WHAT IS SOUND?

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by Steve Deckert

Introduction

I became interested in sound through music as a child… like most of us. As I started building amplifiers later in life and forming this company, sound quickly became more than just music. The mathematics of sound itself, i.e. wavelengths of different frequencies and how they interact in a confined space became all important to me primarily in an effort to understand room acoustics.

My attraction to music is not the melodies of a song so much as it is the timbre and textures of musical instruments… the purity of a single note hanging in space with its beautifully complex decay is all I ever needed to be happy. Combining lots of these wonderful notes into a song was just a bonus. Cramming too many of these notes together into a song so that the complex decays are lost in the fog was and still is just a pain in my head. Where music is concerned, I've termed this preference "Horizontal Headroom".

I credit this probably odd preference for how I like to hear music to growing up as a child in an acoustically perfect church with a 300 year old German Pipe Organ at my disposal. I spent hundreds of hours playing with that Organ and almost 50 years later still can not find the words to describe that sound. It set the bar rather high and since the age of nine, I became extra picky about sound quality… and this is well before ever getting into the audio hobby.

Fast forward to today and I find myself trying to figure out a way to communicate how much more there is to sound than just amplifiers, speakers and music. It's not easy, but I feel compelled to try. It's what drives me and my passion for this wonderful audio hobby.

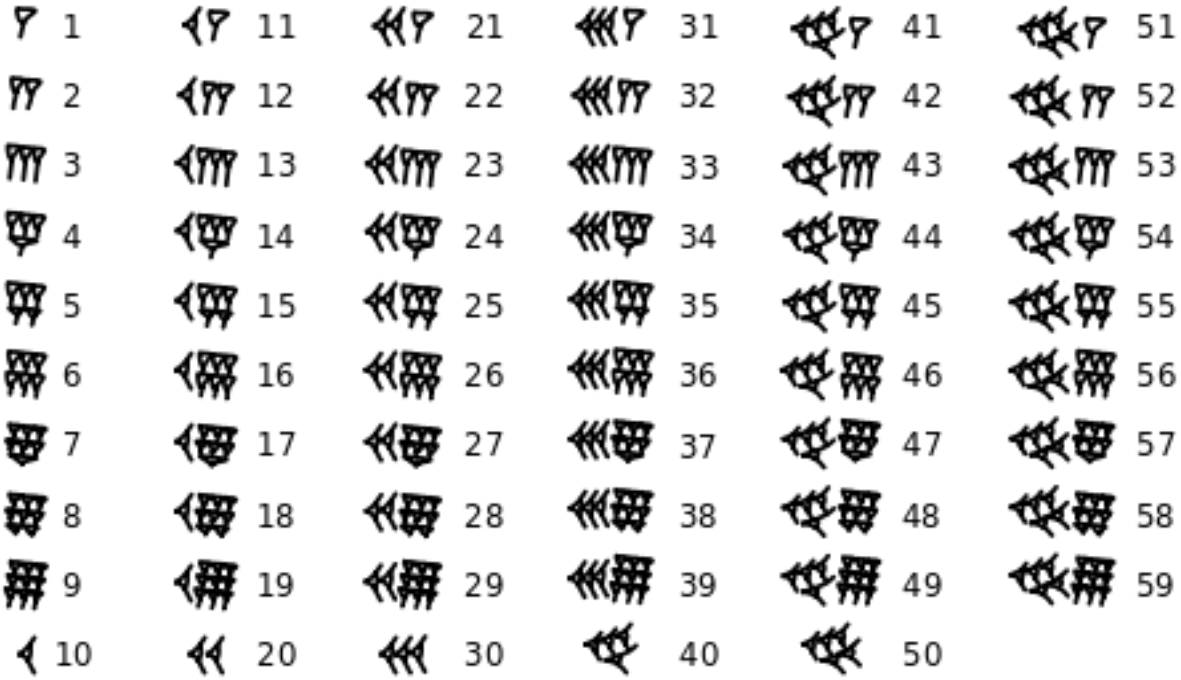
Sound the universal language

So we all know that sound is frequencies or vibrations that resonate at a given pitch but who came up with the increment of time by which the vibrations are counted? Where did " one second" come from and why is it the length of time that it is? Who created the notes that we use to create music and why were they placed at the frequencies that they are?

