



MICROTONES

PLAY THE NOTES **BETWEEN** THE PIANO KEYS

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REEL EAR
Learn to play music by ear

MICROTONES

What are microtones?

We have a compound word - “micro” and “tones”. Tones refer to sounds and micro means very small. So microtones are very small sounds, but small is relative; so the question is small compared to what?

Let's dive deeper.

Sounds are produced when an object vibrates; those vibrations cause increases and decreases in air pressure, that humans perceive as sound. So we can now conceptualize sound as waves that move through the air. Different physical aspects of those waves can be measures objectively; their frequency, amplitude, spectrum and duration. The frequency gives us pitch, the amplitude gives us volume, the spectrum gives us timbre and the duration gives us length the perceived space/time the pitch occupies.

NOTES

Musicians frequently sum up all the above variables into one word – notes. When we play notes consecutively we get melodies and when we play more than one note at the same time we get harmonies – often called chords. Furthermore, a musical note might be named, such as A4, or described as a relative distance from another note, as in the terms intervals, semitones and cents.

To understand the dialog around the term microtones, we need to tease out the unstated reference for the subjective idea of small. To so we need to jump down the rabbit hole of temperaments and tunings.

Let's lay the foundation.

THE OCTAVE

It seems that all musical styles, everywhere on the planet, can agree on at least one important characteristic of sound – namely when we double a pitches frequency, we hear the new note as somehow being the same as the original note, only higher in pitch. The relationship between these two notes is called an *octave* and that relationship can be expressed as a mathematical ratio of 2:1.

EQUAL TEMPERAMENT

Pianos, guitars and other fixed pitched instruments have had a tremendous impact on how composers and musicians have organized pitches into music. Their construction, and subsequent popularity, has evolved with a particular form of dividing the octave into 12 equally spaced notes.

This system of musical organization is called *Equal Temperament* and is very new in the history of human music making. Although it's origins date back to the 18th century, it's widespread impact began to macerate at the beginning of the 20th century. It is the system the dominates much of formal music education through classic music conservatories around the world as well as many modern music schools and teaching studios. However, there are some very important notable exceptions to Equal Temperament.



EVEN SPACED NOTES

The Structure Of Equal Temperament

So how can you divide the octave into 12 equal parts?

The solution in Equal Temperament has been a ratio equal to the 12th root of 2 ($12\sqrt[12]{2} \approx 1.05946$). The resulting interval is the consistent distance between notes is referred to as a semitone; a semitone equals 1/12th of an octave. This same distance is often referred to as 100 cents. Therefore if the distance between semitones is 100 cents, the distance between a note and it's octave is 1200 cents.


Microtones are any distance between notes that are *less than 100 cents*; in other words they are any pitch that falls between the cracks on a standard, equally tempered piano.

And guess what? There is a huge, powerful world of music in between those cracks!

YOU'VE BEEN HERE ALL ALONG

Now is the time I should say “welcome to the world of microtones”, but that wouldn't really be appropriate, because other musical styles using microtones have been around for the history of human music making, all around the world. You have most likely heard music that didn't fully confine itself to the 12 equally distant pitches of equal temperament.

Down home blues, Indian ragas, classical string quartets, horn sections in swing bands, Old Time fiddling from the Appalachian mountains, Scottish bagpipes (or really any kind of bagpipe!) Sub Sahara African music styles, Arabic Maqams and just about any folk songs or folk music from across Asia, Africa, the Americas.....anywhere use microtones. And that's not to mention Renaissance and Baroque music ensembles and just about any type of choral music that has ever been sung.

A close-up photograph of a young boy with brown hair, wearing a light blue collared shirt and a dark grey school vest. He is holding a black clarinet to his mouth and appears to be playing. The background is a soft-focus mix of green and orange. The text is overlaid on the left side of the image.

So it's not “welcome to the world of microtones”, because you have been here all along – and now it's time to train your ears and build up your singing or instrument skills to fully develop yourself as a musician. It's time for microtone call and response dictations – the fast track to achieving your music goals.

READY TO GO FURTHER FASTER?

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