

Tuning and health: an issue of harmony

by Marsili Feliciangeli

Prof. Francesco Marsili Feliciangeli is a specialist in orthopedics and traumatology, a neurologist, a surgeon, and a former opera singer. He spoke at the Rome presentation of Canto e diapason, on June 9, on the theme "Tuning and Health":

I once wrote that music is spirit, the performers are matter, and that music should never be played, but heard.

Today, apart from the diatribes on higher or lower tuning, we have certain factual data regarding musical frequencies, wavelengths, and "nanometric" oscillations that unite the former and the latter. (One nanometer corresponds to one-millionth of a meter.)

This almost-spirit unites with the noblest almost-matter, and with its own creation, through passages that we will examine together, due to the fact that everything begins with a chemical element: DNA, or deoxyribonucleic acid, that sends its message through a certain tuning, which both Italian and foreign researchers agree can be utilized in both the biological or histo-chemical field, and the musical field.

The human body lives in harmony, and therefore in health, when all of the cellular coefficients coexist in a single "harmonic threshold" where the vital intra- and extra-cellular exchanges between their DNA and RNA (ribonucleic acid) occur in an electrolytic environment that we shall define as optimal. It is like a great musical composition that, from the first note on, carries with it a leitmotiv, which, developing during its theme, or "the evolution of life," we doctors would say, continues to create notes and biochemical expressions, which are necessary to conclude the composition, or in our case, the cycle of life.

When, during the journey, it comes across a "technical obstacle" for music, or "disease" for man, we have a modification of all of those vital parameters, or with the impoverishment of the electrolytic environment, with the consequent intra- and extra-cellular modification of the DNA, or even better, of the nucleic acids, which must be brought back, with our direct intervention, to the equilibrium that had been altered.

The subject of the modifications in the tuning over time has already been thoroughly treated by Maestro Sacchetti, and by other personalities in the musical world, with demon-

strations of the variations from the A-3 (third octave A) at 432, arriving, as with a sinusoid, at 440/443/444 or even at 448. The same variations regard the middle C-3, which is equally anchored, at least for us researchers, at 256, a fateful and vital number, the maximum absorbency threshold for DNA.

Therefore, while the tuning changed according to the authors, the performers, or the military bands that preferred a high tuning where the brass instruments shone more with a 460, they also deformed the singers' necks, which came to resemble ever more those of Modigliani, with great handicaps for the voices and the cerebral-acoustic apparatus.

Endorsements

The Schiller Institute's call for an international standard tuning pitch of A=432 cycles per second, has been signed by some 2,000 musicians around the world. We report here a few of the original endorsements by prominent singers, followed by messages of support to the recent conferences in Milan and Rome.

Tenor Carlo Bergonzi, quoted in the Schiller Institute's 1992 A Manual on the Rudiments of Tuning and Registration, Book I:

"This music manual is without any doubt an excellent initiative. It is particularly important to raise the question of tuning in connection with bel canto technique, since today's high tuning misplaces all register shifts, and makes it very difficult for a singer to have the sound float above the breath. When an F-sharp becomes a G, . . . everything is misplaced half a step, and the technique fails. . . .

"I also like in the manual the hypothesis that instrumental music, too, is an imitation, a derivative of vocal music. Also instrumental [music] sounds false when played at a high tuning: The sound is as unnatural in instruments as in voices. . . . What is true for the voice, is also true for instruments."

Tenor Placido Domingo, remarks on Feb. 12, 1996, at a press conference at Washington's Kennedy Center. Domingo was announcing his plans for the Washington Opera, where he had just begun as Artistic Director. He held up the Schiller Institute's music manual before reporters and cameramen, and said:

"This is an extremely important initiative for the future of opera; it must be continued without fail. The modern

But let's skip over this material, even if the anatomic-functional and often endocranial modifications at least enter into our medical curiosity.

The optimal frequency is C=256

Therefore, regarding the middle C=256 oscillations per second, many psychologists have affirmed that the frequency of 16 cycles per second, which corresponds exactly to a C-1, four octaves below middle C, is equal to the 256 that turns out to be the optimal frequency for psychopathology, named the "flicker frequency."

