

## Vallotti's Temperament: Something painless for modern piano technicians to tune

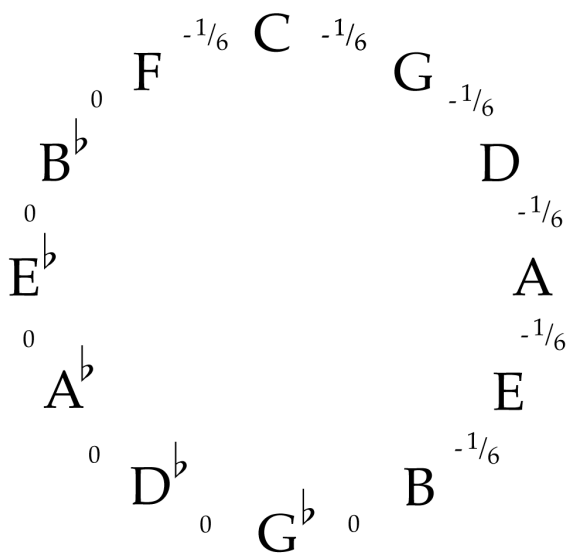
Some regard Equal Temperament as the ultimate tuning system because of the complete freedom it offers to play in any key with impunity. To those so adept at accurately setting it, however, it might come as a surprize that much of the keyboard repertoire is probably better served by using an historic tuning system—especially on early keyboard instruments like the harpsichord and clavichord. There are myriad such temperaments to explore.

The various early meantones limit modulation, the usual Quarter-comma variety making the remote keys with more than three sharps or two flats sound quite harsh or even unusable. But with the right choice of repertoire, the human ear is overcome by the absolute beauty of the eight pure Major thirds Quarter-comma meantone offers, and once accustomed to this sound, any other temperament seems vastly inferior.

In these meantone temperaments, there are only three key colors; good, bad and ugly.

On the other hand, the so-called “well temperaments” will let you play in any key, with excellent intonation in frequently-used keys, and some difference of flavor from key to key as you move further afield. ET, of course, lacks variation of key color as every key is equally out of tune.

It's really the mellow timbre of the modern piano which has allowed musicians to tolerate ET's rapidly beating Major thirds. By contrast, the more complex harmonic structure of early keyboards always makes ET sound a bit rough to my ears on those instruments—and in my opinion best avoided.



Francesco Antonio Vallotti (1697–1780) was an Italian theorist and composer who tempered only half of the available fifths in the circle by dividing the comma into six parts instead of the usual twelve of ET, leaving the remaining six fifths pure. Vallotti's temperament is sometimes also known under the name of his fiddler friend Tartini, who published it in his *Trattato di musica secondo la vera scienza dell'armonia* (Padua, 1754).

The circle of fifths diagram at the left clearly shows the structure of Vallotti: “0” representing the pure fifths on the flat side of F around to B, and “-1/6” the sixth-comma narrow fifths on the sharp side of F.

Modern piano tuners should find this temperament quite easy to set. If Vallotti's narrow fifths are twice as narrow as ET, they will obviously beat twice as fast. For example, if the interval **d'-a'** beats at 0.9 times per second in ET at A440, the sixth-comma narrow fifth **d-a** of Vallotti will beat at 1.8 times per second. (Or, with a little aural adjustment, drop down an octave and you will find that Vallotti's **d-a** beats at that same 0.9 per second as ET's **d'-a'**.)

You need a starting point, though. After taking the **a'** from your usual pitch source, set **f-a** at exactly three beats per second. When you divide the four intermediary fifths **F-C**, **C-G**, **G-D** and **D-A** equally, these will each be a sixth-comma narrow.

Continue these same-size narrow fifths around the sharp keys to **B**. Finally, close your circle by tuning all the remaining fifths on the flat side of **F** and sharp side of **B** absolutely pure. (That may prove more difficult if your ears have been tainted for so many years by ET's lazy-beating fifths, but these fifths must definitely be beatless!)

This temperament is often requested, and is quite suitable for a wide range of solo music as well as for accompanying modern instruments. There is a good variety of key color as you wander from simple tonalities. The worst keys are remote **B**, **G<sup>b</sup>** or **D<sup>b</sup>** because their Major thirds are Pythagorean, ie made up by a chain of four consecutive pure fifths rather than containing one (like **A<sup>b</sup>**) or more narrowed fifths which would bring the resultant third closer to its tonic and hence better in tune.

To explore further, over two dozen temperaments and more besides are discussed in the Technical Library on my website:

[www.hpschd.nu](http://www.hpschd.nu)

Enjoy!

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