The ten string quartets of Ben Johnston, written between 1951 and 1995, constitute no less than an attempt to revolutionize the medium. Of them, only the First Quartet limits itself to conventional tuning. The others, climaxing in the astonishing Seventh Quartet of 1984, add in further microtones from the harmonic series to the point that the music seems to float in a free pitch space, unmoored from the grid of the common twelve-pitch scale. In a way, this is a return to an older conception of string quartet practice, since players used to (and often still do) intuitively adjust their tuning for maximum sonority while listening to each other’s intonation. But Johnston has extended this practice in two dimensions: Rather than leave intonation to the performer’s ear and intuition, he has developed his own way to specify it in notation; and he has moved beyond the intervals of normal musical practice to incorporate increasingly fine distinctions, up to the 11th, 13th, and even 31st partials in the harmonic series.

This recording by the indomitable Kepler Quartet completes the series of Johnston’s quartets, finally all recorded at last for the first time. Volume One presented Quartets 2, 3, 4, and 9; Volume Two 1, 5, and 10; and here we have Nos. 6, 7, and 8, plus a small piece for narrator and quartet titled Quietness. As Timothy Ernest Johnson has documented in his exhaustive dissertation on Johnston’s Seventh Quartet, Johnston’s string quartets explore extended tunings in three phases.1 Skipping over the more conventional (though serialist) First Quartet, the Second and Third expand the pitch spectrum merely by adding in so-called five-limit intervals (thirds, fourths, and fifths) perfectly in tune (which means unlike the imperfect, compromised way we tune them on the modern piano). Quartets Nos. 4 through 7 expand the concept of just intonation (pure tuning) up through the seventh harmonic in No. 4, the eleventh harmonic in No. 6, and the thirteenth in Nos. 5 and 7. The last three quartets, Nos. 8 to 10, employ a neoclassic idiom; they constitute a “pulling back from such extremes of [microtonal] proliferation,”2 reverting to a more traditional triadic syntax in which higher harmonics (up to the 31st in No. 9) are used as scales and chord colorations.

The Sixth Quartet (1980) is one of the most unusual such pieces ever written. First of all, it uses twelve-tone technique in combination with just-intonation tuning—as do several of Johnston’s other works, including his Sonata for Microtonal Piano, his Twelve Partials for flute and piano, and the third movement of his Suite for Microtonal Piano, among others. But the presence of a piano in those pieces ensures that the pitch totality remains relatively static. In the string quartet medium, pitches can proliferate, and given the microtonal nature of Johnston’s row, the Sixth Quartet ends up requiring 61 different pitches per octave to accommodate all the row forms. The concept of twelve-tone music would seem wedded to an equal division of the octave, but for Johnston it could coexist with the harmonic series without contradiction. I once, in the early 1980s, asked him why, since he had returned to just intonation, he still used it to write twelve-tone music, and he responded, “I had learned all that twelve-tone technique, and I didn’t want it to go to waste.” But he clearly also thought the two could work in tandem to create a new kind of densely saturated tonality.

Johnston makes up his tone row rather brilliantly, using the 1st, 3rd, 5th, 7th, 9th, and 11th harmonics of D and the 1st, 3rd, 5th, 7th, 9th, and 11th subharmonics (the upside-down

inversion of the harmonic series) of D#; the aggregate of the twelve pitches (D-, A, F#, G7, E, and G^- plus D#, G#, B, E#L, C#, and A#v+, in Johnston’s notation) approximates a full spectrum of twelve tones. In terms used by Johnston’s mentor, the great American original composer Harry Partch, half the row represents a D otonality (tonality of overtones), the other half a D# utonality (of undertones). Unlike Johnston’s Quartets Nos. 5, 7, and 8, this quartet doesn’t employ the thirteenth harmonic, because each hexachord (half a row) is filled out by the first six odd-numbered harmonics, but there is an implied thirteenth in the 27th harmonic, which is B in the harmonic series on D-, and Johnston uses this relationship to pivot between one hexachord and another.

So much for the underlying theoretical basis—the surface features are even more peculiar. Far from being a typical twelve-tone piece, this is an extended exercise in a kind of Wagnerian endless melody, since except for a brief chordal interlude in the middle, one of the instruments is always playing a long melody, as the other instruments supply sustained tones making up the rest of the row. The first violin starts out with a melody in 8/8 meter, lazily syncopated at first, and after several minutes the cello takes over with a melody in 9/8. When the viola displaces the cello it falls into 15/8 meter, and then the second violin comes in back in 8/8. Then there’s a brief (about one-minute) middle section of flickering chords jumping back and forth among the four instruments. After this the four solos return in reverse order and backwards—for the entire piece is a palindrome, like “Abe was I ere I saw Elba” or “Ten animals I slam in a net.” Musical palindromes are not common, but certain composers like Webern, Berg, Nancarrow, Machaut, and even Haydn found a fascination in them.

