII and elsewhere) are typical of Cage's use of compositional process to juxtapose apparently incongruous elements. The left hand line in mm. 30–31 is presented in the score as a melodic succession, and should be executed by the pianist as if it were such a succession. Due to the table of preparations, however, the sonic result will be at variance with what the performer attempts to project: instead of a legato, melodically fluent descending line, dynamically and timbrally sculpted to create the effect of a half cadence at the arrival of E_4 at the end, the result will be a heterogeneous collection of attacks, some of them notes that speak clearly (E_4 and F_4), and most of the others with their fundamentals and decay characteristics dampened to differing degrees. The low dynamic level of the passage intensifies the differences between the notes of the line, since some of the prepared pitches seem to speak clearly enough at higher levels, but not at lower levels.

The five-note collection that dominates the end of the movement provides most of the pitch material for the two concluding flourishes and the right-hand trill in mm. 36–37. With respect to contour, the ostinato of mm. 28–31 suggests α in rhythmic diminution, and the rising septuplet flourishes of mm. 36–37 suggest an intensification of the latter's head segment. The trill on F_7 (whose auxiliary note is presumably meant to be G_7), by contrast, summarizes the neighbor-note tendencies of β , providing motivic closure.

sonata iii: tempo and entropy

Sonatas II and III are a contrasting pair, the former (as we have seen) rhythmically lively, its developmental orientation and its allusions to dance genres and tonal idioms almost an

exercise in nostalgia. The third sonata, by contrast, is a stark exercise in exposition. Brief, cryptic melodic cells, each without the slightest bit of the rhythmic propulsion or melodic suppleness found in the second sonata, are presented, unfolded for apparently arbitrary lengths of time, and ended as if cut off or allowed to die of entropy.

The sonata's $\{1, 1, 3\frac{1}{4}, 3\frac{1}{4}\}$ rhythmic structure, like that of Sonata II, sums to a complex ratio, in this case $2:6\frac{1}{2}$, only slightly less daunting perceptually than the previous movement's $3:4\frac{3}{4}$. One may consider each of these relationships as approximations of simpler ratios, slightly less than 3:4 in the case of Sonata II and slightly less than 1:3 in the case of Sonata III, but the rhythmic structures of both sonatas nonetheless contrast with the rather precisely (and multifariously) realized 4:3 ratio that governs Sonata I and the straightforward 3:2 relationship expressed by Sonata IV.

The most noticeable characteristic of the sonata's first reprise (mm. 1–8) is the semi-regular dead stroke on A_3 in the left hand. In Cage's own terminology, this stark gesture provides the structure, or clarity, against which the more irregular right hand line, in all its grace, can unfold. The complex durational counterpoint between the two lines in the sixteen measures of the first reprise (mm. 1–8 twice through) is shown in Example 11, where the passage is annotated to indicate the contrast between the near-regularity of the left hand and the freer right hand material. Note that when the repeat is written out in the manner shown, a long, irregular “wrap-around” grouping (twenty-one quarter notes in length) extends across the boundary represented by the repeat sign in m. 8, and that the duration of this grouping, and the durations of each of the other right hand groupings, relate to one another according to Fibonacci numbers, i.e. 5, 8, 13, 21, re-ordered here (if one reckons from the downbeat of m. 3) as 8, 5, 21, 8, 5, 13.

The near-regularity of the left hand pattern in these measures itself embodies the interplay between grace (or freedom) and clarity (or law) that had already been a characteris-

(As notated:)

example 11. Cage, *Sonata III*. First section of sonata (mm. 1–8 twice through), showing interaction of durational groups in r.h. and l.h. Copyright © 1960 renewed 1988 by Henmar Press. Used by permission. All rights reserved.

tic of Cage's music for several years. In m. 6 Cage shifts the attack from the downbeat to the second quarter note. Although in mm. 5–6 this creates two irregular left hand groupings of six and three quarter notes, respectively, given the interpolation of 5/4 measures (required by the sonata's rhythmic structure) it permits attacks to return to the downbeat thereafter.

