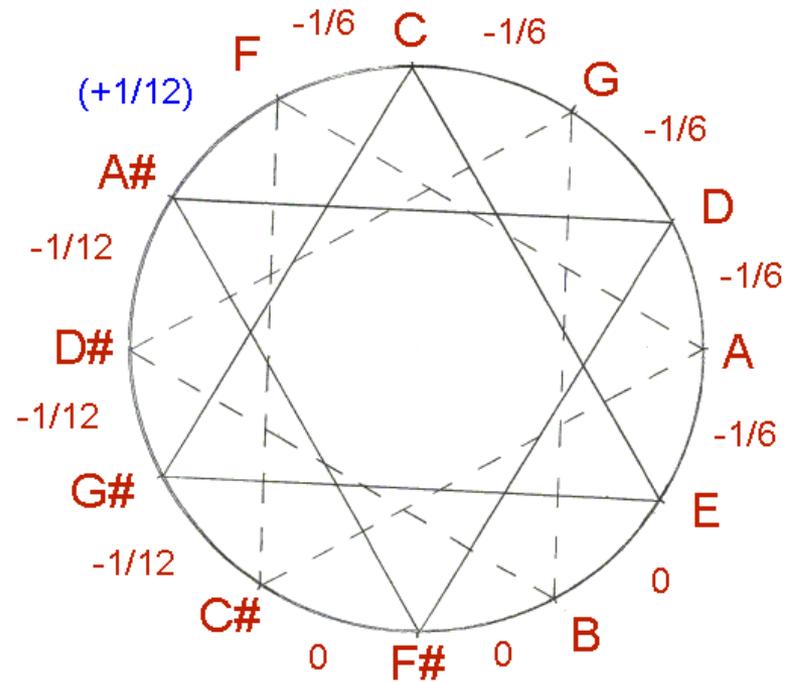
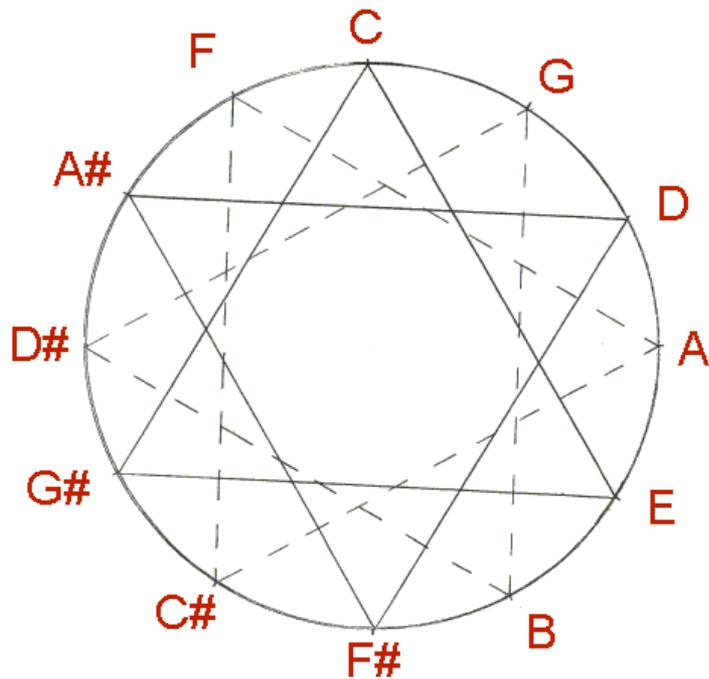


# The Bach/Lehman layout



## Some musical outcomes of this temperament:

- Music in sharp keys gets a bright and brilliant sound.
- Music in flat keys is warmer, gentler, and mellower.
- Music in major keys tends to sound smooth, genial, poised.
- Music in minor keys tends to have much stronger contrasts and forceful gestures; then, it relaxes when it moves to major.
- Tonal music has firm arrival points.
- Music has tension and relaxation as it goes along. (By contrast, when the same music is played in equal temperament it has “nowhere to go”, because equal temperament offers only a one-dimensional surface....)
- Chromatic music sounds especially intense.
- **Performance is easier: it is not necessary to work so hard to make the musical effects project well.** (Bach: “Just hit all the right notes at the right times, and the instrument plays itself.”)
- This temperament works not only for harpsichords and clavichords, but also for organs and pianos.

