

## The tuning fork and the “Soundtherapy”

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### Abstract

*The knowledge of the magic effect of the 440 Hz is really ancient. “The music cannot improve without science”. Pronounced fifty years ago, nowadays this sentence appears almost obvious. John Pierce, the pioneer of musical electronic, well explains the meaning of this sentence The “sound therapy” stimulates the capacity of the human body to heal itself; in fact, through the irradiance of the sound it would happen the Energetical System, phenomenon called in this way by “specialists”.*

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Born in 1935, the English osteopath Sir Peter Guy Manners (departed August 21th, 2009) is considered, without doubt, the father of the “therapy of the sound” or “sound therapy”, from which it derives the “tuning fork therapy”.



While traveling all over the world (with the aim to find new methods out for the treatment of the patients), Sir Manners discovered step by step a variety of alternative branches of knowledge, which inspired him and took him to specialise in Natural Medicine and Magnetotherapy, and, then, graduating to the Academic

Diplomatique de la Paix (a naturopathy school mail order) and the Bio-energetic Medicine’s honorary certificate in Moscow (this one not recognised by the scientific community too) [1].

During that years, thanks to the meeting with the Swiss Hans Jenny, Sir Peter started a research in a relatively new area: “the therapeutic application of the sounds”. From the 1960s, Manners was exclusively focused on the use of audible voiced frequencies in several treatments. Sir Peter Manners founded the Bretforton Hall Clinic, a specific clinic in Evesham, in the Worcestershire, and it was here where he realized the first therapeutic equipment. The point of Manners was that the “soundtherapy” stimulated the capacity of the human body to heal itself; in fact, through the irradiance of the sound it would happen the Energetical System, phenomenon called in this way by “specialists”. The diseases Sir Peter Manners has been studied and treated are: chronic inflammation, bone calcification, arthritis’ pains, anti-aging treatment, and even bacterial/viral/bloody/ tumor infections (these last two just according to the engineer Benedick Howard) [2]. According to G. C. Peyton, a Bio-energetic and Cimatic Medicine, Manners discovered more than six hundred

different healing frequencies; each of them is related to a different part of the body, a specific tissue, a specific organ, a specific gland, a particular pathology, a specific emotional or psychic status. According to other sources, the quantity of the programs present in the equipment for the soundtherapy would even be higher than seven hundred. Moreover, each program would count a combination of five different frequencies. In the range of usable patterns, it would also include frequencies come from the Flowers of Bach: these are “eterical body” ’s frequencies and frequencies for phantom “activations” and “spiritual purifications” of the DNA. The methodology, anyhow, would have the same result for every part of the body: it should be necessary to “get the organs or the interested part of the body listen” the specific frequency of their own wealth status, and, in this way, allowing the disharmonic area’s resynchronization between each part of the body and their own benefic normal frequencies.

To explain in details the soundtherapy’s principle of operation (also called cimatic therapy, cimatherapy or bio-resonance), Manners’ words could be helpful: “Generally, when you think about a sound you think about something has to be listened to. In the cimatic therapy, it is not exactly like this: it is literally to transmute and translocate precise sonorous frequencies in the tissues and in the structures of the human body. Every part and every organ of the body produces an harmony, a sound; this sound is very small and very tiny [3].

This tuning fork, actually, are not so different from that one used by musicians. Essentially, the variability is limited to the dimensions, and, consequently, there is an increasing of the notes spectrum which could be reproduced. The definition of “therapeutic” indicates simply a different usage of them. At this point, we have to take a step back to find out what the musical tuning fork is and when it came out.

Pythagoras used to say: “The geometry of the shapes is solidified music”. We are substantially made of materia (atoms, molecules, particles ect...), altogether with a vibrant energy. We have to say that more discovered kind of vibrations in nature all of them are multiple of eight.

In fact, 432 is a multiple of 8, as well as 72 (the percentage of water in the human body, or percentage of water in the planet, or still, the cycle of regular heartbeats for a minute). The frequency of 8 Hz corresponds to the infrasound produced by our brain when it is powerfully active (this frequency is called “Alfa”, that leads to a synchrony of both brain’s hemispheres, the right one with the left one. Even the ear, as well as other organs of the body, has a multiple of 8 as a frequency. The replication frequency of our DNA is even to 256 cycles (multiple of eight and corresponding to the “C” note in the tuning fork 432 Hz). We are made and organized on

the basis of specific frequencies that has to be respected in the musical practice. In this way, it could be found out the naturality which has been negated in the past. Some recent researches have demonstrated that these frequencies are much more natural frequencies, but, more important, they have value in term of wealth or, better to explain, they are able to “re-agree” to the listening, reactivating the natural vibration of the body, and, in this way, healing physical and psychic “disharmonies”. Here, we are talking about something that has to do with the musictherapy: music is actually a powerful way for the human being. After testing to tune different instruments with different highnesses, I can say that the guitar tuned with the tuning fork 432 Hz offers a warmer and more relaxing sound. I definitely tune my musical instruments with this tuning fork! [4].