Mathematics, Geometry, Energy and Frequency are the universal constructs of a language that not only makes possible communication between races from different places in the universe but also communication across time and between all those who inhabit it and its creator. Sound is constructed from these four things.

The Base 60 Counting System

The first known counting system that we can find in history was called the base 60 and it was documented in ancient Sumeria. This is where we get the 60 seconds to a minute and 60 minutes to an hour.



The Procession of the equinox

There is a small wobble of the earth known as the procession of the equinox which takes 25,920 years to complete. It is a wobble unique to this planet. It is referred to as the “Great Year” which is divided into 12 months each consisting of 2160 earth years. This turns out to be the KEY to unlocking the mystery of our counting system.

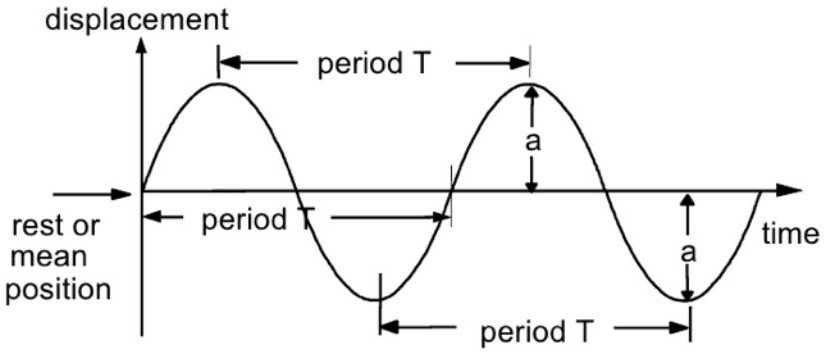
An equally profound formula accompanied this counting system which like the system itself was given to us by ancient extraterrestrials or perhaps God, and was used to calculate many things.

It is called F = 1 / T. (Frequency = one particular something divided by the number Time.)

By using this formula in the most basic way lets make the number for t (time) the most logical choice which is 60. Then let’s take the longest cycle on our planet, the Great Year as the Frequency and see what happens when we solve the formula:

25,920 / 60 = 432 Hz.

Our answer to the formula comes to 432 Cycles Per Second (Hz). This number 432 is also 2160 divided by 5. (*side note: Our Moon measures 2160 miles in diameter*)



Period *and* ***amplitude*** *can be read from the graph.*

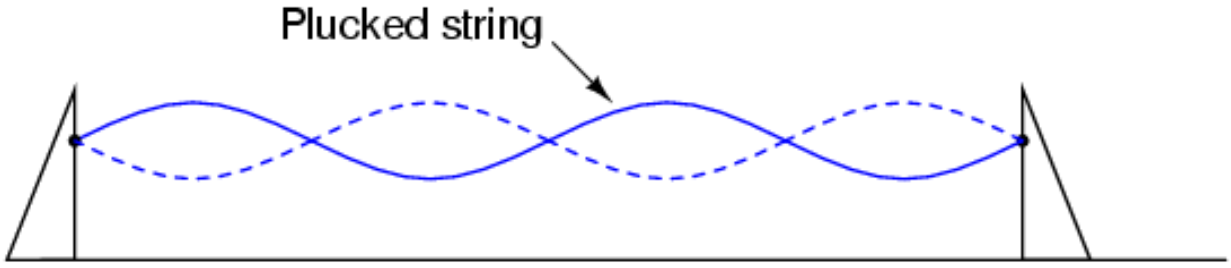
Frequency of the wave can be calculated from period read from the graph.