## Some additional outcomes of this temperament:

- If we can assume that a Leipzig organ was in or near this temperament, at least for a few accompanying stops: Bach's vocal music for his job there emerges with strongly dramatic contrasts. The modulations and the choices of key fit the moods closely. That is to say: the expressive character of this temperament may have inspired some of Bach's compositional ideas, both instrumental and vocal.
- This temperament also fits (and inspired?) the most volatile and intense music by others in Bach's family: especially the two oldest sons, Wilhelm Friedemann Bach and Carl Philipp Emanuel Bach.
- CPE Bach described something similar, and possibly this specific temperament, in his own book (*Essay on the True Art of Playing the Keyboard*, 1753): in the correct modern temperament, one "takes away from most of the 5ths a scarcely noticeable bit from their absolute purity...."

# Playing some examples...

in this Bach temperament

The same pages played earlier from:

Louis Marchand's Allemande in D minor

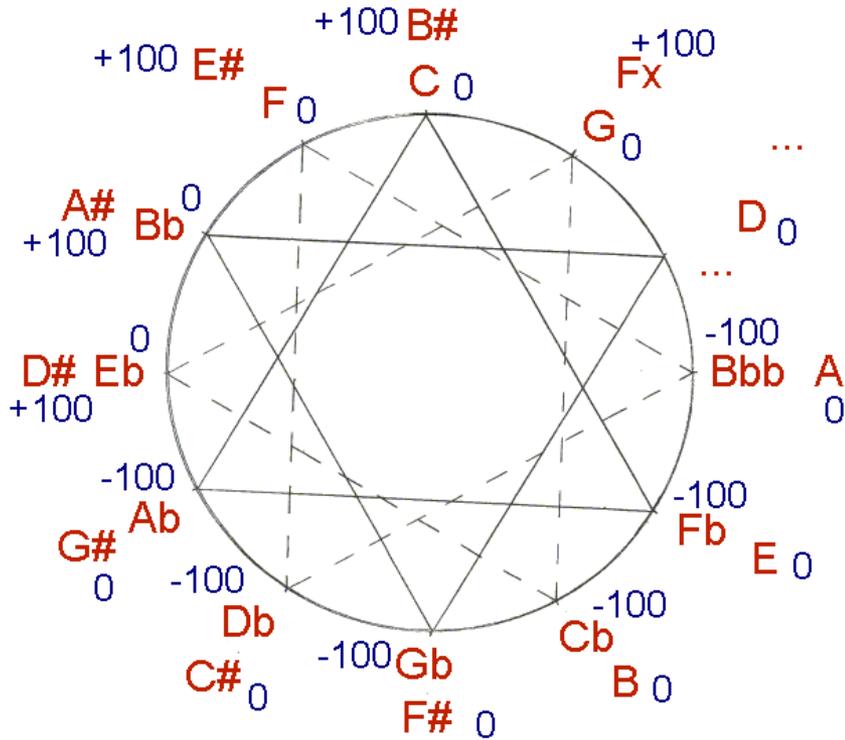
Francois Couperin's "Les Pavots" in B minor, from Ordre 27

Wilhelm Friedemann Bach's Sonata in E-flat major, first movement

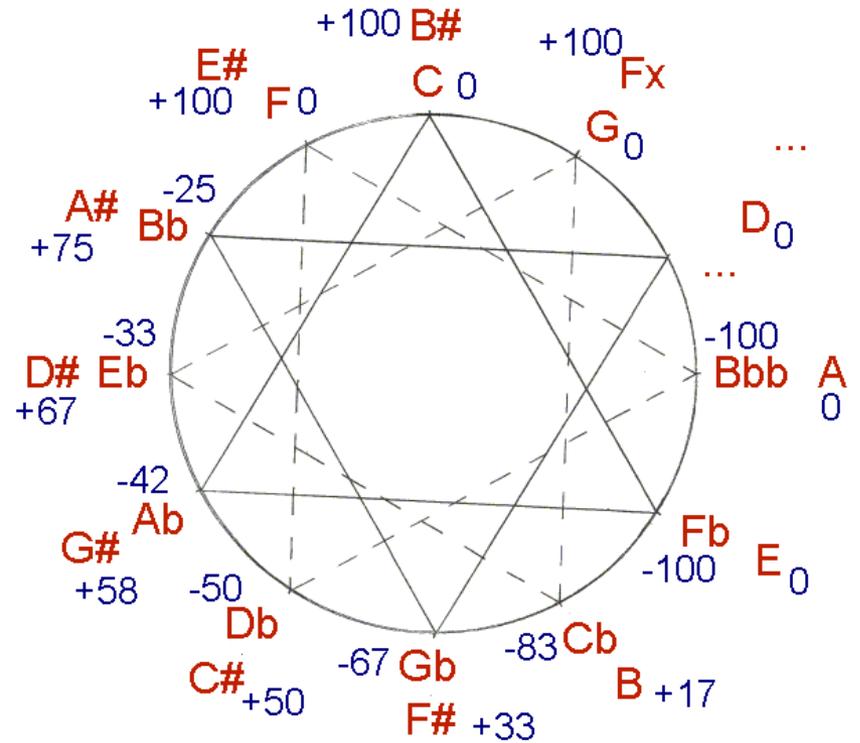
Examples from JSB's Well-Tempered Clavier, and Inventions and Sinfonias, are readily available in recordings using this temperament. Details are at [www.larips.com](http://www.larips.com).

