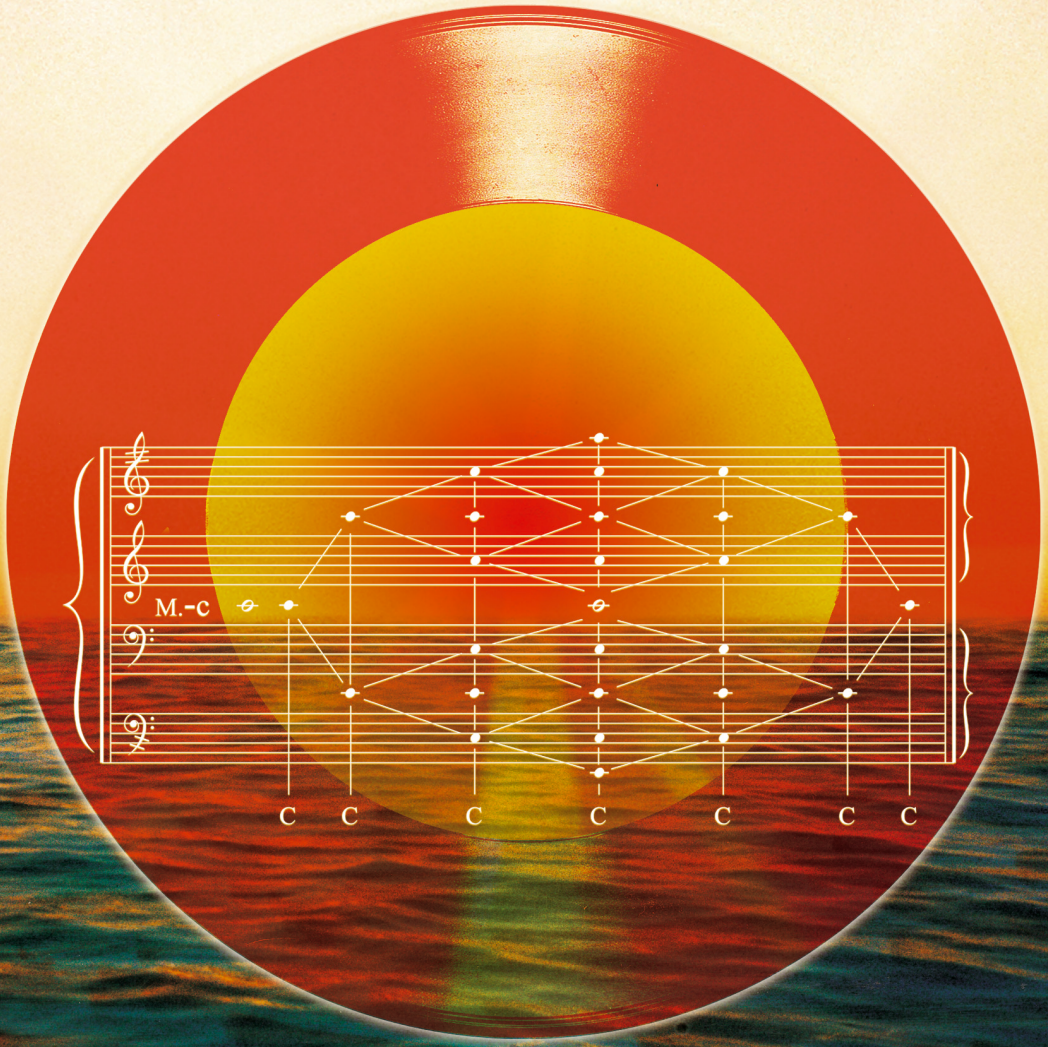
Treatise on the Hexagram

An evolutional system of music notation

(Integrated edition)

by
Wu Dao-Gong



WU DAO-GONG

TREATISE ON THE HEXAGRAM

An evolutional system of music notation

Presentation Franco Mannino
Preface Zhao Feng

PRESENTATION

*Franco Mannino**

The music notation reform proposed by Professor Wu Dao-Gong in his ***Treatise on the Hexagram*** is not based upon a radical revision of our customary system of writing and reading of the notes, but instead represents — in its development of the Pentagram theory — an evolution of the same. Another praiseworthy goal of the author's work is the integration he attempts to achieve between Western culture and that of the East.

During the past few centuries, many attempts to reform the musical staff have been made by musicians who regarded the Pentagram notation as obsolete, but as Professor Wu Dao-Gong rightly sustains, "...thus if one seeks to completely overcome the past, it is necessary to fully retrieve its heredity."

Starting from "Middle-c" and by means of the symmetric unfolding of the 2:1 ratio, adding one line both above to the Pentagram "Treble staff" and below to the "Bass staff", comprising the Pentagram "Great staff" of 11 lines, one forms the Hexagram "Great staff" of 13 lines. The reading of the notes thus becomes simplified, in that the addition of ledger lines is reduced, and the two clefs, each with the addition of one line, are read in the same way.

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* Maestro Franco Mannino: One of Italy's most highly distinguished artists by virtue of his comprehensiveness and wide experience. Besides having been an eminent pianist, he was active as a composer, conductor, administrator, talent scout, writer and playwright. He published over 600 compositions, and composed film scores for more than 100 films, collaborating with some of the world's most famous directors including Luchino Visconti, John Huston, Leonide Moguy, Mario Soldati and many others. He was the first Italian artist to be invited to conduct the orchestras of Peking and Shanghai. He conducted concerts and operas in theatres throughout Italy, from La Scala in Milan to the Teatro Massimo in Palermo. He held important posts in Italian and Western musical life, such as that of Artistic Director of the San Carlo Theatre of Naples, and Artistic Advisor and Permanent Conductor of the National Arts Centre Orchestra of Ottawa, and when he relinquished the latter, the Canadian government ordered a *Mannino Festival*. He was a Member of the Santa Cecilia Academy of Rome as well as President of the highly renowned Philharmonic Academy of Bologna, etc. He received numerous Italian and international awards and prizes for his artistic achievements, as well as honours at the highest level from the Italian state authorities.

Adding then to “Middle-c” according to the modalities of the binary system and of graduality, by evolving and duplicating a uniform staff one level above the Hexagram “Treble staff” and another uniform staff one level below the Hexagram “Bass staff”, including between them the “Great staff” of 13 lines, one forms the “Complete staff” of 27 lines, by means of which all other clefs are in practice eliminated, except obviously for the treble and bass.

This system, as Professor Wu Dao-Gong explains, is based upon three constituent elements: the theoretical and artistical achievements of Pentagram notation; the rational nucleus of the formal logic and of the mathematical logic; the system of philosophical thought and the deductive modality of the *Yi Jing* and the “Ba Gua”.

Concerning the developments of this Hexagram theory, which seems among other things to be extremely rigorous from a formal point of view, one should not exclude that it might be used in the future, also by Western musicians, perhaps with the addition of further contributions, as the author himself hopes.

It must be said, however, that Western music has been based upon the Pentagram for centuries, as a result of which the rewriting of music in a different form from that in which it was conceived seems a rather awkward enterprise. Among other things, the difficulties involved would, in our estimation, be insurmountable, at least as far as our generation is concerned. For example: how would an elderly orchestra player react if he had to read Mozart on a Hexagram?

It would instead be possible, in our opinion, to propose this kind of music notation to the new generations and to those who are not yet familiar with the use of the Pentagram. It is obvious that such an operation cannot be anticipated in a short time, but it should also be said that it would certainly not be the first “revolution” in the history of music.

Franco Mannino

PREFACE

*Zhao Feng**

From ancient times humanity has felt the desire to transcribe music. In the history of Chinese music, a primitive form of notation dates back more than four thousand years. In Europe the method of music transcription on lines develops around the ninth century.

The Notation of the pentagram in its present form was already defined in the eighteenth century. However, as is well known, this system of transcription is still imperfect. Music scholars all over the world continue to conduct an incessant search for the reform of music notation, resulting in the elaboration of various projects.

Music transcription on six horizontal lines appeared in a rudimentary form even before the development of the medieval tetragram of the *Canto gregoriano*. Following the emergence of the Pentagram, the horizontal six lines were to be found in the early "tablature". Over the last two hundred years, there have been more than 220 proposals of linear music notation reform, from those of one line to those of sixteen lines, among which more than 30 of six lines. The first proposal of six-line notation reform was published in 1789, and the most recent in 1984. In China also, at the end of the 1950s, an analogous project was elaborated by Fang Jisheng and Zhao Songguang. However, the principal scope of these proposals was simply that of unifying the reading of the notes.

