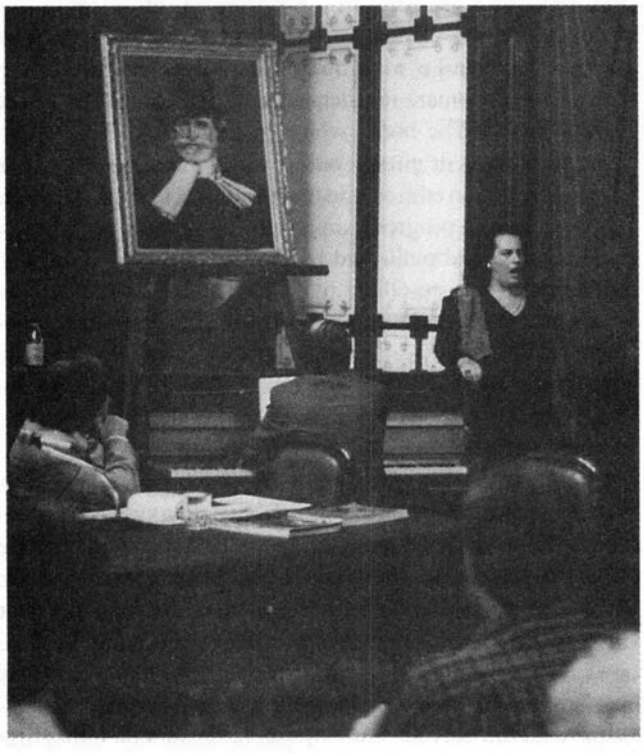
The revolutionary hypothesis behind the battle for C=256

by Liliana Celani

Liliana Celani of the Schiller Institute is co-editor of the Italian edition of Canto e diapason, *the Italian-language edition of Book I of* A Manual on the Rudiments of Tuning and Registration, *first published in the United States in 1992. Below is Mrs. Celani's slightly expanded version of the remarks she made in a presentation of the book at the Casa Verdi in Milan on May 29.*

As LaRouche explains in both forewords to *Canto e diapason*—the one originally written for the English edition, and the one prepared for this Italian version—this is quite a special book, since it proves, with hundreds of musical examples, a revolutionary and important hypothesis: that music, be it vocal or instrumental music, derives from poetry—sung poetry—and not from dance, as some music books say; and that the entire well-tempered system is based on vocal registers for a palette of voices tuned to C=256 Hz, which Verdi calculated as equivalent to A=432 Hz.



Antonella Banaudi sings examples from Verdi's operas.

As LaRouche's introduction explains, in the chapter on "Natural and Artistic Beauty," there are, furthermore, scientific criteria which define the beauty of art, criteria which are not arbitrary, as Immanuel Kant or Friedrich Karl Savigny claimed. Never before has such a link between science and music been proven so clearly, since the human voice is not only something beautiful to listen to, but is also a physical phenomenon, reflecting perfectly the laws of the physical universe. These laws, if broken, as in any other domain, be it economics or music, will cause serious harm—in this case, harm to the vocal cords, and to musical interpretation itself.

The problem was posed by Giuseppe Verdi himself in 1884, when he proposed that all opera theaters around the world adopt the standard "scientific" tuning of A=432 Hz (equivalent to middle C=256), which, relative to today's very high tuning (as high as A=448, for example, in Florence and Vienna), is almost precisely a half-step lower. And it certainly makes a difference of a half-step in the register shift of all voices. To the Music Commission of the Italian government, which actually then adopted A=432 by decree, Verdi wrote:

"When France adopted the so-called standard pitch [A=435], I suggested that Italy also follow its example, and formally asked the orchestras of various Italian cities, among them the one at La Scala, to lower their tuning fork by adopting the French one. If the Music Commission established by our government believes, out of mathematical considerations, that the 435 vibrations of the French standard pitch should be reduced to 432, the difference is so small, almost imperceptible to the ear, that I support it fully.