Yet, this palindrome is not straightforward symmetrical, for the whole scheme is inflected by a stepped acceleration. The first violin solo is marked ∗ = 180, the cello solo at ∗ = 202½, the viola at ∗ = 225, and so on in a series of tempo increases that finally leads to 360, double the original tempo by the end. The series of tempos follows a series of whole number proportions making up a just-intonation “scale of tempos”: 1/1, 9/8, 5/4, 4/3, 11/8, 16/11, 3/2, 8/5, 16/9, 2/1. Johnston had used similar pitch/tempo correspondences in his most popular quartet, No. 4, based on “Amazing Grace.” (The theory of using the same kinds of number relationships to structure both pitch and rhythm originated in Henry Cowell’s 1930 book New Musical Resources, which had a major underground influence on composers as diverse as Partch, Cage, Stockhausen, Kagel, John Luther Adams, and many others.) Because of this acceleration, the sections that reappear following the middle interlude are briefer in retrograde than they were in the original, throwing the climactic middle interlude closer to the end of the piece.

Though it appeared on a commercial recording earlier than most of the other quartets—on a 1983 CRI record with the New World String Quartet—the Sixth Quartet has proved one of the most difficult to perform. It was written for the Concord Quartet, but not completed in time for their performance. So Johnston gave it to the New World Quartet when the latter asked for a new piece, but they found it too difficult to rehearse in the available time period. Johnston worked with them closely on learning to hear the tuning, and they finally played it at an open rehearsal at Harvard in 1983 prior to more official performances at Hope College and Calvin College in Michigan.

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Still, in terms of difficulty, the Sixth Quartet pales in comparison to its successor. The Seventh String Quartet, completed in 1984 but not played before the preparation of the present recording, has a reputation as the most difficult quartet ever written. (By necessity, my discussion of the piece will lean heavily on Tim Johnson’s magnificent dissertation about it.) The titles of the three movements are “Prelude,” “Palindromes,” and “Variations,” the first two movements dwarfed by the massive third. Of the “Prelude” Johnston has said, “It has the most involved microtonal writing I’ve ever done. It just crawls all over the place—Kafka’s *Metamorphosis*!” Crawl it does indeed, through lines that can take several measures to traverse a major third, in a kind of dense micropolyphony—a term associated with the music of György Ligeti, but even more appropriate here. A series of more explosive gestures interrupt the continuity here and there, leading to a humorously grand cadence on a harmonic series on C, whose triumphant finality the subsequent falling glissandos prove to have been ironically premature.

“Palindromes” is once again twelve-tone despite its thirteen-limit tuning; now each hexachord contains the 1st, 3rd, 5th, 7th, 11th, and 13th harmonics, with the remaining 9th used as a pivot tone between hexachords. This is one of the most relentlessly formalist designs in Johnston’s output, a process of minimalist strictness carried out without digression. Each instrument has the solo part, in the order Violin 2, Viola, Cello, and Violin 1, each one playing the row and its retrogrades, thus producing little palindromes along the way. The remaining three instruments in any section pluck seven-note chords composed of the notes of the hexachord plus pivot notes: either a harmonic series up to the 13th harmonic, or the inversion of such a chord, a subharmonic series. (Chords are heard on every downbeat except where the palindrome would cause a repetition, at which points they are omitted.) The performance direction is “Eerie,” and this little scherzo winds to its treble close in a methodical way.

It is the third movement, “Variations,” that makes this the Burj Khalifa of string quartets, and one of the most difficult-to-analyze works in the history of music. For the listener, the movement seems to be a floating meditation through a completely free, unarticulated pitch space. Underneath, the controls guiding this seeming anti-gravity meandering are perhaps the most elaborate Johnston ever devised. The movement’s structure is derived from a 176-pitch row with no repetitions, each pitch just a few cents (hundredths of a half-step) higher than its predecessor; this gradual pitch rise is evident in a headnote at each downbeat, starting in the viola. The viola begins on middle C, and the piece ends when it reaches the C an octave higher, 177 measures later. In addition, the length of each measure approximates in eighth-notes how many cents the headnote pitch rises, so that the movement takes 1200 eighth-notes to traverse an octave of 1200 cents.

