

# The True Scientific Musical Tuning

*The following discussion took place on [the New Paradigm for Mankind show of June 17](#) on LaRouche PAC TV.*

**Jason Ross:** One of the main issues confronting us today is what the nature of the human species is. This is being seen in such situations as Greece where the Troika is trying to force Greece to make incredible cuts to its social welfare programs to the population, in order to pay debts which they simply can't pay. Greece has responded that of course they won't give in, and that the principle of democracy is at stake—that the government of Greece was elected based on the notion that they aren't going to give in to these demands. So how could the government do that? It would be violating the

very principle of democracy on which European civilization is supposedly based.

Another aspect of this issue is the decarbonizing campaign that was promoted by the G7 in their idyllic meeting in the German mountains, where they put forward the goal of decarbonizing the world by 2100. How thoughtful of 10% of the world's population to say what 100% of the world will do over the coming decades. And this is also being pushed in the promotion of the Vatican's weighing-in on this, pushing on a decarbonization policy. This is not based on any science about actual climate change, global warming, anything of the sort.

The intent of these policies is to prevent human



EIRNS/Joanne McAndrews

*The Schiller Institute Chorus, joined by singers and an orchestra largely comprised of musicians from the New England area, presented Mozart's Requiem (at C=256) in commemoration of President John Kennedy, on January 19, 2014.*

development and to reduce the human species dramatically down to the level of a couple billion, as promoted exclusively by many of the top people involved in these campaigns, like Prince Philip or by Hans-Joachim Schellnhuber, who believes that the world is dramatically over-populated. And by not escaping from the kinds of concepts that look at things this way, by not getting out of geo-politics, we have a very real threat of thermonuclear war between the West (NATO) and Russia being created, because of Obama's presence in the Presidency. So I think that we definitely need another image of the human species, and I believe Megan has something to say about this.

**Megan Beets:** I am going to pick up on the discussion that occurred this past Monday between Mr. LaRouche and members of the [LaRouche PAC Policy Committee](#), which was a discussion centered on the fact that, given that the trans-Atlantic system means doom for civilization, where is a future for civilization to come from? We obviously see the Win-Win policy being promoted by Xi Jinping, and being adopted by the BRICS nations, but the discussion on Monday centered around the principle which is really at the core of this: the necessity of bringing about within human society a coherence of mankind, uniting all the different expressions of mankind throughout the world around a commonality of principle and a commonality of a mission.

I am going to read a couple passages from that discussion to set the tone. LaRouche said:

You have to bring about something which we've lost in the United States. You have to build a certain kind of harmony, a human harmony where people of different talents become part of a common chorus, and the idea of the parts, the unity of the parts, the cooperation of the parts of the common chorus is the principle of a republican nation. And that's the way you want to organize people to organize society. What you have to do is to bring a consonance, a symphony of consonance together, of people where all are more or less converging on a common understanding of each other which is a correct one. So if you take Classical musical composition and performance, you have an ideal model for developing the minds of people. And the idea of the chorus is the unifying of a whole population to a

common sense of reality and mission, whatever their other skills are, and they rejoice.

In another passage that I think is extremely relevant for what I'd like to go through today, he said,

The idea is having the true idea of harmony which resides in something which is a characteristic feature of the human mind. The human mind is prepared only to function with a concept of harmony. And the idea of harmony as harmony in the form of Classical song—choral work—is the model for all harmony in mankind and everything in life that's harmonious. The machine tool, everything around that you are playing with, is all a part of harmony, and if you don't have harmony, then you have disjunction and you have degeneration. It's that simple.

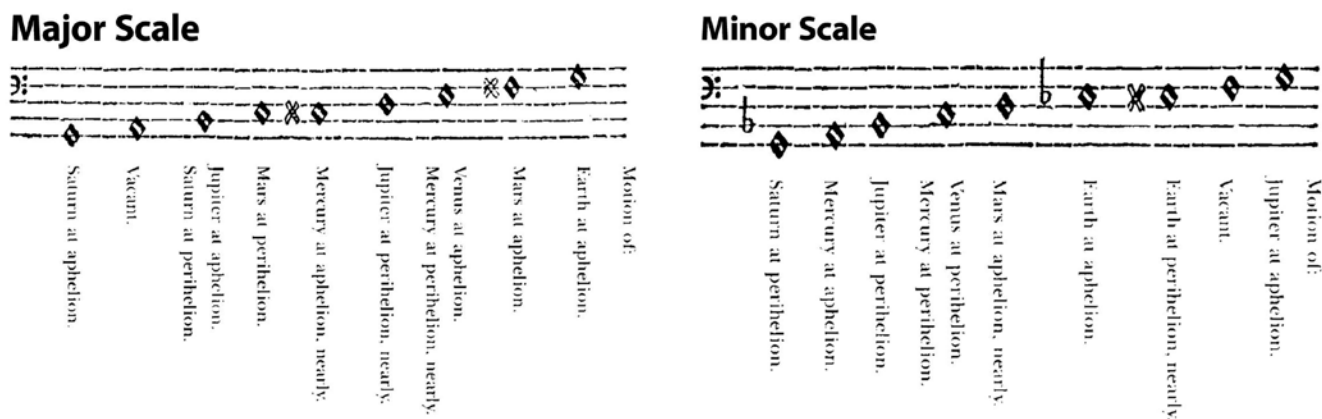
But the point is the principle by name is very simple; it's called Classical artistic composition. Music. Music is the medium for typifying Classical harmonic composition.

