

Cracking the "Bach" Code

Breakthrough WTC Recording

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Nothing turns music lovers glassy-eyed faster than archaic disputes about tuning harpsichords using mean versus just versus Pythagorean temperaments. The debate seems pointless because the victor prevailed quite some time ago: equal-tempered tuning—the tuning heard on virtually all keyboard instruments today. This type of tuning allows all musical keys to be played passably well without unpleasant dissonance, at least to most ears. The downside is that basically every key sounds the same. That's the price of progress. Case closed.

But just when the last dying rays of contention have been all but snuffed out, who shows up at the door but Johann Sebastian Bach himself, blasting apart two centuries of global consensus. He doesn't arrive with ponderous treatise in hand—no algebraic theories, lists of tuning ratios, or geometric projections. Bach's entire scheme is summarized in a six-inch pattern of ingenious looping coils. At first glance, it seems merely a decorative flourish inscribed above the imposing title: *Das Wohltemperieret Clavier* (WTC).

On closer inspection, the "decoration" is eleven oddly asymmetric looping figures, with sub-types clumped together in three distinct groups. The letter C is also notably visible on the inscription, hinting at what's called the "circle of fifths". It turns out that it is actually a very practical, clear, and precise tuning system for Western diatonic music, presented in diagram form.

Here's the kicker: Bach's recipe for harpsichord tuning has been hiding in plain sight since 1722! It was only in the late 1990s that a few curious minds began examining the quirky design. Finally, in late 2005, musicologist Bradley Lehman published an authoritative paper in the Oxford Press journal, *Early Music*. He showed that the coiled diagram perfectly complements Bach's WTC project, which was to play a prelude and fugue in every major and minor key without retuning or making hurtful sounds in the remote keys of the scale. That's 48 pieces set out in two "books".

Bach also knew that his tuning method produced a great-sounding harpsichord. The Bach "Rosetta Stone", as Lehman calls it,

BACH: *Well-Tempered Clavier, Book I*
Peter Watchorn, pedal harpsichord
Musica Omnia 201 [2CD] 145 minutes

shows how every key can be played not only sweetly "in tune" but also with a distinctive timbre. That's why this unequal temperament is superior to the industrial grade equal tuning system in use today. (See sidebar.)

Into the fray steps another intriguing figure, Peter Watchorn, with a brand new recording of the WTC, Book I, played on a magnificent pedal harpsichord tuned according to the Bach-Lehman encryption. Listening to this recording makes any skepticism evaporate at once. The results are nothing short of sensational. The big major keys are mellow and lustrous. The difficult "remote" keys with lots of sharps and flats are bright, edgy, and pungent, but never abrasive. The third group—transitional keys—are crystalline and "pure", that is to say, they retain the crispness of exact mathematical tuning ratios.

Rarely heard on a pedaled instrument, this treatment of the WTC is a revelation. The harpsichord set-up consists of a second chest placed on the floor, aligned underneath the main console, that's connected to pedals in an organ-like configuration. The pedals come in handy when Bach writes sections in five voices, which are very difficult to articulate and impossible to sustain on conventional harpsichords. But the pedal also serves to italicize phrases and lines, producing a kind of unexpected grandeur never associated with harpsichords. Used sparingly by Watchorn, the sound of this pedal instrument is wonderfully bracing and provocative.

Crafted by Hubbard & Broekman after an original Ruckers-Taskin, this beast casts the WTC in a very different light. The clattery, ear-fatiguing sound of the generic harpsichord is replaced by an instrument of depth and color, one that offers a semblance of real dynamics and legato. The pedal instrument and the Bach tuning, in tandem, create a kind of keyboard chimera that combines elements of organ, piano, and the conventional harpsichord. It's as if a new species of keyboard has been invented, but the reality is that Bach himself played pedal harpsichords.

