THE RELATIVITY OF OUR MUSICAL CONCEPTIONS

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The theory of Relativity is sweeping the intellectual world of today. For centuries our thoughts and feelings have been molded by certain definite structures which have crystallized along certain lines, and the characteristic fluidity of early times has transmuted into a state of utter rigidity, so that they appear to us as mysterious and most sacred idols. That these idols are transitory in essence, that they belong to the perpetually unfolding sphere of the Becoming, that WE made them as they are, and that they have no absolute existence, but the existence that WE insufflated into them, all these points seem never to enter the field of our mental or intuitional consciousness. Yet in musical axioms which tyrannically rule over European music lies an absoluteness, a certainty equal to the axioms of physical science, which have so utterly vanished before a closer and more daring investigation lately.

There is no excuse for the perpetuation of such axiomatic creeds now that the discovery of Oriental civilization, art, science, which are so utterly different from ours, shows us that, if during these last centuries of European culture we have discovered ONE Truth, there is the possibility of **another** Truth, differing not in quantity but in quality. In other words, now that we know approximately how (in past civilizations comparable to ours in many respects, in some even decidedly superior) Humanity was thinking, feeling, creating along lines totally different from our present ones, it seems impossible for us to cling so frantically to our own conceptions, above all to believe still that they are eternal, indisputable, absolute, and in no manner susceptible of transformation.

Nevertheless, if some pioneers have already attempted with an ever-increasing success to break the old idols, their work has, at the most, touched only the outer layers of the musical structure. What has been revolutionized as yet is only the construction, the form, the sequence of music. But the musical unit, the note, stands undefiled, untouched to a very great extent. Composers like Ornstein and Cowell have by the use of clusters of sounds imperiled its existence, and, to a certain measure, the futurists' attempt to create an enharmonic scale, or Busoni's third-of-tone scale, have paved the way to the future revolution; yet these tentative efforts arc still very empirical in character and do not reach even the essence of the subject, at least consciously.

In order really to grasp the idea I mean to convey in this brief article, one must first understand what is the inner essence of the concept upon which all western music is based: the Note. If you ask some one what a note of music is, you will be looked at as almost mad; if, furthermore you ask: "Can you imagine music without notes?" your interlocutor will leave you, despairing of your mental balance. Yet, these two questions: "What intrinsically is a note?" and, "Are notes an essential element of Music?" are quite legitimate, and, if properly understood and discussed, will raise most interesting points.

First, what is a Note, according to the current musical theories? A Note is the unit of our musical universe, the cell of the body of music. All musical creations, from a popular refrain to a symphony, are aggregations of notes — vertical aggregations, or chords; horizontal aggregations, or melodies. If, on the other hand, you ask for a definition of music you may find something like this: Music is the art of combining sounds. Here immediately

we come across what seems a duplication. First we spoke of notes, then, of sounds. Is there then a difference between a note and a sound?

Indeed there is a difference. Sound is an element of the Universe. Everything around us is sound, sound that oftentimes we do not hear because of the limitations of our ear, yet in some respect sound. Our music, however, does not use all this infinitude of sounds; it is too rich, too chaotic for our musical sense; we are lost in the profusion of audible vibrations. We, therefore, have selected some specific sounds produced by some almost invariable instruments, and have thus created a little cosmos of sounds in which we feel at home. We have expurgated Nature, we have encaged it, and thus rejoice in our easy mastery over this atrophied material. This material is what we call **musical sounds**. But a note is theoretically something different. **A note is an abstract concept**. It has no sense-reality in itself. When we think of the note A, we think of something which is a pure abstraction.

First, we think of it, independently of the **pitch**. Ask a bass, a tenor, a soprano to sing you an A, and you will have 3 different sounds; yet you may say of each of them, "It is an A."

Secondly, suppose the pitch of the sound be given, we think of it independently of the quality. For should a trumpet, a violin, an English horn, play the same "a", in reality we should have three sounds largely differing in **quality** and in power of rousing subjective emotions.

If we analyze the first case we come in contact immediately with the notion of what we call octave-sounds. It is a very strange notion. We say that a is the **octave-sound** of A. What does it mean? Scientifically it means that if the frequency of A is equal to n, the frequency of a is equal to 2*n*. It is simple enough, abstractly. Yet why should we say that the vibration 2*n* is in some way the same as the vibration *n*, enough the same, at any rate, to give it the same name?