Now, obviously this concept of harmony—a harmony among peoples, a principle of unifying very different people, with very different roles in society, coming from very different cultural backgrounds, national backgrounds, the unification upon a common principle—is very different from the idea that dominates today in the United States in politics: popular opinion. Harmony is not railing on people to cohere or conform with a popular opinion, but instead to bring people to a higher discovery of a higher unifying principle, which is exactly what we are seeing in the process unfolding with the BRICS today. That principle of harmony, as we have been discussing it, is not only a musical principle. It is something much more universal which goes directly, at its roots, to the discoveries of Johannes Kepler.

### **Kepler's Harmonics**

So our idea today of harmonics, modern harmonics as they are used in music but also in the way in which they are expressed by Mr. LaRouche, is rooted in the work of Johannes Kepler. Kepler discovered the Solar System, but in that discovery and through that discovery, he also established the modern form of well-tempered harmonics, as it's used in Classical music today, and as it was picked up on very directly by Johann Se-

FIGURE 1



Kepler's schematic of the planetary harmonies and their correspondence to the Classical music scale.

bastian Bach. I am not going to go through a full elaboration of Kepler's discovery here, but I will just say a few things to set up the idea.

Kepler dumped all previous assumptions about what the Solar System was, what astronomy itself was, and he discovered the Solar System as a physical system. The way that Kepler did that, in brief, is by conceiving of all of the motions of each of the planets and other bodies in the Solar System as an expression of the one mover—the Sun. Kepler imagined each of these planets as a member of an orchestra, playing a musical tone in a musical piece which is conducted by the Sun. A member of an orchestra is not an independently acting individual, which just happens to be in the same room as other independently acting members. You have a commonality of mission to play the same musical piece, and to play in harmony, to express the intention of the composer and also of the conductor who is conducting them.

You see here **Figure 1** that Kepler demonstrated that the fastest and slowest motions of each of the planets in the Solar System cohere to both a major scale and also a minor scale, as we have it in music today. As in music, the tuning of these scales, the tuning of these motions, isn't a one-by-one relationship with the Sun. What Kepler shows is that each of the planet's motions is modulated so that each is as harmonious with all of the others as possible.

And so what comes out is not a simple idea of tuning, but a much more complex, changeable, varied idea of tuning which we now see expressed in much more developed human music, string quartets, orchestras, and so forth. For Kepler there was no real separa-

tion between the physical process which he imagined, and then discovered in the Solar System, and the principles of human music which later came to be expressed in the most developed Classical music.

So this brings us to the real issue at heart with music. As you see with Mr. LaRouche's idea of harmony, and as you see with the way Kepler dealt with harmony, with music, you are not really dealing with sound. That might be a strange idea for a lot of our viewers. How is it that music isn't sound? When you go to a concert hall to hear a concert, aren't you hearing sound? When you rehearse a piece of music and you sing, aren't you producing sounds? Well sure, sound is involved; sound is a certain result that's involved in the process of performance, but music isn't actually sound. It's not built from sound. The combination of sounds does not make music. Here I want to read another short quote from Mr. LaRouche. This is from a few weeks ago in a discussion that he had with some of his associates. He said,

The music lies not in the music. It lies in the motive of the music. Otherwise, what does the music mean? It's just a form of noise making. You don't want to make noise. You want to capture the mind of people, not their ears. And the result should come through the mind, not through the ears. You interpret the thing not as it's heard—the heard sounds. What you should hear is the brilliant music of the unheard performance. You don't have to hear it because you are already captured by it. Your mind is an instrument. Your body and your soul are an instrument of music. It's not the music that makes that. It's

the body and the soul which makes that. The music is incidental.