The lines in the other three instruments, then, are determined by the need to modulate, to trace the simplest and most hearable intervals that will lead via consonances from each structural pitch to the next. Since some intervals recur in the headnote line, so do patterns in the other instruments; the opening rising fourth and major second in the first violin, for instance, come back again and again, creating the appearance of repeating motives whose logic of reappearance lies just beyond audibility. In addition, there are larger structural levels. The movement divides into seven macro-variations, marked off by the headnotes in the C-major scale—C, D, E, F, G, A, B, C—and the last two macro-variations recapitulate the first two, transposed. (The macro-variations starting on E and B are roughly half as long as the others because a half-step takes less time to traverse than a whole-step.) Within that is a set of 53 micro-variations based on the more significant intervals of this hyperchromaticism.
As Tim Johnson has aptly written: “The Variations movement is put together like DNA or gene sequences; it consists of a small number of units put together into a staggering array of complexity.” Even so, there are concessions to the listener in both structural and intuitive directions. On one hand, the pattern of repeated modules creates a perceptible form, and on the other Johnston allows for timbral and dynamic shaping, and variations in melodic outline, that sculpt a satisfying dynamic shape around what might otherwise seem a hyperserialist structural plan. The extreme difficulty for the performers, which has delayed any performance of the piece for more than thirty years, is learning how to hear the relationships needed in modulation without regard to any sustained pitch grid. For the listener, the music moves organically and with a sense of repetition and purpose, though freed from the sense of musical scale that has been the basis of all notated music up to now. Though different from Johnston’s other music only in degree, it crosses a line into a new kind of perceptual structure.

After this, the Eighth Quartet (1986)—the beginning of the neoclassic phase in Johnston’s output for the medium—is far more accessible at first hearing. Tim Johnson reports that the succession from the Seventh to the easier Eighth Quartet was parallel, in Johnston’s mind, to a similar move from the austere Third to the Fourth, based on “Amazing Grace”: an overcoming of depression and a renunciation of abstraction, the personal and aesthetic “crossing from the darkness of mental illness into the light of lucidity.”

The first movement, in a not-too-obvious 7/4 meter, is the first of three textbook sonata forms that will dot the later quartets, including the final movement of No. 9 and the first of No. 10. In the key of C, its exposition and development/recapitulation are both repeated; its first theme emphasizes a harmonic-series scale on C, and the second theme in G comes back at the end transposed to the home key. The languid and beautiful slow movement in 3/4 is an ABA form, the A sections characterized by a gentle repeating pattern in the viola and cello. The chords for these lower instruments, dropping comfortably to subdominants and lowered sevenths, don’t range beyond the kind of twelve-pitch tonality we’re all used to. The microtonal interest is in the violins, whose pitches sometimes form seventh or eleventh harmonics against the bass, and the resulting voice-leading has a highly nuanced and slightly exotic quality. The piece is a wonderful example of how conventional tonality could be expanded to include the higher harmonics for an increase in tone color.

The third movement is in an equally traditional minuet form, though it is more of a mischievous waltz. In the A section the melody moves in increments so tiny that by the time the first thirteen pitches have been heard, the tune has not yet moved outside of a minor third, A-flat to C-flat. One could liken it to the tiny motions of bees constrained by a hive, and the cello maintains a drone note on D-flat to make the microtones all the more measurable by ear. The B section seems expansive by comparison, with melodies based on the harmonic series (8th to 15th harmonics) on each root note, and with a bass note in the cello shifting by minor thirds in the first half and major thirds in the second.

The rondo-like finale, a joyous celebration of the harmonic series, is almost minimalist with its emphasis on repetition, though it uses a classic postminimalist trick. The first violin repeats a figure every three eighth-notes, and the second another figure every nine eighth-notes; the viola repeats an inner line every seven eighth-notes, and the cello plucks an ostinato of ten eighth-notes. Thus it would take some 93 measures of the 6/8 meter for the texture to repeat itself.

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5 Timothy Ernest Johnson, op. cit, p. 56.
into system thinking humor, hymnody, the Ben American music, including most recently critic Kyle conclusion for one of the greatest string quartet cycles of the 20th century. 14th, to This This 15th, for Johnston finally, hopefully find the microtonal buzz on the surface scintillating as well.

Champaign-Urbana an Jalaluddin Rumi, for string quartet and voice. The piece is a memorial to Salvatore Martirano, an innovative electronic composer with whom Johnston taught at the University of Illinois at Champaign-Urbana for 23 years. Johnston recorded his own voice singing the voice part, so that it can ever be overdubbed in his own earnest, rough-hewn tones. The text is:

Inside this new love, die
Your way begins on the other side.
Become the sky.
Take an axe to the prison wall.
Escape.
Walk out like someone suddenly born into color.
Do it now.
You’re covered with thick cloud.
Slide out the side.
Die, and be quiet.
Quietness is the surest sign that you’ve died.
Your former life was a frantic running from silence.
The speechless full moon comes out now.

