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Consider for a moment that you are walking through the woods. You hear birds singing, bugs chirping, and the occasional creaking of trees in the wind. These natural sounds are grounding; you may feel a sense of calm and relaxation. How do these sounds affect your brain? How do they affect your body? Now consider you are at a death metal concert: the heavily distorted guitar, loud drums, rough vocals. There are crowds of people around you screaming. How do these sounds affect your brain? Your body? Do they make you feel calm or aggressive and excited? Maybe something else? Whatever you feel in either situation, there is no doubt these sounds are affecting your mind and body.

Quantum physics tells us that all things are vibrating at some rate. Thermodynamics tells us how fast that vibration may be. Unless it is as cold as absolute zero (0 Kelvin) everything has vibration, even rocks; at the smallest level, the particles that compose the rocks are vibrating. The way the particles vibrate tell us what color the thing is and what it might sound like if it makes sound. When things interact, energy is released and more vibration is produced often causing a sound. When that sound reaches us, our ears, we naturally respond to it. If it is too loud, we cover our ears. If it is very quiet, we may lean in closer to hear it better. If it is harsh, we may become upset, but if it is soothing, we may relax.



But what about the sounds we cannot hear? Do they affect us? The human hearing range on average spans from 20Hz—20,000Hz. It has been documented that elephants communicate over long distances by stomping on the ground and creating a low frequency rumbling sound that we cannot hear, but they can. The Schumann resonance, which has been called the “heartbeat of the Earth”, is an electromagnetic wave that encircles the earth vibrating at about 8Hz. Astronauts have found that this frequency is paramount for life on earth because it directly affects weather patterns. Humans are electromagnetic beings (as shown by our brainwave patterns) therefore it is possible to conclude that removing the Schumann resonance from a human’s environment may be detrimental to his health.

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We have come to an understanding about these vibrational phenomena and can harness them with technology. Speakers are especially interesting when it comes to sound manipulation. There actually exists a type of speaker called an LRAD (long range acoustic device) which can focus sound and direct it to a specific point. A benign use of this would be at a museum where you have to stand directly underneath the speaker to hear the information being presented about the painting on the wall but no longer hear it when you step away from the painting. A less benign use could be riot control by the police. Because of its intense focusing ability, the speaker can reach up to 160dB and acts like a sound cannon. Depending on the frequency being emitted, it can also cause severe headaches and gastrointestinal distress when directed at someone.

There are many ways that sound affects us in our daily lives. Reduce the stress in your life by having your piano tuned so you may avoid being assaulted regularly by discordant sounds.