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Perfectly Imperfect: The Art of Wrongness

Perfect pitch is the incredibly rare ability to *perfectly* identify or reproduce any musical note instantly just by hearing it. It's almost a mythical concept for those who weren't one of the select few lucky enough to be born with it—those in the frustratingly *imperfect* majority, of which, much to my dismay, I am a member. Still, through much repetition and practice, a musician learns to approximate pitch well enough to compete with the naturally talented. This “pseudo-correctness” was the extent of my ability—even after thirteen or so years of piano lessons—on that Sunday afternoon when my longtime teacher arrived for a routine piano tune-up. Every few months, or when either of us remembered, he would arrive at my house carrying his worn and grease-stained bag of tools and that signature scent of cigarettes that any jazz musician worth their salt reeked of. Then he would sit at my bench and begin the strange ritual of tuning a piano.

There's a certain “correctness” about being in tune. Otherwise, perfect pitch wouldn't exist. Therefore, following a logical path, one would assume the process of tuning involves making slight adjustments to each note until they are in tune or “right.” And with every other instrument, your deduction would be correct! The piano, however, is special. Tuning a piano isn't about achieving perfection—it's about painstakingly managing imperfection.

Like the expert he was, my teacher claimed to have no need for the technical crutch of the digital tuner. As he pulled a tuning hammer from his bag, slipped strips of felt between the strings, and began pressing the same key over and over, he simply leaned in and listened to the

wavering hum as he made almost imperceptible adjustments. I figured this was the perfect opportunity to test my own ear, so as he worked, I would play each note in my head before he settled on it, measuring his final pitch against the one I thought I heard. I was on fire at first, hitting almost every note perfectly—until gradually, I wasn't. As he progressed farther and farther from the center of the keyboard, I became increasingly worse and increasingly frustrated. Surely, I wasn't this bad at note identification. So, I pulled out a crutch: a tuning app on my phone. Sure enough, my teacher was leaving each note ever so slightly flatter as he descended into the lower octaves, yet he left them that way, as if wrongness was precisely what he was looking for. Piano tuning doesn't require perfection per se, but rather agreement: it's tuned to what sounds right to our ears, even when "right" isn't perfectly in tune. And if even music relies on compromise to be correct, then what exactly are we calling "correct" in the first place?

What I didn't know that might have saved me from tuning frustration that day was that my teacher wasn't tuning the piano to some universal musical truth—he was tuning it to a system. As Nicholas Temperley, professor of musicology at the University of Illinois at Urbana-Champaign, lays out, most modern Western pianos are tuned using "equal temperament," a method that divides the octave into twelve equal steps, allowing music to be played in any key without the intervals collapsing into a dissonant mess. In theory, this sounds like a neat mathematical solution where every half-step is identical, every octave is perfectly doubled, and the keyboard is really pretty and symmetrical. But, as Temperley quips, "the complex development of harmony has been the most striking peculiarity of Western music," and with the addition of multiple notes played at the same time, the piano "has brought with it a host of tuning problems." Equal temperament is less the final answer and more one of many possible compromises: it deliberately sacrifices pure interval ratios in order to make modulation possible.

Stuart Isacoff, award-winning author and a pianist himself, describes equal temperament as one of the great intellectual battlegrounds of Western music since the days of Pythagoras. The question has never been as simple as how we should tune an instrument, but what we're willing to trade for harmonic purity (Isacoff).

So, equal temperament explains why pianos can't be perfectly in tune across every individual key, but it still doesn't explain the seemingly intentional "wrongness" of my teacher's tuning process. Was he actually scamming me every other month? Well, probably not. When you press a key on a piano, it swings a little hammer that strikes a set of strings, producing that all-too-familiar piano sound. However, those strings don't behave like strings ideally would. They're thick, stiff, and under constant enormous tension, so their overtones don't fall into the clean whole-number harmonies we're used to hearing (even if we don't realize it). Instead, they drift progressively sharper as they rise in a phenomenon called "inharmonic" (Johnson). So, it isn't just the intervals that mess up piano tuning; the very physics that make the instrument produce sound bend the harmonic structure our ears expect to hear.