“The music cannot improve without science”. Pronounced fifty years ago, nowadays this sentence appears almost obvious. John Pierce, the pioneer of musical electronic, well explains the meaning of this sentence [5]. It is not a case that the first thing done by thousands of musicians is to tune their musical instruments with a frequency of 440 Hz’ sound as model, denominated “reference tuning fork”.

Every frequency agrees and is tuned, let’s say it is harmonized, with each other frequency which has the first frequency’s multiple or under multiple value.

Therefore, all the multiple or under multiple frequencies gives the same note off, on every different octave. For example, if you duplicate the 261 Hz of a piano’s central C, you will obtain a frequency of 522 Hz, which is the frequency of the higher octave C. The sound is the same but more acute, and the two notes altogether resound out. These two notes, then, are “harmonic” to each other. (n.d.t.). This is the working principle of the octaves, which music and math co-operate together in.

On the basis of this principle, it is possible to combine together the astronomical and musical formulas [6].

In the Middle Age it was already come to know music has a strong link with the sciences, and because of it, music was included in the so called “quadrivium”: the four most important matters in school, altogether with arithmetic, geometry and astronomy. At that times, this famous Pythagoras’ sentence ruled: “The secret of harmony lies in the magic power of numbers”. This concept explanation comes from the verification that the perfect consonant intervals of eighth, fourth and fifth correspond to notes that have frequencies with whole small numbers ratios with each other. (C-C’, 1:2; C-G, 2:3; C-F, 3:4, con  $1+2+3+4=10$ , the magic number) [7].

The knowledge of the magic effect of the octave is really ancient. One of the mysterious inscriptions on the capital in Cluny’s Abbey in France recites: “Octavus Sanctus Omnes Decet Esse Beatos” – “The octave teaches the Holy Beatitude”. Then, the unit for the measure of the frequency, the Hertz, indicates the oscillations for a

second; therefore, affirming that the frequency of 194,18 Hz is twenty-four octaves higher than a cycle for a day, it means that duplicating 24 times the frequency of an oscillation in a day you will obtain 194,18 oscillations for a second (twenty-fourth harmonic). It corresponds to the basic “A” obtained on the chromatic scale starting from the “G”, 194,18 Hz [8].

Talking about it, there is much more to say:” *Musica est exercitium arithmeticae occultum nescientis se numerare animi*”, that means “Music is an arithmetic exercise of the mind which counts without knowing how to count”. Leibniz wrote these words, in the eighteenth century, maybe inspired from the Pythagorean idea that “the secret of harmony lies in the magic power of the numbers” [9].

However, when exactly is the tuning fork officially born? According to Sir John Hawkins (London, March 29, 1719 – London, May 21, 1789; musicians, essayist and pioneer of a new range of studies, that is musicology; father of the writer Laetitia Hawkins, he was a writer too, and also magistrate, president of the tribunal in Middlesex and, from 1772 onwards baronet too) (10), the shape of the modern tuning fork has been invented in 1711 by John Shore: he was a trumpet player who took place in Friedrich Haendel orchestra and he was one of the 24 musicians in Queen Anna’s orchestra; he has become famous for the trumpet solo during George I’s ceremony of coronation in 1714 and he also was a member of the real band for many years [11].

In Italy, this instrument is called “TUNING FORK ” and also “corista”, when in France they use to call it “fourche” or “fourchette”; in German, instead, it is called “stimmgabel”. At that times, the issues to be solved to obtain a pure and stable source of elastic vibrations were to succeed to obtain a pure sound: in other terms, a sound without higher harmonics for a long period of time. However, these conditions had not been satisfied, at least, contemporary by any other instrument.

Nowadays, the term TUNING FORK , which has different meanings in music, generally indicates an acoustical instrument able to generate a standard note which tuning the musical instruments with. The most common and also the most ancient TUNING FORK is a sort of fork made in steel that, when it is hit, it produces a pure, without harmonics sound; sometimes this sound is amplified, especially if the basis of the fork is located on a surface shaped like a harmonic box.