$$f = 1/T$$

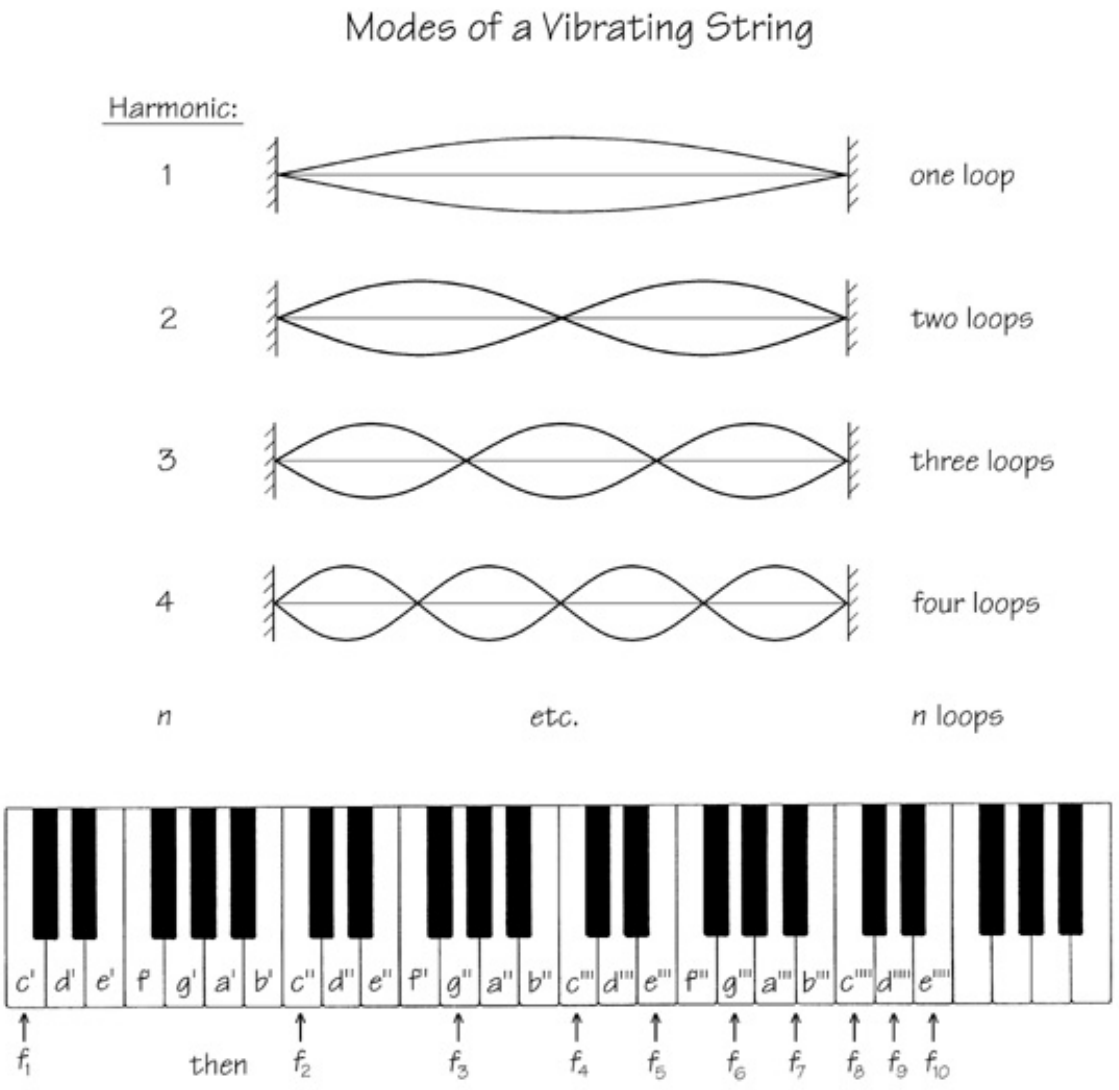
It is also interesting to note that if you take the zero off 2160 so that it becomes 216, that is exactly half of the number 432.