I think that that's a completely different idea of music than almost everybody—certainly in the United States and Europe—has today, and it flies in the face of what people accept and tolerate as popular notions of music: sound, entertainment, self-expression. What Mr. LaRouche is getting at in the short passage I read is that there is a substance to music which goes far beyond the notes—which goes to the capacity of the human mind to have new insights and discoveries about the nature of man itself, and to be able to convey and communicate these conceptions to other human beings. And that communication which we tend to call Classical music sometimes, can be clothed in sound, will be expressed in sound, but the motivation is this other passion of mankind.

### Now, To Tuning

With that notion of music, which is the notion of music of the Classical tradition that Western Civilization was founded upon—as an aside, it also resonates very strongly with the notions of music and art that you find expressed by people like Confucius—with that standard of art, what I would like to do now is take up a discussion of a very important specific “issue,” you could say, in how art is performed today, and in the possibility of continuing the performance and composition of Classical music into the future. That issue is the notion of tuning.

It is a fact today that almost every single Classical musician—we'll leave the other ones aside—on the planet today, be they professional or amateur, sings or plays out of tune. Out of tune in the sense that they are singing at the wrong pitch.

What is meant by that: singing at the wrong pitch? Well, today as always when you go to a concert hall and you sit down and the orchestra begins to play—before you got there, or before the performance started, the



*Italian composer Giuseppe Verdi in 1886, when his fight for natural tuning was in full swing.*

musicians tuned their instruments. There was a standard pitch which was played which all the musicians tuned their instruments to. This would also happen if you went to a concert where there is a piano on the stage and you have a piano concert, or a singing concert with a piano accompanying. There is a standard pitch which was chosen, and all the notes were tuned to conform to that pitch as standard.

In most cases today, the standard pitch which is chosen to determine the tuning pitch of all the instruments, and which determines the pitch at which the singers sing their songs, in most cases is high, arbitrarily higher than it should be. In

some cases it is much, much higher than it should be, meaning that every note that's sounded is actually a little bit or a lot higher than is natural.

Now this may sound like an issue for music specialists or concert aficionados, but this is not an academic issue; this is not an issue which is a debate within the “music world,” and which has no consequence for politics or anything else. This is an intensely political fight. This is a political fight which was waged more than a hundred years ago by Giuseppe Verdi, the great opera composer, who was also a senator in the first parliament of Italy. This is also a political fight which was begun by Lyndon LaRouche in the 1980s and continues up to today. I will come back to some of the details of that.

But why is this a political fight? And why can you say that there is such a thing as a right or a wrong pitch? How can you say that an orchestra is tuned wrong? Who has the authority to say that?

Well, nature. Nature has the authority to say that. The human voice has the authority to say what pitch it wants to sing at—how it works best. All music today, be it vocal music, instrumental music, piano music, whatever, all music inherently is based on the human voice and the characteristics of expression of music based in human poetry and the human voice, and specifically, the trained human voice, as trained by discovered principles of how the human voice actually works, devel-

oped from the Renaissance on.

The human voice operates best when it's tuned to a particular pitch. It does not operate well when it's stretched to sing at a higher pitch or even a much lower pitch. The pitch which was agreed upon by the best Classical musicians of the Nineteenth Century and some beyond in the Twentieth Century is a pitch where middle C—people who don't know what middle C is could imagine a piano keyboard, and the note C right at the center of the keyboard is "middle C"—is tuned to 256 vibrations per second. So the correct pitch of that note, or the string of the piano of that note, is 256 Hz, 256 vibrations per second. If it were more, the note would sound a little bit higher in pitch to you, and if it were less, it would sound a little bit lower. So the proper natural pitch is C at 256, which corresponds to the note above it of A at around 432.

I know that to people who don't play an instrument or sing, that may sound kind of arbitrary, so let me play a few examples for you. The first example you will hear is the tone A at the natural tuning of 432. Now I'll play the same note, A, at the tuning which is adopted in many orchestras in the United States, A440. You can hear that it is a little bit higher in pitch. It's a small difference, but it's a difference, and every note of the scale is adjusted up at least that much.

Now let me play one more tuning of the note A, A450, which is adopted in many orchestras around the world today.

**Ross:** That's a pretty big difference.

**Beets:** That's a very big difference—it's almost a half step, the difference between two keys on a piano, two entirely different notes.