Prof. Wu Dao-Gong, a Chinese musician with Italian citizenship, proposes in his ***Treatise on the Hexagram*** — published in Italian, Chinese, and other languages — a project of reform which, by means of the formal logic and the mathematical logic of the

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* Maestro Zhao Feng: Well-known most distinguished Chinese music educator, commentator and theoretician, whose work *China Supplementary Volume I Instruments (The Universe of Music — A History)* is known throughout the world. Pres. Emeritus of the Chinese Central Conservatory of Music, and Chairman of the Chinese Association of Musicians; Chairman, Committee of Art Education, National Education Committee P.R.C.; Chairman, Committee of Arts, Ministry of Culture; Hon. Prof., Xiamen, Nankai, and Henan Universities; Member C.N.P.P.C.C.P.R.C.; Asian Region Coordinator of the UNESCO/IMC.

2:1 ratio, and the principle of the binary system, is based principally on the Hexagram of 4 levels with 27 lines that form the “Complete staff” of 8 octaves, made up systematically of the “Double treble staff”, the “Treble staff”, the “Bass staff”, and the “Double bass staff”; among these are inserted also the “Middle staff” (comprising the Alto and Tenor staves) and the two “Transitional staves” of the treble and bass registers. In this way, the numerous additional ledger lines are reduced or completely avoided, and the reading of the notes unified, which results in a simple and unitary rule, and above all eliminates the difficulty of displacement of the “Middle staff”. The Hexagram's structure of eight octaves and four levels grouped together in a single and divisible form, can embrace all the ranges of executable tones, from those of the grand piano to those of vocal and orchestral composition.

The advantages of this reform reside particularly in the fact that all the notes of C (Do) in the different registers and four levels are to be found uniformly in a central and symmetrical position. The Hexagram's extremely rigorous and concise logical structure unquestionably opens up broad prospects to the computerization of music notation.

However, in spite of the fact that the necessity of a reform is felt by many, it is difficult to change a practice that has been in use for so long.

The creative project of the *Daogong system* must be fully recognized, but in order for the rational method of his proposed Hexagram to become widespread, it is necessary that the international community take an interest in it, to the end of developing a program for its application and popularization. Ample discussion and the well-deserved attention will give rise to an auspicious general consensus.

Thus far the publication in several languages of the text *Treatise on the Hexagram* and its diffusion on an international scale are already indicative of an initial success achieved by the efforts engaged in this praiseworthy initiative.

Zhao Feng

AUTHOR'S PREFACE

The Integrated edition of the text ***Treatise on the Hexagram*** is an enlarged and updated version of the first edition published in 1990, and the outcome of further examination and research over a period of twenty years. It constitutes a completion of the integral functional system, from a strictly professional application to a broadly popular one. It is a practicable system independently of any tendency or particular school, and it can either fulfill the evolutional demands of contemporary and avant-garde music, or satisfy the need for the divulgation, promotion, and development of classical and popular music. It is an elaboration whose goal is universal contact and the shared advancement of musical culture in humanity's third millennium.

The ***Treatise on the Hexagram*** proposes a reform of music notation based upon the theory and achievements of the Pentagram notation, of which it represents an evolution, not an *ex novo* creation. Musicians are not required to begin their studies again from zero; once one has understood the logical formula and unitary rule of the Hexagram system, one has the *keystone* of the whole notational system.

The ***Treatise on the Hexagram*** also represents the integration and reciprocal complement between Western and Eastern cultures, in harmony with today's tendencies. In this encounter, the two cultures can find new inspiration and reciprocal stimulation in the search for a common civilization and collective progress.

The author hopes to elicit from all friends of the international musical community, to whom this treatise is addressed, the critical discussion, practical application, and creative contributions regarding the music notation of the Hexagram system.

Rome, 2012

INTRODUCTION

During the past five centuries, the Pentagram (five-line staff) music notation as a form of representative musical ideography has been widely used in Europe and throughout the world, contributing greatly to a universal musical culture. Though still in use today, Pentagram notation has created and presented certain difficulties, due to its historical evolution with its intrinsic limitations and attendant problems. There is consequently an increasing gap between the Pentagram notation on the one hand, and the demands of advancing musical development on the other. Sensitive musicians have been aware of this problem for some time and have drawn attention to this tendency, while at the same time hoping for and seeking a new breakthrough.

In the course of the last two centuries, there have been numerous proposals of linear music notation reform, from those of one line to those of sixteen lines, with more than 30 proposals being of six lines. All these proposals have, however, consistently disregarded a fundamental principle: that if one seeks to completely overcome the past, it is necessary to fully retrieve its heredity. Furthermore, the general tendency has been to focus the attention on a renewal of the form, while neglecting further research into the logic.

In the history of music, the horizontal six lines have already been used in the early European "tablature".

In the *Yi Jing* *****, the "hexad" is the "cipher" of the deductive-philosophical logic and of the deeper significance contained in the divinatory diagrams. It thus concerns the

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* *Yi Jing*: *I Ching — The Book of Changes*, the famous philosophical canonical text of ancient China. It sums up and illustrates the form of each thing by the alternation of the Yin (negative principle in nature) and the Yang (positive principle in nature); it analyses and demonstrates the movement of each thing by the changes of symbol (the formal figure) and number (the mathematical numeral). Its system of philosophical thought and its deductive modality provide the important function of enlightening guidance in the formation of the Hexagram theory. For example: the concept of the whole, the temporal-rhythmic concept, the versatility concept, and that of the unity of opposites; the systematic thought, the idea of graduality and the idea of the periodic cycle; the theory of the center, the symmetrical figure, the principle of equilibrium, the principle of equivocality, and the principle of reciprocal complement. etc.

formal logic and the mathematical logic, which have been the object of interesting reflections and considerable research.

In the course of the evolution of human civilization, each thing concurs in the good of every other.

The Hexagram (six-line staff) music notation is an innovation inspired by the foregoing considerations and developed in response to the problems indicated in the premise. With respect to the Pentagram notation, it represents the total preservation of its heredity and at the same time its complete evolution. It derives from the logic of the theoretical development of notation, while preserving the traditional knowledge and customary rules for its application. At the same time it eliminates the Pentagram's present difficulties and limitations, while unifying and normalizing to the utmost its forms and rules. It thereby allows the musical ideography to unfold with great precision and versatility, while at the same time achieving perfect simplicity and functionality. The innovation of the Hexagram notation could thus facilitate today's most advanced theoretical and technical-musical demands, bringing new vigor to musical development.

THE FORMAL STRUCTURE AND THEORETICAL FOUNDATIONS OF HEXAGRAM NOTATION

A. The formal structure of Hexagram notation derives from that of Pentagram notation, it is founded upon traditional concepts, which it simultaneously transcends. Consequently, it seems to us unprecedented and at the same time familiar; it is both varied and uniform. The whole applied system is more complex and at the same time more simple than that of Pentagram notation.

B. Hexagram notation is based upon three essential elements: the theoretical and artistic achievements of Pentagram notation; the rational nucleus of the formal logic and of the mathematical logic; the system of philosophical thought and the deductive modality of the *Yi Jing* and the "Ba Gua"*. The staff system thus devised is characterized by its rational structure, concise concept, complete function, and simplified rules.

The formative modalities of the new system are the following: 1) Each set of three horizontal parallel lines forms a half staff — precisely, based on the traditional Pentagram, with the three lower lines of the "Treble staff" and the three upper lines of the "Bass staff" — every combined with the transitory natural ledger line, constitutes a mutable scale group, i.e. precisely an octave, a series of twelve tones or a series of twenty-four tones; each set of six horizontal parallel lines, made up of the combination of these two adjacent and opposite groups of mutable scales, forms a staff that, by means of the principle of reciprocal complement, becomes an autonomous expressive musical mode. 2) Each staff is a symmetrical combination of the 2:1 ratio both formally and

* "Ba Gua": The system of 64 different "hexa-grams" in the *Yi Jing*, obtained from the combination, in pairs, of 8 different fundamental "tri-grams", used ever since antiquity both as a means of divination and as a philosophical deductive modality. Its formal and mathematical logic is that of the 2:1 ratio (i.e. a unity formed by doubling the half), which is characteristic of the unity of opposites, and possesses also the capacity for always beginning the circle again in an endless cycle; the alternation of the Yin and the Yang corresponds to the principle of the binary system.

mathematically; each staff can be evolved and duplicated logically according to the modalities of the binary system and of the graduality, so as to produce the “Complete staff” and the “Inferential staff”. The “Complete staff”, that is to say, a combination of the staves of 4 different levels with the clefs of the seven applicative programs made up of 27 lines and 8 octaves, comprises all the ranges of executable tones; the “Inferential staff”, i.e. a series of variable combinations structured according to the principle of equivocality, can instead express specific categories of frequency and of the imaginary, beyond a practicable use. They can be concrete and abstract, realistic or fantastic, all at the same time. The application of this system, which has just one unified rule and one logical formula, can be unfolded from the microcosm to the macrocosm, from the interior towards the exterior, always beginning again in an endless cycle, capable of infinite variations without detaching from its principle.