Pythagoras and Harmonic Fifths

Pythagoras saw that when a string was plucked it created a pitch based on its length and when the string was shortened to half its length, the pitch doubled. This resulted in his eventually coming up with tunings based on harmonic fifths!



So what the hell are harmonic fifths? Well pretty simple really… Harmonic Fifths come from dividing the length of the string in half, by three, by four, and so on. See, when you pluck the string you hear the Fundamental tone of the string, but you also hear smaller sounds from the string that come from each of these higher frequency multiplications of the strings length. This is the physics of anything which vibrates. Ironically everything vibrates. There is nothing in the universe that doesn't vibrate at a specific frequency.

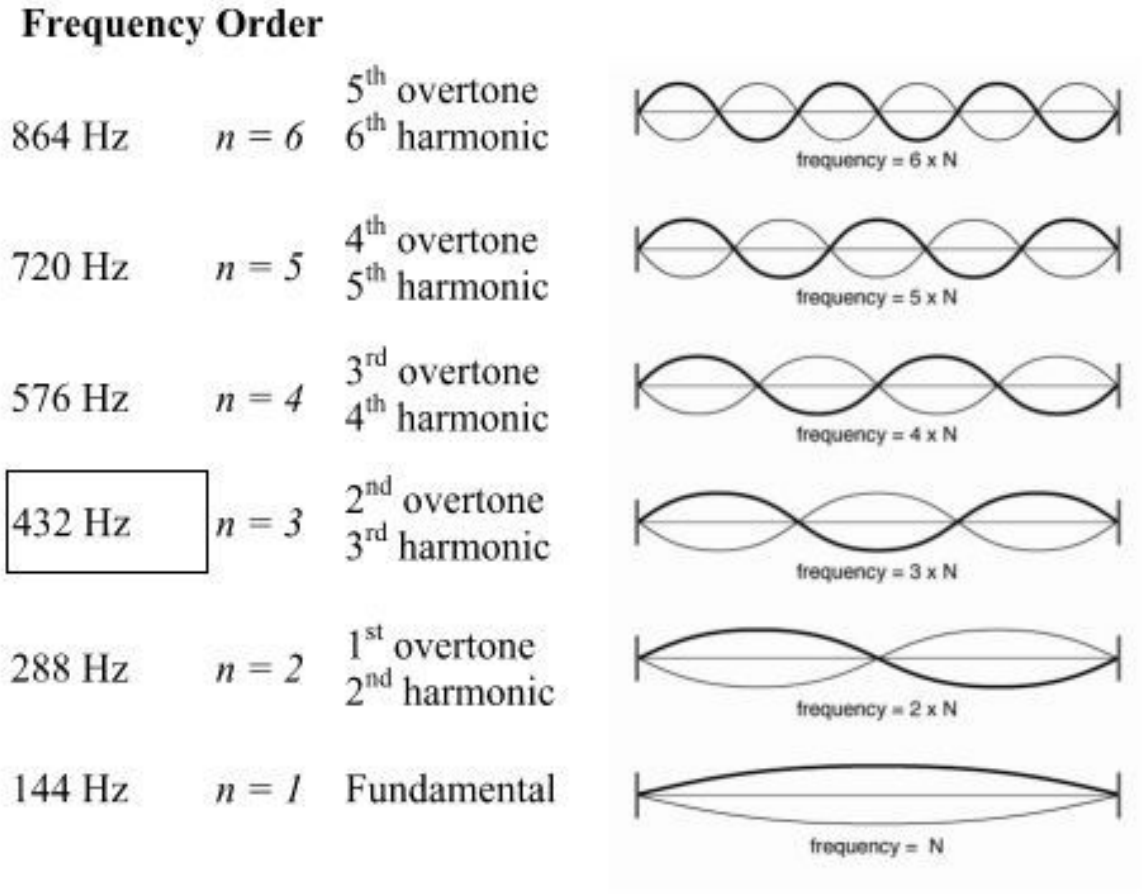


If the first harmonic of the string is tuned to middle C (c'), then the frequencies $f_2, f_3, \cdots, f_{10}$ correspond to the notes shown above.