The many scalar passages in this sonata, in conjunction with the multiplicity of timbres and attack characteristics caused by the preparations, create what György Ligeti would describe many years later as “blocked keys” leading to gapped lines that, belying their simply patterned appearance on the page, create considerable asymmetry and complexity.¹⁹ As

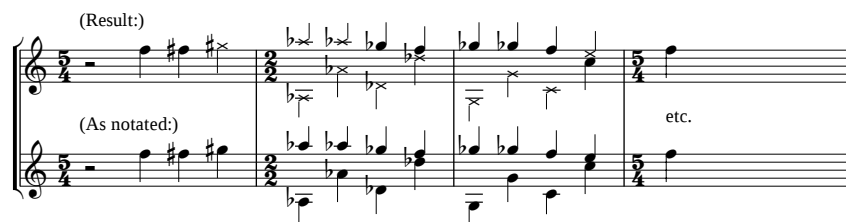
already noted, because A_3 is a heavily prepared note, the left hand ostinato in mm. 1–8 does not provide any definite pitch information, so the texture of this passage is essentially that of a melodic line with a very simple percussion accompaniment. The right hand's pitch material is limited to the

Chopin ist auch dabei),” the second movement of *Monument – Selbstportrait – Bewegung* (1976), and explores the same technique in the third of the six *Etudes pour piano, première livre* (1985). Here the composer states that he borrowed the concept of “mobile key blockage” from a 1973 essay on contemporary piano technique by Henning Siedentopf. (From the performance notes to Etude No. 3: “Die Idee der mobilen Tastenblockierung stammt von Henning Siedentopf – siehe seinen Aufsatz ‘Neue Wege der Klaviertechnik,’ *Melos*, Mainz, 40. Fg. 1973, Heft III, S. 143–146.”) It seems just as likely that by 1976 he was familiar enough with Cage's prepared piano works to have heard how the latter had achieved a similar effect in the 1940s. See Ligeti 1986, 13.

¹⁹ Ligeti first uses the technique of silently depressing and holding piano keys and then playing scalar and arpeggio patterns across the registral divisions they create in “Selbstportrait mit Reich und Riley (und



(a) First section of sonata (mm. 1–8), r.h., renoted to reflect the extensive detuning of $G\flat_5$. The bottom staff shows the passage as notated; the top staff an approximation of the line as it sounds, minus the percussive attacks that occur in lieu of pitched events on the heavily prepared notes.



(b) Measures 13–16, showing passage both as notated and as heard.

example 12. Cage, *Sonata III*. Copyright © 1960 renewed 1988 by Henmar Press. Used by permission. All rights reserved.

pitches F_5 , $F\sharp_5$, $G\sharp_5$, and A_5 , of which the $G\sharp$ is heavily prepared and, in the present context, effectively without pitch. The result, as shown in Example 12(a), is an alternation of rapid thirty-second note pickup figures followed by a half-note rest and the notes F , $F\sharp$, and A . The entire sonata is a study in such gapped lines; this is heard most clearly at the end of the second microunit, mm. 13–16, which features a right-hand melody that focuses on $G\sharp_5$, a heavily prepared note, thus yielding a melodic succession that is a composite of percussive and definitely pitched notes. Different types of note heads are used to depict this in Example 12(b); as indicated on the top staff, the left hand's C_5 provides the penultimate note of the succession.

A study in blocked keys that streams into a polyphony between a pitched line and a number of indefinitely pitched sounds arrives in m. 19, where a simple chromatic scale passage in the left hand results, due to the preparations, in the line shown on the top two staves of Example 12(c). It should be noted that the left hand provides the principal melodic continuity in mm. 19–20, while melodic focus shifts between the two hands in mm. 21–25. (In particular, note the absence of any aural sense of parallel octaves in m. 22; here, save for the prepared pair $G\sharp_4$ and $G\sharp_5$, the octave multiple of each unprepared note— $F\sharp_4$, A_4 , G_5 —is a prepared note— G_4 , $F\sharp_5$, A_5 .) In this and similar passages it becomes clear that one of Cage's desiderata in composing the *Sonatas*

(c) Second half of the third microunit (mm. 19–24), both hands, renoted to reflect the melodic juxtaposition of melodically available (unprepared and minimally prepared) notes with melodically unavailable (heavily prepared) notes. The bottom two staves reproduce the score excerpt, the top two show the passage approximately as it sounds, minus the percussive attacks that occur in lieu of pitched events on the heavily prepared notes.

example 12. [continued]

and *Interludes* was not simply a quest “for more new sounds,” but indeed a search for new ways to relate sounds of fixed fundamental pitch—so-called musical sounds, or notes—to sound in general. This sonata presents at least two possible relationships between them. In mm. 1–8, 19–24 and elsewhere, a melody of more or less distinctly pitched notes is surrounded by a nimbus of sounds of little or no definite pitch content, while in mm. 13–16 a single melodic succession includes both distinctly pitched notes and the thuds that replace the note $G\sharp_5$.

