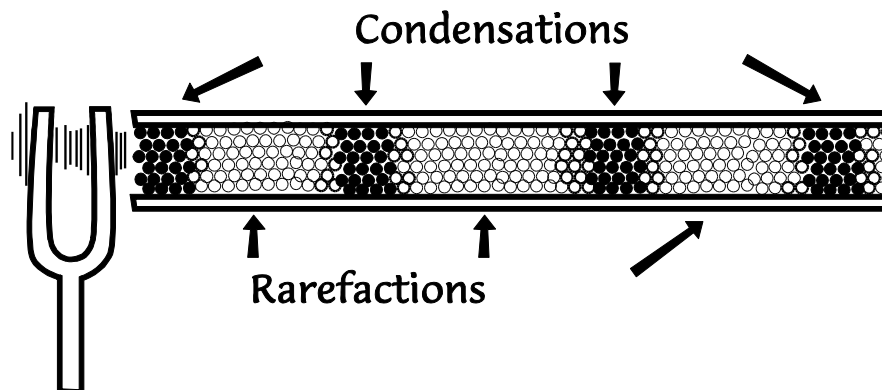




Sound is produced by vibrations

Almost anything that vibrates can produce sound. When something vibrates in air it pushes the air particles around it, forth and back, and those particles in turn push the further air particles around them, carrying the pulse of the vibration in all directions from the vibration source.



The vibrations cause the air pressure changes that are detected by a human ear or a sound sensor. The sound sensor converts them into an electrical signal registered by the computer.

Sound waves are called **longitudinal** waves because particles of the medium (e.g. air) through which the sound is transported vibrate parallel to the direction that the sound wave moves.

The way we experience sound depends on three: loudness, pitch, and timbre.

Loudness

The loudness of a sound results from the difference in pressure between the higher-pressure areas (high density of particles - condensations) and the lower-pressure areas (low density of particles - rarefactions). A greater difference in pressure (greater amplitude) results in louder sound.

Pitch

The pitch results from the frequency of the vibrations. Frequency, by definition, is the number of vibrations per time unit. A higher frequency gives a higher tone. The frequency of vibrations is not the same as the speed of sound. Different frequencies all travel at the same speed in the same medium.

Timbre

The timbre is what makes a sound distinct and recognizable as a particular instrument, voice, vowel sound, or just noise.