The 432 Musical Grid

The end result of the Pythagoras Tuning system is built on 432Hz also know as the 4th octave "A" on the piano.

Recently, astronomers at Stanford University found the fundamental frequency of our sun to be 144 Hz. The 2nd Overtone of 3rd Harmonic of this fundamental pitch is 432Hz.



So you can begin to see that the musical notes are inexplicably linked to to astronomy as that is what determined the increment of time that we use measure frequency or pitch. We can be pretty sure Pythagoras didn't have the ability to measure the frequency of the sun, yet he came up with the correct core frequency for tuning because it is paralleled across so many things.

Below is the resulting grid that Pythagoras used to create all the musical notes we have used since. Some have referred to this as the "Factor 9" grid since each number on the chart is an increment of 9. This is the mathematical grid that all music was based on from Pythagoras' time until the 1930's when it was maliciously changed to a grid built on 440 Hz.

"Factor 9" Grid Built on 432

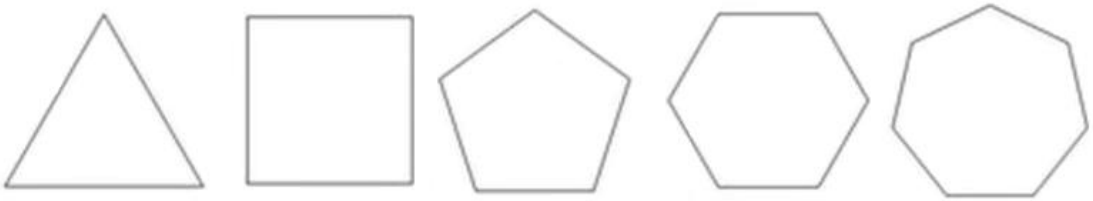
C	126	252	504	1008	2016
C#	135	270	540	1080	2160
D	144	288	576	1152	2304
D#	153	306	612	1224	2448
E	162	324	648	1296	2592
F	171	342	684	1368	2736
F#	180	360	720	1440	2880
G	189	378	756	1512	3024
G#	198	396	792	1584	3168
Ab	207	414	828	1656	3312
A	216	432	864	1728	3456
A#	225	450	900	1800	3600
B	234	468	936	1872	3744
B#	243	486	972	1944	3888

This is the grid that determined how music notes are defined, where every note in each octave is exactly separated by a factor of 9 Hz. Every number on this chart can be considered Sacred since it comes from the mathematics of the universe and is anything but randomly selected frequencies. It's not surprising that humans are so drawn to music.

The Sound of a Triangle

Did you know that simple geometric shapes have sound? They do… you simply convert degrees to Cycles per second (Hz). So a basic triangle has 3 sides. Each side is a **60** degree angle so you simply add all three sides and you get 180 degrees or the frequency of 180 Hz. So the sound of a triangle is a pure tone of 180.0 Hz. See that 60 is the base counting system we talked about, and 180 appears on the "Factor 9" chart.

The next geometric shape or in this case shapes is a circle and a square both which total 360 degrees or a pure tone of 360Hz. It turns out that all geometry whether it is two or three dimensional is derived from base 60 mathematics!



180 Hz F# | 360 Hz F# | 540 Hz C# | 720 Hz F# | 900 Hz E#

Notice that all of these numbers can be found on the chart.

