

# Absolute pitch.

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Every friend of a genuine *wunderkind* must have heard fantastic tales of the infant's prodigious sense of pitch-- that is, the ability to name, in a blindfold test, any number of notes simultaneously sounded. Some orchestra leaders are said to possess similar powers of musical clairvoyance (or shall we say, clairaudience?). With the first approach of an experimental hand, however, such tales and legends usually vanish into the realm of naïve nonsense. The cold fact is that the power of tone-detecting is extremely limited, even among phenomenally gifted individuals. The probability of the existence of a 100% absolute pitch which would enable its owner to name, in truth, any number of notes, any tone-cluster, to borrow a fashionable term, appears very slight when we consider the acoustical maze existing in our world of compound tones.

Every sound, at least theoretically, presents a complex system of harmonics built on a fundamental tone. "Actual" tones differ only in degree of intensity from "ghost" tones, which, under the various names of overtones, combinational tones, etc., form a sort of musical ectoplasm around each sounding body. At times, indeed, these spook tones materialize themselves to a confusing degree. Inexpert performers on wind instruments have a hard time ridding themselves of unwelcome octaves and fifths above and below. Some players, on the other hand, cultivate such tones for the sake of color. Evsei Belousov, the 'cellist, can play octaves on a single string, an effect which he chooses to term-- let us hope, metaphorically-- "Yogi tones."

In his classical book, "Music, a Science and an Art," Professor Redfield gives an interesting transcription of our national Danish-British-Austrian-American hymn, "God save the King"-- "My country, 'tis of thee," with all the ghost tones written out. The look of it is even more appalling than its sound as performed by military bands at patriotic functions. All this musical exhaust reaches our ears even in the purest of symphonies. We are fortunately unaware of its existence, as we are unaware of the existence of tiny specks constantly floating in our field of vision, but it clouds our perception in finer tests, and proves the eventual undoing of those whose self-assurance prompts the impossible claim of infallibility.

All these parasitical tones are often increased in volume through sympathetic vibration of surrounding objects. "*Jedes Bönchen licit rein Tönchen*," says an irreverent private in Remarque's "All Quiet on the Western Front." In a less coprological sense, every quasi-flexible object is attuned to a certain pitch. Our very ears, or rather their external parts, vibrate sympathetically to the tones lying between F. and G of the fourth octave-- the circumstance that makes these tones disagreeably shrill. If, by inserting a tube of paper into the ears, we change their vibrational number, the tinkling sound peculiar to them disappears.

Yet, limited as they are by the very nature of things, the members of the caste of absolute pitchers possess qualifications which are specific and unmistakable. To qualify for membership, a person must be able to instantly name any single note, struck on the piano or any other instrument with definite pitch, within the range of, say, five octaves, leaving out the extreme high and low registers. The answers must be correct in all cases, not in the majority only. Twenty tests, separated by an interval of time (to avoid the possibility of an accidental guess in the first test, with the subsequent reliance on relative pitch) ought to be sufficient. The answers must be given instantly, without preliminary figuring out.

To a true absolute pitcher there can be no more doubt about a certain note being a C, or a D, than there can be, to an ordinary person, any question that a certain color is red or blue. In fact, it may be said of persons deprived of the sense of absolute pitch that they are tone-deaf, in perfect analogy with persons that are colorblind. Jaques Dalcrose developed a method which enables one to form a sense of absolute pitch through measuring the tension of the vocal cords with the fingers, while intoning a certain note. But this method, even if successful, would be only another Braille's alphabet for the blind, applied to sound. Needless to say, it has nothing in common with an inborn sense of pitch which cannot be acquired as it cannot be lost.

For it is an inborn sense, though its physiological premises are highly uncertain. Children who have it reveal it as soon as they learn the names of the notes, and retain it throughout their lives, whether they become professional musicians or not. On Doomsday they will unhesitatingly recognize the key of the Archangel Gabriel's fanfare. On the other hand, the pariahs of absolute pitch may rise to the height of musical fame, and yet never know whereabouts they are in the scale. They may develop a tolerable sense of relative pitch, and even get to recognize certain tones by the muscular tension of their own vocal cords, unconsciously attuned to the given tone, but ever so often they will slip into a gross error, sometimes missing by several semitones. And always they would have to think before giving their answer, a necessity unknown to the members of the privileged caste.

