

# The power of 256

*Lyndon H. LaRouche, Jr. tells why classical musical composition should be performed with a fixed value of well-tempered scale.*

*Written on the occasion of a concert given in Washington, D.C. in honor of Mr. LaRouche, by violinist Norbert Brainin, formerly the first violinist of the Amadeus Quartet, and pianist Günter Ludwig, on June 6, 1990.*

Why should classical musical composition be performed in agreement with a fixed value of well-tempered scale? Why must that scale be fixed to a middle C of approximately 256 cycles? During three centuries, or more, several sound explanations have been supplied. Ultimately, all valid replies are subsumed by two facts, one primary, the other supplementary, but essential.

The primary fact is that all great classical music is of superb beauty precisely because the composition is governed pervasively by something sacred, and expresses this connection in a way which only a strictly classical form of well-tempered polyphony can supply. The essential function of classical music, is to reflect, celebrate, and enrich that sovereign creative reason of the human individual, the which sets mankind apart from, and above the beasts.

That quality of potential for *sovereign creative reason* in the human individual, is that feature of man which defines the person as *imago viva Dei—in the image of the living God*. This quality is more quickly identified as the aspect of reason, distinct from, and superior to deduction, by means of which an individual scientist generates the valid discovery of universally lawful physical principle, which is the germ of a scientific revolution. In the instance of the great classical musical compositions, as from the mind of J.S. Bach, W.A. Mozart, or Beethoven, the same principle of creative reason is essential. This is also the case for all true works of classical art, such as those of Leonardo da Vinci, Raphael, or Friedrich Schiller.<sup>1</sup>

The supplementary fact governing classical well-tempering, is the *bel canto* mode of demonstration of the natural, fixed characteristics of registration for each “species” of the healthy, properly developed human singing voice (**Figure 1**). If we look at the matter more deeply, we see the same principle in the intrinsic musicality of the speaking voice, especially as this is situated in the known historical evidence of classical sung poetry as far back as Vedic hymns from earlier than the 4th millennium B.C.

## Vocal and instrumental registration

For the benefit of those readers who may not be familiar already with the empirics of voice registration, we identify the most relevant definitions to be adduced by aid of reference to Figure 1.

First, *registration*. The trained, healthy human singing voice spans a range of tones, from lowest to highest, within the ability of that person to produce beautiful tones. This entire range of the trained adult singer’s voice is divided into sub-ranges, from bottom to highest; the composition of classical song requires three such ranges, and four of these sub-ranges are often employed, at least in part, in classical scoring for the most challenging arias of the repertoire.

These sub-ranges are termed *registers*. Any trained singer can easily demonstrate the difference in quality inherent within a distinct such register.

This brings us to *register shift*, or *register passing*. Reference the soprano voice in Figure 1. Note those points at which the voice passes from F, in the relatively lower register, to F-sharp, in the relatively higher. This is true only for C=256 (A=430-432); at A=440+, the F-sharp lies in the relatively lower register, and the register-passage is from E to F natural (except by straining the voice, and shortening the life of that voice).

