

Sounds Unfamiliar

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I am a singer by profession and have had the pleasure and good fortune to perform in a variety of styles that include folk and country music from my childhood, my college studies of opera, art song and, ultimately, a career specializing in medieval, Renaissance, baroque, and new music. Recently, I had the opportunity to expand my harmonic possibilities when I was invited to premiere a new composition that was written in a musical vocabulary that goes beyond what most listeners in the West are used to hearing. The piece is written in the *microtonal* system, and is called *Extended Just Intonation*.

As I pondered whether to accept the invitation to premiere Ben Johnston's *Parable*, my confidence was buoyed by the realization that my ability to imagine and uncover new possibilities for movement might well correlate with uncovering my ability to hear and sing new tones. I also had a hunch that there was a parallel philosophical component behind *microtones* and *micro moves*. And, in order to find out, I would have to go forward.

Throughout Western music history tonal systems, like languages, or skirt hems, have come in and out of favor. For instance, whether you listen to popular or classical music you are hearing in the tonal system called *Equal Temperament*, which dates back to around 1750. It's called *equal* because the sound interval between any two adjacent notes remains the same in all keys. Equal Temperament became necessary when a tuning system was required that would fit all sounds—or *timbres*—of the many new musical instruments coming into vogue in the Baroque

era. Equal Temperament won, and so the familiar octave scale of a mere twelve tones was instituted.

Prior to the standardization of the scale into Equal Temperament, musicians and composers had made use of the tuning ideas of the ancient Greek mathematician, philosopher, and father of acoustics, Pythagoras, in which the simplest intervals—the octave, fifth, fourth, and third—can be expressed as ratios of the simple prime numbers: two, three, and five.

The scale that can be constructed from these intervals is called a *Justly Tuned Scale*, which differs from Equal Temperament in that the distance between any two notes is not always the same.

In medieval music and within the intricate polyphonic vocal writing of the Renaissance, which used the Justly Tuned scale, certain intervals were deemed beautiful and others were considered altogether unacceptable. For instance, the interval called the *tritone* was referred to as the “*diabolus in musica*” or “the devil in music” and was expressly forbidden.

In the twentieth and twenty-first centuries several composers circled back to revisit the musical mathematical ratios of Pythagoras and brought forth new harmonic colors, called *microtones*. Previously, many of these unfamiliar sounds had, either consciously or unconsciously, been deemed unpleasant and even inaudible to the human ear.

The American composers Harry Partch (1901-1974) and Ben Johnston (b. 1926) found that using only the small prime numbers as Pythagoras did was limiting. They began to inquire: Why not use the slightly larger prime numbers seven and eleven and thirteen? Both Partch and Johnston listened, *were able to hear*, and felt that these are beautiful sounds. The resulting scale using the seven, eleven, and thirteen, is the scale of Extended Just Intonation.

To imagine the increase in sound possibilities, recall that the octave scale in the baroque Equal Tempered scale yields a total of twelve tones. Compare this number to the same span of an octave in Extended Just Intonation which yields no less than forty-three tones, or microtones. The expanded possibilities become limitless. *Los Angeles Times* music critic Mark Swed was so impressed by the expanded possibilities inherent in harmonized microtonal music that he wrote: “The feeling I got was of the room doubling in size, so vast were the sonorities.” In a recent review of the Kronos Quartet, John L. Waters of the *Guardian* wrote, “Ben Johnston's String Quartet No 4 (*Amazing Grace*) was spacious and humane, reflecting Johnston's understanding of the science of sound.”

In February 2011, I received an email from John Schneider of the Partch Ensemble in Los Angeles who'd heard my recent recording (*On Cold Mountain: Songs on Poems of Gary Snyder*) and was writing to ask—in some of the songs—was I singing in *Just Intonation*? John was looking for a singer to premiere a song cycle by Ben Johnston and asked, would I consider performing it. As I quickly searched the web for Just Intonation and to read about Harry Partch and Ben Johnston, I had to query, “How could I have sung in Just Intonation (JI) when I don't even know what it is?”