% of comma difference from the regular 1/6 comma system

Regular 1/6 comma



Bach/Lehman



# Interpreting that diagram of percentages...

- Most of the C major scale is exactly where it belongs in that 18<sup>th</sup> century standard: **C, D, E, F, G, and A are all “on spot”** in their regular positions.

- B is slightly raised: 17% of a comma – scarcely enough to notice, in practice.

- All the sharps get gradually sharper, in smooth progression, the farther removed they are from C major around the spiral.

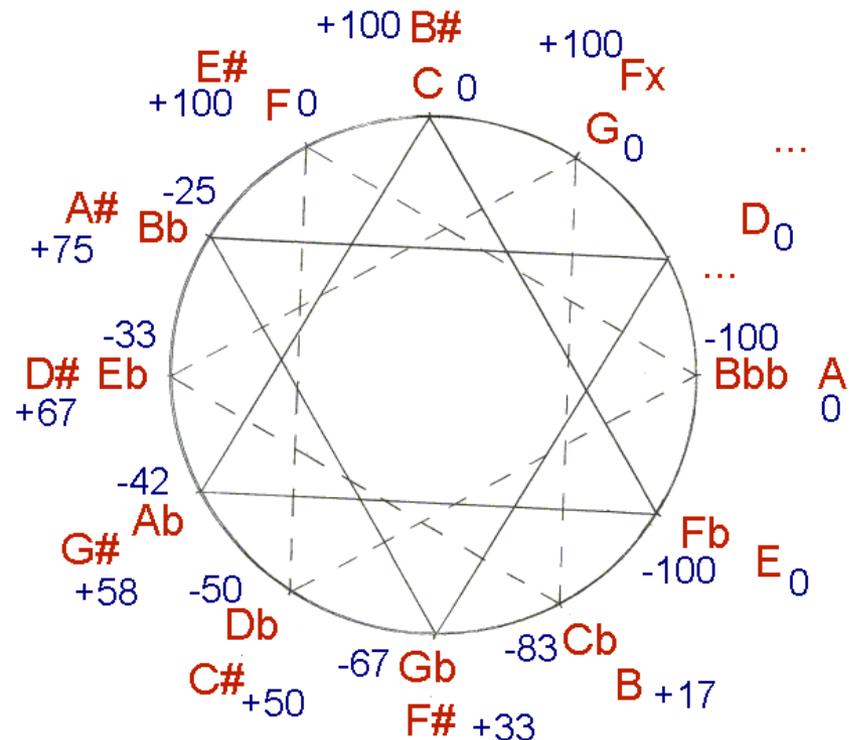
- F# is 33% sharp, C# is 50%, G# 58%, D# 67%, A# 75%, E# 100%...

- The flats similarly get gradually flatter: Bb is 25% flat, Eb 33%, Ab 42%, Db 50%, Gb 67%, Cb 83%, Fb 100%...

- The nearer a note is to the C major scale, the less enharmonic error it has. (And 100% of a comma MUST be absorbed somehow, every time we swap a note name.)

- The major 3rds A-C# and Db-F are exactly the same size: the note C#/Db is 50% “off spot” as a compromise between the places where C# and Db would be. It is equidistant from the C major scale in both directions.