In fact, on that wavelength, the human mind begins to

perceive a series of induced or repeated stimuli, such as "intermittent light" or "sound pulsations," as if they constituted a single image or a single sound emission. This has also been proven with our studies in neurophysiology (in collaboration with Prof. Carlo Serra at the Neurological Clinic of the University of Naples), with respect to the electroencephalographic responses, in the study of behavior disorders in the early years of development.

It is also specified that the flicker frequency acts as a frequency band of the cerebral waves, as occurs for alpha waves (equal to 8 Hz) and theta waves (4.8 Hz).

Another demonstration of the importance of the study of

rise in the singing pitch is most destructive to the *bel canto* voice, especially to young singers. Did you know, that the tuning here may be at A=440, but in Vienna it is as high as A=448? This makes singing almost impossible; it chokes us off. And Verdi himself wanted legislation to hold it down to A=437. . . . What, A=432? Even better! This is most desirable."

Domingo authorized the Schiller Institute to utilize, in endorsement of the "manual," both his comments above, and those he made at the time of the Institute's 1988 Milan conference on the Verdi tuning:

"It is very important that we singers start doing something, because the conductors are tuning the orchestras way too high today . . . and that means that a singer does not last long. So far, we have been obedient and sung without complaints, but throughout my career, the pitch has just gone up and up.

"Even the 440 cycles for A, which is the standard today, is much higher than, for instance, at the time of Verdi. And now there are even some conductors that tune at 445-446, because they believe that this gives a specially beautiful sound and brilliance. . . . This is simply outrageous.

"I remember one time, when we had to sing *La Boheme* with the Boston Symphony, Renata Tebaldi arrived before the performance and gave the oboist an A. . . . He got very offended and said: 'Madame Tebaldi, what is this supposed to mean?' 'That you are too high,' she answered. 'That you don't have to tell me, I know my work,' he said, and then a lot of trouble and confusion arose. But the end of it was, that the orchestra was tuned in the original way, and this was actually a very good experience."

Domingo joked that, since he is now running an opera company, he might have to withhold his final 1988 comment, calling for "a singers' strike" for the Verdi tuning.

Baritone Piero Cappuccilli, speaking at the April 1988 Schiller Institute conference on "Giuseppe Verdi and the

Scientific Tuning Fork":

"If in the epoch of Verdi the pitch was [A] 432 vibrations, and he wrote his operas for this tuning, Verdi was an intelligent person who understood voices and wrote for voices. Taking the pitch up to the present level, the strain on the vocal cords is too accentuated. This is why many singers after four, five, or six years of their careers, encounter great difficulties, because they are straining the vocal cords in an unnatural way."

Tenor Luigi Alva, message to the 1996 Milan conference:

"I endorse your initiative fully, together with the famous colleagues you mention in the invitation, and I fully agree that A=432 should be the standard tuning in all opera theaters, in order to have a healthy and correct performance. Hoping that I will be able to contribute to your initiative in the future, and certain that it will be a success, I send you my best wishes."

Mezzosoprano Fiorenza Cossotto, message to the 1996 Milan conference:

"Lowering the tuning, we will go back to correct register shifts, and as a result the high register will be less difficult and the whole vocal extension more natural and consistent. I am sure the audience will appreciate the natural color of the voice."

Soprano Mirella Freni, telegram to the 1996 Milan conference:

"I am very sorry I cannot be present on May 29 at the Casa Verdi, but I will be there with all my thoughts and affection. The music manual is a very important initiative for today's singers and for those of the future. Bringing orchestra tuning down to a lower, more natural A will bring advantages not only to singers, but also to listeners, since the sound will be smoother, easier and more natural."

the emissions and absorptions of human waves concerns the fact that living tissues of every type and species, emit and absorb electromagnetic radiation at very precise frequencies and wavelengths, such as, for example, for mitogenic radiation, and here we are speaking of musical scales in respect to biological spectra. This radiation thus corresponds to 42 octaves higher than an F equal to 341 Hz with 200 nanometers.