C. In the Hexagram notation, the “Middle-c” is the centre of the staff structure and of the scale system. The staves and scales are formed by expansion from “Middle-c”; the “Middle-c” is the centre of unification for every combination of the staves and scales. They are at the same time complete and divided, similar and different. The rules are invariable and can be applied to different ranges.

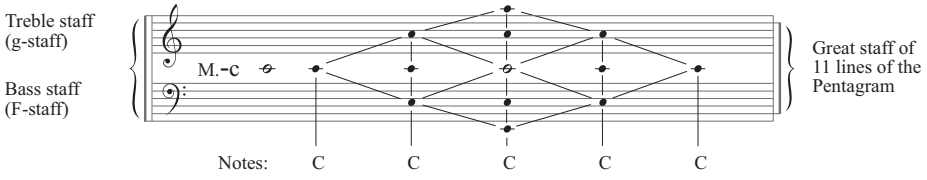
D. The formal structure and theoretical basis of Hexagram notation, and especially its formal and mathematical logic, can also form the theoretical framework for the “Demonstrative staff” in the field of contemporary and avant-garde music, offering practicable and standardized rules for its application and future development.

THE HEXAGRAM NOTATION STAFF SYSTEM AND RULES FOR ITS APPLICATION

A. The "Great staff" of 13 lines of the Hexagram

Illustration: Starting from "Middle-c" as a center line, then by means of each set of three horizontal parallel lines that constitutes a half staff of an octave and by means of the symmetric unfolding of the 2:1 ratio, adding one parallel line both above to the Pentagram in the "Treble staff" and below to that in the "Bass staff", comprising the "Great staff" of 11 lines, one forms the "Great staff" of 13 lines of the Hexagram, which combined with the transitory natural ledger lines, constitutes a group of scales of 4 octaves. The formal logic and the mathematical logic of the two different levels of the "Great staff" are unified and yet symmetrical, identical but also differentiated, as in figures 1, 2, and 3:

Figure 1) Unified and symmetrical figure on the "Great staff" of 13 lines of the Hexagram



M.-c (Middle-c) is on the transitory natural ledger line.

Figure 2) Scale structure on the "Great staff" of 13 lines of the Hexagram

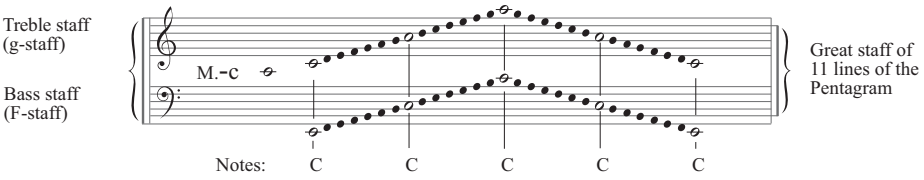
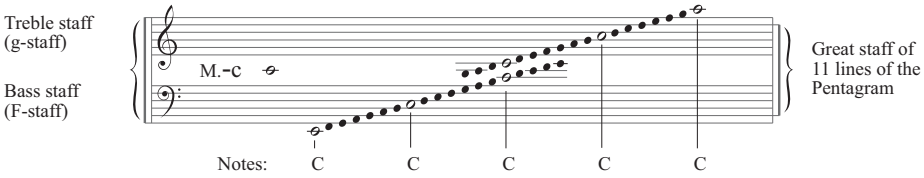


Figure 3) Scale system on the "Great staff" of 13 lines of the Hexagram



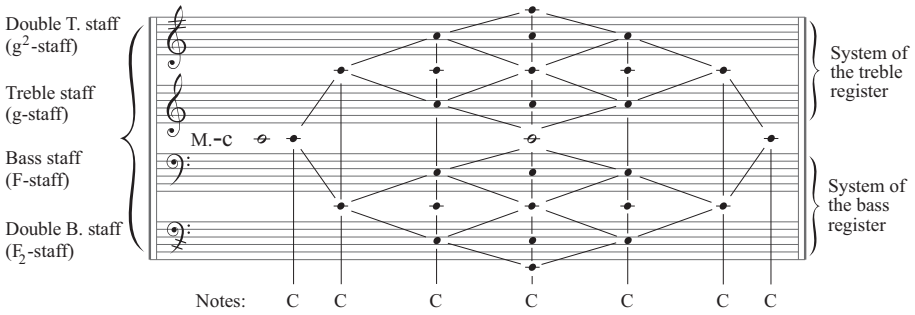
Demonstration: Two different sets of six lines read like a single uniform set of six lines; a single uniform set of six lines reads like two different sets of three lines — precisely as, on the Pentagram the combination of the three lower lines of the "Treble staff" with the three upper lines of the "Bass staff".

Conclusion: The range of notation has been extended, the addition of ledger lines has been reduced; the reading of the notes has been unified, the rules simplified. The structure of two levels grouped together in a single form, comprises the tone ranges of normal performance.

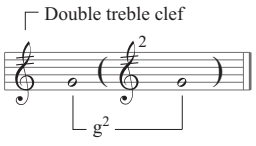
B. The “Complete staff” of the Hexagram

Illustration: After having formed the Hexagram “Great staff ” of 13 lines by means of a symmetrical extension from “Middle-c” as a center line, according to the modalities of the binary system and of graduality, then by evolving and duplicating a uniform staff one level above the “Treble staff ” and another uniform staff one level below the “Bass staff ”, including the “Great staff ” of 13 lines, one forms the “Complete staff ” of 27 lines of the Hexagram, which combined with the transitory natural ledger lines, constitutes a group of scales of 8 octaves. The formal logic and the mathematical logic of the four different levels of the “Complete staff ” are unified and yet symmetrical, identical but also differentiated, as in figures 4, 5, 6, and 7:

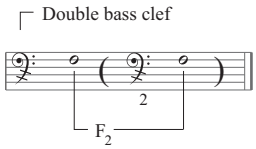
Figure 4) Unified and symmetrical figure on the “Complete staff ” of the Hexagram



T. (Treble); B. (Bass).



The cipher (2) above the “Double treble clef ” is represented by the small letter octave ^{2}, can be omitted. With the addition of two small oblique lines in the upper part of the “Treble clef ”, one represents the “Double treble clef ”.



The cipher (2) below the “Double bass clef ” is represented by the capital letter octave $_2$, can be omitted. With the addition of two small oblique lines in the lower part of the “Bass clef ”, one represents the “Double bass clef ”.