I made a few inquiries with friends who had experience in JI. They were encouraging, and at the same time their comments gave me pause. One friend who is a composer gave me the impression that JI is a purely mathematical construct and believes that while some humans, like Ben, have the ability to hear these extended harmonics, JI remains a mostly theoretical idea. On the other hand, my string player colleague reported that when he worked with a composer who had written a piece in JI and asked him how he could come closer to playing the exact pitches, the composer replied, “Just make it sound whiney!” I had read also that it

is thought when singers sing a cappella—such as in barbershop quartets—that more than likely they are singing Justly Tuned harmonics. This fascinated me. Had I already sung harmonics specific to JI and just didn't know it? If so, my learning to sing in JI would be a matter of my becoming conscious of them. In order to sing them *intentionally*, I would have to learn to hear and differentiate the specific fine shadings of tone and color as notated.

Within the score were explanations of Ben's notational system. I was also able to pick up a copy of his book of essays, *Maximum Clarity*, edited by Bob Gilmore. On the page the musical notation looks somewhat similar to the usual staves with bar lines, notes, meter signatures, rhythms. However, next to many of the notes is a minus symbol [-], or a number like 7, or 13, with up [↑] or down [↓] arrows, and combinations thereof.

Micro-moves turned to microtones. Learning to sing microtones would be a matter of "How little can I do to create discernible differences within myself in order to sing the microtones?" Somewhere between a mathematical construct, a cappella, and whiney began to sound like a musical Functional Integration lesson.

The voice—this malleable hornpipe with the oscillating vocal folds—can be amazingly receptive and responsive to a wide spectrum of colors. The vocal folds emit vowel sounds that create harmonics, the lowest being the *fundamental* of the tone. The singer's pliant throat-wall and speech articulators make shapes that either increase or decrease the number of harmonics, which are also called *partials*.

Together these create what is known as the singer's *formant*.

Opera singers take great advantage of these formants so that the voice can be projected over the orchestra and out into the opera house. For opera singers, usually the lowest harmonic —the fundamental—takes a backseat to the overtones that color and vibrate to resonate a large hall. By comparison, in early music, the

singer will sing on predominantly the fundamental harmonic to match the medieval and baroque instruments.

Often I have pondered and journaled about what I feel are the differences between singing opera and early music. It seemed to me that learning to sing this new piece in JI was going to even better clarify these differences and I knew already that my approach to learning would need to be global, exploratory, and inventive. My approach included practicing ear training exercises, listening to recordings, reading, working through vocal exercises, and rolling on the floor. But I wanted to begin where I felt most comfortable, by studying the poems.

Ben Johnston's song cycle *Parable* (for voice, violin, clarinet) is a setting of three poems by Rumi: "A Mouse and a Frog," "The Long String," and "The Force of Friendship," as translated by Coleman Barks. I began by reading the poems over and over while enjoying afternoons sipping tea gazing out the window watching the birds and the rain. The

repetition of the words became a kind of meditation. To embody these I took breaks to lie on the floor, breathe, and do some movement. The quiet allowed for a sense of spaciousness as I took the time to listen to my body.

To help in my learning to hear the *justly tuned* intervals, a friend made mp3 files of the individual tones, patterned exercises, and scales. I could sit with headphones on listen and repeat, listen and repeat. I also used an app on my iPad (yes, there is an app for that!) called Clear Tune which cost me \$5. With the JI setting on my iPad I could sing a tone and see a needle register telling me whether I was on the pitch or above or below it. This meant that I could sustain a tone, and shade it incrementally up or down (flat or sharp) engaging, essentially, in the best learning tool known to humankind: trial and error.

Sometimes it was utterly frustrating, like after a good day of practice when I was feeling like I'd heard that [13-E_b↑], and *knew* I was singing it, only to return a

couple of hours later to find that it had evaporated. Thinking I'd learned it, owned it, was like trying to hold water in a sieve. In these moments of dismay I must admit that I had to turn Ben Johnston's book *Maximum Clarity* facedown so his image on the cover would stop being disappointed in me.

