

~ A=432Hz: Truth, Lies and Creative Story Telling ~

Rich Goodhart, July 2015

Most of us in the Sound Healing community, as well as many in the New Age, energy healer, esoteric spirituality communities at large have likely heard about the mystical or sacred tone and tuning of the reference note A to the frequency of 432Hz. There is quite a bit of information spread all over the internet on websites and videos about this phenomena, including all sorts of historical references, health effects of 432 vs. 440, and even mind control conspiracies involving Joseph Goebbels and the Nazis and the shady workings of a former United States military man named JC Deagan.

Let me get straight to the point: *nearly all of this information is blatantly false.*

This may be unfortunate for those building careers as mystics or healers using the esotericism and mystique of 432 as one of their foundation blocks, however it is up to them to allow in new awareness and let go of where they have been misguided. For those who knowingly propagate these lies in order to sell products and services, it is up to us not to buy into them, as well as to speak the truth and raise the collective awareness when opportunity to do so presents itself.

Aware of the opportunity and risk of writing a very long and detailed article here, I will instead attempt to keep it reasonably brief and more simply cover some of the primary claims and evidence.

Oh, where to begin.....

~ First off, many in the "432 movement" speak of a "return to the former tuning standard of A=432Hz", turning back from the international conference in 1939 that set A=440 as the standard (thus initiating all sorts of modern ills, intentionally or not, through this "unnatural vibration", or so 432 proponents claim). REALITY: There NEVER was a standard of 432Hz agreed upon by countries, cultures or concert halls in known recorded history. The only historical records we have of 432Hz as a tuning standard are it being proposed in Brussels, Belgium in 1876, and again in Milan, Italy in 1881. Further, A=440Hz has been around as a reference pitch in a number of locations in Europe since at least 1812 – well before Goebbels, Deagan or the Nazis were even born. The truth is, the "standard" pitch for A has historically been all over the place, from approximately 370Hz on up to at least 455Hz, but almost never 432Hz. (In Germany, some early simple pipe organs had an A as high as 567Hz!) Some concert halls in Europe still use A=444Hz and throughout the 1800's it was anywhere from about 422Hz up to 452Hz , though never officially 432Hz, except possibly in Italy in the early 1880's.

The history of pitch standards is an extensive one and it would take several pages to even briefly discuss it here. Search the internet and see the links below if you are interested to know more. I'll simply add that in 1859 a French government commission made A=435 the law in France, and in 1896 Britain made A=439 the standard in that country. There continued to be no standard in North America well into the 20th century. A primary basis for choosing A=440 was as a compromise between opera singers who preferred a lower pitch standard to preserve their vocal health and orchestras and instrument makers who preferred a higher pitch standard as it made instruments brighter, project further and fill increasingly larger concert halls more effectively.

~ CLAIM: Mozart tuned his piano to A=432.

REALITY: Mozart used an A=421.6 fork as a tuning standard. (Some note the tuning fork that was owned by Mozart as measuring at A=421, other sources round it off to A=422.)

~ CLAIM: Stradivari made his violins to be tuned to 432Hz.

REALITY: There is no known documentation of this intent. Again, there was no 432 pitch standard in his day for musicians to be tuning their violins to. What we do know is that with one carefully disassembled

Strad, the front plate had one of several tap tones at a C=512Hz, which would relate to an A=426.66 in Just intonation, 432 in Pythagorean 5ths, and 430.5 in Equal Temperament. But do we even have any idea that this is what Stradivari was aiming for with that tap tone, and if so, why? (Classical string ensembles are usually playing in just intonation for the aim of good harmony and soloists and lead melody aim for both just intonation and Pythagorean 5ths, as well as expressive intonation, depending on what notes, harmony and emotion they are playing.) Pitch standards were generally much lower than A440 during Stradivari's "golden years" of instrument making (1700-1720's), but they were also much lower than A432. Known references from that period mostly fall into the 404Hz – 415Hz range. The tuning fork was invented by British musician John Shore in 1711 and one of his forks is still in existence which measures at a pitch of A=423.5Hz, sitting at the higher end of the common range of that period. Why would we have justifiable reason to surmise that Stradivari was making instruments designed to be tuned *much* higher than the tuning practices of his day? Most importantly however, it is *not* desirable to have the resonant tones of a violin match the string pitch and reference tuning as you then get annoyingly exaggerated notes called "wolf tones", which are a very real problem with violins. Instead, you want the instrument resonances to be off scale, or in between the scale tones, ideally around 20 to 40 cents off. If there were any evidence of intent to be found in that 512Hz tap tone it would more likely be that Stradivari was expecting his violin to *not* be tuned to an A=432 reference.

