

## Learning Ben Johnston's string quartets in just tunings

Within the quartet we each have a slightly different approach: some like to practise at home with the MIDI rendition that we commissioned for each Johnston quartet, while others go it alone. All of us write the deviation from equal temperament as a numerical value over each pitch and then use chromatic tuners as guides in the quest for training the ear.

When rehearsing as a foursome, the work is inevitably *very slow*. We tune and balance each chord over and over. Balance plays a surprisingly important role in getting a chord to sound in tune, and just plain right. Of course, making music has to be integrated into this meticulous process.

There are only two universally recognized intervals, the unison and the octave. Everything else is an acquired taste, in the sense that we all grow up indoctrinated in one culturally accepted tuning system or another...someone accustomed to the busy, shimmering intonation of indigenous Balinese instruments might find the regimented equal temperament of most Western pop, jazz, and classical music unappealing. The thing about justly tuned intervals is that they are a natural acoustic phenomenon—their telling characteristic is the smoothness that comes when the vibrations of the two notes are properly synchronized in time, eliminating any beats or interference patterns in the sound waves. Because of this, just tuning is intrinsically pleasing to the ear.

The biggest challenge with Ben's language is that his just tuning system is *extended*—there are often more than 150 pitches in the octave, rather than the equal-tempered 12. It is quite an enterprise, a bit like trying to become fluent in a language as completely foreign to a native English speaker as Chinese, to the extent that one could write poetry or tell jokes.

The simple justly tuned scale became second nature for us very quickly. But playing the quartets requires a leap to a completely different plane of existence. To get there, we need to play a particular passage enough times to internalize the pitches and to adjust the small muscle memory to the altered distance between notes. The fingerboards on a violin, viola, or cello are unfretted and hold infinite possibility for pitch, and with Ben's expanded pitch demands, training ourselves efficiently has been key.

Playing against a drone is often helpful. The most crucial issue is understanding the harmonic function of any given note at any given time. It is essential to anticipate the function of the next pitch, really hear it in advance. That is what makes it possible to play it in tune. Quartets have wrestled with these pieces in the past, but our work has delved more deeply into the demands of this extended system.

We hope that this project will have an impact on a new generation of players. At present, our first violinist, Sharan, is teaching a chamber music class on Quartet No. 9, introducing the students to a more sophisticated approach to pitch—with rather stunning results. They had never questioned equal temperament before, and now, in the words of one student, “equal temperament is now *sooo painful!!!*” It really is different for them, having Sharan as tour guide, than it was for us, encountering and fully addressing the challenge of Ben’s pitch system for the first time. Further advances in technology (e.g. fancier chromatic tuners, computer readouts of Ben’s scores instead of paper) will provide more support, but mostly this repertoire requires reorienting and a lot of hard work.

Playing Ben’s quartets is a true adventure, and worth every ounce of commitment it takes.

— Kepler Quartet, November 2011