Save for the brief *ritardando* in Sonata I, the first two sonatas in the cycle are rigid with respect to tempo. Sonata III not only introduces extensive tempo inflection, but begins and ends in different tempi. The difference between the third sonata’s starting and ending tempo (half note = 72 versus half note = 66) seems intended to reinforce the piece’s

sense of increasing entropy, perhaps a foretaste of the tendency towards tranquility that Cage asserts is reflected by the cycle as a whole.

As previously described, the first reprise, although not without its subtleties, is a depiction of regular, metronomic, measured musical time. Measures 9 and 10 are an interpolation, set apart from the music before and after them by a sudden bump in tempo and by the sudden C_5 – D_5 trill, which is accompanied by (and terminates with) percussive thuds. The opening tempo returns in m. 11, and persists until mm. 23–24, when a *ritard* indication articulates the end of the third microunit. The new microunit that begins with the *a tempo* of m. 25, however, is bedeviled by tempo-related complexities. These serve to underline tendencies towards a dwindling of energy first made manifest in m. 24; the left hand’s harmonic fourth $G\sharp_3$ – $C\sharp_4$ serves as a kind of

punctuating gong stroke, a consequent to the antecedent of mm. 1–8's A_3 dead stroke. This same gesture occurs again in m. 26, with the sustained fourth G_3 – C_4 , again under a ritard indication.²⁰ The concluding *meno mosso* tempo begins immediately thereafter, the copiously gapped line of mm. 27–32 providing almost the only gesture towards development found in the entire sonata, serving as it does to continue the gapped chromatic line first introduced (in the next lowest octave) in m. 17. The bell-like G_3 – C_4 fourth of m. 26 becomes the G_3 – C_4 grace note/sustained note succession played by the left hand during the first six of the sonata's seven final measures.

The apparent breach of the sonata's rhythmic structural scheme, i.e., the elongation of its last two microunits by five sixteenth notes each, intensifies the entropic effect of the ending. The two sixteenth-note figures on the downbeats of mm. 29 and 32 are, in fact, written-out grace note figures. That they are written out suggests that they are to be executed as if with expressive rubato—to use Cage's own terminology, the inflection of Structure (or Clarity) with Form (or Grace) at a fairly deep level. The last sonority of the piece (last three quarter notes of m. 32) consists of two interlocking fourths, G_3 – C_4 in the right hand and D_4 – G_4 in the left, a concatenation and intensification of the detuned, gong-like gestures of mm. 24 and 26. It also recalls the construction of the pitch matrix in Example 3(d), which may be considered a series of four interlocked perfect fifths.

20 This is one of the few places where Cage's distinctive hand is difficult to decipher, perhaps due to the aging of the original used to produce the 1993 printing of the published score. The pen nub used for Sonata III, and for several of the other sonatas, seems to have been a size or two coarser than the one used for most of the rest of the cycle. In such cases, context provides a clue: the only harmonic intervals Cage writes for the left hand in this sonata seem to be perfect fourths, starting with the clear $G\sharp_3$ – $C\sharp_4$ of m. 9. This same fourth reappears in mm. 17 and 18, making it likely that the difficult-to-decipher left hand event on the downbeat of m. 19 is meant to be the same dyad, and that m. 26 is supposed to represent a transposition of the dyad.

sonata iv and RASA

The ten-measure macrounit serves as a kind of referential norm for the cycle. Its first appearance is in Sonata IV, which closes the first group of four sonatas and comes right before the first interlude, whose macrounit is also ten measures long. The first three sonatas are full of textural, gestural and dynamic contrast. As we have seen, the first sonata explores the extremes of straight and altered sounds and every gradation of piano tone in between; Sonata II is a rhythmically energetic, Balinese-tinged dance, while Sonata III is more rhythmically discontinuous and less up-tempo, featuring several ritardandi and ending slower than it began. The trend towards increasing stillness and decreasing rhythmic bustle leads, in the fourth Sonata, to a sparse surface that features many rests. Indeed, one microunit in the sonata's second half (mm. 41–43) consists entirely of three measures of what we might term colored silence—a silence filled, thanks to Cage's continuous use of pedal here, by the sounds that immediately precede it. The melodic material in the fourth sonata is very limited; again and again, one pitch is stressed, namely the same B_4 that is melodically prominent in m. 13 of the first sonata, often ornamented with the C_5 immediately above it. As mentioned above, motivic complexes seldom recur between movements of the cycle; this increases their impact when they do recur, as here, where the B–C connection brackets the first group of four sonatas.²¹ What seemed at first hearing in Sonata I to be a singular event is shown, in the context of Sonatas I through IV taken in aggregate, to have a connective function. The Interlude that follows Sonata IV helps us hear the first four movements as Act I of the cycle, with the through-composed first Interlude playing the role indicated by its title. Close scrutiny of the next fifteen movements reveals that different