~ CLAIM: Pythagoras and the ancient Greeks tuned to A=432Hz.

REALITY: Pythagoras mathematically figured out scales and tuning using numbers as ratios but *not* as measured frequencies in Hertz, i.e., cycles per second. Beginning with the number 1 and then doubling for octaves (2, 4, 8, 16, 32, 64, 128, 256, 512 etc...), we get a note of 128. Beginning with C=128 and using Pythagorean 5ths (aka Twelve True Fifths) tuning we do get an A=432. But again, Pythagoras was using convenient and logical whole numbers as *ratios*, NOT measuring frequencies nor tuning to those numbers as cycles per second frequencies of sound waves.

There are two primary reasons for this:

1. Pythagoras did not have the technology to measure the frequency of sound waves.
2. Pythagoras and the ancient Greeks did not measure time with the unit of the "second", as that unit of time measurement had not been created yet!

(A review of tuning systems and practices is a whole other very lengthy discussion, but it should also be noted that "Twelve True Fifths" doesn't create a perfectly tuned 12 note scale – it actually results in one badly out of tune interval as well as other intervals, particularly 3rds and 6ths that are not in good harmonic tuning with each other. 'A' is the Major 6th of 'C'. To begin with a C=128, we get a G=192, D=288 and A=432 in this system. The octave of C128 is C256. The perfect Major 6th of C256, in a naturally tuned ratio of 5/3, is actually an A=426.66. The mystical 432 is way out of tune with this. Any master string player or vocalist, or any master musician on an instrument with movable pitch will be playing that A426, *not* A432, in true and natural harmony with C256.)

~ CLAIM: Ancient Egyptians tuned their instruments to A=432Hz.

REALITY: False again. Not only no historical evidence of this, but also no evidence they were measuring sound vibrations in cycles per anything, let alone the unit of time we call the "second", which, like the ancient Greeks, they didn't have.

~ CLAIM: "Even the Tibetan singing bowl is tuned to 432Hz." (Actual quote from a 432 website).

REALITY: Again, entirely false. For one thing "*the* Tibetan singing bowl"?? There are thousands of bowls, hundreds of forms and styles of making them. Most bowls have very complex harmonics and none have a pitch reference standard.

~ CLAIM: "Shamans and even other religions use the 432Hz tone in their songs, during the Ayahuasca healing ceremony." (Actual quote from a 432 website).

REALITY: More complete untruth. The ayahuascaros and other shamans are working with the tones of their voices as they exist for them in that moment. They are not working with a universal "perfect pitch" sense that magically tunes them into a 432Hz reference. There is no common standard of pitch or tuning in their ceremonies and singing.

~ CLAIM: "...the sounds, birds, frogs, running water etc... These sounds consist of vibrational frequency, which is measured in Hertz (Hz). All of these natural harmonics vibrate at 432 Hz, and it's the natural frequency of the universe." (Actual quote from a 432 website).