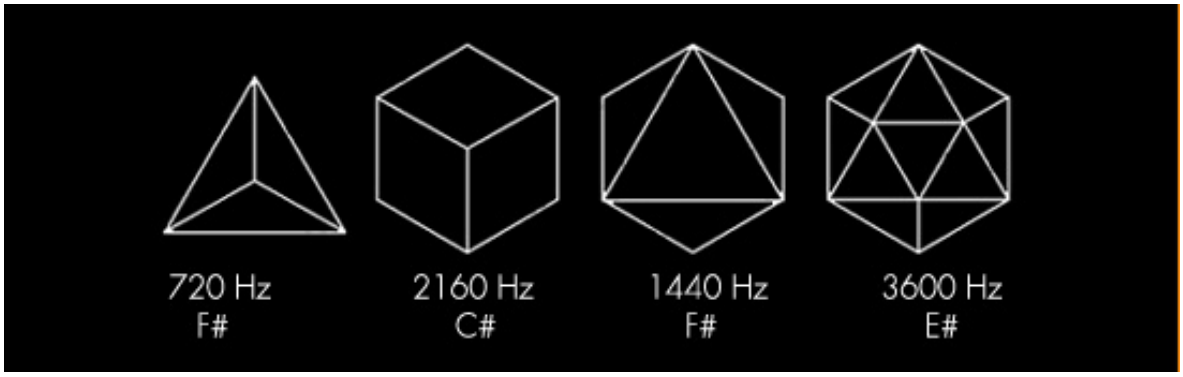
1080 Hz
C#

Remember that each of these shapes when the total angles are summed always equals a sound that represents only that specific geometric shape. So if we continue, a pentagon has five sides who's angles when added together equal 540 Hz.

The hexagon is 720 Hz, the 7 sided heptagon is 900 Hz and the 8 sided octagon is 1080Hz.

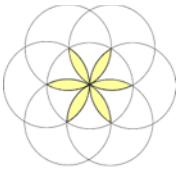
Platonic Solids

From these basic shapes there are four platonic solids that form the 3 dimensional elemental building blocks of life. They are the Tetrahedron, made up of 4 triangles who's summed angles total 720 Hz or F#. Then there is the cube who's summed squares equals 2160 Hz or C#. Interestingly there's that number (2160) again.



The 3rd of the four platonic solids is an Octahedron constructed of 8 triangles, its total angles equal 1440 Hz which is another perfect F# higher up the scale. Finally the Icosahedron is made up of 20 triangles so the total degrees is 3600 Hz or E#.

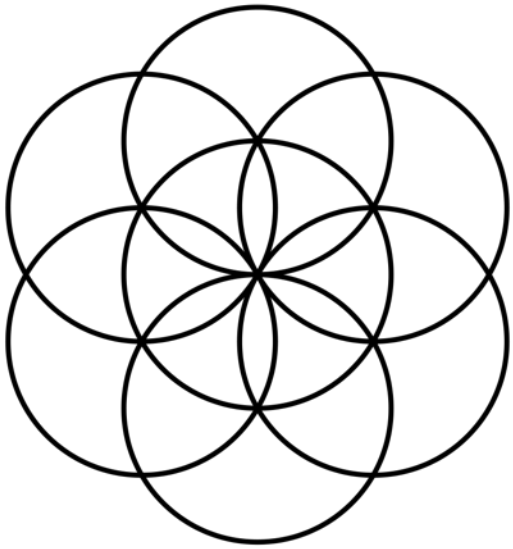
So now that you're seeing how geometry is frequency based let's look at the what happens when you create 6 circles also know as the "seed of life" referred to repeatably in the sacred geometry of antiquity.



It gets more interesting. What happens when we take this sacred geometric symbol and apply it to frequency.

Seed of Life

If you start with one circle which is 360 degrees (Hz) and then add a second circle you have 720 Hz. Adding a 3rd brings you to 1080 Hz (the harmonic 5th of C#). Four circles brings you to 1440 Hz (another F#) and five circles totals 1800 Hz and finally the sixth circle brings us to **2160** Hz.



What all this has in common is that we have 2 dimensional geometry, 3 dimensional geometry and even sacred geometry all being perfectly represented by an F# major chord based on the factor 9 grid of 432 Hz.

It is important to note that the 432 factor 9 musical grid contains all of the geometric shapes of nature shown in the previous illustrations. It is equally important to understand the when the grid was changed to 440 in the 1930's, not one geometric shape is represented.