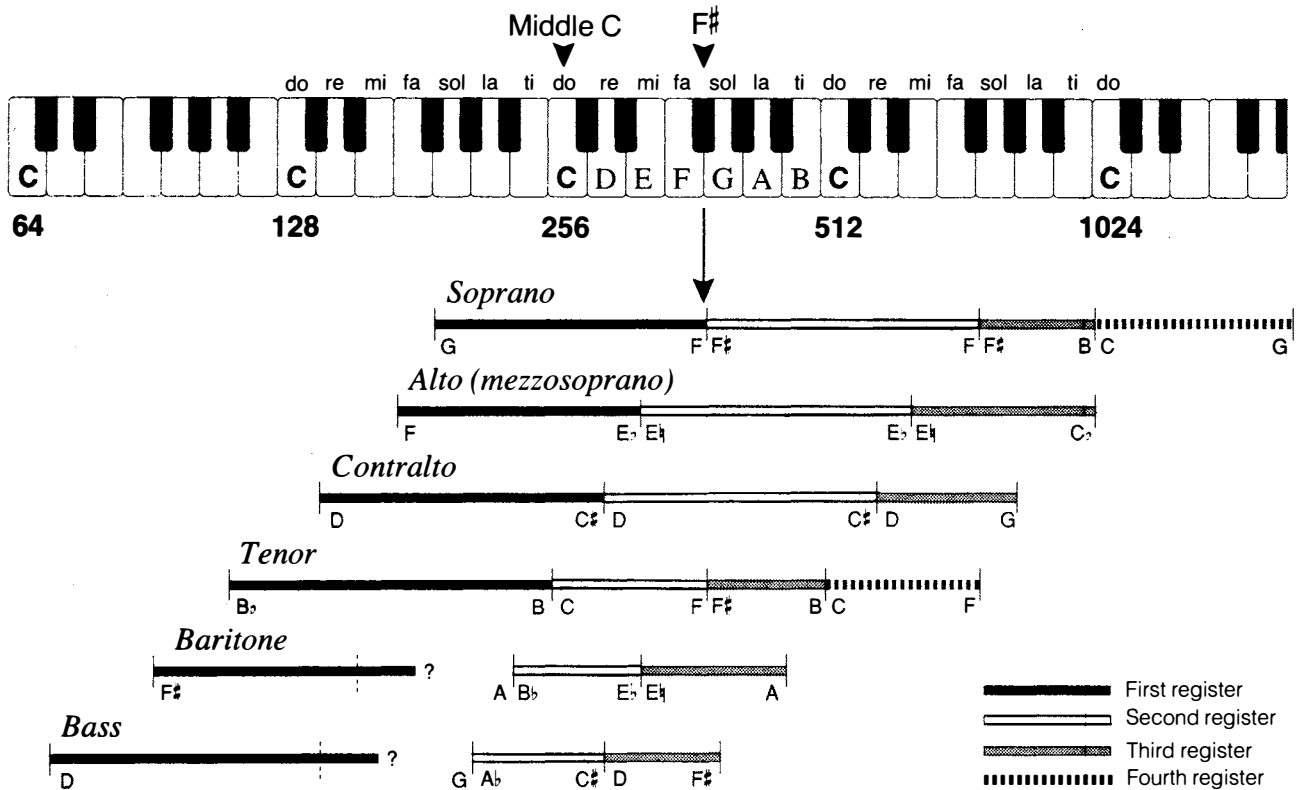
This *register passage*, as from F to F-sharp in this example, defines a kind of vocal “no man’s land” somewhere in the range between F and F-sharp. At A=430, this “no man’s land” lies somewhere between F and F-sharp; at A=440+, the “no-man’s land lies between the E and F natural.

Let us, then go back to the 15th-century Europe of the Golden Renaissance. **Figure 2** is a series of photos of carvings from the cathedral in Florence dating from the early 15th century. Those carvings show the singers in *bel canto* mode. Let us think of the predominantly soprano boys’ choruses used in the cathedral choirs of that period, and earlier. Let us situate the famous Guido’s scale in those terms of reference.

Take the central register of the boy chorister’s soprano voice as a point of reference. Let half of an octave lie in that register, and half in the register below. Thus, if the mid-point of such a well-tempered octave coincides with the relevant soprano register-shift, and if C is the denomination of the octave line, then the register-shift lies between F and F-sharp.

FIGURE 1

The six species of the human singing voice



Source: Schiller Institute research team. Ranges are based on known examples in the classical vocal repertoire.

So, the notion of G of the C scale as *dominant*, and the F as *subdominant*, are derived directly from such a construction of the *bel canto*-sung well-tempered scale.

In brief, what we have just represented is the evidence, based upon the empirics of ordinary *bel canto* choral practice, immediately under consideration by the musicians predecessor to Leonardo da Vinci's knowledge of existing musical-theoretical practice.

The crucial point here, is that all we have referenced, pertaining to voice-registration, is determined by *God*, not the artifice of man. All healthy soprano, alto, tenor, baritone, bass voices, and so forth, are born that way; their *bel canto*-adduced registrations are *God-given* to each and all members of that singing-voice species. Thus, once we have determined that the scale divisions between octave tones must be well-tempered, we need but know where the *God-given* values of the register shift lie, to locate the necessary, fixed values for a well-tempered classical scale.