"It would be a very serious mistake to adopt, as proposed by Rome, a tuning of 450!!! I also share your opinion that lowering tuning does not reduce at all the sound and brilliance of performance; on the contrary, it gives it something more noble, fuller, and more majestic, which could not be given by the screams of a too-high tuning.

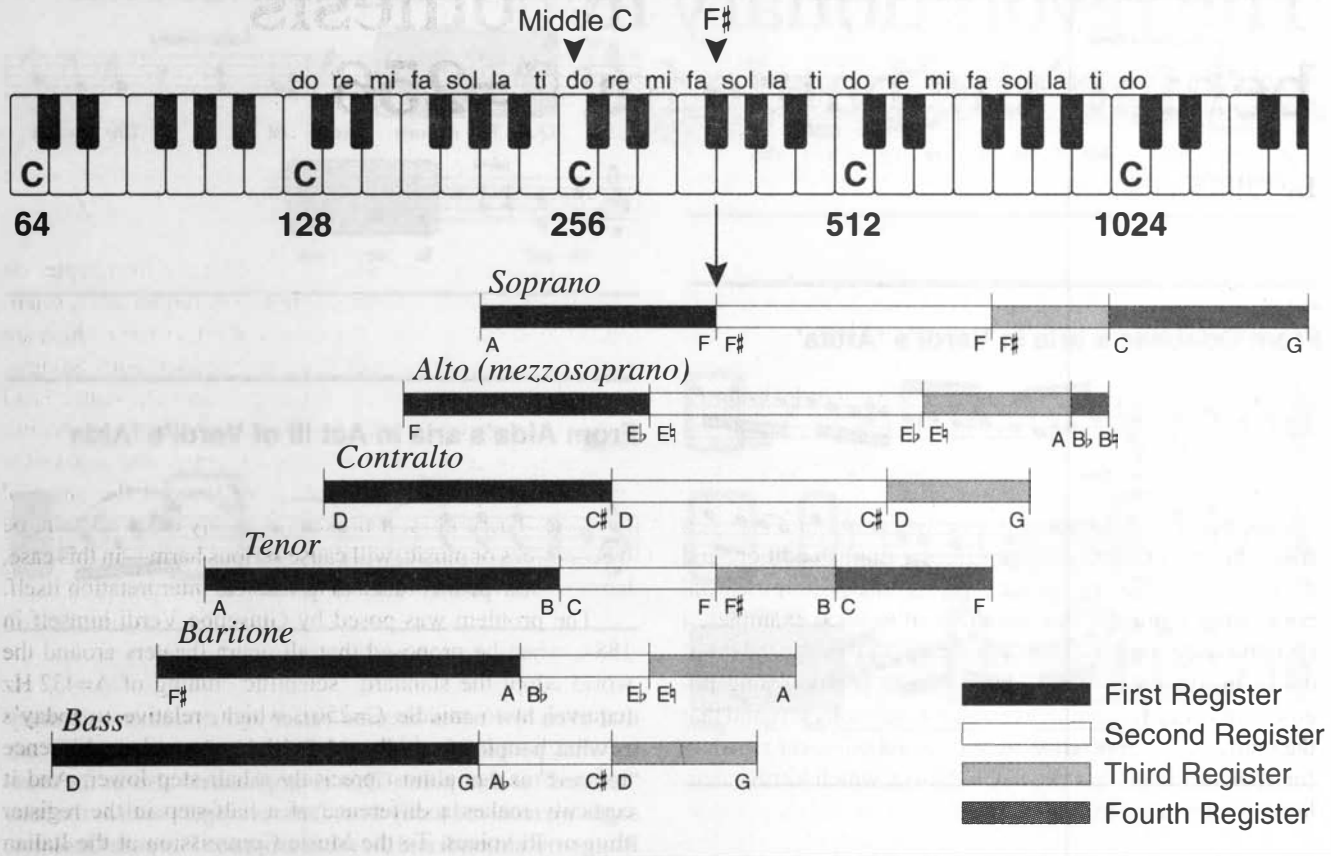
"As far as I am concerned, I desire a single tuning for the whole musical world. Music is a universal language: Why should a note, which is called A in Paris or Milan, become a B-flat in Rome? Respectfully yours, Giuseppe Verdi."