Jussi Jaatinen and Jukka Pätynen from the University of Helsinki in Finland confirm that this "inharmonic" isn't just a theoretical quirk, but something that actually directly influences how people perceive pitch and how they judge whether a piano sounds "correctly" tuned. The piano tuner's job thus justifies its steep cost, as tuners must listen for how partials interact across octaves and subtly widen them in a frustratingly complex practice known as stretch tuning. They aren't aligning notes to a single reference point but shaping the instrument so that its overtones reinforce each other in a way that sounds stable to the human ear. Or, as Eric Johnson—a practitioner of this difficult process himself—sums it up, "a piano tuner is putting your piano precisely *out* of tune" [emphasis added]. As Rudolf Rasch and Vincent Heetvelt similarly note,

because inharmonicity messes up the alignment of overtones, piano tuners *can't* rely on exact theoretical pitches, instead making small adjustments for balance and coherence across the entire range of the instrument (171–74). In other words, neither I nor my phone were wrong—the notes *were* out of tune. But for my piano, being “out of tune” was the only way it could sound “right.”

Here is where we pivot, however, because this concept isn't revolutionary. Musicians have known for centuries that “in tune” is less a fact than a negotiation. Yet, we still talk about correctness as if it's a fixed, objective thing. Equal temperament itself wasn't adopted because it was perfect; it just made playing the instrument easier. Returning to Isacoff for musical history, we see he recounts that musical debate has always been centered not on technical disputes, but rather arguments over what kinds of music *should* exist and what sacrifices were necessary to see that through. Purity bent its knee to flexibility and function. The current “correct” was *constructed*. It wasn't “right”; it worked.

So why do we continue to talk about tuning as perfect? We teach aspiring musicians to aim for the “right” note. We refer to music as “correct” or “off.” But if the very system that set this metric knowingly sacrifices perfection for the sake of practicality, then musical correctness begins to look less like fact and more like an agreement we've collectively decided not to question.

Let's take an exploratory step outside the world of music for a moment to further examine this idea. In his contentious essay “The Death of the Author,” Roland Barthes argues that meaning does not originate from a single, authoritative source, but is found among its many interpretations. This separation of the author from the final say on what their work means allows the reader—in our case, listener—to become an active member in the conversation of meaning. As he writes, “this disjunction occurs, the voice loses its origin, the author enters his own death,

writing begins” (Barthes). There is no fixed truth from creator to creation, but instead a space where arranging and rearranging of “truth” becomes legible.

Now step back in. The instrument does not impose its mathematically perfect pitch onto the listener; it carries a structure of relationships that have been arranged and rearranged through centuries of interpretation that the listener has learned to *accept* as “in tune.” Just as the meaning of a text is interpreted by the reader rather than told by the author, pitch in a piano is stabilized by the listener rather than dictated by physics. In both, objectivity is formed and sustained through agreement.

The unsettling part of this realization wasn’t that the piano was imperfect—imperfection is what I find so beautiful about music, actually—but that I had mistaken a compromise for truth. The notes were *wrong*. The instrument sounded *right*. Generations upon generations of musicians and listeners had formed, and learned to accept, these many relationships of imperfection as “in tune.” The stable correctness I had known wasn’t “right” in the way I believed; it was “right” because we had collectively reinforced it as such. That’s where the art lies for me: not as universal perfection, but *human* balance. We, as listeners, don’t uncover the “right” note so much as we learn to hear it.

Unfortunately, none of this theorizing granted me the mystical ability of perfect pitch. I still rely on my tried and (sometimes) true approximation. But when my teacher leaves and I sit at my piano, no individual key is the focus of my attention. Why would they be? A complex system of compromise is carefully arranged beneath my fingertips, pulling its imperfections into a symphony of balance. The bass notes are stretched. The overtones are slightly misaligned. The intervals are mathematically “wrong.” Yet, as I play, the piano sounds right. The piano isn’t flawless—but it’s human.

Works Cited

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