We could as well have said that A being the name given to the sound whose frequency is *n*, a would be the name given to the sound with a frequency of 3*n*. In other words, why not have called an octave, the space comprehended between a certain sound and the sound whose frequency is three times greater, instead of the space comprehended between a certain sound and the sound whose frequency is twice greater? From a philosophical point of view, the number 3 in nature plays a part as important as the number 2 does. The Trinity is the basis of every religious system; the triangle is the most universal symbol, and the most perfect figure in many respects.

The objection which will be presented immediately is this: We **know** sensorially that an octave is the repetition of the same sound at a higher pitch; we feel it. If you play a twelfth (the interval corresponding to the ratio above-suggested, 1:3) you know that it does not sound like an extended unison, as the octave does.

But the objection is a very illusory one, As well say: "An octave is an octave because it is an octave." We have been trained for generations to consider the sound a" as something possessing the same emotional quality as the sound a', the same quality to such an extent as to apply to both the same denomination. Yet, we cannot help but see that these two

sounds are different. They are not the same. There is absolutely no reason why we should think they are the same, why we should call them by the same name. **It is a mere convention, which has absolutely no natural, no fundamental basis**; which, therefore, may be modified at any moment without any theoretical inconvenience.

In fact, Oriental music has never recognized octave-sounds. The concept of octave-sounds in Japan is not understood, by old musicians at any rate. Their conception of "scale" differs so widely from ours that there is practically no such thing as "scales" in the Orient. They have **modes**, thousands of them; but that is very different.

The difference is that, if you go deep into the esoteric conception of Music in the East, you discover that the Oriental music ignores the "note" as such. They make music in terms of **absolute pitch**, not in terms of **relative pitch**. Their music is built upon modes wherein each tone, each "compound sound" has an individuality, an existence proper. Occidental music, on the contrary, is built on the abstract concept of "**interval**." A scale is a progression of ratios, is a pattern made to order, which may be fixed at will at any pitch. It is a sliding ladder, whose rounds are notes; between these rounds there is an absolute void, practically. So that outside these few rounds there is no music; there is only "wrong notes." We do not think musically in term of sound, we think in terms of notes, or in terms of intervals, which is the same; **for a note is the edge of an interval**, as far as our musical theory goes, therefore a purely abstract factor. We are still under the influence of the Flemish school of counterpoint of the 15th — 16th centuries, with its algebraic formulae, its reversing parts and intricate puzzles; we are still, in theory, juggling with intellectual puppets, artificial entities which we call "notes" and manipulate like wooden cubes, in order to build our musical castles. But these cubes arc corpses; they contain no life. We can pile them up, dispose them in beautiful decorative figures; but, do we get music? Decidedly **not**. We attain to a sort of Decorative Art, a sort of moving architecture; but that is not music, real, absolute Music. Nor is it real architecture: you cannot apprehend it at once; it lies in between, a hybrid combination of elements half-intellectual, half-emotional.

What I attack here is not the principles of Musical Composition. I should be foolish indeed to say that there should not enter any intellectual or abstract elements in the composition of a musical organism, as for instance a symphony.

What I want to convey is the idea of the unreality, the un-musicality of that which is the unit, the cell, of all musical organisms in the West, viz. the Note.

If again we come back to the Oriental conception, we see that the formative units of a mode are living entities. The interval, the ratio of frequencies, do not count as basic elements. They came in music during the decadences when it became necessary to have strict regulations in order to check the decomposition of the sacred institutions and colleges. The primordial sounds used as bases were conventionalized natural sounds. We see in the early Chinese annals how these primordial sounds were taken from the singing of a certain bird, from the bellowing of a cow, and so forth. Then, in order to attain a more fundamental characterization and to reach the plane of the archetypal sounds, as it were, of the natural voices, they were stabilized, the length of the sound-producing pipes precisely fixed. But

even when stabilized they kept all their initial flexibility; between each successive tone there was no void, but an insensible progression; each tone was a **center influence**, not a rigid tower of ivory; therefore they remained "**alive**." Each musical sound, each tone, lived as an entity in itself. Transposition was unknown as a principle of composition, because as soon as you begin to transpose you take each sound as an abstract symbol, and no more as a living reality. If you take a cat and raise its atomic vibrations, by some mysterious process, it is no more the same cat, and probably no more a living being. If you take a sound and raise its pitch, it is no more the same sound. In other words, wherever absolute pitch (theoretically) is not required, music is no longer based upon tone (or life), but upon abstractions, upon intervals.