At the same time though I had other indications that my ear training in JI was altering my overall perception of sound. One day, after a morning of practicing, I went to a friend's cook-out. Standing in the midst of the merriment of the dining room talking with a friend, I could hardly carry on the conversation for listening to all the sounds in the room and wondering how they could be notated. Was my ability to hear disintegrating, or was I becoming more conscious of how I perceive sounds?

Think of the difference in the modulations (oscillations) of the tone of your voice as you see someone about to sit on top of your favorite pair of super-expensive designer sunglasses; compare this to the sounds you make when you are consoling a friend or pet. Now think of trying to notate these sounds by using shapes and symbols to indicate

precisely the rise and fall, color, inflection, and volume of your voice.

Learning to sing in Just Intonation became a vocal Awareness Through Movement lesson (ATM). I would begin with a familiar tone and from there slowly by small increments glide my voice up or down. By gradually moving my voice between the familiar and the unfamiliar (while watching the needle on my iPad) I began to find the correct harmonic. At first, the unfamiliar defied my accustomed palate of sensations. It seemed as if I was trying to sing in between the lines and spaces.

Sometimes I played around as if I was singing out of tune on purpose. But soon I would need to be able to sing these unfamiliar sounds reliably and consistently in the twenty-minute-long story accompanied by violin and clarinet.

Two weeks before the performance, I flew down to Los Angeles for my first rehearsal with the violinist, Sarah Thornblade, the clarinetist, Jim Sullivan, and director of the Microfest, John Schneider. In terms of JJ, I was the new kid on the block. Much to my relief, after playing through the first song, Sarah and Jim looked up, rather astonished, and asked, “How did you *learn* this?”

Still, I was not consistently able to sing the fine shadings of the 11th and 13th partials which are paramount in Ben’s composition. And the next rehearsal would be with the composer on the day of the performance.

The morning before the performance in my Anaheim hotel room I met with Sarah, Jim, and John to rehearse before being joined by Ben Johnston, his caregiver, his son, and a videographer who is making a documentary about Ben. No pressure, right? We played through each movement and worked the difficult sections. I was still having difficulty hearing and singing the 11th and 13th harmonics. Having Ben point these out—in the moment—where I could listen to the violin and clarinet, I found I *could* adjust and find the right pitch. I knew I was on the right track but the question was: How would I make it consistent?

Two hours later there was a dress rehearsal in the hall. Time seemed to be flying and a lot of new information was coursing through me. It was important for me to get to sing in the room with the instruments, to feel and sense the acoustic, the space. The rehearsal went pretty well. Still, I knew I was missing those tones. At this point I felt as if I was guessing at them. And, it was too late to focus only on them. I had to think of the bigger picture.

I went back to the hotel to rest. I couldn’t sleep. Like the rests in Awareness Through Movement, I needed to be with the new information I’d learned that day. With my eyes closed, I could sense myself and remember the feel of the tones resonating in the hall. For the performance I had to sing the twenty-minute long story of the friendship between a mouse and a frog *in microtones*. It’s not every

performance that you have the composer sitting in the audience, and it would be Ben's first time hearing the piece performed. Naturally, I was hoping he'd be pleased. Yet I knew my singing couldn't be about that. I also had to let go of any fantasies I might have had about singing the piece perfectly.

Everything I had learned from performing, studies in life and music, and my work in the Feldenkrais Method were called into play. I had to be prepared for the errant parasitic thought like: "Oh, I hope Ben hears that *I'm trying*," or, "Oh no, here comes that really hard passage," and "Gee, I really blew that one." My experience of parasitic thoughts is that they just happen, especially, in moments when I am feeling tired or stressed. To prevent these from undermining my intention in performance I was aware that I would need to be ready to let the occasional unnecessary thought float on by. I would stand in the room, be in the moment, focus, and tell the story.