REALITY: Complete nonsense that the sounds of birds, frogs, running water etc "vibrate at 432Hz". The sound of running water is a dense complexity of frequencies that is essentially "white noise", without any clear measurable tone, and there are infinite versions of the sound of running water. Birds have no perfect pitch or pitch standard reference exhibited at all. Additionally, "the natural frequency of the universe" is an absurdly nonsensical statement with absolutely no grounding in anything observable. We have not found nor measured any fundamental or "natural" frequency of the universe. The universe is comprised of all possible frequencies. Will we someday discover a primal vibration at the root of all of creation? Will we someday find the original "Om" vibrating somewhere in space and be able to measure it? Maybe. How cool would that be! Will it be a 432Hz tone? *Probably not.....*

Some info regarding measurement of time and measurement of sound wave frequency in cycles per second (or Hertz, abbreviated as Hz):

The unit of time that we call the "second" was introduced conceptually by the Persian Muslim scholar and mathematician al-Biruni around 1000AD. The "second" means "the second division of the hour by 60". The earliest clocks to display seconds didn't appear until the last half of the 16th century, though they were not accurate. Pendulum clocks created in 1644 by the French philosopher, mathematician and music theorist Marin Mersenne provided the first known accurate measurement of the second. Mersenne also was able to make rough measurements of low tone frequencies, and Joseph Sauveur improved on the accuracy in the early 1700's, however such measurements did not become scientifically accurate until the 1830's, beginning with the work of German physicist Johann Scheibler. Prior to this time, the actual frequencies of tuning forks owned or used by Mozart, Handel and others were generally not known to their users. DaVinci developed the idea of sound waves around 1500 and Galileo demonstrated this idea around 1600. Any reference to sound waves being accurately measured, or instruments tuned to any vibrations per second numerical standard before this time in recorded history are not true.

It also needs to be noted that frequency measurements are not "real" in that they are not actually indicating a phenomenon that contains anything numbered. The notes that we call 432 or 440 or 528 etc do NOT have those numbers associated with them in the actual manifestation of the phenomena. There are no 432 of anything happening in a 432Hz tone. It is ONLY a measurement of rate or speed made against the artificial time grid of the unit or space of time we call a "second" that gives us a numerical identity. Only if we are listening to a sound for precisely one second will we be experiencing 432 vibrations from a 432Hz tone. Virtually never do we experience music in such a manner. Sound and music are vibration happening in various and complex ratios, but NOT in numbered quantity, thus rendering any imagined or possible mystical or sacred quality associated with the number 432 meaningless in relation to listening to or otherwise receiving sound and music vibrations.

A particular leaf having five points, or a cluster of seven pine needles on a certain species of pine tree are actual "real" numbered phenomena.... not so with sound waves.

One other piece of "cosmic evidence" that is often presented in support of 432 that I'd like to address here: Precession of the Equinoxes

~ CLAIM: $432 \times 60 = 25,920$ which in Earth years is the time length of Precession. This has also been presented with the support of Saturn's year of 30 Earth years ($432 \times 30 \times 2 = 25,920$.)

REALITY: Precession of the Equinoxes actually takes 25,772 years. Additionally, Saturn's year is equal to 29.46 Earth years, not 30. So the numbers need to be "adjusted" to make it appear as a cosmically perfect ("the natural frequency of the universe"??) alignment with 432.

Ironically, (or maybe it's the cosmic joker at play) If we do the math using the correct precession number of 25,772 and a Saturn year of 29.46 we get 437.41 – a lot closer to 440 than 432. If we use the incorrect precession count of 25,920, which is needed to make 432 neatly work, and use the accurate Saturn year of 29.46, we get a result of 439.92 – which for practical purposes *is* 440!!