Remember that 2160 Hz was the frequency of both the sacred geometry's germ of life we just described, but also of the cube. Notice that without the zero it is exactly half of our magic number of 432 Hz, or 216 Hz.

2160 divided by 2 is 1080, the angle sum of an octagon. 2160 divided by 3 is 720, the angle sum of a hexagon. 2160 divided by 4 is 540, the angle sum of the pentagon and by 5 is the key tone of **432** Hz. Divided by 6, 2160 equals the angle sum of 360 Hz, which is the angle sum of the square and the circle.

Our sun is 864,000 miles across. Incredibly our moon's base number sequence is exactly half of 432 while our sun's number sequence is exactly twice 432.

There are 86,400 seconds in a day which is 43,200 seconds in 12 hours. If you take the 360 degrees of our sun or moon and multiple it by 12 hours you get 4320.

432 is the only whole number that when squared comes within .01% accuracy of the speed of light which equals 186,624

For all of this to work out and be completely keyed on the 25,920 year earth cycle is not possible for man to have achieved so our counting system and music is therefor divine.

The great controversy.

One of the things that lead me to discover all this stuff about 432 Hz was coming across an article about how the tuning was changed in the 1930's to 440 Hz. Very little explanation as to why that particular pitch was chosen as a world standard, but the simple fact that this new musical scale no longer contains a single note found in the chart (making virtually everything I've written so far pointless) could only be the demonic actions of a shadow government.

My take away from this newfound knowledge was simply hey… if they don't want us to hear these frequencies they must be self-empowering and good, and now having looked into it, I can see I was right.

A similar experience with my discovery of Solfeggio frequencies, of which there are 9 tones used in antiquity for healing and meditation. Apparently these were deleted from the Bible like so many important things were. Once again, if someone has gone to the effort to suppress it, I want to know what it is. Interestingly this group of frequencies do not appear in the chart, except for one, 396Hz.

Harmony

When you ponder all of this for any length of time, you realize that music and harmony are what underpin creation, life, the spin of your molecules, everything you experience. It suggests to me that physical matter is nothing more than energy that is stalled or frozen. What freezes it or unfreezes it is frequency, so the term holographic takes on new meaning in so much as that everything you see and touch is an illusion that is being created by sound. It is for this reason that sound can heal sickness of the mind or body, can create matter from energy and energy from matter. It is the very quintessence or aether of our universe.

Sound Quality

As audiophiles it remains for all of us somewhat puzzling why some songs sound so good, while others sound wholly uninspiring yet have no real technical faults or reason to explain why. I believe one factor is likely the specific tuning of the music you're listening to. Most is going to be pitched around A = 440 Hz and sadly even if that pitch is only fairly close, it's never going to accidentally slide all the way down to 432 Hz. Even music tuned at 432 when played back could be 432.5 or 433 or even 431 due to errors in the recording and playback equipment.

As an experiment I have been able to transform the sound of reel to reel tapes from tapes that sounded dry and uninspiring into tapes that sounded incredible by simply changing the pitch. For example, if the music was tuned at 440 Hz, I could adjust the tape machine to 0.9818 speed to bring the pitch down to 432 Hz. Of course you never know how accurate the calibration tones are going to actually be on a tape, so you will often have to dial in the exact 432.0 Hz by ear. It's done by simply fishing for it until you hear the sound start to sound right for lack of a better term.

Summary

So I guess my purpose for writing this article is to point out the sound is a lot more than something we listen to in our every day life. Sound IS life as we know it. The more you understand it, especially how it behaves on a quantum level, the more you understand God. In thirty years of casually studying sound I have run into hundreds of specific claims where sound was the technology behind everything from anti-gravity to healing DNA.

Listening to well recorded music, especially in a divine pitch on a stereo system good enough to replicate the depth of each note and the space around it is like a powerful drug once you get it right. Like all drugs there is side effects. In this case the side effect is increased health. Also in some cases it has been reported that this can lead to higher forms of consciousness which will certainly put you at odds with most governments.

- Steve Deckert / DECWARE