Figure 5) Scale structure on the "Complete staff" of the Hexagram

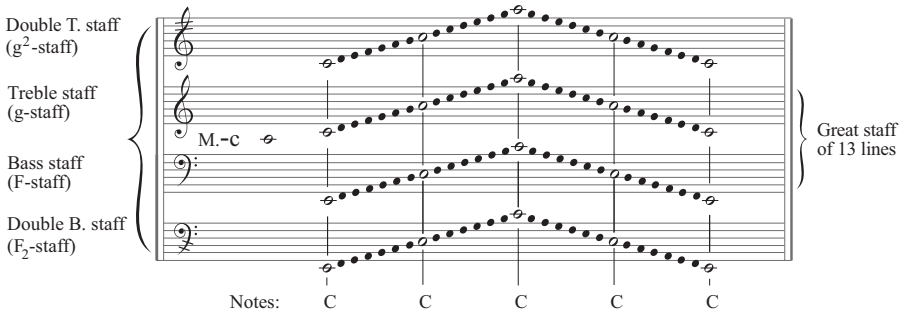
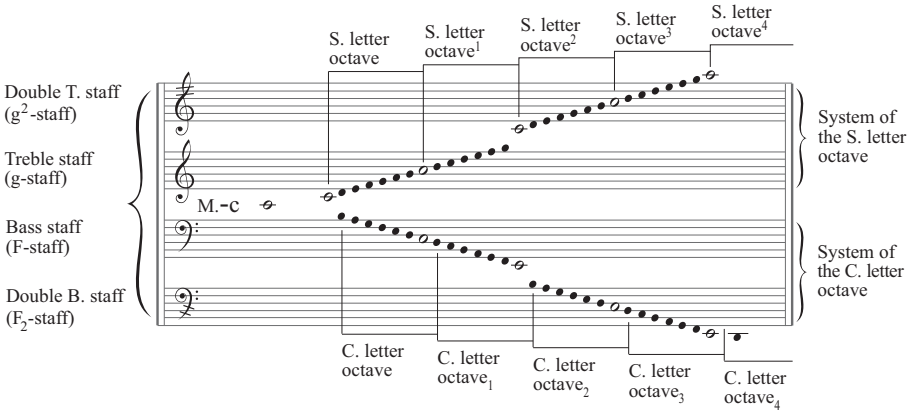
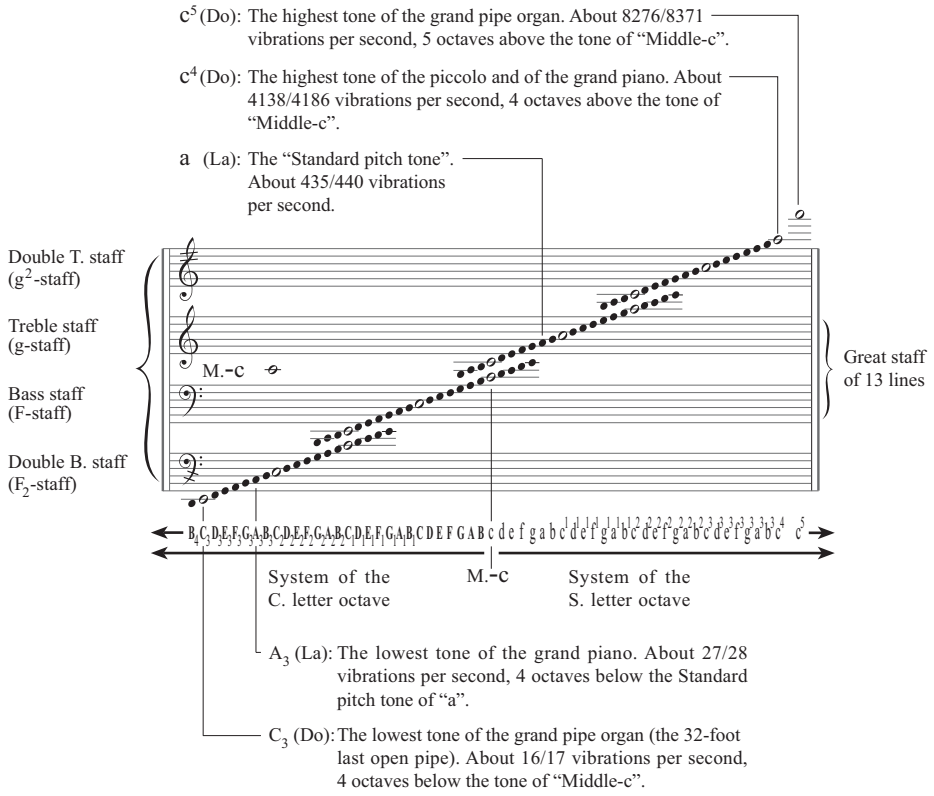


Figure 6) New symmetrical composition on the "Complete staff" of the Hexagram



Notes: S. (Small); C. (Capital).

Figure 7) Scale system on the "Complete staff" of the Hexagram



Demonstration: Four different sets of six lines read like a single uniform set of six lines; a single uniform set of six lines reads like two different sets of three lines — precisely as, on the Pentagram the combination of the three lower lines of the "Treble staff" with the three upper lines of the "Bass staff".

Conclusion*:* The range of notation is now complete, the addition of ledger lines is reduced or avoided; the reading of the notes has been unified, the rules simplified. The structure of four levels grouped together in a single form, comprises all the ranges of executable tones of both the treble and bass register systems.

C. The relationship between the "Great staff" and the "Complete staff" of the Hexagram

Illustration: Modifying the clefs but not the rules, the method of the "Great staff" can be applied to the "Complete staff", as in figures 8, 9, 10, and 11:

Figure 8) Connection of the clefs in the treble register

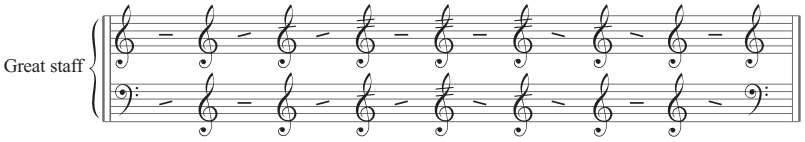


Figure 9) Connection of the clefs in the bass register

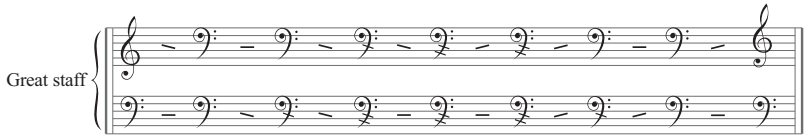


Figure 10) Connection of the clefs in the extended register

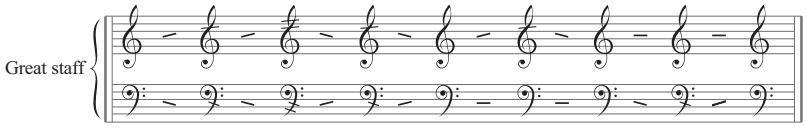
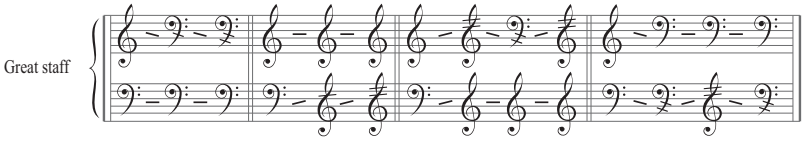


Figure 11) Connection of the clefs in the crossed register



Demonstration: Two different sets of six lines include four different sets of six lines; four different sets of six lines read like a single uniform set of six lines — precisely as, on the Pentagram the combination of the three lower lines of the "Treble staff" with the three upper lines of the "Bass staff".

Conclusion: The range of notation has been completed, the addition of ledger lines is reduced or avoided; the reading of the notes has been unified, the rules simplified. The structure of two levels grouped together in the single form of the "Great staff" can be applied to the system of all the ranges of the "Complete staff", including the piano, organ, harmonium, harp, celesta, xylophone, bells, guitar, etc., or to the compressed full score.

D. The "Middle staff" ("Alto staff" and "Tenor staff") of the Hexagram

Illustration: With two small parallel vertical lines together with the sign **C** (like M.-c), one can represent the "Middle-c clef" ("Alto clef" and "Tenor clef"), which indicates the position of the "Middle staff" between the two register systems of treble and bass in the middle register, i.e. an octave lower than the "Treble staff" and one higher than the "Bass staff", as in figures 12 and 13:

Figure 12) Position of the "Middle staff" register

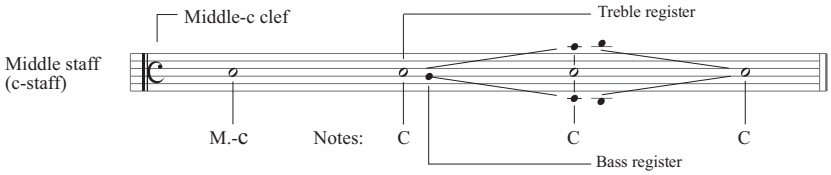
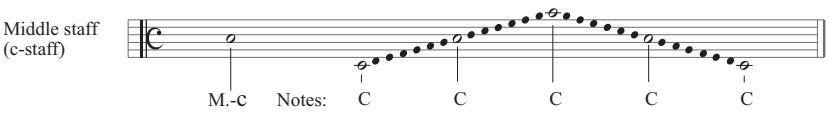


Figure 13) Scale structure on the "Middle staff"



Demonstration: The set of six lines, at once equal and versatile, applies to the middle register between the registers of the “Treble staff” and “Bass staff”.

Conclusion: The range of notation has been expanded, the addition of ledger lines reduced or avoided; the clef has been determined, and the reading of the notes unified. The transition to other staves has been facilitated, making for ease of application.