Now, what's the result of doing this? First, I'll talk about the voices. What's the result of a trained opera singer who shows up in Vienna, for example? The Vienna Philharmonic Orchestra adopts a tuning today which is close to the highest A that I just played. An opera singer who shows up in Vienna to sing an opera role, where the tuning is much higher than the natural tuning, what's the result?

Well, back in the 1980s and '90s when the Schiller Institute was running an intensive campaign to return the tuning to low tuning, we approached many, many of the top opera singers in the world on this issue, and all of them agreed: The high tuning damages the voices. It stretches the voices. It makes the voices shift and change (in the way that they have to with the proper training) in the wrong place, and puts a strain on them.

It shortens the careers of singers, and also makes some of the music which was composed in the past at lower tunings unsingable. It actually makes it, in a sense, unavailable to modern audiences because you don't have the voices around to sing that music anymore, because of the strain of these arbitrarily high tunings.

Another result is not just on voices—again this isn't just an issue of the human voice, while instrumental music can do whatever it wants. You also have an incredible damage to the musical instruments—violins for example. For a violin which was built to play at the lower tuning of A432, if we tighten all the strings to meet the higher tuning, there is now more than 8 pounds of additional pressure on the body of the violin than there is at the lower tuning. Over time this causes tremendous damage to this great wealth of Stradivarius violins, and all of the other wonderful instruments that have become part of human society, human culture.

Therefore, I think the obvious question, given that the tuning varies so much from place to place (you never know what you're going to get from one concert hall to the next), and that the higher tunings do so much damage to voices and instruments: who would want to do that? Why would you want to do something unnatural? How did it get to be that way? Did people just forget what the natural tuning was and start to choose whatever they wanted?

No, that didn't happen. The real fight around the nature of tuning is a fight over the nature of man, and it's a fight over what music is. What is the purpose of music in society? What is the nature of the mind and the life of mankind? That's what's at the root of the fight around tuning.

## Verdi Launches the Fight

Let me briefly give a sketch of some of the history of the fight over tuning pitch. As I mentioned before, and as I'll mention again when we get to it in the timeline, Verdi fought for legislation on this question in the 1880s, and LaRouche launched a campaign in 1986 to legislate the standardization of international tuning pitch at the low natural tuning of C256 or A432. But the fight goes back much earlier.

First, let's start with the Classical composers—Bach, Mozart, Haydn, Händel. In their time, there really wasn't a standardized pitch. You could travel from city to city, church to church, which usually would have an organ, and the tuning would vary widely. However, what is known is that the tuning generally used by these

composers was much, much lower than the modern pitches. For example, both Händel and Mozart used a pitch which was even a little bit lower than the A432 that I played for you. Verdi asked for exactly this pitch of A432 as the natural scientific pitch.

The first attempt, which was a certain unofficial attempt to standardize the tuning pitch came with the 1815 Congress of Vienna. The Congress of Vienna was the international conference held at the end of the Napoleonic wars to set up a new political structure of Europe. What really happened at the Congress of Vienna was the re-imposition of fascism over Europe by the imperial powers. At the Congress of Vienna the Czar of Russia gifted a set of musical instruments to the Austrian Military Band which were all at the new high tuning of A440.

This wasn't just a whim on the part of the Czar of Russia; there was a political operation coming out of the Congress of Vienna to begin imposing a new, higher pitch in music throughout Europe. The new band instruments had a much brighter sound, a much more dazzling sound, and there are physical acoustical reasons for that which I won't get into today, but they had a sound which had much more physical impact on the listener. This set off a total craze, which I am sure was also created, not just a natural craze. There was a cultural operation begun from this time, where orchestras and bands across Europe began to raise the tuning of their instruments.

For example, the London Philharmonic in 1820 tuned to A432. In 1842 they had gone up to A440 and by 1850 they were at A452. Something similar happened with the Paris orchestra, and many other orchestras. While you still had people playing at the lower tuning, generally the pitches began to rise all across Europe, such that by 1877 at the Wagner Festival in London, they were playing at A455, which is much more than a half step higher than the natural tuning. In New York City in 1880 the Steinway factory was tuning their pianos to A457, which is extremely high.

In 1858 there was a conference held in Paris, which was largely due to the efforts of the composer Gioachino Rossini, who composed for the bel canto human voice, to standardize the pitch.