21 As David Bernstein points out, a similar dyadic recurrence involves $B\flat_5$ and D_6 , whose recurrence joins Sonata IV and the paired “Gemini” Sonatas XIV and XV. See Bernstein 2002, 81.

means are used to knit each group of four sonatas into a narrative or associative unit.

Pritchett has indicated that several of the sonatas evoke specific emotional states for him—he says that the third, for instance, with its sinuous contours and subtle inflections of tempo, suggests the erotic. Given both the lack of rhetorical codes (like those that allow us to identify a given work of the eighteenth century as to genre and intended mood) and the multidimensional richness of each movement in the cycle, it is difficult to determine correspondences between individual movements in the cycle and one of the nine permanent emotions with any degree of certainty or consistently. Although the tendency to closure found in the last sonata of every group of four suggests the sort of motion toward a common tranquil center that Cage spoke of, it seems reasonable (and less of an exercise in hermeneutics as applied to music that seems singularly resistant to hermeneutic explanation) to think that the composer really did mean the “permanent emotions and their common tendency toward tranquility” as a general model, rather than as a schematic.²² Perhaps the permanent emotions that Cage depicts in each of the sonatas and interludes of the cycle are ones that are too specific, or

peculiar to himself, to be given names; perhaps he has given musical substance to twenty new, transient, emotions, and show us how they, too, tend toward a tranquil center.

Example 13 provides an analysis of the entire fourth sonata comparable to that given in Example 3 for the first sonata. Here Cage explores permutations on a melodic figure that consists of the unprepared or minimally prepared notes A_4 , B_4 , C_5 , and G_5 , plus the heavily prepared, percussive note E_5 . The twin appearances of this figure, ordered as a rising motive in mm. 21–22 and 44–45 stand out so prominently that they provide the conceptual focus for the entire movement; all other melodic formations seem to be fragments or permutations of this prime figure. Example 13(a) uses a modified form of the CSEG (contour segment) analytical notation employed by Joseph N. Straus to discuss melodic construction in the music of Ruth Crawford Seeger.²³ Like Straus, I label each pitch in each melodic figure with an integer from 0 to 3, where 0 is the lowest and 3 the highest note in the figure. This helps identify the formations of m. 11 and mm. 13–17, for instance, as related to the prime figure by either inversion or retrogression, and the formations of mm. 1–2, 3–4, and elsewhere as more complex, rotationally-derived transformations of the prime figure. Because E_5 is such a persistent component of the movement's melodic formations, and because it so often precedes the final note of each formation, it is included in the modified CSEG analysis (shown in angle brackets above the beam connecting the notes of each formation) as “x.” The brief grace-note and grace note-like figures (mm. 14, 16, 24, etc.) either embellish the sonata's melodic formations or suggest speeded-up versions of them; in particular, note the appearance in sixteenth-note quintuplets of the prime formation in m. 9, which presages rather than states the prime formation.

22 The history of the cycle's development is of use here in evaluating Cage's contentions concerning the relationship between the eight permanent emotions and the *Sonatas and Interludes*. David Patterson, drawing on an interview with Anahid Ajemian and George Avakian following Maro Ajemian's death, notes that the cycle as premiered in 1946 by the latter consisted of only four sonatas, and that “Cage's delight in her performance inspired him to expand the work over the next two years to include sixteen sonatas and four interludes.” This suggests that the cycle grew by accretion rather than according to a pre-ordained program. Patterson avers that “Even if this final version ultimately assumed the nine permanent emotions as its overall theme, it is impossible to cross-match any one sonata to any one emotion, if in fact Cage's account is meant to be taken literally at all.” See Patterson 2002a, 204. The four sonatas performed by Ajemian at the 1946 recital became Sonatas VII, IV, II, and III, in that order. (David W. Patterson, private communication, July 3, 2003.)