E. The “Transitional staff” of the Hexagram

Illustration: With the addition of a small oblique line in the upper part of the “Treble clef” or the lower part of the “Bass clef”, one represents the “Transitional register clef”, which indicates the position of the “Transitional staff”, that is to say, one octave above or below the notes of the original staff, as in figures 14 and 15:

Figure 14) “Transitional staff” of the treble register

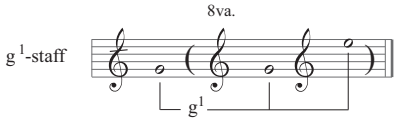
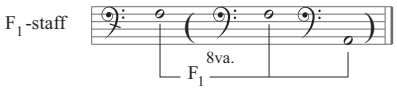


Figure 15) “Transitional staff” of the bass register



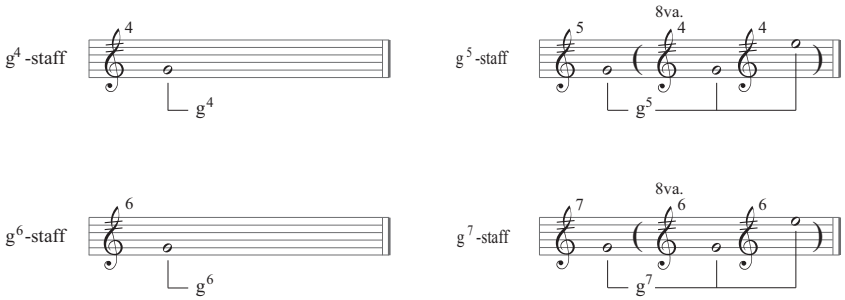
Demonstration: The different sets of six lines, which are both equal and versatile, are applied to the transitional registers between the staves of the treble register system and those of the bass register system.

Conclusion: The concepts are concise, the logic is rationalized; the rules have been unified, the reading of the notes unmodified. With these added staves one has the application of voices to the transitional parts in the notation.

F. The “Inferential staff” of the Hexagram

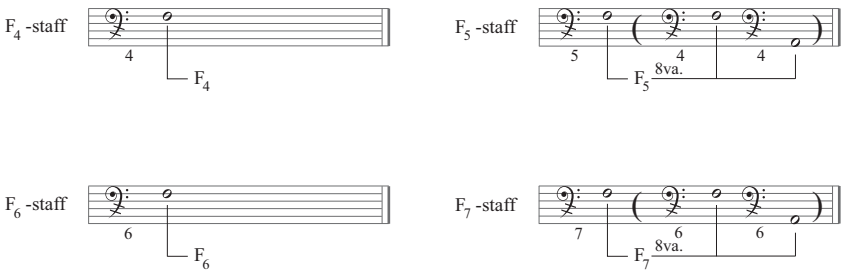
Illustration: By means of the deductive modality of the principle of equivocality, sets of six horizontal parallel lines continue to unfold from the basis of the “Complete staff”, alternating and evolving in such a way as to continuously produce staves of new levels. With a cipher (Arabic numeral) placed above the “Double treble clef” or below the “Double bass clef”, one represents the “Inferential register clef”, which indicates the position of the “Inferential staff” and its pitch and register, as in figures 16 and 17:

Figure 16) “Inferential staff” of the ultra-high register



Registers g^4-g^5: in ultra-high frequencies.
Registers g^6-g^7: in the category of ultrasonic waves.
The sign “8va.”can be omitted and substituted by a number that determines the pitch of the notes and the register.

Figure 17) “Inferential staff” of the ultra-low register



Registers F_4-F_5: in ultra-low frequencies and the infrasonic waves.
Registers F_6-F_7: these refer to the specific category of imaginary frequencies.
The sign “8va.”can be omitted and substituted by a number that determines the pitch of the notes and the register.

Demonstration: All the different sets of six lines read like a single uniform set of six lines; a single uniform set of six lines reads like two different sets of three lines — precisely as, on the Pentagram the combination of the three lower lines of the "Treble staff" with the three upper lines of the "Bass staff".

Conclusion: The efficacy of this method is prodigious, the rules are simple, they can be applied however one likes, as long as the rules themselves are respected. The use of variable structures and a fixed form can have an expression that transcends the notation of executable tones and extends into specific categories of the frequency and of the imaginary.

G. The "Demonstrative staff" of the Hexagram

Illustration:

l) The half staff, combined with the transitory natural ledger line constitutes a mutable scale. A whole staff, combined with the transitory natural ledger lines constitutes two adjacent and opposite groups of scales. Each of the staves, when combined with the transitory natural ledger lines constitutes a different level of register. All the registers, reciprocally combined with the transitory natural ledger lines create a system of gradual scales. They are at the same time similar to and different from each other.

2) There exists a symmetrical dividing-point of the 2:1 ratio, which is a formal and mathematical subdivision between any two half staves and between any two whole staves. This dividing-point exists also between two mutable scales and between any two of these groups. Connecting and transforming the scales are a symmetrical axis and a junction on the tone of "Do" (the note of "C"). All of it is abstract and concrete at the same time.

3) Each clef indicates the pitch and the register of the staves. The structure and form of every staff is a unification of opposites, forming a clearly marked entity.

4) A single invariable rule is applied to every kind of music. A simple identical form is applied to every different register. They are complex and yet simple.

5) Modifications of the regular tempered tones combined with irregular fluctuations of the lines, on the one hand, and modifications of the regular notes combined with irregular

rhythmic signs, on the other, constitute the means and the rules for the expression of music. They are at the same time modern and traditional.

6) Applying the rules described here, on the basis of the data, norms, and fixed proportions, one can write the "sound spectrum" of lines, dots, and signs, indicating the fixed pitches and the registers. Thus it is possible to achieve vast objectives, whose function and meaning include not only the category of music notation but also that of research into the "sound spectrum". These objectives are both artistic and scientific.

Demonstration: The modality of the demonstrative notation is based upon the formal and mathematical logic of the Hexagram notation. The method of the demonstrative notation is formed of notes, lines, and signs. The structure of the demonstrative notation is built upon the "Complete staff" and the "Inferential staff", thus giving rise to the "Demonstrative staff".

Conclusion: In the Hexagram notation the theoretical basis of the "Demonstrative staff" in the field of contemporary and avant-garde music is founded on abstract concepts and concrete methods. Both its theoretical rules and its practical application have been verified.

H. The notation of the 24-tone equal-temperament

***Illustration*:** Here we have a division into halves of the 12-tone equal-temperament. The whole tone is divided into four equal parts; the semitone is divided into two equal parts, as in figures 18, 19, and 20:

Figure 18) Accidental notational signs of the 24-tone equal-temperament

Intervals		Minor semitone	Semitone	Major semitone	Whole tone	Natural tone
Flats	Names	Minor-flat	Flat	Major-flat	Double-flat	Natural
	Signs	𝄳	♭	𝄬	𝄫	♮
Sharps	Names	Minor-sharp	Sharp	Major-sharp	Double-sharp	Natural
	Signs	𝄲	♯	𝄪	𝄪 (×)	♮
Notes		1) 𝄬 = ♮ + ♭ = ♭♭. 2) The whole interval range of the 4 tones: minor semitone (1/4), semitone (1/2), major semitone (3/4), whole tone (4/4).				

Figure 19) Rules for the arrangement of the musical alphabet of the 24-tone equal-temperament

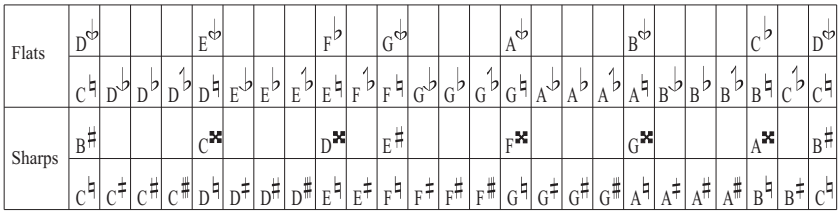


Figure 20) Rules for the enharmonic changes of the 24-tone equal-temperament

$B^{\downarrow\flat} = A^{\uparrow\sharp}$	Down to minor-flat	=	Up to major-sharp	$A^{\uparrow\sharp} = B^{\downarrow\flat}$	Up to minor-sharp	=	Down to major-flat
$B^{\downarrow} = A^{\sharp}$	Down to flat	=	Up to sharp	$A^{\sharp} = B^{\downarrow}$	Up to sharp	=	Down to flat
$B^{\downarrow\flat} = A^{\sharp}$	Down to major-flat	=	Up to minor-sharp	$A^{\sharp} = B^{\downarrow\flat}$	Up to major-sharp	=	Down to minor-flat
$B^{\downarrow\downarrow} = A^{\natural}$	Down to double-flat	=	Up to natural	$A^{\times} = B^{\natural}$	Up to double-sharp	=	Down to natural
Notes	1) Between E - F, B - C, the intervals are minor semitones and semitones. 2) The enharmonic changes with 3 tones: $B^{\downarrow\downarrow} = A^{\natural} = G^{\times}$; $E^{\sharp} = F^{\natural} = G^{\downarrow\downarrow}$; $D^{\times} = E^{\natural} = F^{\downarrow}$.						

Demonstration: The 24-tone equal-temperament derives from that of the 12-tone equal-temperament and depends upon it, enriching its range and enlarging its notational function.

Conclusion: The traditional rule remains in use. The use of the 12-tone equal-temperament in place of the 24-tone equal-temperament is avoided.