The idea was: this higher pitch is insane, we are losing our music, we are losing our voices, we have to standardize the pitch! And the conference in Paris officially adopted a standard of A435, which is very close to the low natural tuning, and which was the lowest



*A lithograph of Italian composer Gioachino Rossini by F. Perrin, done around 1850.*

pitch in use in France in those days. In 1881, in Italy, there was a Congress of Italian Musicians, largely inspired by what occurred in Paris, which officially called for Italy to adopt a similar standard in tuning of A432. Now this was supported, as I mentioned, by the composer Verdi. After the resolution of the Congress of Italian Musicians, Verdi wrote a letter to the Italian government which reads as follows:

Since France has adopted a standard pitch, I advise that the example should also be followed by us, and I formally request that the orchestras of various cities of Italy among them that of La Scala and Milan to lower the tuning fork to conform to the standard French one. If the musical commission instituted by our government believes for mathematical exigencies that we should reduce the 435 to 432, the difference is so small that I associate myself with it willingly. It would be an extremely grave error to adopt as proposed by Rome a standard pitch of A450. I also am of the opinion with you that the lowering of the tuning in no way takes away the sonority or the liveliness of the execution, but it gives on the contrary something more noble of a greater fullness and majesty than the shrieks of a too

high tuning fork could give. For my part I would like a single tuning to be adopted in the whole musical world. The musical language is universal. Why then would the note which has the name A in Paris or Milan have to become a B flat in Rome?

In 1884, three years later, the Italian government did officially adopt A432 as the standard tuning pitch for all orchestras of Italy. Similar motions were taken up in other countries, Spain, for example, Belgium. In 1885 there was an international conference in Vienna which turned out to be a huge fight. Verdi sent his friend Boito, who was his librettist and who he worked with very closely. Verdi instructed Boito to fight like hell for 432, or 435 if he had to. While that conference was a little bit conflicted, and they did eventually resolve for 435, the point is that this was a political fight—and it never quite took hold, and Verdi recognized this. He actually banned performances of his opera *Otello* if they were going to be at the high tuning.

### The Fascists Pull a Coup

Now I am going to fast forward a little bit, to 1939 when you had the next major attempt to standardize the pitch internationally. This attempt was led straight from Berlin by the Minister of Propaganda, Joseph Goebbels. So from Nazi Germany comes the request to London to please set up a conference to standardize the international tuning pitch at the same pitch that was used by Radio Berlin: A440, the higher tuning. This conference did demand a standardization at A440 at the request of the Third Reich, but obviously there was a lot of tumult and chaos in the world at that time, so this pitch wasn't actually adopted everywhere as requested.

I want to mention something else, at this point, for people to think about. We've gone through a sweep from 1815, really from the period of Bach and Mozart through 1815, and then through the time of Verdi, and now up to World War II. What's been happening to



*Hitler's Minister of Propaganda Josef Goebbels.*

music throughout this time?

There has been a great attack on Classical music, especially after Brahms died in 1897, and you have the promotion of an idea of music which is completely based in the senses, the sensuous effect of music. This came with Richard Wagner, the promotion of Wagner, the promotion of Richard Strauss, the promotion of Igor Stravinsky, whose best known work is *The Rite of Spring*, which is a musical portrayal of human sacrifice, all to create physiological sense effects in the human being, and to promote the idea that ugliness is music. That is what has been happening to music over the course of this parallel rise in the tuning, and this is obviously completely contrary to the idea of music as expressed in the quote I read from Mr. LaRouche about the powers of the human mind, of

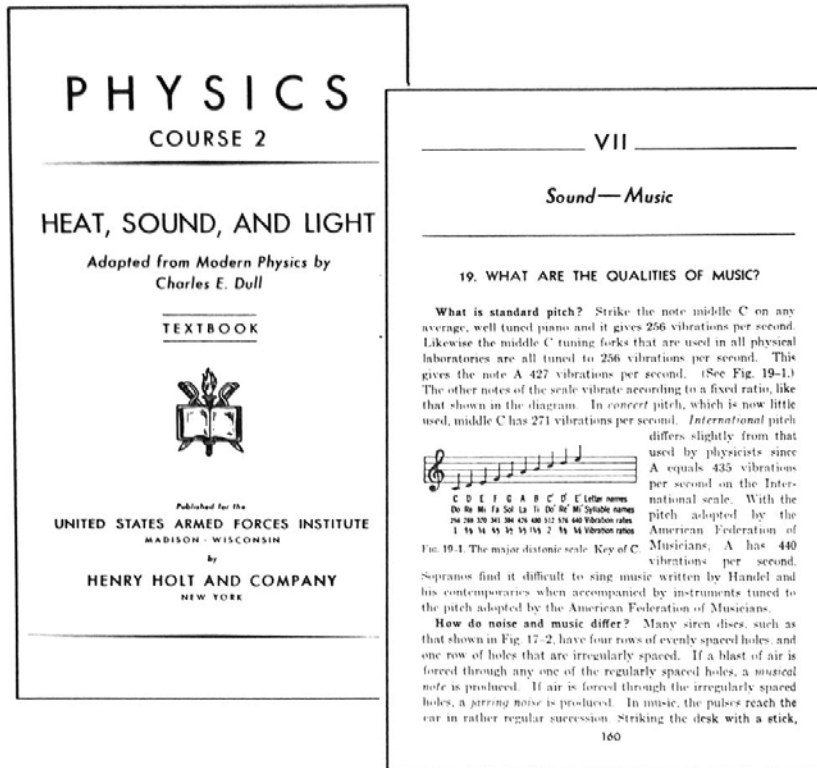
discovery.