23 Straus makes extensive use of CSEG to refine Charles Seeger's concept of neumatic construction. See Straus 1995, 24–26. Straus provides a concise explanation of CSEG notation and its use in Straus 2000, 87–89.

music theory spectrum 27 (2005)

1 2 3 4 5 6 7 8 9 10

(l.h. tacet through m. 10)

<20x1>

<x21>

11 12 13 14 15 16 17 18 19 20

[2] [4] [8] [4] [2] [5]

<012x3>

(to m. 31)

21 22 23 24 25 26 27 28 29 30

[3] [3]

Golden mean (61/100)

31 32 33 34 35 36 37 38 39 40

[3] [2] [3] [2] [3] [2] [3] [2] [3] [2] [5] [5] [5] [5]

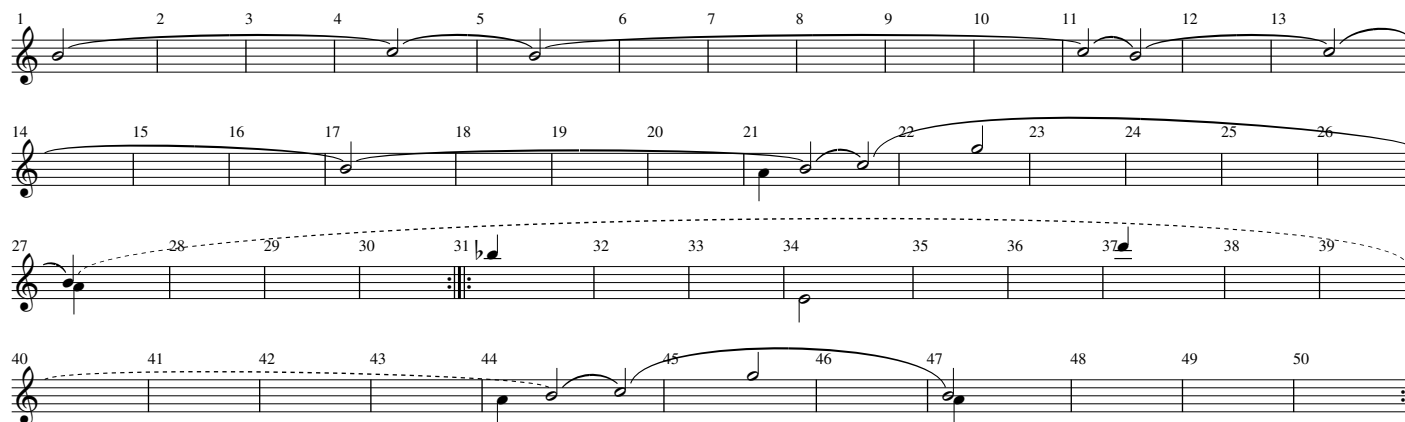
<012x3>

41 42 43 44 45 46 47 48 49 50

[2] [2] [2] [3] [3] [3]

cage's *SONATAS AND INTERLUDES* for prepared piano: performance, hearing and analysis

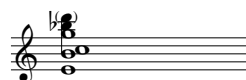
61



(b) Reduction to show long-term voice-leading relationships. Matrix pitches are shown with white noteheads.



(c) Further reduction, showing large-scale bracketing by B_4 - C_5 - B_4 figure.



(d) Matrix pitches that unfold in Sonata IV, with Bb_5 and D_5 shown as upper extensions to matrix.

- Note E_5 's persistent association with the B_5 - C_5 - A_5 melodic complex.
- Numbers in brackets provide a contour analysis of the fragmentary melodic figures (each grouped together with beams) involving unprepared pitches that dominate the music's surface. The complete, fully ordered form of the melodic figure, 012x3 (where x = the heavily prepared E_5),

is foreshadowed by the flourish in m. 9, but arrives only in m. 21 and again in m. 44.