If musicians would know what a **Mantram** means in the East, they would understand. They would understand that, in **real** Music, a tone, or compound-sound, and still more a series of tones, or **modulations of sounds**, or melody, are living organisms reacting directly upon other living organisms, visible or invisible; they would understand that the essence of music is magic (as Combarieu points out so clearly in his "Histoire de la Musique"), that real music has a tremendous magical power susceptible of destroying and creating matter. It is already a fairly common laboratory experiment to blow out a big flame simply by sounding the proper tone to which the flame responds; in the same way a student in Menlo Park, California succeeded in shaking the walls of his study when producing the proper tone to which they responded. (Are we not near the famous incident of the trumpets of Jericho?) All this means that a tone is an "entity," and not an abstraction; that in "abstractizing" tones, or creating the concept of Note, the vital, magical value of Music is killed.

The note a" given by a violin, and the same note given by a horn, are in fact two different sounds. We are used to consider them theoretically as identical, but they are not; their pathos is entirely distinct, their creative or destructive powers over matter are totally different. In identifying them we overlook what is really essential in them: Life. We do like the scientist who kills first in order to dissect. No wonder if he cannot discover the secret of Life! No wonder if Music has lost its olden power, in spite of the perfecting of instruments, and their multiplication. To tolerate this continual adaptation of a music written for one instrument to another instrument, proves the terrible primitiveness of our musical sense; although, evidently, in our system as it is, it does not really matter much.

Let us understand and face the truth. We Occidentals, in spite of all our glorious musical repertoires, of our wondrous orchestras, **have not yet learned what a sound is**. Even in the analytic process of our art we are still in a period of relative infancy. We have been so drunk with our chords, our counterpoint, etc., that we have forgotten to care about the basis of all: a complex sound. Yet what is harmony, if not the science of making complex sounds?

We speak of the note a". But such thing does not exist except in scientific experiments. The a" produced by a violin is only fictitiously called a", because what a violin produces is, in fact, a **compound-tone**, that is, a prime and a certain amount of upper and lower partials,

specially upper ones, though the lower have been lately discovered in almost every sound we use in music. We practically never deal with pure sounds devoid of partials. We deal only with compound-tones. Each compound-tone has an individuality of its own.

What is the difference between a chord and a compound-tone? There is no qualitative difference, only a quantitative one. A single violin tone is a compound-tone of the **first order**. A chord emitted by a string quartet is a compound-tone of the **second order**. They differ in degree of diversity, but only in degree.

If we courageously face these facts we reach immediately the following striking conclusions:

(1) There is no fundamental difference between Monody and Polyphony.

(2) Our modern Harmony is but a part of an infinitely more complex science (or art), of which Orchestration is also a part.

(3) Our invention (!) of Polyphony is but a step leading to a more exact synthesis of tones, wherein primes and partials will both be considered and strictly defined.

(4) Our musical notation is a most inaccurate one, in so far as it leaves aside all partials.

If every musical sound is a compound-tone, a melody is not one unrolling thread of sounds, but **several** threads of sounds; it is, in fact, approximately the same thing as a succession of chords. The primes play merely the part of the bass of the harmonic succession. What we do then, when we note a melody by writing only the succession of its primes, is exactly what composers of the 17th century did, when, instead of writing the whole chords, they merely wrote the fundamentals. But most of the time they added to these fundamentals the numerical symbols of the chords. When we write a melody we are not even so accurate, relatively. In other words, melody is never to be found in music. Every melody is a hidden harmonic succession, and should be treated as such. In fact, it was treated **empirically** as such by Oriental Music; for a given mode or melody was to be played only by one type of instrument, as a rough indication, not only of the given primes, but also of the partials. Western music, having increased the number of instrumental categories, and forgotten the secret value of modes and their proper use according to time, season, hour, place, influences, has mixed up most distressingly the musical values. Its notation, seemingly more accurate and precise, is in fact inferior in such respects to the Oriental notation.

What we call Harmony is the art of combining musical sounds in vertical progression. We are only beginning to know what it means. Until now we have dealt only with notes, with combinations of abstract relations of intervals. But in the future we shall deal with compound-sounds understood in their integrality (primes and partials). Thus the quality of sounds will be studied, as well as the pitch of the principal tone, or prime. Thus the science of Orchestration will become a part of Harmony; but a science of Orchestration so conceived

as to differ materially from the one we have today. Today we mix instruments absolutely empirically, instinctively. The science of partials being actually non-existent, we have no means of knowing scientifically what we are doing. Furthermore, the complexity of our modern orchestras is not only, materially and financially, nonsensical, but musically produces luxurious effects which most of the time kill the real depth of musical expression, although it is a great help to composers who have nothing to express. **The orchestra is an instrument of decadence**. It is all on the surface; it is, like the modern palaces all gold, all light, all glitter; but in such a profusion of ornaments no soul can dwell. Our orchestral music is absolutely un-spiritual, in the real sense of the word spiritual. It has no simplicity, no spontaneity, no purity. It is either the result of a poverty of spirit trying to conceal its heavy layers of tinsel, or the frantic attempt of an imprisoned soul to break the inertia of notes and create music based almost exclusively upon half-revealed partials.

