

Alternative Tunings and Free Range Eggs

By now we have all got so used to the taste of factory eggs that if we eat a really fresh free range egg it tastes sort of weird and gamey. It's the same with tuning systems. We're all so used to equal temperament now, that when we hear something that's in rational tuning it sounds odd and out of tune.

If you listen to the music of any culture other than European since 1750, you will hear rational tunings. They are the natural, intuitive way of feeling comfortable with a tuning. They are based mathematically on the harmonic series so that the frequencies of the notes that make up the intervals are in simple, whole number ratios like 3:2 or 5:4, hence the name rational. This is a principle which goes all the way back to Pythagoras who recognised the basic principles of rational tuning by the simple process of measuring and twanging.

Let's clear up some terms before we go on. Bearing in mind that everything nowadays is measured against the standard of equal temperament, any tuning or scale that includes notes smaller than a semitone, or different from an equally tempered interval is called microtonal. The term "rational tuning" is used to include justly tuned major and minor scales and also the "exotic scales" such as Arabic maqamat and Indian ragas. But it excludes the quartertone scales beloved of Charles Ives and Alois Haba and also other scales involving the division of the octave into equal steps of 19, 31, 53 or whatever.

Equal temperament was really a great idea when it started. It grew out of the need of mediaeval musicians to be able to play in any key. J.S. Bach celebrated this with "The Well-tempered Keyboard" - studies in all the major and minor keys. Previous to Bach there were various meantone systems which were compromises to give a nice justly tuned feel while allowing the ability to change key. Many of these systems such as Werckmeister are going through a revival with the drive for authenticity in early music.

This facility of allowing the use of any key compromised the rational relationships between the notes of the scale. Key changes and modulation became more and more adventurous throughout the nineteenth century culminating with the chromaticism of Wagner. The aim was romantic and individualist self expression. You know, the Big Feelings.

I'll let Lou Harrison give his view of Schoenberg from his 1971 "Music Primer". "Mr Schoenberg's excellent ear early informed him that there is no tonality in equal temperament (only the octave is a good interval). Being a European and sharing in Europe's heavy investment in equal temperament, it did not seriously occur to him simply to retune. He invented instead a way of putting some order into an essentially chaotic affair by arranging an order of succession through the unrelated pitches (while systematically avoiding the only related ones - the octaves). Thus he substituted an order of succession for a hierarchy of relationships. If one is going to have to cope with twelve tones in equal temperament then his method is one very good way of doing so."

Let's be practical in the midst of all this theory. Left to themselves, a string quartet will play in just intonation. The players will go for the best sounding interval. Add a piano and make a quintet and the string players have to accommodate with the piano's inflexible intonation. It's the same with other instruments that can play the gaps between the notes, like the slide trombone or, heaven help us, the human voice. In jazz, the bending of the thirds and the sevenths into blue notes is the musician going for a rational interval (in this case a 7:6 third or a 12:7 seventh) because these intervals hit a feeling, an emotion, a something to which we say yeh we respond. By comparison, equal temperament hits the head, and we say hmm interesting.

The return to rational tunings in the west began with Harry Partch. Born 1901, at the age of 30 he made a bonfire with all the scores he had written to date and started building instruments that could play his system of 43 tones to the octave. That's what all the books say about him. And the idea communicated is that microtonal music must be some weird wailing sound where it requires a fanatically sensitive ear to distinguish tone from tone. However in practice, any scale that Partch used in a melodic or harmonic

structure would be in a mode of 5 or 7 notes taken from the total possibility of 43. The system shines when he writes for voice, the subtleties of intonation of human speech can be given accurate musical notation in Partch's system that beats the hell out of Schoenberg's Sprechgesang.

Partch's failure is in his technological limitations. Many of his instruments, being basically variations on marimbas and xylophones, have a short chippy sound. This makes for good rhythmic stuff but it means that the ear doesn't have time to recognise and hear a chord because the harmony has already shifted. Similarly his melodies are rushed, flittering affairs that never really hang around long enough in the air to express anything. In "Revelations in the Courthouse Park" the leisurely solo part for adapted viola gives an idea of what he could have done if he had gone for instruments with a longer resonance.

But it is exactly this resonance that you get with La Monte Young's "The Well Tuned Piano". Having failed to persuade the piano to behave like a good horse and eat a bale of hay (see "Piano Piece for David Tudor #1" 1960), he finds a piano tuner to tune his Bosendorfer to a scale of his own specifications and produces maybe the only other American piano masterpiece this century after Charles Ives' "Concord Sonata".

"The Well Tuned Piano" is a brilliant tour de force lasting over 5 hours. It explores in a gentle way, intervals, chords and melody lines allowing the listener time to hear and get into the "free range egg" quality of the tuning. Other passages set up powerful vibrating clouds of sound where the notes are played in time with the beat frequencies between the harmonics of the notes thus reinforcing the overall sound and creating an unforgettable experience.

Terry Riley's "Harp of New Albion" for piano is on a smaller scale than Young's piece. It uses a different tuning, closer to the familiar major/minor system.

Ben Johnstone worked with Harry Partch and certainly counts as one of his heirs. But he goes beyond his teacher in that he undoes one of the major confusions started by Partch which was to mix Otonalities and Utonalities (scales from the ascending and descending harmonic series). I imagine Partch did this in order to give his tuning system a breadth and the variety that would stand up against the range of possibilities of equal temperament and the key system. But the result is that by mixing two systems with their different integrities creates something harmonically incoherent.

Johnstone however, keeps Otonalities and Utonalities separate and creates something with far greater integrity than that of Partch. My problem with Johnstone's music is that we're back with the same old gestures and atonal pottering that you get with the Darmstadt school. What he didn't learn was Partch's corporeality – music that connects with the human organism, the song and dance that is the basis of it all – Partch says go and listen to Mahler's Das Lied von der Erde to hear what corporeality is – I would say listen to Carl Orff's Carmina Burana as well.

A visit to the music of other cultures could be relevant here and we explore them in the article "World Musics and Microtunings".

© Brian Lee 1994

<http://www.nakedlight.co.uk>

info@nakedlight.co.uk