The importance of the sense of absolute pitch has been greatly stressed by some, and violently attacked by others. The truth is that it is undeniably a great convenience to all musicians, but of more value to conductors than to pianists or other instrumentalists. Composers but rarely possess it, and the absence of it does not seem to interfere with their creative powers. Certainly, the mere possession of it does not predicate great musicianship, though it always points to a musical nature. An International Absolute Pitch Club (the founding of which is hereby urged) would be to the world of music what the Caterpillar Club, formed of pilots who have had to jump for their lives on parachutes, is to the world of aviation. Some distinguished birdmen are its members, but along with them, many aviatorial mediocrities as well.

The possession of absolute pitch may prove of great advantage in everyday life. Commuting from a suburb to town on a trolley, I noticed that the humming sound, rising in proportion to the speed, reached its high at the B flat of the tenor voice, and that riding on that high note through a certain open stretch of the road, I would get to town in so many minutes. It took proportionately more time to reach town with an A, and still longer with an A flat. Having built an experimental table, based on daily practice, I could always tell just how late I would be at the office. In war the approach of a shrapnel announces itself in the form of a hissing sound. When its pitch rises beyond a certain high note, we know that it is directly headed towards us, and so may gain time to say our prayers. Undoubtedly, there are many other handy applications of absolute pitch.

But the same absolute pitch may be-- and very often is-- a source of annoyance to its owner. Horatio Parker, who was supersensitive in this respect, complained to William Lyon Phelps of the tortures connected with too fine a sense of hearing, and professed his envy for the latter's blissful imperviousness to music. Yet, Rimsky-Korsakov, who was a champion, composed one of his loveliest operas on a piano in B flat, as he facetiously called it-- that is, a piano tuned a full tone lower. Striking a C and hearing a B flat must have been an excruciatingly painful experience for him. But are not clarinet players doomed to play different notes from what they hear? All performers on transposing instruments, indeed, must be suffering from this sort of maladjustment.

But here we come to a debatable point. The standard of pitch has never been definitely set for any lasting period of time. The A of the American Federation of Musicians, assigned 440 vibrations a second, is nearly a semitone higher than the pitch of Handel. Thus, our orchestras in playing Handel's works, or, for that matter, any Eighteenth Century works, perform them a semitone higher than they were intended to sound.

At various times, the standard of pitch deviated from ours even more than that. Some freak readings record an A with but 376 vibrations a second, which corresponds to our F sharp, a minor third below. (A dilapidated small organ of *l'Hospice Comtesse* at Lille, gives this pitch-number.) At other times, the pitch for A went as high as 570 vibrations a second, corresponding to our C sharp, a major third above. (The North German Church of the Seventeenth Century provides an example of this high pitch.) Thus, we see that our standard A has traveled through the centuries from F sharp to C sharp-- that is, within the interval of a perfect fifth! What price absolute pitch in the light of such perplexing relativity?

But we must not be unduly perturbed. It matters little whether we call our A an A or a B flat, as Handel would. So long as the difference is expressed in complete semitones, we have but to transpose every given note to adapt it to the current standard. The question becomes more confused when there is a difference of a quarter tone between two local standards. This difference is nearly reached between the low pitch of some of the European countries and the American standard pitch. In such a case, a European with a sense of absolute pitch will associate the American A with either A or B flat until he is accustomed to the new pitch.

I have said that the sense of absolute pitch is extremely limited in the number of tones which any person can possibly detect. But few experiments have been made

to establish this limit, and find its causes. In 1913, Professor Stumpf of Berlin examined the sense of pitch of Erich Wolfgang Korngold, the most outstanding Wunderkind of modern times. (He is thirty now, and disappointing.) He found that Korngold could name chords of from four to five selectively discordant tones.

I have made similar experiments with Messrs. Alfredo Casella, the composer, Jesus Maria Sanromá, the pianist, Joseph Achron, the violinist and composer, Arie Abileah, a virtuoso on the Theremino-Vox, and others, all clairaudients of rarest powers. They easily passed the test of two and three notes, simultaneously struck, no matter how discordant. The first casualties announced themselves with the addition of a gratingly dissonant fourth note. Still the majority of guesses were correct. The fifth note-- maliciously disagreeable with the rest of the chord-- got them all. The jarring interference and the "beats" to which it gave rise must have formed a physiologically insurmountable obstacle to the correct perception of the tones.

The recipe for chords apt to create "beats" is very simple. Take several adjoining notes of the chromatic scale, distribute them liberally so as to form intervals of the major seventh and the minor ninth, and check on all chords that make any sense. Schoenberg's tonal combinations are eminently suitable for such exercises. Then go to your nearest *wunderkind* or an orchestral monarch and try the chords over on the piano. If he succeeds in disentangling more than four notes at a time without looking at your fingers-- communicate with this writer at once.