Taking into consideration the Galilean experience regarding the “quotes produced by the chisel”, quoted in the *Discourses and mathematic demonstrations about two new sciences* (1638), perhaps it is not wrong to attribute to Galileo the original idea either of the first graphical method of sonorous vibrations’ recording and of the best method to produce it through a tuning fork forerunner.

A chisel, used by hand and vibrating because scraping a metallic surface, it can be considered as a shaft with a

knot on a side and free on the other side; the tuning fork, indeed, can be in theory considered as well as a particular kind of shaft. The birth of the tuning fork could be linked to the union between the knowledge about the vibrant metallic shafts and a common object confirmed capacity to vibrate and produce sounds: the springs (e.g. to stoke the fire), shaped like and surely much more ancient than the tuning fork [12].

Obviously, the oscillation frequency of the tuning fork depends either on the elastic material which it is made of, and on the length and also on the distance between the branches of the fork itself. Nowadays, the most used tuning fork is that one in “A” up over the central “C”: this A has a frequency oscillation of 440 Hz and, then, it corresponds to the A on the fourth octave of the piano [13].

The first historic tuning forks had a frequency of 415 Hz (Renaissance instruments), but analyzing several Greek and Egyptian instruments, we can notice a similarity with the 432 Hz’s tuning fork. Verdi used to tune his own orchestra with the “A” at 432 Hz as well, and because of this principle, he decided that in Italy it would have been this one the highness for the TUNING FORK [14] . He was so convinced about it that, by permission of a musical commission of the period, he was given a Legislative Decree which standardized the TUNING FORK to the 432 oscillations for a second’s A. This Decree is still exposed in the Milan Conservatory “Giuseppe Verdi” [15].

The generalized use of the tuning fork as an instrument for producing a sound with fixed acoustic frequency did not follow his invention, as we can notice from the scientific literature of eighteenth century, e.g. in the pages of the course (1751) by the abbot Jean Antoine Nollet (December 19, 1700 – April 25, 1779, a French theologian and physician). These pages take in evidence how the issue of conservation of an acoustic frequency example had not been resolved in the middle of the century. Until over the end of the 18 century, all the suggested methods to obtain fixed frequencies for scientific usages, were essentially based on the usage of air tools. It is true that in 1751 Haendel used to use a “tuning fork example” to be used for the musical executions. At the beginning of nineteenth century it is dated sources in which it is explained the usage of the tuning fork like an instrument for the production of example frequencies in the physic laboratories. During that period of time, instead, it was used to study the propagation of the sound and the resonance of bodies; in the same period of time, the scientific literature suggests the usage of tuning fork only to tune musical instruments, like in the famous script by the French physician and mathematician Jean Baptist Biot (Paris, April 21, 1774 – Paris, February 3<sup>rd</sup>, 1862) [16].

The running to the increasing of the “A” began with the Russian and Austrian musical bands (Wagner times),

after analyzing the effect of the sounds on the human being. In particular, it has been noted that, during the war, one more acute tuning fork (between 440 and 450 Hz) gets the soldiers to be instable and aggressive, a very useful behavior to fight. Later, the Nazis adopted this kind of effect on human mind to incite the army as best they could do it [17].

The Minister of the propaganda Joseph Goebel imposed the its adoption in the whole Europe for artistic aims, but this decision raised several protests in France (in fact, he ignored a contrary referendum, promoted in France by 25.000 musicians) [18]. Later, during some phantom conferences made by phantom experts as well, the 440 Hz tuning fork has been completely confirmed for global musical practice. Therefore, a too much acute tuning fork uses to get soldiers too much irritable and aggressive in the fight. This phenomenon gets us to understand how and how much the history, the politics and the historical events deeply influence our musical world. In particular, the sound tuned on the 440 Hz's would create "Beta" brainwaves... during its normal daily activity, our brain produces a series of infrasound, and in the specific, this kind of Beta sound is a status for infrasound (between 14 and 30 Hz), related to anxiety, danger and reaction. In other words, what it is confirmed by several scientists, artists and researchers is that the choice of 440 Hz is one of the worst "legitimated" mistake of the musical history. The Canadian musician and musical science academic Graham H. Jackson (music teacher in the school of Rudolf Steiner "Wadorf") spoke about Maria Renold experiences (pianist and sonic researcher) on the effects of the different tunings. In the book "Intervalli, Scale e Toni", she talks about her experiences, in which she used to entertain her guests with concerts in both tunings (440 e 432 Hz). After 20 years, over 2000 people had been tested and interviewed, and the 90% of them preferred the tuning on the 432 Hz, because the music got them to be transported: "in a deeper way, they have the sensation to be wrapped by the music itself that looks like to raise from the center of the room". This result gets value to the concept that a produced and determined by a "fair-temporary" scale sound (it means 256 Hz' C and 432 Hz' A), it refers to the "eterical free tune" cited by Rudolf Steiner in several of his scripts: this is, in other words, a sort of additional harmony that resonates and tunes with the instrument. It seems to be true that Mozart compositions are the only ones able to keep their harmonicity on also with the 440 Hz tuning [19].