Most noticeable is that, with the pedal instrument, sounds linger in the air long enough to insert pauses, to let phrases sing,

and to let the music breathe. Something special happens starting with the first of the 48 pieces, the C-major Prelude. It is darker and tawnier than usual compared with the Kirkpatrick (LP), Dreyfus, Verlet, and Van Asperen recordings. But after a few moments, Bach's musical figures glisten on this new recording, with guitar and harp overtones pealing in lustrous, sympathetic vibration. Unsuspected reserves of sound emerge with a depth that leaves other discs feeling a bit hollow and monochromatic, exhausting their potential by the end of the first Prelude. With Watchorn, there are many surprises still to come.

The C-minor Fugue, for example, ends with blasts on the pedals, creating an astonishing organ-like diapason and blowing the lid off any precious preconceptions. Then comes the first real test, preludes and fugues composed in C-sharp major (seven sharps) and minor (four sharps). It's quite challenging for these keys to sound really good in an unequal tempered system. As predicted, yes, there's an edgier, jagged sound that Bach surely seemed to exploit, but yet no key sounds at all sour. More to the point, the "remote" keys speak with a distinctive pulsing twang—a "live wire" effect that's not at all uncouth.

Progressing through Bach's monumental score, it's really noticeable that chords and imitated phrases each have a different timbre, virtually an entire orchestral palette that can be reedy, stentorian, limpid, or bosky. The distinctions are palpably audible. Measure for measure, chord by chord, this recording is a serendipitous adventure.

Adding to the opulence is Watchorn's sweeping vision and masterly playing. No bolting through this score! This is one musician who so savors every note on this two-disc

recording that Book I is a good half-hour longer than rival sets.

It's the majestic pacing rather than tuning or pedals that will probably spark any controversy. Watchorn's aspiration is for Book I to be experienced as one extended concert piece rather than, more typically, as selective samplings from a few favorite items. Since the A minor and B minor pieces near the very end of Book I do support a carefully wrought, solemn reading, his introverted approach with the keys just preceding them deserves some rethinking. The A-flat-major, G-sharp, and A-major-Fugues feel a tad listless. Thrust and energy seems to lag. These pieces want to dance a lot more. Perhaps, too, the B-flat-minor Fugue could have used more staccato to create stronger rhythmic vibes. It's in this general region, late in the game, that the ear starts noticing lost opportunities.

Exceptions aside, Watchorn's WTC sounds spontaneously improvised. The aching fantasia-like E-minor and E-flat-minor Preludes are spellbinding. Likewise, the recitative-like sections, especially the C-minor and B-flat-minor Preludes, really call to mind the emotional drama of French and Italian baroque opera. Watchorn gives every prelude and fugue a distinct character without sounding fussy or contrived. All in all, this MusicOmnia recording is a "must have", a seminal interpretation.

As a final touch, Watchorn ends where he began, with the C-major Prelude. It's his idea, not Bach's, and the inspired gesture works. Bradley Lehman's papers can be found at www-personal.umich.edu/~bpl/essays.html. [See also BACH in this issue.]



J.S. Bach was famous for tuning his harpsichords with his own system that yielded a nice sound. In Bach's diagram edited by Bradley Lehman, Bach cordoned off three distinct clusters of keys, each with a different tuning profile. The group in the middle—*E-B-F#-C#*—is tuned in pure mathematical fifths. These have the cleanest, most resonant sound. Those to the right of the middle group are designated with one inner loop, and those to the left with two.

A comma is the slight difference between pitches of the same tone in different systems of tuning. The inner loops are indications to the tuner to loosen the harpsichord string (turning counterclockwise) either one twelfth or two twelfths of a comma. This creates slightly flattened fifths. The group to the right—*C#-G#-D#-A#*—is flattened by a one-twelfth comma, while those to the left—*F-C-G-D-A*—are flattened two-twelfths comma. Thus, Bach's tuning system extinguishes the comma unequally through the octave by 0, 1, or 2 twelfths of a comma.

Initial reaction to this newly discovered temperament has been quite strong, with Andrew Manze, director of the English Concert, and harpsichordist Richard Egarr adapting it. Reports are that even late 19th Century piano music sounds splendid with Bach's tuning.