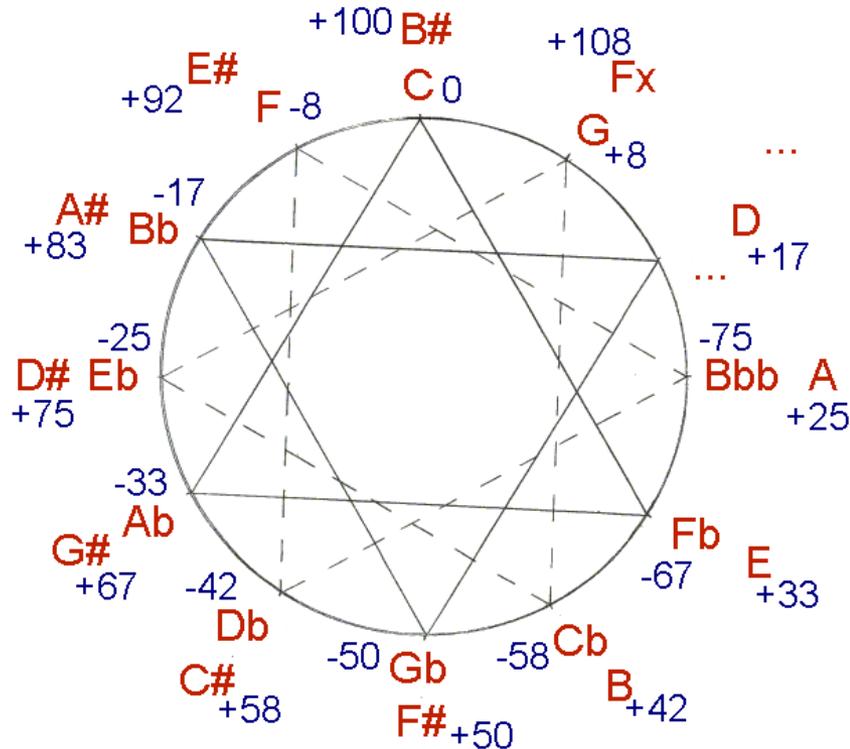
## Bach/Lehman



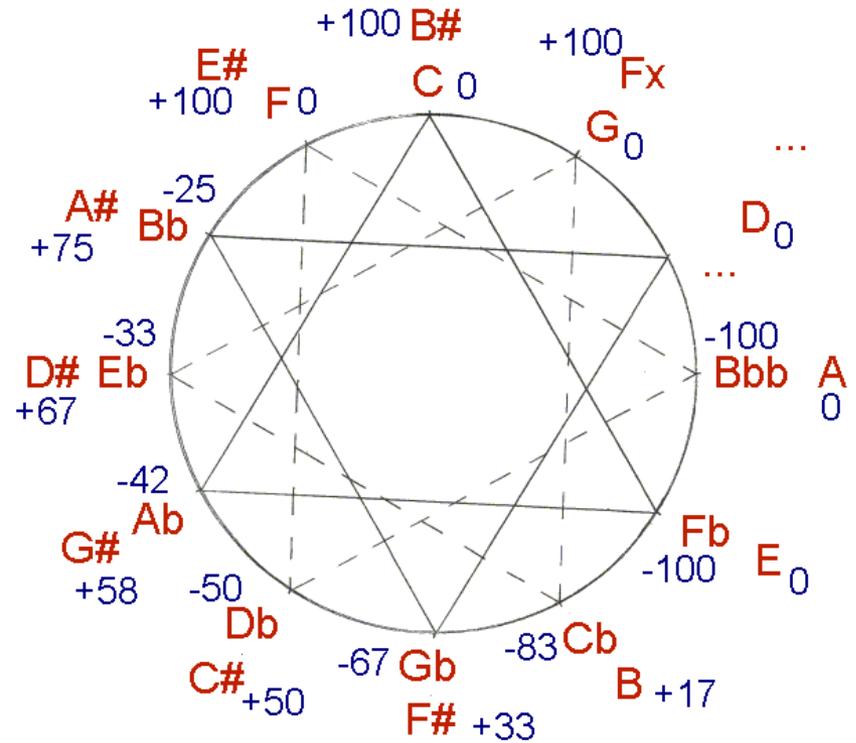
# % of comma difference from the regular 1/6 comma system

Equal temperament rises and falls smoothly, too, with a crossover point of 50% at F#/Gb. With its widely spaced naturals it is **ATONAL**: not favoring a sonorous C major scale, or favoring any harmony in particular.