The dangers of ignoring registration

We refer to this letter of Verdi's not only in the music manual, but also in the international initiative of the Schiller

FIGURE 1

The six species of the human voice, and their registers



Institute to adopt A=432 throughout "the whole musical world," an initiative endorsed by more than 2,000 singers all over the world, as many of you who attended our first international conference here, at the Casa Verdi, on April 9, 1988, will remember.

The book is rich in musical examples proving the disastrous effects of high tuning, not only on voices, but also on the interpretation of German lieder, church music, and opera. For those who are not familiar with the *bel canto* singing technique, the book also gives ample explanations and graphics indicating how each voice species has its own *register shifts,* which must be respected in order to preserve the voice and allow correct interpretation. By register shifts, we mean those changes in the way of singing which allow a good singer to pass without any damage or break in the voice from the low or "chest" register (first register), to the center of the voice (second register), and, from there—which is the most difficult thing for the inexperienced singer or beginner—to the "head" or third register—the high notes which also laymen recognize when they are sung by famous sopranos or tenors, because they sound more brilliant and trumpet-like than any other notes. Beyond this register, there is an even higher one for tenors and sopranos, called "super-high," because it is even higher than the regular high third-register notes, going up to the high C (sometimes called the "chest high C") (see **Figure 1**).

When you will therefore hear today that, because of the high tuning, the voice "shifts too early" to a higher register, you can compare it to a car which has to change gear too early, which obviously reduces its performance altogether, and the speed in the high gear. This comparison (keeping in mind, obviously, that a human voice is a living phenomenon, and not a piece of metal), that the long-term damages of such early "changing of gear" can cause the ruin of the vocal cords, will allow you to understand the following musical examples.

Some examples from Verdi's operas

The best way to introduce the book, is, therefore to give you a musical example, which is being sung today by soprano Antonella Banaudi, a promising dramatic soprano coming out of Bergonzi's "bel canto voices" master class in Busseto, the home town of Giuseppe Verdi. She is accompanied by Maestro Marzio Fullin. They are performing two arias, Odabella's aria from Verdi's *Attila*—a dramatic coloratura aria going up to a high C, and Aida's aria "Oh patria mia." Each

FIGURE 2

From Odabella's aria in Verdi's 'Attila'

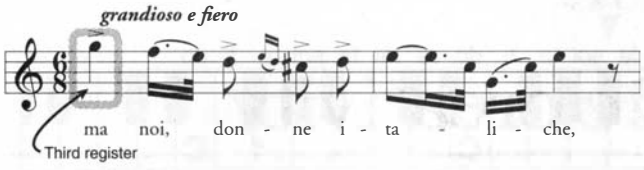


FIGURE 3

From Odabella's aria in Verdi's 'Attila'

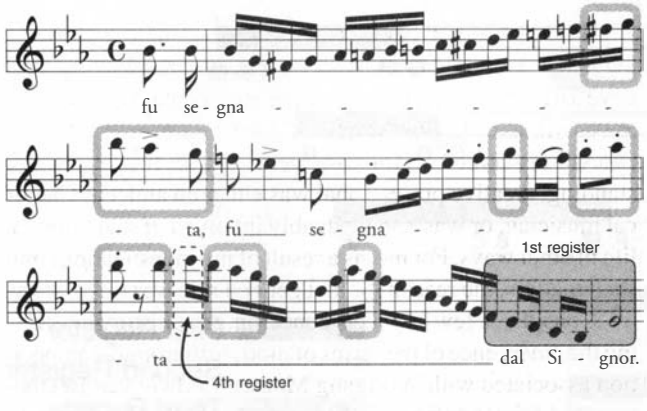


FIGURE 4

From Aida's aria in Act III of Verdi's 'Aida'