- The lower staff gives the rhythmic characteristics of the left hand line. Note the palindromic construction of mm. 11–15 and the 5-quarter note ostinato of mm. 31–35 (foreshadowed in mm. 19–20).

example 13. [continued]

When the left hand enters in m. 11, it provides a percussion accompaniment to the right hand's melodic play that exhibits its own organizational norms. The palindromic grouping of 2s and 4s around a central 8-quarter note span in mm. 11–15 may seem to have nothing in common with the ostinato passage in 5s in mm. 31–35, but both occupy a five-measure span and are, in Messiaen's terms, non-retrogradable (the same backwards as forwards). These two rhythmic formations occur at the start of the third and fourth microunits of the sonata, respectively, providing a connection across the macrostructural divide represented by the repeat sign in m. 30. (The left hand's subsequent rhythmic figures in mm. 38–40, 44–45 and 47–49 may be construed as liquidations of the quintuple groupings of mm. 31–35, which as shown consist of a consistent 3+2 pattern.) A further connection across this divide is suggested by the audible melodic link between the right hand's B_4 of mm. 27–30 and $B\flat_5$ of mm. 31–33. The cantus firmus-like four-note melodic figure that begins with these two notes provides an element of contrast with the unidirectional prime formation of mm. 21–22, and its two highest pitches, $B\flat_5$ and D_6 , look forward to subsequent parts of the cycle. The arrival of the former pitch at the point of the piece's golden section helps, by contrast, to articulate the sonata's macrocosmic structure.

Writing of Cage's own claim that he has no ear for harmony, David Bernstein states, "there is a subtle interplay between degrees of harmonic tension and relaxation in the *Sonatas and Interludes* that contradicts this assertion. Cage often plays with our sense of tonal 'closure'." While this is emphatically true, Bernstein's claim that in Sonata IV Cage "builds a centricity around A," evidently on the strength of the strong motion from B_4 to A_4 in mm. 17–21 and the reprise of this motion implied by the return of the same rising figure on A_4 that starts in m. 44, bears reexamination.²⁴

24 Bernstein 2002, 83–84.

It is true that these pitches are paired not only in these two places, but also throughout the movement. It is also true that Bernstein's implicit assignment of scale-degree functions ($\hat{2}$ for B_4 , $\hat{1}$ for A_4) allows us to account for the local melodic play between these pitches; indeed, under his scenario the A-under-B figure that concludes both halves of the sonata represents a half cadence formula that neatly recalls the answer-and-question pattern that we have already described in the first half of Sonata I. The way in which Cage superimposes A and B in mm. 27 and 47 causes a momentary blurring that indeed constitutes poignant play with the notion of tonal and melodic closure, but both due to its local salience and for reasons given below (and no doubt already anticipated by the reader), the centric claims of B_4 seem stronger than those of A_4 .²⁵ Example 13(b) reduces melodic activity in the sonata to those stepwise motions and skips that, through temporal priority, agogic and tonic accent, seem most salient; neighbor motions between B_4 and C_5 are thus seen to undergird much of the movement. Example 13(c) provides a deeper level of analysis that reinforces this perspective. These analyses strengthen the case for connections between the first four movements of the cycle, as the neighbor motions just discussed provide further elaboration of motive β from Sonata II. The pitches $B\flat_5$, E_4 , and D_6 in mm. 31–40 persist to this level through sheer duration; these may be viewed primarily as pointing to other movements, or as an unfolding and extension (through addition of the fifth G_5 – D_6) of the pitch matrix, as shown in Example 13(d).

25 It should also be noted that Bernstein claims a centric role in Sonata IV for A_4 as a pitch class. For reasons given above concerning the impact of Cage's preparations on assumptions of octave equivalence, I restrict any analytical interpretations or assertions to the realm of pitch, not pitch class.

internal coherence of the cycle:
 sonatas i–v internal coherence of the cycle:
 sonatas i–iv

In the first sonata, in addition to strictly Cagean features such as the preexistent rhythmic structure and the timbral alterations caused by the preparations, we have found more familiar devices such as pitch centricity, motivic variation, and thematic recurrence and development. These latter invite us to listen to this music in a manner that blends new forms of reception that do without Western concepts of unity and teleology with older types of hearing (older to Western ears, that is) that invite these things as ingredients in a composite sound world. In the first sonata, we may think of the signposts that suggest recourse to traditional modes of hearing (as for instance the gestural dialogue of mm. 1 through 12, or the return of the opening chord in m. 18, or the chorale-like closing section) as features that we can use to help us navigate the unfamiliar sonic surface that Cage has prepared for us. Alternatively, we may exclude consideration of such signposts to whatever extent we are able. As I suggested at the outset, the cycle invites two different kinds of hearing, one that draws on elements of repetition and familiarity, and another that invites concentration on the moment, and on the unique interplay between each sound or momentary collection of sounds and the surrounding silence.