There are more attempts made after World War II to standardize the pitch, which, for the most part, begin to take hold. Even in the 1930s and '40s, while the pitches were rising in concert halls, it was still agreed upon that the scientific pitch was C256. Here are two examples **Figure 2**. One is actually a physics manual released by the U.S. Army, which says right away that the scientific pitch is C at 256. The other example is from a phonetics textbook from 1931, which again asserts that C256 is the scientific tuning, and that if you raise the tuning, sopranos and others have a hard time singing music. Yet, the pitch has risen throughout this period. As I mentioned a few minutes ago, in Vienna the standard pitch is A444, and in Berlin it is A448, which is incredibly high.

### LaRouche's Fight for Classical Tuning

Now I'd like to get to what the LaRouche organization has done since 1986 to fight for restoration of the lower natural tuning, to save Classical music and to save this precious power within society. In 1986, as I mentioned, LaRouche launches the campaign to save Classical music, calling for legislation to lower the

FIGURE 2



tuning. By 1988 we had contacted the top singers in the world. A couple hundred of them had signed our petition supporting such a call and we worked with two Senators in the Italian Parliament to introduce legislation in Italy, once again, to lower the tuning pitch.

Our organization sponsored seminars with demonstrations of the low tuning versus the high tuning, and the more truthful expression of the music which is heard at the lower tuning, as opposed to the higher. We eventually got thousands of signers to this petition, including Placido Domingo; Carlo Bergonzi, a famous tenor; Piero Cappuccilli, Mirella Freni, and many, many others. Additional signers were singing teachers, instrumental musicians, all calling for this. Here are a few pictures from this campaign.

This is a press conference announcing the legislation. Here you see Liliana Gorini, who is the Italian representative of the Schiller Insti-

tute in the middle. Next to her is the great baritone, Piero Cappuccilli, accompanied by others including the Senators from Italy. This is Carlo Bergonzi, who gave a seminar with the Schiller Institute at Carnegie Hall in New York City demonstrating the superiority of the lower tuning.

Now I'd like to show a clip of one of the demonstrations that was done. This was in 1988 in Milan, which was the first of such seminars. You'll hear Piero Cappuccilli. Other people who spoke there were Helga Zepp-LaRouche, the chairwoman of the Schiller Institute, and Renata Tebaldi, who's one of the greatest operatic sopranos. Interestingly Tebaldi made the point that the high tuning doesn't just affect sopranos or tenors, or people who have to sing high notes; it's not about that. It's about the natural placement of the voice. She said that even basses, altos, and mezzo-sopranos who have to sing low notes are adversely affected by this displacement

of the human voice.

What you will hear in the [video](#) is a short passage from an opera aria by Verdi. You'll hear it three times: once at the low tuning, then at the high tuning, and then once more at the low tuning again. Something Cappuc-



Schiller Institute

The July 1988 press conference announcing introduction of legislation mandating the lower tuning in the Italian Senate. Schiller Institute leader Liliana Gorini (center) is joined by Baritone Piero Cappuccilli (on her left) and the Senators ( Carl Boggio and Pietro Mezzapesa) who introduced the bill.





Schiller Institute

Tenor Carlo Bergonzi at his 1993 Master Class demonstrating the Verdi pitch, held at Carnegie Hall in New York City.

cilli points out during the demonstration is that when the tuning was artificially high, he had to do things to shift his voice on the highest notes which Verdi didn't intend. He said it changes the color. . . .

**Liona Fan-Chiang:** He didn't intend to make color change at that point.

**Beets:** Exactly, but the voice had to, in a certain strained kind of way.

The campaign which this demonstration was a part of, unleashed a total brawl, a total freak-out, and the legislation that was introduced in 1988 was eventually defeated as a result of intense pressure from the United States on the Italian government not to pass it. It should make people think: if music is just whatever you like, why would something like this be such an issue? Why would the oligarchy go to such efforts back in 1815, and obviously recently, in 1988, to stop an effort to standardize the tuning pitch?