I. The new order of Hexagram notation and rules applied in the full score

1) With the Hexagram, each part relative to vocal or instrumental music can be inserted in a staff, in precise accord with the corresponding clef.

2) With the Hexagram, any clef of any part relative to vocal or instrumental music can be modified at will.

3) Thanks to the modality of alternation of the clef, one reduces the use of many ledger lines.

4) Thanks to the method of changing of the clef, the modifications of the alto clef are eliminated.

5) In the notation inverted, the parts remain in their original position, without inversion (see APPENDIX 1).

6) In the transposed notation, the parts — music for some wind instruments — must be written in the score in the original keys (with tones at real pitches). Thus, in the score, all the tones are notated in their original position, the reading is unified, and the rule is standardized (see APPENDIX 1).

Conclusion: The rules outlined above, solve the intrinsic difficulties of Pentagram notation, and in particular allow one to overcome the contradictions and erroneous impressions produced by the relations between vertical and horizontal elements in the score, as between listening and reading. Thus the reciprocal unification of formal and mathematical logic is achieved. The score is greatly normalized and standardized, is thus easier and simple to use, making possible greater efficiency and precision.

J. The Tonic Do/La solfeggio (relative solfeggio) notation and the applicative modality of the generalization on the Hexagram

Illustration:

1) On the basis of the Hexagram "Complete staff" scale system, as in figure 7, the notation and disposition of the scale of eight octaves and of the staff of seven levels follow the tonic Do/La solfeggio, which is formally composed so that it can be applied gradually. Every staff (clef) comprises the scale of two octaves and one degree of the voice range. The formal logic and the mathematical logic of the seven staves of different levels are unified and yet symmetrical, identical but also differentiated, as in figures 21, 22, and 23:

Figure 21) The unified and symmetrical module of every staff in the Notation of the tonic Do/La solfeggio on the Hexagram

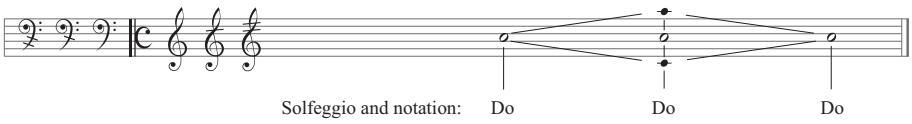


Figure 22) The solfeggio structure and the scale system of every staff in the Notation of the tonic Do/la solfeggio on the Hexagram

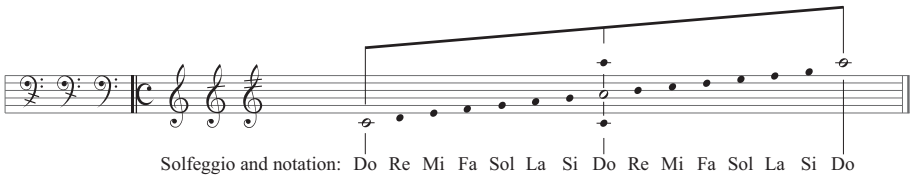
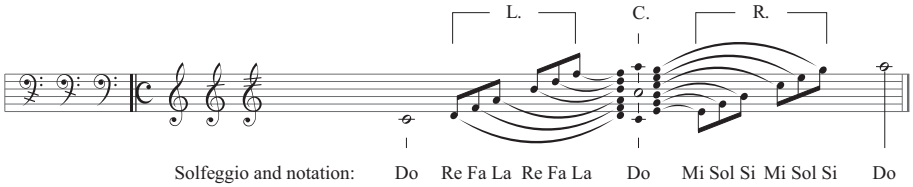


Figure 23) The method of reading notes and the form of transcription in the Notation of the tonic Do/La solfeggio on the Hexagram



The Hexagram is a structure of six parallel lines and five spaces, with the third space in the centre, while both above and below it are three lines and three spaces (comprising the first upper and lower ledger spaces). The third space of the centre and the first upper and lower ledger lines, are all tonic Do of the major mode both in solfeggio and notation, constituting a unified and symmetrical system of a scale of two octaves (see point C. in figure 23 above).

Below the central Do, the solfeggio and notation of the three spaces are gradually Re, Fa, La; whereas above the central Do, the solfeggio and notation of the three lines are gradually Re, Fa, La (see point L. in figure 23 above).

Below the central Do, the solfeggio and notation of the three lines are gradually Mi, Sol, Si; whereas above the central Do, the solfeggio and notation of the three spaces are gradually Mi, Sol, Si (see point R. in figure 23 above).

The notes and the signs of rhythms in Hexagram notation are completely identical to those in Pentagram notation. They follow the same theoretical principle of the Simple notation (Notation of the *Chevé System** — notation of the scale with Arabic ciphers (numerals), popularly used in China and Japan), and they originate from the traditional basis of musical theory.

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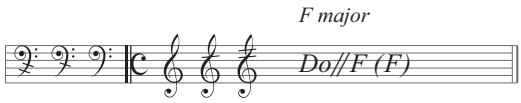
* Notation of the *Chevé System*: Galin-Paris-Chevé System *(Méthode élémentaire de la musique vocale)*. Émile Joseph Maurice Chevé (1804-1864), French musical theorist and pedagogue, intended to perfect and to popularize the method of numerical music notation (sight-singing system) conceived by Pierre Galin (1786-1821) and Aimé Paris (1798-1866). Then known as *meloplasto* and now also as the *Chevé System*, its fundamental characteristic is the use of numbers (Arabic ciphers) instead of the notes. The ciphers from 1 to 7 represent the tones of the scale (all referred to the tonic…). *Chevé* was a polemical supporter of his own theories and he tried in vain to provoke public discussion and comparison between his students and those of the traditional method, especially in the Conservatoire. In 1677, a Franciscan monk in Paris, C. Willems Souhaitty, had been the first to suggest using the ciphers from 1 to 7 instead of the notes of the scale, with the addition of points to locate their position on the staff. Later, in 1742, at the Academy of Sciences in Paris, Jean Jacques Rousseau (1712-1778), the Swiss-French philosopher, writer, and composer, expounded his own report on a new system of music notation based on the substitution of notes with ciphers *(Projet concernant des nouveaux signes pour la musique)*. This method and system were imported to Japan, and later to China, during the twentieth century. The lack of their divulgation, unfortunately, has deprived Europe nowadays of a valid and simple system of popular music education in the ordinary schools.

2) The principle of this Notation function is applied in a fixed, though versatile way, with the variable key-signature and with the tonal pitch in modulation. The key-signature is made up of the tonic of the solfeggio (Do/La), the parallel sign (//), and the alphabetic key-note (C. D. E. F. G. A. B. / c. d. e. f. g. a. b.) written on the right side of the clef, showing the parallel and equalizing relationship between the tonic of the solfeggio and the tonic of the applicative key. The key-signature thus shows only the key that has really to be applied and the tonal pitch of modulation, without modifying the position and the modality of the original notation from the tonic Do/La solfeggio, as seen in figure 24:

Figure 24) The figure and the applicative system of the key-signature of every staff in the Notation of the tonic Do/La solfeggio on the Hexagram

The key-signature system of the 12 major:



Note: solfeggio (*Do*) parallel (//) to the Capital alphabetical key-note (*F*)

Do // C (C major), Do // D♭ (D♭ major), Do // D (D major), Do // E♭ (E♭ major),

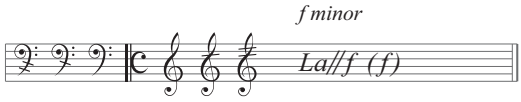
Do // E (E major), Do // F (F major), Do // G♭ (G♭ major), Do // G (G major),

Do // A♭ (A♭ major), Do // A (A major), Do // B♭ (B♭ major), Do // B (B major).

There are besides three enharmonic keys-signature:

Do // C♯ (C♯ major), Do // F♯ (F♯ major), Do // C♭ (C♭ major).

The key-signature system of the 12 minor :



Note: solfeggio *(La)* parallel (//) to the Small alphabetical key-note *(f)*

La // a (a minor), La // b♭ (b♭ minor), La // b (b minor), La // c (c minor),

La // c♯ (c♯ minor), La // d (d minor), La // e♭ (e♭ minor), La // e (e minor),

La // f (f minor), La // f♯ (f♯ minor), La // g (g minor), La // g♯ (g♯ minor).

There are besides three enharmonic keys-signature:

La // a♯ (a♯ minor), La // d♯ (d♯minor), La // a♭ (a♭ minor).

3) The applicative canon of the Tonic Do/La solfeggio notation on the Hexagram:

- The position and notation are placed by means of the tonic Do/La solfeggio in major and in minor diatonic modes.

