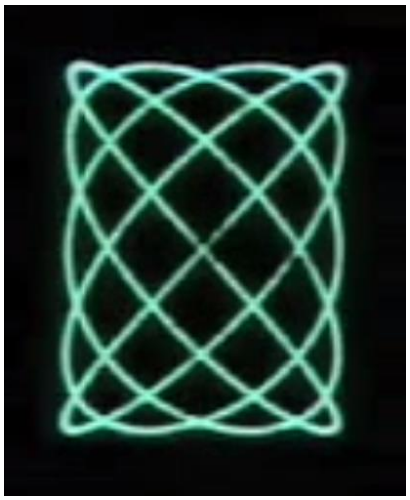
MUSIC IMPARTS BEAUTY AND ORDER TO THE PHYSICAL WORLD

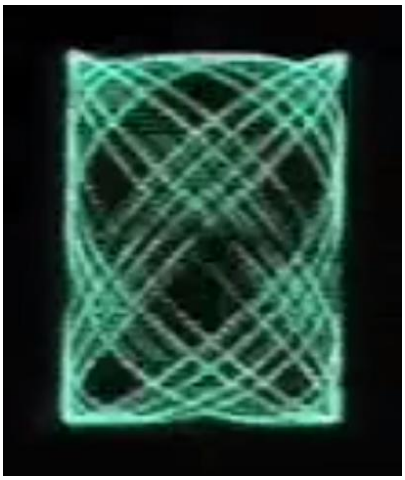
By Jason Poteet

Music can impart beauty, structure and energy to the physical world. However, not all sound is music. Some say the definition of music is subjective, that beauty is in the eye of the beholder. However, we now have tools to help us visualize the beautiful order that is true music. When properly tuned pure sine waves are played together in a major third and viewed on an oscilloscope, they form a beautiful structure:



Just Intonation Tuning

Is this not truly beautiful? Yes! Is it music? Definitely! Yet today we sacrifice this beauty for a different tuning system that allows an instrument to be played in any key but with a harsher sound. Compare the same notes in our modern equal tempered tuning:



Equal Tempered Tuning

Is this as beautiful looking? No. Does it sound as good? Again, no. One could even argue that this isn't truly music, yet it sounds relatively good compared to sound that is intentionally distorted in modern rock music etc. While this equal temperment it supposed to make an instrument tolerably playable in all keys, the tradeoff is that it not really in tune with itself in any key. This is the problem with modern polyphony. See www.justonic.com for a solution to this tuning problem using modern electronic MIDI instruments.

The branch of science known as Cymatics allows us another way to visualize the beautiful physical interaction of music on the world around us. A single pure note (e.g. an undistorted sine wave) can produce the most beautiful patterns in matter:

Pure Sound Orders Water

Pure Sound Organizes Rice

However distorted sound produces disorderly chaotic patterns:

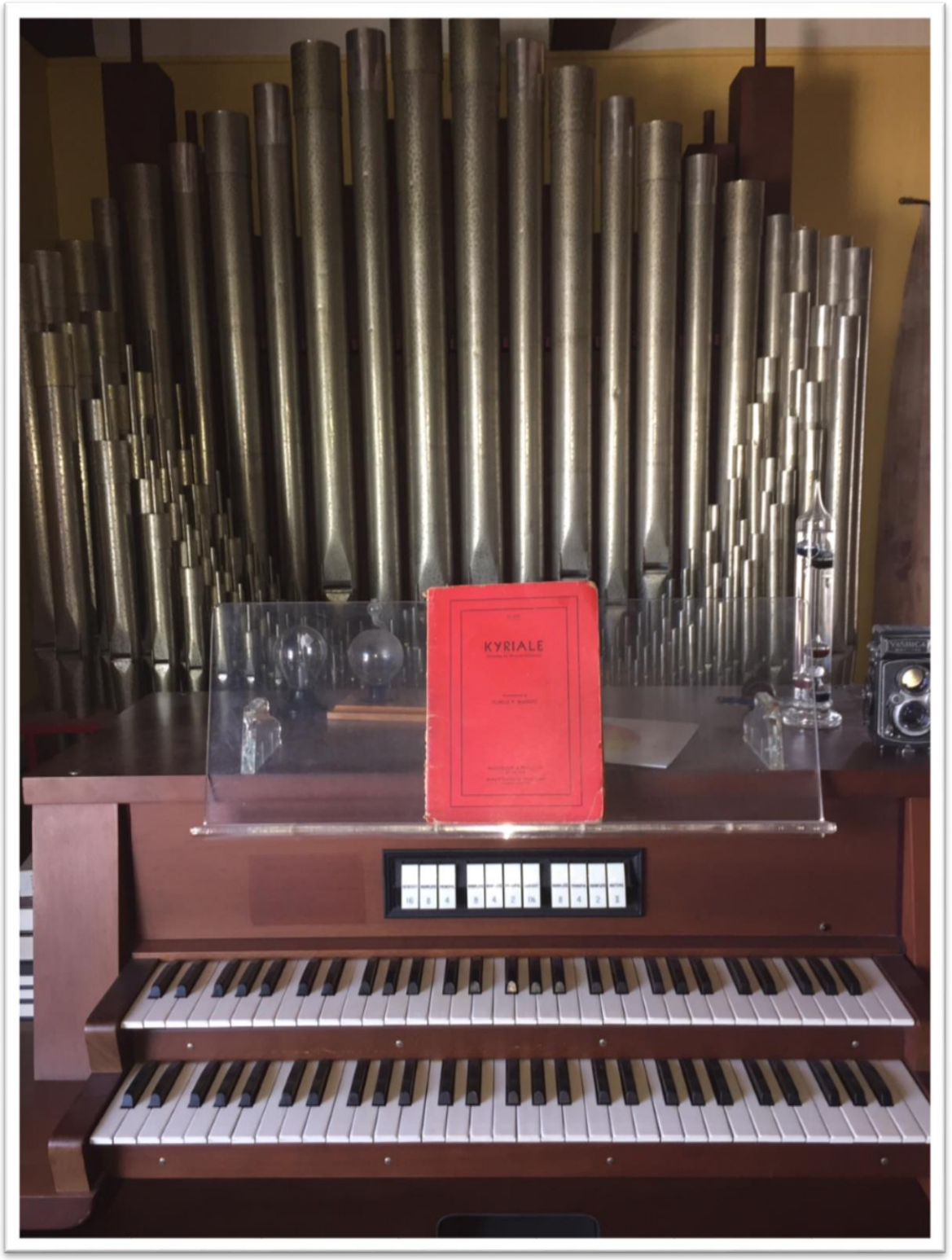
Distortion Guitar Imprints Chaos

Some of us might find distorted music energizing for a while because it makes us restless, but it is ultimately draining. It disorganizes our physical selves and disrupts our mind. It is up to us which one we choose – restful beauty or draining chaos.

Now that we've seen how music can affect our physical world, it is natural to wonder - can music organize the energy around us? Take a tuning fork, strike it and see how loud it is. Can you hear it without placing it to your ear? No – it is very quiet. But it can be amplified acoustically without using any additional energy. Place the bottom against a high quality sound board such as a violin. Notice how it is several times louder and doesn't noticeably shorten in duration. Where does the energy come from? Perhaps sound is organizing the natural energy around us such as Brownian motion. Sound can also cause other objects to resonate at a distance that are tuned to the same frequency. This can be seen by singing at the same pitch as a string, or the famous case of the glass being broken by a soprano. Is the singer quieter just because there is another object present that is tuned to the same pitch? No – the energy is not destroyed. This phenomena called sympathetic vibration also happens on a larger scale with building acoustics – an entire building can be set in motion by the correct frequency! Perhaps someday we will recapture the art of lifting objects with standing sound pressure waves or moving them with travelling waves. Music literally can change the physical world providing we are in tune with ourselves and our surroundings!

3D Acoustic Levitation

Tibetan Monk Acoustic Levitation



My Pipe Organ

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