What's really the issue here? The issue comes back to: what is man? What is the power of music for mankind? Is it arbitrary? Is it whatever you want? What does

that lead to? Look around society today. Look at the entertainment culture that that has led to the situation of today, versus what would be possible if we had a culture which was dedicated to the truthfulness of this kind of music, of the kind of principles that are involved in developing and maintaining that kind of music in society.

I think that that is absolutely the core of our political mission today, and it is something which the United States and Europe, in particular, can give as our offering of some of the best of our culture to this collaborative process taking shape in the world today.

**Fan-Chiang:** It's almost as if you disallowed the universalization of language—as though you were to say: “No, you can't have a national language. It should be arbitrary, however you would like to, whatever types of noises you would like to make, that should be your way of communication.”

**Ross:** All the gesturing that Cappuccilli was making in the video, I'm glad you pointed out what he was referring to—that he was changing the color of his voice to sing notes in different ways. As you had mentioned

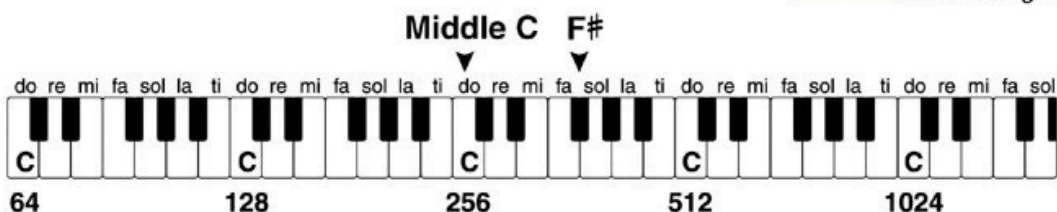
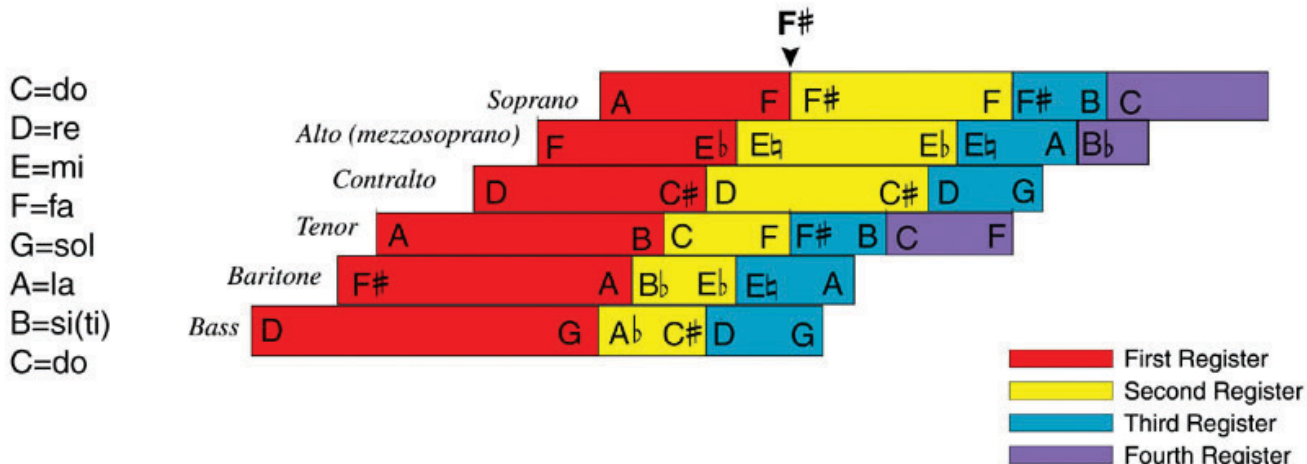


Schiller Institute

Baritone Piero Cappuccilli demonstrates the Verdi pitch at the Schiller Institute's first conference on scientific tuning at the Casa Verdi in Milan in April 1988.

FIGURE 2

## The Six Species of Human Singing Voice, and their Registers



*Manual on the Rudiments of Tuning and Registration, which is available for sale at [www.schillerinstitute.org](http://www.schillerinstitute.org).*

that Renata Tebaldi was pointing out, it wasn't only that high pitch makes singing high notes really hard, but that all of the notes are in the wrong place. That's something I think is an astonishing thing in itself, that these different types of voices, a tenor, a bass—it doesn't only mean you are higher or lower. Can you say anything about the internal characteristics of them?