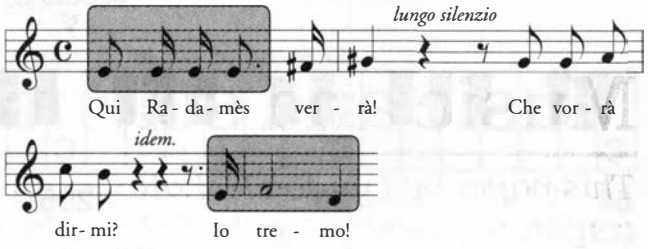
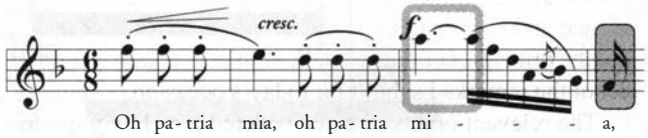


FIGURE 5

From Aida's aria in Act III of Verdi's 'Aida'



selection is being performed twice, first at A=442, at the piano on your left, and then at A=432, at the piano at the right, underneath Verdi's painting. You will notice in her voice what the book explains on paper: the difference of register shift, of color, and the effortlessness of singing at Verdi's tuning. You have to consider that the effort singers expend in opera houses is even bigger, since most of them nowadays begin by tuning the orchestra to a pitch higher than A=442, and since in the course of the performance, the wind instruments, as they warm up, rise in pitch even further.

As you may notice (see **Figure 2**), Antonella has no problems with high notes, and proves, as baritone Piero Cappuccilli already emphasized in 1988 by singing examples in both tunings, that it is not a question of high notes, as some critics of our initiative claim, but rather of "difference in color," which is much darker and dramatic, as it should be, with the low tuning. As she told me yesterday during the rehearsal, phrases which Verdi wants to emphasize (the expression marking says *grandioso e fiero,* grandiose and proud), such as "ma noi donne italiche" ("but we Italian women") on a high G, right after the register shift on F-sharp, become much more emphatic. She also wants to emphasize the high B-natural, which, at the high tuning, already must "shift" into the super-high register (**Figure 3**). What is clear, becoming all the more clear in the next example (**Figure 4**), is the fact that even low notes become easier and smoother—contrary to what people generally think, since the vocal cords are "relaxed" at that point. This is emphasized also in the messages we received today from famous singers such as the bass Ruggero Raimondi and the mezzosoprano Fiorenza Cossotto, who say that a low tuning also helps low voices, not only high ones.

The second aria presents a different aspect: It revolves around the main register shift for the soprano, between F and F-sharp. The words "Oh patria mia" ("Oh, my country") are all repeated F-naturals (see **Figure 5**), which are supposed to be broad, open notes on a broad vowel, "a," and must not be shifted to the high register—which is what happens if a soprano does not want to subject her voice to undue stress. The register shift occurs in this example, at the point when "patria mia" is repeated, on a high A (and the vowel "i" of "mia"). It is the same problem presented in the tenor aria "Celeste Aida" from the same opera, with the F of the word "Aida," which many tenors are forced to "pass" too early, resulting in favoring the "i" of Aida over than the open "a," contrary to Verdi's intentions, as the manual explains.

You may have noticed also, that the low notes (*parlato* or spoken notes) were much better at Verdi's tuning. Here, too, you can obviously ignore the natural register shift, and "open up" all Fs even in the high tuning; but that bad practice explains why young, talented voices today last only five years, unlike the the voices of singers trained 40 years ago, such as Carlo Bergonzi, Piero Cappuccilli, or Alfredo Kraus, who still sing today, because they are perfect masters of the use of the register shift.