

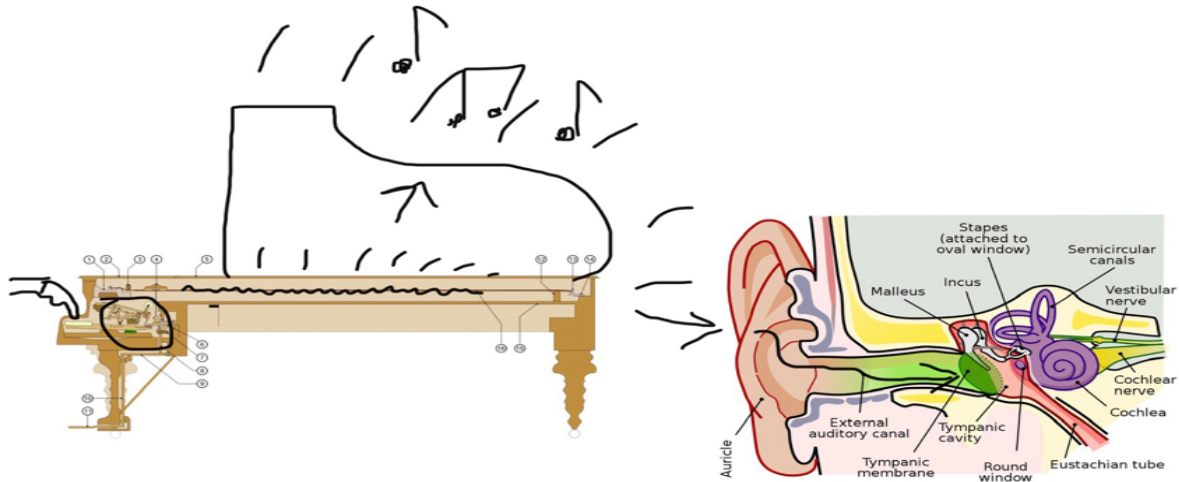
Do You Hear What I Hear?

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At the beginning of last month, I went to my Audiologist, Dr. Williams, at REM Audiology. One of her technicians performed a hearing test on me to see what condition my ears and hearing are in. We discovered that my ears are healthy and my hearing is immaculate! Upon completion of this meeting, I decided to investigate more about how our ears work. Dr. Williams kindly sent me some information to help with my investigation. After pairing what I know about pianos, and what information I have about the human hearing system, this is what I have come up with.

In contrast to the operation of a piano, the human ear starts with a sound, a frequency or group of frequencies, and turns it into a mechanical operation of parts within the inner ear that later transmutes the energy into an electrical operation. Sound goes into the ear and vibrates the eardrum, which then interacts with three bones in the inner ear setting fluid inside something called the

cochlea, in motion. The fluid moves tiny sensory cells in the cochlea called “hair cells” that recognize the motion of the fluid as electrical signals that are then sent to the brain for processing. Whew! Here is a video link for a visual: <https://youtu.be/7O-adw-HyrQ>



For a piano to make sound, the process is a complete mirror of the process we use to hear. First, we decide what sound we want to make, what music we want to play. An electrical signal comes from our brain to our fingers which strike a key or group of keys on the keyboard. This action sets in motion a complex set of levers that interact with one another to throw the hammer up to strike the string. The string vibrates and in succession sends that vibration into the bridge and eventually into the soundboard. The soundboard then wiggles, like the eardrum, and sends sound out into the world for someone to hear. What a stark contrast in operation indeed!

When it is said that we create based on what we see in nature, it is true to the “t”. The piano mimics the operation of the human hearing system almost completely but in reverse order. The only major difference is that there is no fluid involved in the operation of the piano and there shouldn’t be. (Please remember to keep any liquids far away from your piano whether it be a potted plant or your morning coffee.) Otherwise, we can see direct correlation between the the soundboard, bridges, and strings and the ear drum, the piano action and the bones in the inner ear, and the electrical influence either coming from the brain in a piano operation or the going to the brain in the hearing process. How exciting!

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