What Music needs is, above all, a kind of electric instrument, conceived in a way similar to the basic idea of the "Telharmonium" of Dr. Cahill experimented with some 15 years ago. Such an instrument will permit us to produce by combination **any sound**, whatsoever — and therewith arrive at the third and fourth propositions enumerated above. Thus we shall rid ourselves of the empirical division of sounds into primes and partials, at least for practical purposes. Instead, we shall have compound-tones, with not only the relative intensity of partials and primes as a quantity accurately defined, but also with the numbers and disposition of partials as a precise musical factor.

As an example let us take a melody, a' b' e' d' g'. In our present musical system a' b' e' represent different notes sufficiently defined by their name. In the future a' will give place to a compound-tone composed, let us say, as follows:

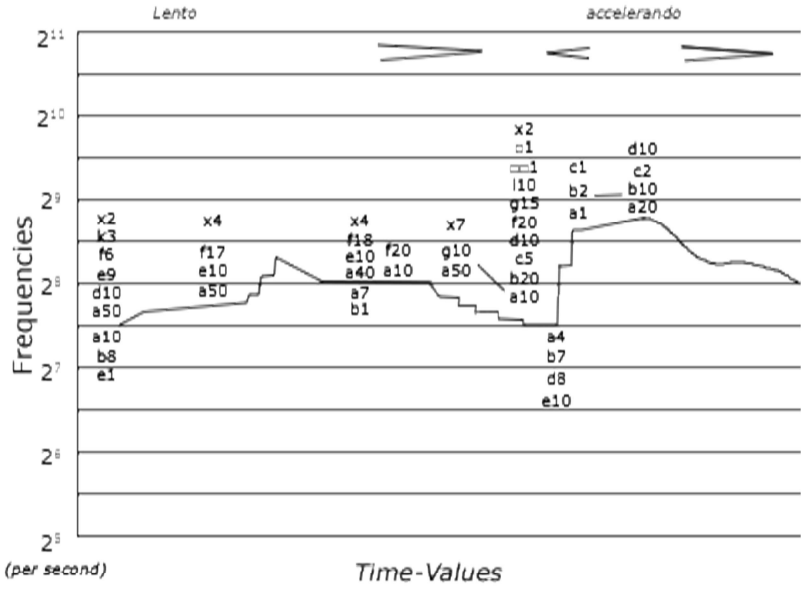
prime: a'
upper partials: 1. 2. 3. 5. 7. 9.
lower partials: 1. 3. 4.

But that is not all. The intensity of the prime being taken for instance as 100, the intensity of every partial would be given proportionally. Thus every compound-tone will be determined in all its components. A progression of such compound-tones would be what we call a melody. Having enriched with unheard-of tones the monodic line, the next natural step will be to constitute a polyphony in the spirit of Palestrinian polyphony. But instead of the simple and restricted quality of the human voice, we shall have the wondrous splendor of an infinitude of cosmic sounds. For with such an instrument as we imagine, every quality of sound is theoretically possible. A dazzling profusion of new materials will flood the imagination of the future creators; and yet an utmost purity and simplicity may be attained, because all this splendor will transfigure the **quality** of the tone, not, the **quantity** of it. What we shall gain, is an almost incredible subtlety, an ever-changing **chatoyment** of colors, not so much of outer colors as now, but of innermost nuances. The new wealth will

be within, not without, it will not be a mixture, but a selection out of an infinitude of potentialities.

Not only upper partials will be used, but lower partials, as they have been detected recently in such abundance in the tone of bells. In fact, the prime sound — the only one we consider now — will appear then as a radiating center of dynamic tonal energy, as a Sun surrounded by the double series of planets, the over- and under-tones. Each compound-tone, therefore, will be a microcosm, living of its own life, expanding a certain vital energy, acting powerfully over all cosmic organisms. A melody then will be, by comparison, a chain of solar systems — a polyphonic whole, a Universe. Then indeed Man will be worthy of the name of Creator!