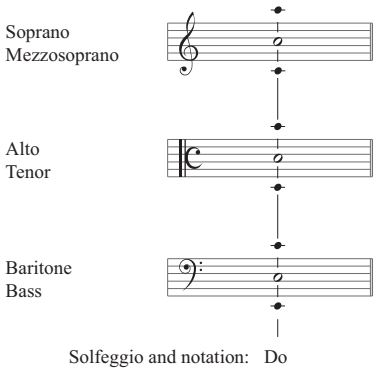
- A determinant key and the intonation of the pitch by means the tonic Do/La of the solfeggio in major and minor diatonic modes, make it possible to find both the actual key and pitch to be applied.

- Music of particular tonalities can also be defined in key and be prepared according to the tonic (key-note) of the modes, for example, the five-tone Chinese modes.

- Atonal music has neither modes nor tonic to define, but is to be notated directly with 12-tone or 24-tone equal-temperament system.

4) The applicative modality of the Tonic Do/La solfeggio notation on the Hexagram:

The Human Voice



The Musical Instruments

All instrumental music that applies the Tonic Do/La solfeggio notation on the Hexagram can determine the staves according to the real pitch and tone range of instrumental execution, and can also modulate the clef (staff) provisionally, according to the needs of application, as advised in Appendix (1).

Demonstration: The Hexagram staff of seven different levels requires only one method of reading the notes, in a unified and symmetrical form of notation; a single method of reading the notes in a unified and symmetrical form of notation, can be applied to the staff (clef) of the seven different tone ranges and to the 24 key signatures of different tonal pitches (12 major and 12 minor).

Conclusion: The concise and easy method of reading the notes, and the simple and effective way of transcribing the Tonic Do/La solfeggio notation, not only can highlight the tonality and strengthen musical perceptiveness, but can also allow unrestricted modulation of key at pleasure; these methods are not only in effective accordance with professional application, but also surpass and substitute the range of functions of the Simple notation, thus providing both an efficient applicative modality for the popularization of singing activities, and a divulgative method of musical education in primary and secondary schools.

Hexagram notation represents a complete recuperation of the heritage of Pentagram notation as well as its natural evolution, with the Hexagram “Great staff” of 13 lines comprising the Pentagram “Great staff” of 11 lines. To learn the Hexagram means to understand and master perfectly the Pentagram. The practice of the Tonic Do/La solfeggio notation will stimulate the development of application of the professional system of Hexagram notation, and will afterwards facilitate its application on the computer.

THE FUNCTION AND MEANING OF HEXAGRAM NOTATION

A. The complete and versatile function of the Hexagram notation system, with its unified and simple rules, will lead to new ideal prospects in the application of musical ideography, and this new impulse to musical development will allow musicians to use their abilities to best advantage.

B. The equal but diverse structures and the simple but complete rules of Hexagram notation will improve musical education, particularly that of children. The teaching of Hexagram notation can proceed from the half staff of one octave to the staff of two octaves. Once one understands the one-level staff, one possesses the "keystone" of the entire system. Hexagram notation will also initiate a new stage in the renovation of musical education.

C. Hexagram notation is easy to learn and simple to apply. Both amateurs and professionals in the field of music will therefore be encouraged to study it. Contact between them will become closer and consequently there will be more scope for action amongst the professionals themselves.

D. Widespread use of Hexagram notation will obviously help improve the profession and facilitate the learning of music, while promoting the development of an expanded musical culture in general.

E. Hexagram notation is derived from Pentagram notation, which it comprises and inherits, even while reforming and surpassing it. It can therefore substitute Pentagram notation in every area, renovate the system of score notation, and also provide a new commercial impulse to music publication.

F. The formal and mathematical logic of the Hexagram system, which corresponds to the 2:1 ratio and to the principle of the binary system, entails unification and symmetry, concise and rigorous regularity. The rationality of this system will also allow a compilation that can be inserted into a computer, as well as the use of a small keyboard, or piano, connected to it. The application to the computer can include the notation, playing, composition, study, and teaching of music, as well as score analysis, the compressed reduction of scores, etc. It will also be useful for type composition in the field of musical publishing, where the saving of time will provide great economic advantages.

The use of Hexagram notation will open up new possibilities for the modernization and more scientific quality of musical technique.

G. The "Inferential staff" of Hexagram notation includes both the spatial-temporal dimension, and that which remains outside of this category. It can be used for both artistic and scientific purposes. In the future, it might even be possible, by means of musical communication, to establish contact with different cultures in space. The "Inferential staff" thus takes on the meaning of both scientific fantasy and practicable imagination.

CONCLUSION

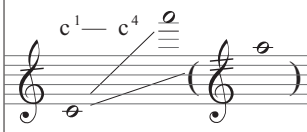
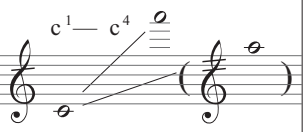
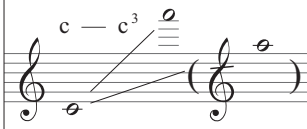
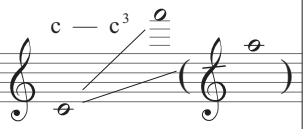
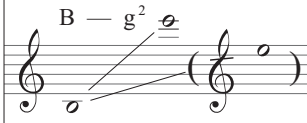
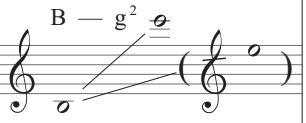
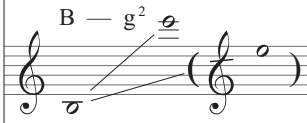
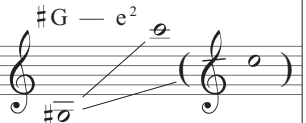
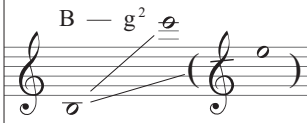
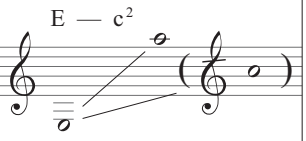
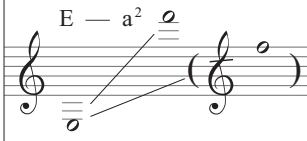
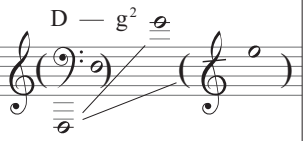
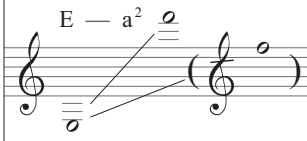
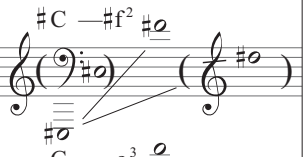
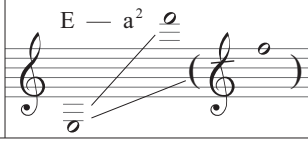
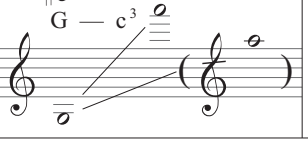
The emergence of Hexagram notation, which corresponds to the most advanced technical-musical demands of today, sums up the best achievements of musical ideography in history and resolves the difficulties encountered up until now. It normalizes and rationalizes musical ideography, with the utmost simplicity and functionality. In fact, the appearance of Hexagram notation is neither the result of a momentary fashion nor the sign of an ephemeral trend, but rather a painless birth and peaceful revolution. Its emergence will open up new horizons on the high seas of free musical navigation.