Certain things suggest that Cage is interested in constraining this either/or, however. For one thing, repeats occur in all of the sonatas and in two of the interludes. Repeats cause the listener to group events together into large sections, and to separate the large sections so constituted from surrounding events. Contrast the *Sonatas and Interludes*, with their internal repetitions, with 1951's *Music of Changes*, which unfolds in a manner entirely untouched by willful repetition, in which we are invited to let go of each sound as it is heard. Neither Cage's constructive technique nor the music that resulted from that technique facilitates such hearing-in-the-moment, however, as the exclusive approach to Cage's

pre-*I Ching* work. With respect to the *Sonatas and Interludes*, arguments for adopting a listening strategy that privileges retention of a sense of motivic detail and sectional balance are built into the cycle by the composer: first, there is the symmetrical layout of the work itself, the interludes interspersed with the sonatas in such a way as to create a mirror symmetry, as already shown in Example 1. This layout suggests a kind of circularity; the cycle's ends are its beginnings. In counterpoint to this, we find certain dynamic elements that point to more conventional concepts of closure that impact hearing, performance, and compositional layout.

For instance, Cage's suggestion that we engage in something other than merely cumulative listening is made explicit late in the cycle, where he uses the same music for the second half of the fourteenth sonata as for the second half of the fifteenth, creating a composite structure with the form AABBCBB that is reminiscent of a Baroque rondeau or dance pair. This pairing serves as a direct reference to the rondo principle of statement, digression and restatement, and thus to modes of listening and performance that would not be out of place in encounters with Bach or Ellington. So much for hearing. With respect to performance, in Sonata XVI, Cage specifies that the performer should play a given G–A dyad sometimes with and sometimes without its upper note, which is not prepared, and then upon the repeat “provide the complementary form.” In other words, if the performer plays G/A, A, G/A, G/A the first time, G, G/A, G, G should be played the second time. This procedure is suggestive of the performance practice expected of a *claveciniste* playing a Baroque dance suite with repeats authentically ornamented.

Finally, with respect to composition, the length of macrorhythmic units in the various sonatas and interludes varies from a minimum of six measures of 3/4 in Sonata VI to a maximum of six measures of 7/4 in Sonata X, with a most common value of ten measures of 4/4 or cut time in several of the other movements. According to Pritchett, Cage suggested that the emphasis on ten-bar units in the last

four sonatas represents tranquility, which according to the Hindu aesthetic theory of *rasa* is the common center toward which the other eight permanent emotions tend.²⁶ The ten-measure macrounit also occurs at three other places in the cycle; as we have seen, the first such place is in Sonata IV, which comes right before the first interlude, whose macrounit is also ten measures long. The first three sonatas are full of textural, gestural and dynamic contrast. The first sonata explores the extremes of straight and altered sounds and every gradation of piano tone in between; Sonata II is an energetic dance; and Sonata III is more rhythmically discontinuous and less up-tempo, featuring several ritardandi and ending at a slower tempo. The trend towards increasing stillness and decreasing rhythmic bustle leads, in the fourth Sonata, to a sparse surface that features many rests. Indeed, one microunit in the sonata's second half consists entirely of three measures of resonance held over from the previous unit. The melodic material in the fourth sonata is very limited; again and again, one pitch is stressed, namely the same B₄ emphasized in m. 13 of the first sonata, often ornamented with the C₅ immediately above it.

The *Sonatas and Interludes* do not impress the listener as saturated with networks of carefully plotted motivic recurrences between movements; this increases the impact of motivic complexes when they do recur, as here, where the B₄–C₅ connection brackets the first group of four sonatas. What seemed at first hearing in Sonata I to be a singular event is shown, in the context of Sonatas I through IV taken in aggregate, to have a connective function. Although we may expect the first Interlude's nearly continual emphasis on F₅, frequently in tandem with C₅, to reinforce the aural presence of the pitch matrix that emerges in the first four sonatas, the use of the *una corda* pedal throughout the Interlude (the pianist is instructed to let it up only briefly, in m. 30, mm. 54–

55, and 66–67) transforms these otherwise clearly enunciated pitches into less tuned, more percussive events.