But coming back to our human DNA, which is the key substance for all of the vital processes of a cell, we can say that it has a wavelength of between 263 and 269 nanometers and, more specifically, the "average frequency of this band" corresponds to a wavelength of 265 nanometers, which is the precise value of the 42nd octave above the frequency of 256.64 cycles per second.

In this manner, we can affirm, until there is some contrary proof, that the first vital step of all of molecular biology is tuned to a middle C, which corresponds precisely to the fateful number of 256, equal to a semitone in nuclear physics.

False notes represent diseases

This result is equal in both the helix, or DNA (alpha), and the ribonucleic protein, RNA. All of this brings us to think about the musicality of the genesis and the course of life, and that the "singer," in all of his expression, has a natural tuning with his DNA, an inseparable part of himself, which, combining itself with all of the other cellular aggregates in the physiological state, have their engraved mark: 256. If perchance these data were modified, we would find ourselves confronted with a part of pathological processes, both acute and invasive, where the decadence of the cells would be such that their components would go crazy, each playing their own false notes, which represent diseases of every type:

In that case, only an induced cellular reeducation, not musical, but chemical, through the input of new DNA and RNA and through the electrolytic environment, could bring back the lost harmony and repair the broken "tuning-fork" to hear it again with the physiological state at the sound of 256.

Let's give an example: Conducting a magnetic resonance or computer tomography, we would see that the subjects who showed alarming results, and must be completely demented because they had the cerebral cortex reduced to the minimum; however, strangely, they could recite verses by memory or make extraordinary calculations, thus demonstrating that they have a very lively psychic life.

For a second group of patients, who apparently had a complete brain, the responses with our equipment showed a completely destroyed mental life. What does all of this mean?

It can be explained with a simile: that of a sailboat. That is, that the report between the brain, or hull, and the neurons, the neuroglia (the peripheral nervous system), are the sails, which can be enormous, even with multiple sections, but the speed at which the boat travels depends only on the wind that blows in its sails, and this is the mystery of life.

In fact, the cerebral nervous cell doesn't regenerate itself: We have it from birth until the end, but we can intervene in this as part of the larger nervous system, taking from it irritating elements that stimulate the wind that pushes our boat in a negative manner, trying not to put stress on its sail and trying to keep the DNA equal to the 256 tuning alive; in this way, we can better understand the two examples that I cited earlier. The first group of patients subjected to our investigations, despite having a cortex reduced to the minimum, responded psychologically better than the second group, with the wider cortex, but with mental activity almost completely destroyed, because the first had an optimal pack or spare reserve of DNA, and of all the other chemical elements of a healthy cell, while the second had a scary impoverishment of those vital resources, despite having a beautiful boat, that didn't, however, move on the water.

The number of cerebral cells isn't important if they are altered, but the type is important, the quality of their primary component for all of the vital exchanges, in order that this strange wind that we said earlier is the "mystery of life," allows us to continue to travel harmonically with our imaginary boat.

Another satisfaction, and I'll close with this, would be to see future doctors no longer using their stethoscopes, but instead the "auricular tuning-fork," and maybe carry out "musical ecographs" to check if the tuning of the various organs of their patients responds with 256, and 256, and 256! Just think of what an orchestra the hospital would be!

How tuning affects musical instruments

by Bruno Barosi

Prof. Bruno Barosi is a physicist with the International Institute for Violin Building (Cremona), where in 1988 an experiment on the tuning of Norbert Brainin's "Omobonus Stradivarius" violin was made, proving that it was built for a C=256 tuning. He spoke at the Milan presentation, held at the Casa Verdi on May 29:

The question of high tuning is very important also for Stradivarius violins and for the performance of violin music. In the nineteenth century, the original Stradivarius violin was changed, its neck and fingerboard lengthened in order to adapt to the higher tuning. There is only one Stradivarius instrument which has remained untouched, and it is the so-called "Medici viola" kept in Florence, which we of the Cremona Violin