This heartfelt, free-form piece mostly inhabits the harmonic series of A, save for a few digressions to nearby pitches in the first half, and its final gesture is sung over a dying sonority of the 13th, 14th, 15th, and 16th harmonics of the A below middle C. What a poignantly understated conclusion for one of the greatest string quartet cycles of the 20th century.

—Kyle Gann

Kyle Gann, a composer, was a private student of Ben Johnston’s from 1984 to 1986. Longtime critic for The Village Voice and current professor at Bard College, he is the author of six books on American music, including most recently Essays After a Sonata: Charles Ives’s Concord.

Ben Johnston (born 1926) is an American composer whose works are built on the pure ratios of the overtone series. This mathematical base is sometimes overlaid with references to folk songs, hymnody, jazz, and other vernacular musics to create organic soundscapes combined with humor, wit and humanity. The arc of Johnston’s musical career began in the 1930s. He started thinking about the physicality of sound which would lead him to Just Intonation as the tuning system of choice for most of his compositions. While the concept of just-tuned music led Johnston into composition, his early works of the 1950s use the familiar equal-tempered scale and evoke
neoclassical balance and clarity. Johnston began composing with Just Intonation in the 1960s and his perspective became metaphysical as he grappled with opposing elements of chaos and order, randomness and total serialism. From the 1970s onward Johnston’s concern with the social impact of his music caused him to shift sonically from complexity to simplicity. As a result, his later works sound candid and tranquil while maintaining a highly complex underside. In the 1980s Johnston explored European classical music and pondered the path it might have taken if not limited by equal temperament. His ten string quartets, a monumental contribution to twentieth-century music, were completed in the 1990s.

His music awards include a Guggenheim Fellowship, a grant from the National Council on the Arts and the Humanities, two commissions from the Smithsonian Institution, and the Deems Taylor Award. In 2007, the American Academy of Arts and Letters honored Johnston for his lifetime of work. His Quintet for Groups won the SWR Sinfonieorchester prize at the 2008 Donaueschinger Musiktage. In the twenty-first century, Johnston continues to pursue the spiritual quest that connects his life to his art. He also continues to guide musicians through performances of his compositions in keeping with his belief that a musical work is not fully composed until it is performed well.

The Kepler Quartet was formed in response to the enthusiastic audience and critics’ reception of their world-premiere performance of Ben Johnston’s String Quartet No. 10 on the Present Music concert series on April 20, 2002. Violinists Sharan Leventhal and Eric Segnitz, violist Brek Renzelman and cellist Karl Lavine have since channeled their energies as a group almost exclusively into recording the string quartets of Mr. Johnston for New World Records in partnership with engineer Ric Probst. Volume 1 (String Quartets Nos. 2, 3, 4 and 9) was released in 2006, Volume 2 (String Quartets Nos. 1, 5 and 10 in 2011. The Kepler Quartet has been fortunate to work closely with the composer in documenting these works, and wishes to salute Ben for his great insight, patience, and loyal friendship throughout this process, as well as for all the fantastic music, of course! For further information on individual quartet members, please visit www.keplerquartet.com.

SELECTED DISCOGRAPHY
Carmilla. E.T.C. Company of La Mama. Vanguard VSD-79322. (LP)
Casta Bertram. Bertram Turetzky, contrabass; tape. Nonesuch H 71237. (LP)
Ci-Gü Satie. New Music Choral Ensemble, Kenneth Gaburo, conductor. Ars Nova/Ars Antiqua AN 1005. (LP)
SELECTED BIBLIOGRAPHY
——. “Glimpses of a Musical Future in Ben Johnston’s Fourth Quartet,” 1/1, Vol. 12, No. 3 (Fall, 2007), pp. 23, 24, 31, 32.

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Francis Goelet (1926–1998), In Memoriam

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BEN JOHNSTON (b. 1926)
STRING QUARTETS Nos. 6, 7, & 8

Kepler String Quartet
Ben Johnston, voice (Quietness)

80730-2

String Quartet No. 7 (1984) 23:45
1. Prelude—Scurrying, forceful, intense 2:31
2. Palindromes—Eerie 4:50
3. Variations—With solemnity 16:15

String Quartet No. 8 (1986) 17:52
4. Vigorous, aggressive 5:22
5. Lazy, rocking 6:05
6. Scherzo—Fast, skimming; Trio—Light 3:26
7. Extremely light and rhythmic 2:53

8. String Quartet No. 6 (1980) 22:29
Legato espressivo

(in memory of Salvatore Martirano)
(Text: Jalaluddin Rumi, trans. by Coleman Barks, John Moyne)

Kepler Quartet: Sharan Leventhal, violin I; Eric Segnitz, violin II; Brek Renzelman, viola; Karl Lavine, cello

TT: 66:14

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