This Interlude thus pivots us between the pitch cosmos of the first four sonatas and the reshuffling of pitch relationships that takes place in the next set of four. Sonata V, for instance, also prominently features the new, less definitely pitched *una corda* version of C₅, linking it to the Interlude immediately preceding. Like the latter, Sonata V features brief passages during which the *una corda* pedal is temporarily not engaged; in both movements, C₅ (in its prior, non-pedal-altered form) is allowed to peek through during these intervals. Indeed, the strong emphasis on C₅ at the end of the fifth sonata provides a poignant backward glance at “Act I” of the cycle. Sonata VI shifts registral focus towards the “16va” register (roughly F₆ to F₇), explored further in Sonatas VII and VIII; the latter two movements resume the continual *una corda* coloration of the First Interlude and Sonata V, temporarily absent in Sonata VI, here coupled with constant use of the sustaining right-hand pedal.

Careful consideration of the subsequent movements reveals that different means are used to knit each group of four sonatas into a narrative or associative unit. As indicated by Cage himself, the tendency to closure found in the last sonata of every group of four suggests motion toward a common tranquil center.

conclusions

It will have occurred to most readers that the two ways of listening to Cage presented at the outset as antagonistic to one another may, in fact, coexist within a single listener's understanding of the *Sonatas and Interludes*, and perhaps of any Cage work. Cage himself referred to the two types of reception as a matter of continuity and no-continuity. By 1951, Cage had come to value the latter and eschew the former; as Haskins and others have shown, however, his music is seldom, if ever, without some degree of both continuity and no-continuity. In his “Lecture on Something,” the composer re-

26 Pritchett 1993, 30. Pritchett is paraphrasing a 1949 review, probably of the early, four-sonata version of the *Sonatas and Interludes*, by Cecil Smith in *Musical America* 69 no. 2, 12.

ports a conversation between himself and Morton Feldman in which

it was argued from a rational point of view that no matter what there is continuity. This is again a matter of disinterest and acceptance. No-continuity simply means accepting the continuity that happens. Continuity means the opposite: making that particular continuity that excludes all others.²⁷

Cagean continuity, therefore, must consist of an embrace of all possible modes of continuity, and exclude none, not even those of traditional provenance. The two ways of listening to Cage I proposed at the outset thus are seen potentially as aspects of the same thing. To be sure, in hearing and pondering Cage's music one might move between a pure no-continuity viewpoint and a viewpoint that privileges conventional continuities. Above, I have presented accounts that lean strongly in favor of the latter, leaving the former for each listener to discover.

It is attractive to consider Cage's music only in light of a steady decline in his interest and sympathy with continuity, and of an increasing interest in no-continuity. Such a perspective places the *Sonatas and Interludes* near, but not yet at, the tipping point at which Cage prepared to abandon continuity and the apparatus he had devised to create it—particularly his four-part model of composition, comprising structure, form, material, and method—and embrace the chance procedures that would allow the composer, and presumably also the performer and audience, to enjoy the richness and freedom of no-continuity. My understanding of how Cage developed as a composer, however, suggests that his involvement with continuity and all that he understood by that term remained in a state of ongoing flux throughout his life. The years that produced the *Sonatas and Interludes* and the works that immediately followed them in 1948–51 clearly represent both an extreme development of the devices with which

he sought to write continuity into his music, and an increasing encroachment of those material- and method-derived elements that would eventually lead him consciously to embrace no-continuity. In subsequent phases of his long life as a composer, Cage would move between works of the 4'33" lineage, which seem comprehensible only as essays in virtually pure no-continuity, and works of more mixed character, in which compositionally-imposed continuities coexist with the fortuitously occurring, contingent continuities created by the processes of audition and performance at any given time. Even during his initial rejection of continuity in the early 1950s, Cage was aware that no-continuity was more an awakening to the myriad continuities available to him than a negation of continuity itself: "When nothing is securely possessed one is free to accept any of the somethings."²⁸ To the end of his life, Cage remained too much the inventor to allow the listener to have all the fun of discovering continuities in his music; he thus allowed himself to keep a hand in the process, sometimes indirectly (as in the *Music of Changes*), sometimes directly (as Haskins has shown in his analysis of the number pieces of the 1980s and '90s).²⁹ In this process of self-discovery and self-invention the *Sonatas and Interludes* loom large.

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27 John Cage, "Lecture on Something" in Cage 1961, 132. Cited in Haskins 2003, 70.

28 Cage, "Lecture on Something," 132.

29 Besides the *Frankfurter Zeitschrift für Musikwissenschaft* article cited above, see Rob Haskins, "An Anarchic Society of Sounds: The Number Pieces of John Cage." Ph.D. dissertation, Eastman School of Music, University of Rochester, in progress.

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