CHORAL SINGER

When It's OK To Be Temperamental

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Singers who are also instrumentalists are at a tremendous advantage in understanding the complex issue of tuning. The rest of us tend to encounter it principally in the performance of early music with instrumental accompaniment - as in the compositions of Heinrich Schütz. This is because, as music evolved during the 16th, 17th and 18th centuries from modal to chordal, with its major and minor scales, so did modern tuning conventions.

The human voice can modulate easily from key to key. Not so keyboard instruments. Although an individual instrument playing in a given key can reproduce what are known as acoustically pure - or just - intervals, such as a perfect fifth (see box), trouble arose when instruments were required to accommodate to one another, or to change keys.

Due primarily to: **a.** the limitations of construction; **b.** the preference (or whim) of the makers and; **c.** the absence of a universal tuning convention, musical instruments were not necessarily compatible with other instruments of either the same or different type, or with singers.

As far back as Classical Greece musicians developed and proposed various solutions in order to cope with this rather random and arbitrary approach to tuning. According to "Grove's Dictionary of Music and Musicians"(see Resources), the Greeks knew that "12 perfect fifths exceed seven octaves by a small but appreciable interval." This interval came to be known as the Pythagorean comma.

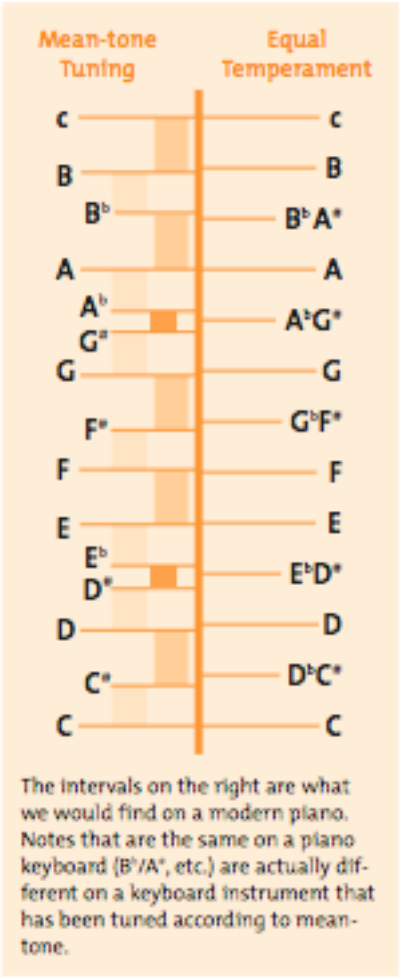
Over the centuries music theorists labored obsessively to compensate for the differences that exist between harmonic intervals that are not quite identical because they have been arrived at by different methods. "Grove's" devotes some 20 pages to these extraordinarily complicated tuning solutions, called temperaments, that rely upon the principals of physics and mathematics to adjust, or temper, the irregularities. Following are the two most important for modern singers to know about (see illustration below):

Mean-tone. For each major or minor tone, this tuning substituted "a compromise whole tone that was their mean"(average of the two). Even though it worked well only as long as

the music didn't modulate too far from its tonic, or key note, mean-tone temperament predominated for the entire 16th and 17th centuries, and lasted into the early 19th.

Equal temperament superceded mean-tone, propelled by the ascendancy of the piano forte (modern piano). Equal temperament distributes the minute differences in intervals over the entire piano keyboard. The adjustments made in order to arrive at this standardization have led some to criticize equal temperament as "universal mis-tuning."

J.S. Bach's famous "Well-Tempered Clavier" is perhaps the best-known attempt to impose continuity of tuning for performance. Bach's tuning is indeed tempered, though not mathematically so. Beginning with C and ascending chromatically, his seminal work contains a prelude and fugue for each major and minor key - 48 in all - intended to be played on a "well-tempered" instrument.



The intervals on the right are what we would find on a modern piano. Notes that are the same on a piano keyboard (B♭/A♯, etc.) are actually different on a keyboard instrument that has been tuned according to mean-tone.

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