What transpired that evening was, according to several folks, kind of miraculous. Somehow between the afternoon and the evening my ability to sing those evasive harmonics had improved. During the performance, I could feel that I was "in it." In sync with the violin and clarinet, in the story of the poem, and in Just Intonation. At the end of our 20-minute performance, a few seconds of profound silence hung in the air before the applause. I was relieved and invigorated. A review in the *Los Angeles Times* said, "The performance was stunning."

In *Body and Mature Behavior* (Ch. 13, p. 108), Moshe Feldenkrais asks: "What is it that enables those who use the proper or better way of doing to distinguish it from the other ways, and so continue in it?" He states that *the organs concerned with kinesthetic awareness are located all over the body* and introduces the Weber Fechner law: "In simple words, the Weber Fechner law means that the smaller the weight you are holding, the smaller is the added or subtracted portion *that you will*

be able to notice. [my emphasis]” This has to do with the perception of noticeable change and applies, undoubtedly, to my experience of learning to sing the harmonic tones in JI.

In practicing as I transitioned my voice back and forth in between the microtones, I was learning to make discernible differences within myself. My felt sense of where my vocal folds are located and how they feel as they draw air to emit a sound; how I hear the tone and imagine how I would like it to sound create a remembered sensation.

The sounds mirror my perception. From *Harmonic Experience* (p. 515), W.A. Mathieu writes, “The ultimate answer lies with each musician, who has to demonstrate by his or her example the energy that Just Intonation resonances open out into the world. Musical resonance is a lit torch that passes from one person to the next.”

My initial hunch was that a philosophical resonance exists between the awareness lessons of Moshe Feldenkrais and Ben Johnston’s compositions in Extended Just Intonation. Feldenkrais looked back at childhood development and wondered, why is it that as adults, many people come to limit their movements, or lose their curiosity and sense of wonder. Ben Johnston returned to ancient music theory and wondered, why is it that certain beautiful harmonics and sound combinations have been limited? In the structures they created both men were seeking to convey meaning to the person.

Moshe Feldenkrais created movement lessons that ask the question: How little can I do to elicit a noticeable (meaningful) sensation? The primary emphasis lies in “making the unconscious conscious.” Ben Johnston creates musical structures and asks: What is the precise color of microtone that best conveys meaning to the human being? To perform is to bring into form that which did not previously exist.

As a person who happens to be a musician, a large piece of my life's work is to be able to more accurately match my inner experience with my outer world. To be quite honest, in the past it was very difficult for me to stay with myself and embody my experience. This recent opportunity to learn shows me that growth and transformation are possible and, indeed, have occurred.

Like an Awareness Through Movement lesson, I could attend to and notice within myself how I produce and shape the familiar sounds. I could then begin to imagine and sense the possible unfamiliar increments of microtones. I became conscious of my inner dialogue and was able to “distinguish the parasitic elements” and discard them. As in Functional Integration, greater improvement occurred as I worked with skilled others who could verify, or kindly correct, my perception. Gradually in response to the new information my inner intention shaped to align with my outer representation. And, I knew I could trust my experience.

In *The Potent Self*, chapter 11: The Aim of Readjustment, Moshe Feldenkrais writes: “The human nervous system is the least rigid of all structures; it grows and forms itself while we undergo experience.” And in addition: “Maturity is not a state reached with age or experience—it is a process that goes on until death in all evolving and creative people. Unfortunately, we often nip it in the bud.” Each time we lie on the floor for an ATM, or enter into a Functional Integration lesson we create meaning. How beautiful are the words: “Listen to your body.” Like a work of art, when we engage deeply with a lesson there exists the potential for transformation.

. . . It's not always a blind man
who falls in a pit. Sometimes it's one who can see.

A holy one does sometimes fall, but by that tribulation, he or she ascends, escapes many illusions, escapes conventional religion, escapes being so bound by phenomena

We seem to be sitting still, but we're actually moving, and the fantasies of phenomena are sliding through us like ideas through curtains. . . .

We can't know what the divine intelligence has in mind!

Who am I, standing in the midst of this thought-traffic?

—“The Long String,” Rumi

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