Recently, the researches have had the result that the 440 Hz oscillations (it is probably not well known how this frequency is the result of an arbitrary choice, made in London in 1953, deciding, in this way, to make uniform all the musical composition on this sound; later, it happened the European solution n. 71 of June 30, 1971) [20] it takes to a notable increasing of the brain's left side

hemisphere, causing a very huge increasing of Beta status and causing also a disparity of brain electrical conduction. The 432 Hz, instead, multiple of 8 Hz, produces brain equilibrium (alfa/beta), vital for our somato-psychic wealth. The ordinary brainwaves have a frequency variation from 14 and 40 Hz, and in this range, only a limited number of brain cells' dendrites operate and the flow of information is thousand and thousand times weaker [21].

For definition, the tuning forks have always been used in the musical field as precision and intonation purity reference point. This is very relevant in the therapeutic area, where the equilibrium which it has to interact with is really delicate and important [22].

At this point, we can affirm that the "tuning fork therapy" is a holistic matter, in which "energetic activations" of specific parts of the body are carried out, through the usage of "therapeutic tuning forks". Moreover, the tuning fork therapy is part of the called "sound therapy", defined in this way: "treatment based either on the discover that human blood cells react to voiced frequencies, modifying their own shape and color and on the hypothesis that sick or in mutation phase's cells can be healed and harmonized by the sound. This therapy has been developed and supported by the French Fabien Maman, a musician, acupuncture doctor, composer, researcher and bio-energetic, who could be considered the father of "sound vibrational therapy" [23].

Like musician and composer, Maman has created his own original compositions in the biggest concert rooms of the world, e.g. the Carnegie Hall, the Opera in Tokyo, the Olympia in Paris and the Filarmonica in Berlin. Moreover, in 1980, he has been the addressee of "Grande Prix de Composition Francaise" (Big Price of French composition). In 1977, Fabien became an acupuncture doctor, linking the acupuncture with the music. He created the famous system which uses the tuning fork instead of needles in acupuncture points [24].

Attracted in the first place by the martial art of Aikido, in 1975, Maman had the possibility to study with the teacher Nakazano in Paris. While he was studying with the Japanese teacher, Maman began to learn his teacher's acupuncture methodology, based on the classic style Nan Jin. Linking his passion for music together with the classic knowledge of acupuncture and the meridian equilibrium art, Fabien Maman conceived a methodology to treat acupuncture channel disequilibrium with different tuning fork and bells placed on the person.

According to Maman, the tuning fork handle communicates the vibrations to the meridian, in other words to the DNA's cells, while the resonance of the forks (the opposite side) communicates the same message to the opposite part of the meridian – the magnetic field - with the aim to delete the cause of the negative scheme, which, with the time passing by, could duplicate itself on

the body of the person. For many teachers, this original method has become the inspiration about how to use the sound therapy in their own researches. The application of the sound therapy to the acupuncture theory has been a really perfect combination. Working as acupuncture doctor, Maman discovered that the association of tuning fork with the acupuncture is extremely powerful, without using the needles; in this way, he can be considered without doubt one of the fathers of “sound vibrational therapy” [25].

Through his own created equation,  $E=M \cdot (C^2)$ , Albert Einstein demonstrated that materia and energy are the two aspects of the same universal substance, which is the cause of the whole life and which we are made of. “Vibrational therapy” means that all the organisms depend on a really light vital force, which creates synergies through a particular structural combination. Each material structure, then, can be considered like a complex system of vibrations: crystals, flowers, plants, animals, the whole creation has its own vibrational field, as well as the human being and his organic parts. Thanks to many discovers made by several researchers and thanks to the discovers carried out by the quantum physics, it has possible to translate these vibrational fields in math codes. Each of them is specific for each organ and part of human body. This discover would permit to keep on conducting very accurate studies about the person wealth, and so, identifying which are the possible ways to operate. The “vibrational quantum medicine” is, then, a very important support for the analysis of physics and emotional disturbances that get the organs and/or the person’s psycho-emotional area involved into [26].