Finally, and in my experience as well as that of my most respected teachers and colleagues, there is no “sacred” note or special tuning magic pill to be found. The reality of music and sound and their effects on life, health and healing are far more complex than any particular note or reference pitch standard. One's state of consciousness ultimately comes from within and it comes from finding balance and flow in relation to the countless phenomenon existing all around us and moving through us. The consciousness, attunement, awareness, intent and skill of an artist determines the energy transmitted, not reference pitch. The conscious, cultivated and intentional (and even occasionally accidental!) use of sound can be a very potent, sometimes even seemingly miraculous, healing tool. The best sound healers I've ever known or experienced spent decades cultivating their art, often with the assistance of deep and profound life initiations. Their art and skill was never about simple fixes or “magic pills”, nor adherence to any sort of external, imposed structure or contrived dogma. That there may be cultural programming and societal mind control perpetrated through modern music as some 432 proponents claim is not what I am arguing against. But it's existence is in the lyrics, rhythms and other design factors of the music, NOT in the reference pitch - AND it only works if you unthinkingly subject yourself to it, like is also possible with TV commercials, “reality” TV shows, corporate news, etc, etc, etc. Lowering the pitch reference by 8Hz - to a *new* standard, not an old one - isn't going to change any of that.

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Notes:

In regard to the various 432 claims, I have no interest or need to call out anyone by name. Between websites, YouTube videos and various blog and forum postings, there are probably hundreds of opportunities to read or hear the same or similar claims – a large amount of which are simply copying and pasting the same material without applying any original or critical thought. These pages are easy to find, and if you are reading this article then you may well be already informed of the “cosmic attunement” of the “mystical” 432Hz. Regardless of their proliferation, repeating falsehoods countless times does not make them true.

I will note the name of Leonard Horowitz who makes some rather grand claims regarding A=440, however he proposes A=444 and C=528 as the “natural” frequencies, *not* 432. Yes, there's a 528 “movement” too. The writings of Mr. Horowitz is a discussion in itself and not for the scope of this brief article. You can easily find plenty about his ideas on the internet.

It may be noted that Greek mathematician Ptolemy actually described the second as 1/60th of a minute around 150 AD. However he was measuring space, i.e., one degree of angle divided into 60 minutes, divided into 60 seconds. He was *not* applying it to the measurement of time.

Italian opera composer Verdi did propose A=432 in the late 19th century as a slight lowering of the French 435 standard, for vocal reasons. There is no evidence that he did so for philosophical, spiritual or cosmic reasons.

As mentioned, using Pythagorean 5th's as a static tuning system does not create in tune harmony throughout. In Just or Perfect Intonation, C=256 yields an A=426.66. In equal temperament, which is an imperfectly harmonized system of compromises designed so that pianos, organs and other fixed pitch instruments can be played equally in all keys, C=256 yields an A=430.5. In regard to Mr. Horowitz's numbers, A=444 and C=528 coexist in equal temperament. Ironically, in Perfect Intonation, it is A=440 that aligns with the “mystical” C=528. If we are going to explore the potential health or consciousness affecting properties of music, we might want to consider actual *naturally occurring* harmonic relationships rather than being caught up in anyone's obsession with abstract numbers.

One further note:

You may prefer your music detuned to an A=432Hz reference, even if the effect is simply the novelty of a new sound to your ears or the result of a placebo effect. That's fine and who am I to argue with that? Tuning anything down from whatever you are used to is going to give it a softer tone. However, using digital software on your computer to lower the pitch of recorded music (a practice the 432'ers use to provide “evidence”) does *not* give

you something "real" in terms of it being what you would have gotten if the musicians had tuned their instruments to A=432 in the first place. Changing the tuning on the actual instruments played changes the string tension, which also changes the tension being applied to the sound boards on guitars, violins etc which together changes the harmonic overtone structures of the sounds generated by those instruments. The same applies to vocal cord tension. Saxophones, flutes and many other instruments would also experience subtle changes in their tone. In a world with an international A=432 standard, instrument makers would be building their instruments and strings for optimal performance at that pitch reference which would also result in a different sound than an A=440 instrument lowered to 432. When you lower the pitch of already recorded music with digital software, all of the string and vocal tension and associated harmonics or sound profile etc of the original higher pitch *remain intact*. You are not getting a true sonic representation of what the music in question would have sounded like if originally performed with an A=432 reference tuning. And what if we lower the tuning to 431 or 433? You will not perceive a difference between those options and 432. Sorry, but there is nothing special, nothing natural, nothing mystical about an abstract number within an abstract measuring system.