The question of notation is very simple; the best way to arrive at an easy reading is to have the music printed upon a roller, similar to the ones used in pianolas, but unrolling horizontally instead of vertically, as has already been suggested by some inventor. The diagram printed on the opposite page will give a very incomplete yet basic idea of the possibility of such a notation.



Note: The series of partials is indicated by the letters a, b, c, d, etc. The numbers adjacent are the measure of the intensity of each partial, the intensity of the prime being taken as 100.

In fact, it is merely an adaptation to the new mechanical potentialities of the old Japanese notation of Chinese origin. This Japanese notation, which one may find reproduced in some books upon Japanese music, is also vertical and horizontal, and uses curves or straight lines in almost the same way as I do here. But the quality of the tones (i.e., the overtones) is not mentioned, although quantity of letters, symbols, etc., give detailed indications concerning instruments, nuances, etc.

The notation by curves or lines (instead of by points or notes) is very much more supple and leaves to the executant a part — small but necessary — for personal feelings. It has the great advantage of giving the impression of a continuity, therefore of Life (See Bergson, "Creative Evolution") whereas our notes give the feeling of division, of restlessness, of individualism. I repeat again here that music has nothing to do with individualism; it is above all a cosmic expression. It is the cosmic expression of Man's consciousness.

The time-values are given as in mathematical curves by the horizontal elongations of any fragment of the curve. Once the essential features of the diagram are understood, one can easily imagine a score (roller) containing three or four curves. We shall then get on a larger scale something equivalent to the score of a mass by Palestrina, for three or four voices.

If one objected that such a conception of simple polyphonic music limits the field of musical expression, I should answer that Perfection is concentration and selection. The music of a Vittoria is **perfect** because it comprehends no **external** elements; the music of Wagner is **imperfect** because it contains **non-musical**, external elements.

Descriptive music is not music at all. Psychological music, so called, is equally futile **as music**. What the future will bring us is a synthesis of all arts; but within this synthesis, each component has to stay in its own place, to use its own means of expression, and not to make a horrible mixture of the "precedes" of all combined arts. We want Order, not Chaos. The music of today is chaotic, because it does not know what it wants; or even if it knows it does not **dare** to do the necessary thing to get there. It is built upon anti-musical elements; it tries to destroy them, and does not know how; it feels that something is wrong, but does not know what.

But above all, it has no ideal to express, no faith — social, religious, or any other — to support it; it is **metaphysically aimless**. That is the worst thing that can happen to an art. Wagner was great because he had a metaphysical conception, and **knew it**. So was Scriabin. Stravinsky is great today because he feels something immense without seeming to be able to express it consciously; wherefore we miss something in his music, however marvelous it is from a sensorial point of view. He is, with a few others, the mirror of the humanity of to-day, striving in a half-darkness, rent at times by fulgurating lightning. But all are afraid of "jumping beyond their shadows," as Nietzsche would say, afraid of clamoring for what Music needs, for what Humanity, Science, Art, Religion need a **new basis, a new soul, a new faith**.

These pages do not pretend to be more than a sketch of future possibilities, or necessities, as I believe. My endeavor was merely to open the eyes of musical thinkers, to show that everything is unstable and relative in our music, and why it will be imperative to make radical changes. This does not mean a revolution into nothingness, or a floundering about in the Unknown. Oriental music is there, **if properly understood**, to tell us its secret, and to illumine our darkness. I am not advocating a going back to Oriental music. That would be the greatest nonsense. We go forward, not backward. But, as in Logic

antithesis succeeds thesis, and synthesis succeeds antithesis, I firmly believe that Oriental music was the thesis, Occidental music the antithesis, and that the future must give life to a synthesis in the direction here sketched.

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1. I might add here that the "trinitarian octave," or the Twelfth taken as the basis for scales, has been, in fact, used during the early Christian centuries. We hear of the "organum" or singing fifths. I fancy these fifths were really twelfths; the twelfth appeared then as a consonance, as consonant as our octave (Helmholtz reaches the same conclusion). The progression of chords of ninths, dear to Debussy, is based upon the same duodecuplc system. Twelve is furthermore the basis of the Universe, in all cosmologies.

So the whole idea of the "trinitarian octave" is very much less fantastic than it appears at first.

We have seen thus how, from the point of view of pitch, the conception of octave-sounds is a mere artificial abstraction; from the point of view of the quality of sounds we find that our current musical conceptions are equally un-natural.