The argument is made that some musicians are variously atheists, agnostics, or professedly agnostics. As we shall notice here, although some composers of the Romantic and Modernist factions have been overtly satanists, or atheists,

no classical musician could accept that. *Classical music*, like all great classical art, is directly motivated by a belief in a God like the Christian's God. That point will become clearer ahead; for now, it is sufficient, that we register the point.

The successful development of classical musical instruments, as for the case of such periods as circa A.D. 1500 (Leonardo da Vinci), until radical and arbitrary changes in tuning of wind instruments circa A.D. 1850 and beyond, is consistent with perfection of a well-tempered vocal polyphony pegged to C=256 cycles. As well-tempered vocal polyphony grows out of the singing of classical poetry, so the classical chart of musical keyboard and other instruments is based upon imitation of the principles of the human voice.

In short, the idea of an "instrumental music" distinct from vocal-polyphonic principles, is an anarchistic violation of classical principles which was popularized first by the Romantic enemies of Beethoven, Chopin, Schumann, and Brahms.

Notably, the great Cremona stringed instruments show conclusively, that they were constructed to be in agreement with C=256, and that they were otherwise intended to be congruent with principles of vocal polyphony. The history

FIGURE 2

**Bel canto singing, as sculptured by Luca della Robbia for the choir loft of Florence Cathedral**



Nora Hammersman



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of the classical pre-1850 wind and keyboard instruments is comparable. Admittedly, the reactionary incompetent Helmholtz and the confused statistician Ellis show disparity of constructed tuning among organs of the 1500-1850 period, but to the extent organs were used with choruses, the organ was adapted to the tuning requirements of vocal polyphony. Any competent keyboard performer of this period, simply tempered the keyboard score to bring the organ's tones into tuning agreement with the chorus' standard  $C=256$ .

**The classical principle**

Since I am responsible for launching, beginning about ten years ago, the present international campaign to restore classical tuning, I am obliged to account for the nature of the developments which led me to my present views on the meaning of the classical principle.

The entirety of my intellectual and related development is situated in a project which I conducted between my 12th and 17th years. At 12, I made a listing of names which I believed then to be the most influential English, French, and German philosophers of the 17th and 18th centuries: I selected Francis Bacon, Hobbes, Descartes, Locke, Leibniz, Hume, Rousseau, and Kant. I soon despised Bacon, Hobbes, Locke, Hume, and Rousseau; I chose Leibniz as the only truthful thinker of the list; and, I assigned myself the chore of constructing an original defense of Leibniz's *Monadology* against the contrary standpoint of Descartes and Hume.

It was out of this project, that my notions of classical principle emerged later, during the postwar period.

The essential philosophical issue, is that Descartes and Kant, like Aristotle earlier, reject the existence of a knowable form of creative reasoning. On this false premise, Kant and the Romantics generally, insist that there is no lawful yardstick for aesthetical beauty, and no rational aesthetics at all,

but rather only the capricious whims of both popular audiences, or the current generations of self-esteeming "professional" artists. So, the conflict between Leibniz and Kant is forerunner for Richard Wagner's satanic malice against Johann Sebastian ("Beckmesser") Bach.

The matter of defining "creative reason" is treated in several among my published writings in several languages; the recent, short book, my 1989 *In Defense of Common Sense*,<sup>2</sup> is recommended as most convenient.

Briefly, if we define a successful scientific revolution in terms of deductive forms of mathematical physics, the essential difference within science, immediately before and after the revolution, is that none of the old theorems is truly consistent with any of the new ones. There exists, thus, a *deductively* unbridgeable chasm between the old and new sets of mathematical theorems. This chasm is of the form known as a "mathematical discontinuity" or a "singularity."

No deductive mode of thought, such as that of Aristotle, or the neo-aristotelians Descartes and Kant can represent a function characterized by such "non-linear" entities as such "mathematical discontinuities." This follows.

The act of creative discovery of a more correct general scientific principle, which prompts a scientific revolution, generates thus the kind of "non-linear" singularity referenced here. The "register shift," which is the passing-over from the lower to higher register of scientific knowledge, is the act and power of creative reason. From the vantage-point of a merely deductive method, this passing-over of scientific discovery is, as it was for Descartes and Kant, an intrinsically incomprehensible phenomenon.