In the first period of 80’s, through a series of revolutionary biology experiments conducted in the Jussieu University in Paris, Maman demonstrated the effects of the acoustic sound on the human cells and their own energy fields: in this way, he discovered that, through a series of acoustic sounds the tumor cells tend to blow up, while the healthy cells could get stronger and get enriched [27].

This his own sound theory, then, referred to a treatment based on the discover that human blood cells reacted to the voiced frequencies, modifying their own colour and shape and on the hypothesis that sick or in mutation phase’s cells can be healed and harmonized by the sound [28]. Fabien Maman’s research about the sound and the cells linked with the acupuncture indicates that any kind of musical system adopted for the tuning fork has to be based on a coherent music scale, and this one has to be based on classic musical traditions. The coherence between the notes leads to harmony; the incoherence leads to chaos. This theory means that the 12 tuning forks set of Fabien Maman is perfectly tuned on the chromatic scale of the piano; and, then, his research about the sound and the cells gets these 12 notes perfectly combined with the Chinese Medicine and Acupuncture’s

principal 12 organs. Finally, it means that there is a mathematic relation between each note, and in this relation, it can happen the healing through the sound. The classic tuning forks of Fabien Maman uses the chromatic scale of the piano tuned on the chromatic scale of “A” at 220 Hz : A, A#, B, C, C#, D, D#, E, F, F#, G, G# [29].

The therapeutic tuning fork on 128 Hz serves, for example, to heal contractures, muscle aches or bone aches. This frequency is especially helpful to heal local pains and, then, it is used in the contracture or painful areas. To get large the contact area of the vibration, it is used an accessory with wide extremity (optional).

Commonly, there are two systems to “play” this tuning fork: to hit a prong (one of the two spikes of the fork) on the back of the hand, or using a special metal and rubber made drum stick (optional).

The therapeutic tuning fork at 136,1 Hz is used, instead, to re-equilibrate the internal organs, stimulating the reflected points and their correspondents on the meridians, mapped by the Chinese traditional medicine. The therapeutic tuning fork is used on the points of acupuncture, in the shiatsu therapy, reflexology, digital pressure and auriculo-therapy [30].

In physiology, the sensitivity examined getting a tuning fork vibrate in correspondence of a not covered by muscles bone surface (malleolus, iliac spine, olecranon, acromion ect...) is called “pallestesia” (from Greek word  $\pi\acute{\alpha}\lambda\lambda\omega$  “to vibrate” and the ending -esthesia). This is a kind of deep perception of the nervous system, a complex sensitive mode, that comprehends the tact and the speedy alternation of pressure’s stimulations. The loss of the pallestesia happens because of posterior nervous roots’ wounds and spinal marrow’s posterior cordons wounds, and, therefore, it happens oblique wounds of the spinal marrow. Getting a tuning fork vibrate in correspondence of these wounds, it can be diagnosed the integrity or loss of the pallestesia in a patient, if he succeeds to percept the vibrations or not (the loss could be caused by brain cortex wounds, internal capsule wounds, posterior nervous roots’ wounds or spinal marrow’s posterior cordons wounds or oblique wounds of the same).

The pallestesia seems slightly compromised until the total loss in all the neurological diseases which take spinal marrow’s posterior cordons wounds (dorsal tabe, funicular mielosis ect...). The skinny sensitive structures able to register the pallestetic stimulations are the Pacini’s corpuscles (impression and perception); the transmission happens in the marrow dorsal horns, goes up along the dorsal columns until arriving to the thalamic nucleus.

The loss of pallestesia is a kind of sensitivity that tends to decrease with the old age. But this one is not the only diagnostic application of the tuning fork in medicine. For the Rinne test, for example, it is used a high frequency tuning fork (as the 512 Hz’ one) which is placed on the

mastoid process in order to get the patient feels the sound through the bone transmission; when the patient does not feel the sound anymore, the tuning fork is placed closed to the ear (without touching it). Since the transmission of the sound through the air is higher than through the bone, a replacement of the sonorous perception keeps out a conductive alteration (the system of conduction is integer). The same process and result happens when it is made the Weber test, necessary when the patient has a monolateral aural deficit: it is used the same high frequency tuning fork (512 Hz) placed on the meridian of the forehead. If there is any kind of conductive deficit, there is a higher intensity of sound in the sick ear; instead, if there is a neurosensorial deficit, there is a higher intensity perception in the heal ear [31].

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