**Beets:** Yes, briefly. Every human voice has a potential to be developed and trained according to what we refer to as the bel canto technique, which isn't just some method from Italy, from a long time ago. It's actually a method which recognizes the natural physiological potentials of the voice.

Each of what we call the species of voices—for example, in women there are sopranos, mezzosopranos, and contraltos—each of these voices themselves has natural areas of the voice which have different color characteristics. For example, the way in which a soprano will sing low notes versus high notes has to do with a different mixture of the resonance cavities, among other different things that you'll learn with vocal technique. Those changes from when the chest resonance is dominant, to the middle, then to where the head resonance is dominant—a singer doesn't just change whenever they feel like it. There are certain notes in the scale where for every soprano that shift nat-

urally occurs. In certain very specific areas, she will pass from the middle to the higher resonances, and that is naturally determined.

When you start to raise the tuning pitch, you start to confuse the area in which that occurs, and it causes physiological strain on the voice. Additionally, for the music of somebody like Verdi, who composed with these different colors and qualities of the voices in mind, to give expression to the poetry, it messes up the poetry if you are shifting at the wrong place, whether it's a high note or a low note.

### **A Standard of Truth**

**Ross:** You brought up truth in music, the existence of truth in culture, and using this as an example of the fact that if we can't maintain the standard of: "Hey, there is a standard of truth in this!", then look at all the other things this leads to more generally. You had mentioned in your introduction about how music wasn't only sounds. I was wondering if you could discuss at all about the unheard aspects of music—that the mind hears things that the ears don't. Sometimes there can even be a contrast between what the mind hears or expects versus what the notes indicate. Could you say anything about the substance of what music is?

**Beets:** There are a couple of ways I can try to get at it, briefly. First, I'd like to reference Furtwängler. Furtwängler lived in the terrible Twentieth Century, and conducted music in the midst of all the degeneration that was going on. Toward the end of his life he took to writing about music, not because he thought that was the best idea for a musician, but because the culture was becoming so ignorant of musical principles that he felt as if he had to write to try to express some of them. In his writings, he discusses an idea of a certain particular kind of tension that has to be present in any musical performance, and the tension he is discussing is the tension between the now, the moment that you are in, and the whole composition.

Imagine being a performer, even if you are not a musician, playing Beethoven's 5th Symphony. As you play, you're playing your notes and you're intoning the notes in a particular way. There is a certain causality of the moment of how you play, and how you move from note to note. That's in time, but there is something else which only comes into existence once the last note has sounded: the whole—the impression of the whole,

which doesn't exist completely in any particular part. It's this unity of the process of development which has occurred over the stretched-out time of all the moments.

Furtwängler discusses this tension, and that the musician is never only in one or only in the other. The musician is always experiencing how the moment is affecting what will eventually be the whole, and how his foreshadowing, his insight into the whole—which doesn't yet exist—affects the way in which he unfolds the moment. Now that's only possible with compositions which are actually expressions of real ideas, not just some stupid thing that you might hear on the radio today, some pop music. It's only true of compositions which actually intend to express a certain insight into the human mind, the human power of conceptualizing something universal about human beings, which is guiding every moment of that composition. Only things which are composed in that way are susceptible of it. Examples of that I mentioned are the works of Beethoven, also fugues of Bach are incredible from this standpoint, the sonatas of Mozart. LaRouche mentions quite often, and for good reason, Schubert's Ninth Symphony, and particularly Furtwängler's conducting of Schubert's Ninth Symphony.

Those things that I just attempted to describe, you don't hear those with your ears. You don't hear the tension between the moment and the whole with the ears, and yet that really is the principle which is determining the composition in its entirety, and which can be shared among many people with many sets of so-called ears. It's not in the sounds. It's something which is before and between the sounds.

**Fan-Chiang:** And it also very much assumes that there is something that is universal about the human mind and otherwise you wouldn't be able to say that I could write music that would move any human mind.

**Beets:** Exactly. It is accessible to any human mind, not accessible in the popular sense but in the same way a scientific discovery is accessible. I also want to mention, lest I gave the impression that this is something which died in 1989, that our organization has never let up the fight for the return to the lower tuning. In fact, we did a performance of Mozart's Requiem in 2014 in Boston in honor of John F. Kennedy at the lower tuning specifically, and made that a part of the intervention, so this is something which has continued and is a key part of our intervention into Manhattan now.