From the standpoint of Leibniz and his followers of the 19th century, no such difficulty exists. My own life's work became, essentially twofold. First, the discovery of a more



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adequate sort of intelligible representation of the process of successive acts of creative reason. Second, the useful applications of such improved representations.

In that state of mind, during 1947-1948, I first encountered the bestial dogma of “information theory” as presented by Professor Norbert Wiener. I committed myself to refute Wiener’s evil, neo-Kantian brutalizations of the human mental processes. To this purpose, I chose the relationship of technological progress to the increase of the productive powers of labor, as the empirical standpoint of reference for my refutation of “statistical information theory.” Hence, my original discoveries along that line belong chiefly to my profession of physical economy.

By 1952, as I completed my initial discoveries in physical economy, I was not satisfied to represent creative mental processes only as they pertain to the subject modes of mathematical physics. It was necessary to account for the role of the same powers of creative reason in classical art, for example. I was obliged to do this by my commitment to refute both of the attacks on Leibniz which Kant sums up in his *Critique of Judgment*.

My political philosophical standpoint is a coherently universalizing one. For me, the universe is defined not by assigning a fundamental role to fixed, discrete objects; *God* is essentially the *Creator*, the universe a process of unfolding *creation*, and individual *creative reason* our only map for tracing and influencing real existence in the universe. *Creation*, not discrete *thingness*, is the essence of *universal substance*; for me, *substance* is *hylzoic*.

So, in politics. As I show (afresh) in my *In Defense of Common Sense*, man is *imago viva Dei* by nature of an individual person’s *sovereign potential* for developing the *power of creative reason*, the latter the only quality which deserves the name of *reason*. A suitable form of *human life*,

is a mode of day-to-day individual and general practice which generates, disseminates, and employs the power of creative reason, to the effect of celebrating and strengthening that which sets man apart from and above mere hobbesian, lockean beasts, which is suitable for mankind as *imago viva Dei*. To do good, is to celebrate and to affirm practically the joyous fact that we are *imago viva Dei*.

Thus, true art must be confined to creative problem solving within the constraints of a powerful socratic kind of rigor, defying all *purely arbitrary* innovation. Only as art embodies nothing but that representation of creative reason—as I have defined creative reason—does art cohere with the requirement of being practice *imago viva Dei*.

So, true physical science and classical art are two independent, inseparable facets of a single, universal principle.

## Emotion and art

We experience two qualities of emotions, one, the *erotic*, below the belt line, so to speak, and the other, *Agapē-caritas*, above. The difference between Classical and Romantic art, is the difference between Leibniz and Kant, the difference between the rule by Christian *Agapē* and Dionysiac *Eros*. So do would-be “Romantic” performers butcher, erotically, a classical Beethoven, Schubert, Chopin, Schumann, or Brahms score.

Those of us privileged to have effected genuine creative accomplishments know better than most, of course, that we are driven emotionally to our successes, over long periods of labored concentration-span, by a quality of lovingness consistent with *Agapē*. The lives of many of us so occupied are gripped by classical music, because nothing but the music of Bach, Mozart, Beethoven, and Schubert evokes within us those strong forces of *Agapē* essential to all successful creative work. We know, in a parallel way, that Dionysiac *Eros* is full of destruction of creative potential. By aid of those relatively exceptional qualities of relevant experience, we understand more profoundly what is essential in the transaction among the composer, the artistic performer, and the audience.

The mechanisms by which a student assimilates a scientific discovery are the same quality of mental processes by which the discovery was effected. The faculty by which the performer and audience is enabled to receive the creative work of the composer is the same power of creative reason employed to create the composition. The message of classical music is the creative process which seeks to unite the composer, performer, and audience across space and time. This message enriches the performers and audiences touched, and like successful performance of a good Schiller tragedy, sends the performer or audience from the theater genuinely enriched in their nature as *imago viva Dei*.

## Notes

1. This is not true of “Romantic” or “Modernist” compositions, which, by definition, are modes of practice premised upon defiance of the “constrictive” features of the classical principle.
2. *In Defense of Common Sense*, by Lyndon H. LaRouche, Jr., Washington, D.C.: Schiller Institute, 1989.