## Equal temperament



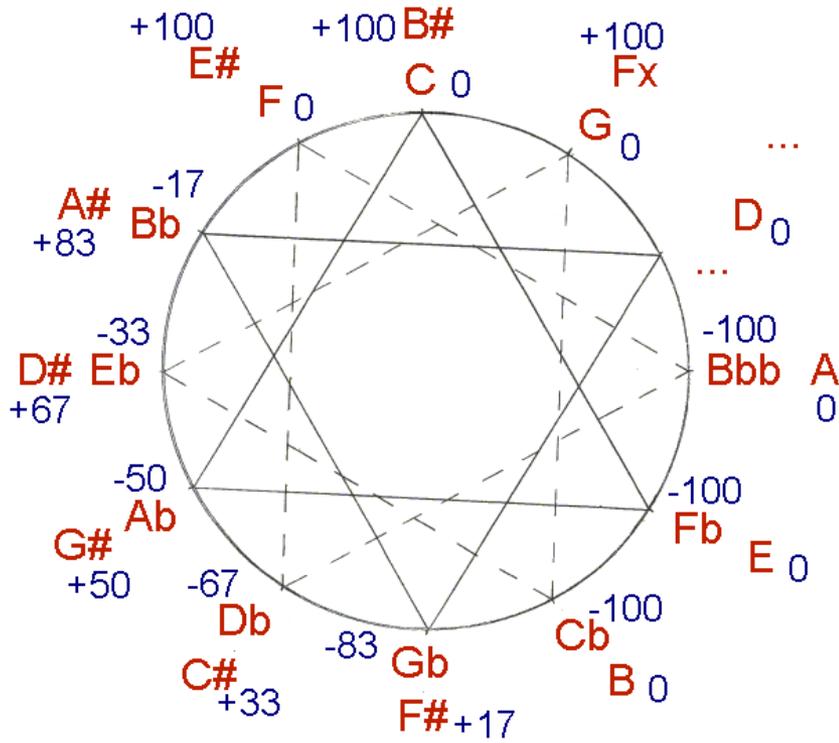
## Bach/Lehman



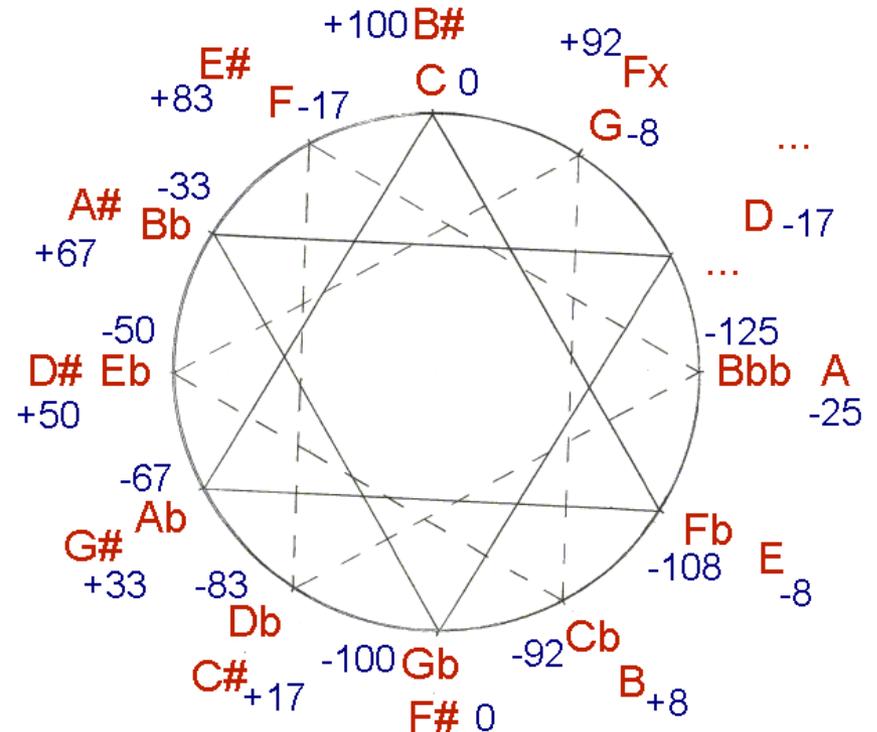
# % of comma difference from the regular 1/6 comma system

Two other supposedly all-purpose 17<sup>th</sup>/18<sup>th</sup> century temperaments in popular use today: but both doing badly with flats, and with the triads of B major, F# major, Db major, and Ab major...

## Vallotti



## Werckmeister III



# Further resources

- Lehman, Bradley. “Bach’s extraordinary temperament: our Rosetta Stone” (Early Music, 2005)
- Lehman. Several other articles in *Clavichord International*, *Diapason*, *BBC Music*, and CD booklet notes.
- Lehman. Web site [www.larips.com](http://www.larips.com) with free copies of the articles, analysis, musical examples, CDs for purchase, YouTube video demonstrations, and more.
- Duffin, Ross. *How Equal Temperament Ruined Harmony (and Why You Should Care)* (Norton, 2007).
- Recordings by dozens of musicians already using this temperament regularly since 2004: Robert Hill, Peter Watchorn, Richard Egarr, et al.
- At least a dozen pipe organs in North America and Europe with this temperament in their permanent installation.