Sources:

http://wam.hr/sadrzaj/us/Cavanagh_440Hz.pdf

<https://www.piano-tuners.org/history/pitch.html>

(This article, while containing an extensive listing of historical pitch standards, does contain one glaring error: the statement that Pythagoras used a pitch of 256Hz on his monochord. Again, Pythagoras calculated ratios, not pitch. He did not have the time unit of a 'second' nor did he measure the vibration of sound in cycles per anything.)

<http://www.dolmetsch.com/musictheory27.htm#chartofpitch>

Chart based on: Ellis, Alexander J. "On the History of Musical Pitch," Journal of the Society of Arts, (March 5, 1880). (In this chart we see mention that 432 was *proposed* as a pitch standard in Brussels, Belgium in 1876. We also see the later claim that 432 was used in Milan, Italy in 1881, "at a musical congress in Milan as part of the Musical Exposition held in June 1881, it was decided to stabilise pitch in Italy at a'=432." This supporting information is not from Ellis, it was quoted from a post made in a Yahoo forum discussion 127 years later on March 16, 2007. The full post reads:

Hi Dan,

I am not entirely sure about the period 1890 to 1910, but in June 1881, at a musical congress in Milan as part of the Musical Exposition held that year, it was decided to stabilise pitch in Italy at 432. Immediately prior to that date, several Italian institutions, including the Istituto Musicale di Firenze (Florence) and the Teatro San Carlo in Naples had adopted French pitch of 435 (fixed by the French government in accordance with a law passed on 16 February 1859), while the Accademia di Santa Cecilia in Rome had adopted as its own pitch 450. *I am not sure when/if pitch in Italy was actually fixed at 432* and, if so, when it was raised to 440.

The answer to the first of these questions can probably be found in Giulio Ricordi's 'La Gazzetta Musicale di Milano.'

- Michael

(Note: I have not been able to verify when or if pitch was actually fixed at 432 in Italy, however, four years later in 1885 the first international standard was adopted in Vienna at A=435, of which Italy participated in and agreed to. - R.G.)

Yule, Doug. Violin maker at Violinista Studio, Seattle, WA, www.violinista.com

Pollens, Stewart. *Stradivari*, Cambridge University Press, 2010

Count Constantin. Artistocrat, Composer, Violinist & Bow Maker

<http://www.violinmasterclass.com/en/masterclasses/intonation>

<http://www.livescience.com/44964-why-60-minutes-in-an-hour.html>

<http://www.roelhollander.eu/en/tuning-frequency/goebbels-and-440/>

<http://www.phys.uniroma1.it/DipWeb/museo/uccu.htm>

https://en.wikipedia.org/wiki/Concert_pitch

https://en.wikipedia.org/wiki/Unit_of_time

<http://en.wikipedia.org/wiki/Second>

<http://nrich.maths.org/6070>

<https://en.wikipedia.org/wiki/Al-Biruni>

https://en.wikipedia.org/wiki/Axial_precession

<http://www.britannica.com/topic/precession-of-the-equinoxes>

<https://pds.jpl.nasa.gov/planets/special/saturn.htm>

<http://cseligman.com/text/sky/rotationvsday.htm>

<http://www.universetoday.com/44172/how-long-does-it-take-saturn-to-orbit-the-sun/>

(Note: There's a fair bit of rounded off approximate data as well as incorrect data posted on the web regarding the planets. One page rounded the Saturn year off to 29.5 and others to 29.4, which will give slightly different day counts. "Universe Today" has a posting from the year before the one listed above that erroneously says Saturn's year is 10,832 days, or 29.7 years. Even doing the math with 29.7 does not give us 432. I'd like to think that if anyone knows what they are talking about in regard to basic astronomical measurements that NASA must, and they say Saturn's year is 29.46 Earth years. Other sources extend the accuracy to 29.4571, equal to 10,759.22 Earth days.)

(**All websites accessed during or before July 2015.)