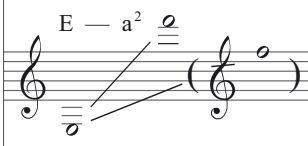
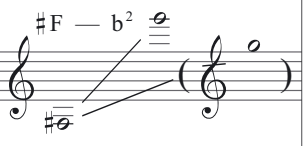
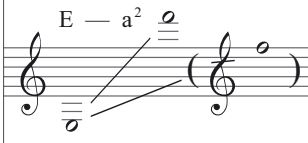
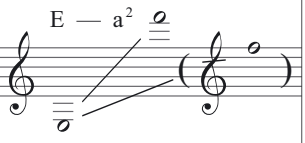
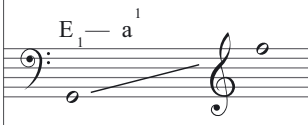
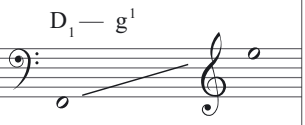
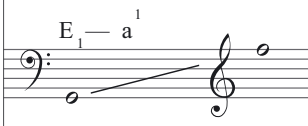
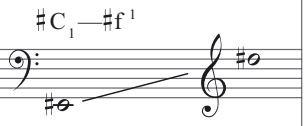
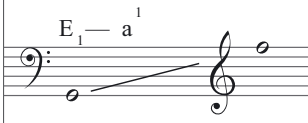
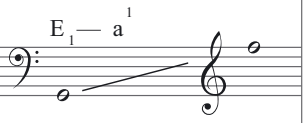
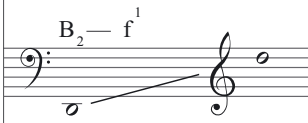
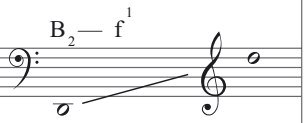
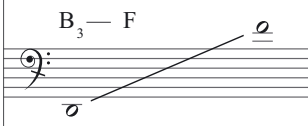
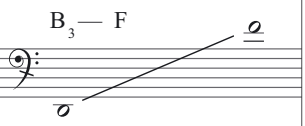
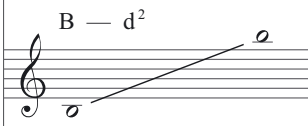
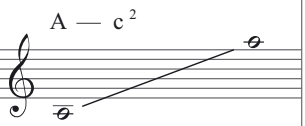
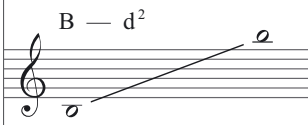
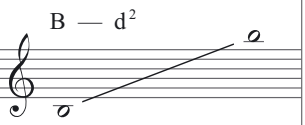
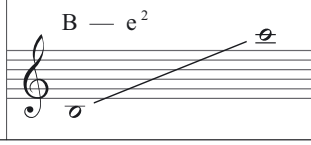
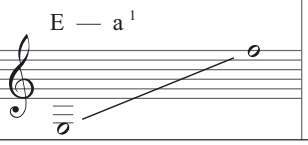
It is when people languish in self-satisfaction and laziness, then regression and degeneration begin without their realizing it, whereas the hope of humanity lies in proceeding constantly with the search towards evolution. The appearance of Hexagram notation aspires to be a valid contribution to the universal development of the world's musical culture.

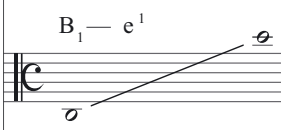
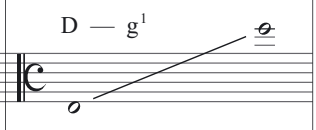
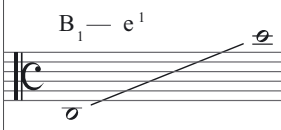
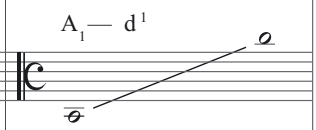
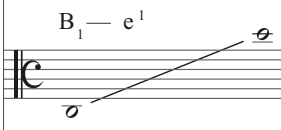
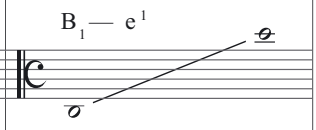
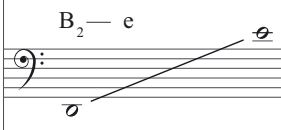
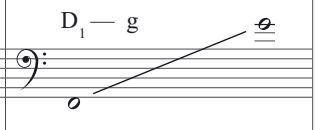
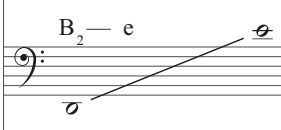
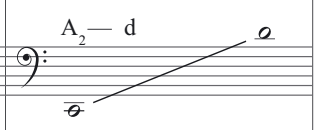
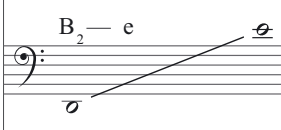
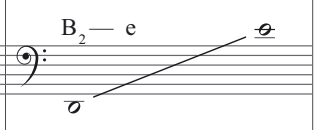
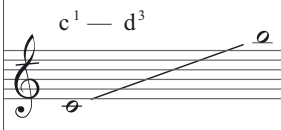
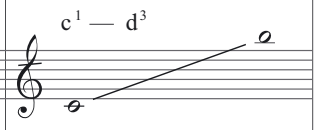
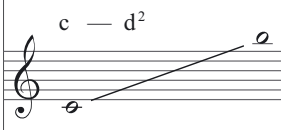
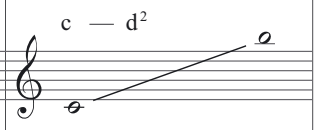
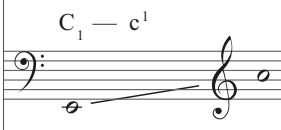
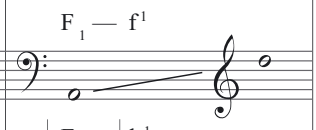
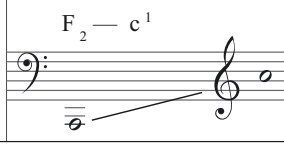
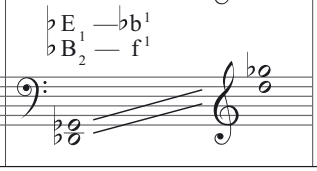
APPENDIX

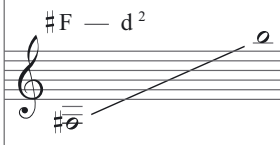
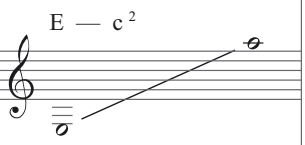
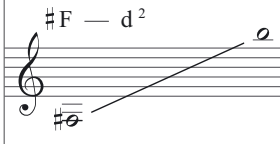
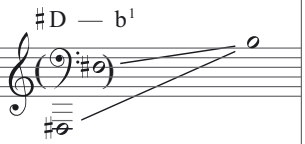
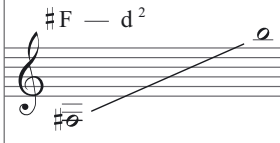
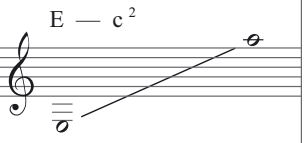
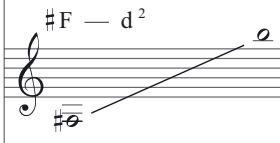
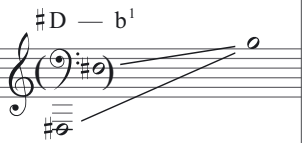
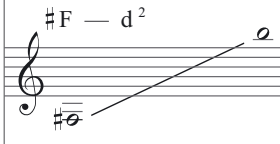
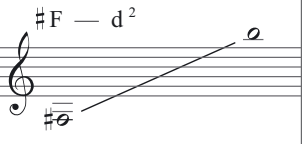
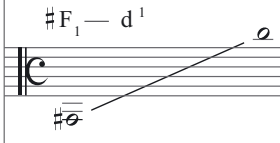
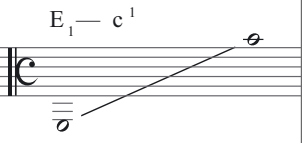
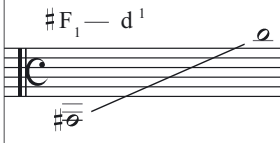
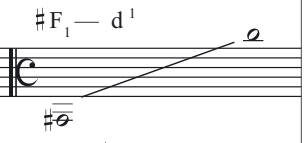
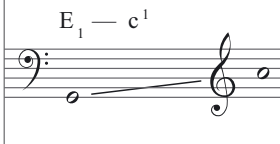
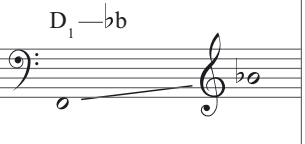
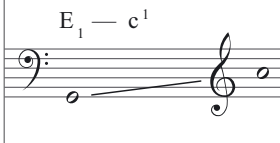
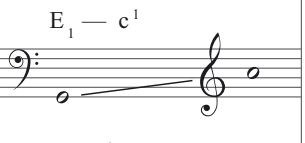
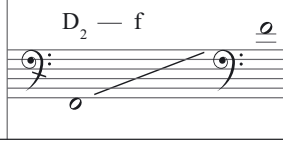
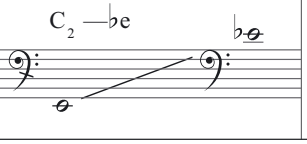
APPENDIX (1)

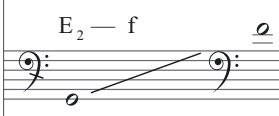
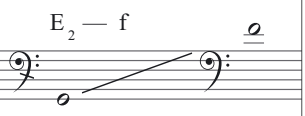
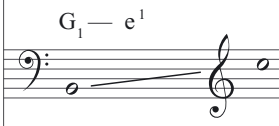
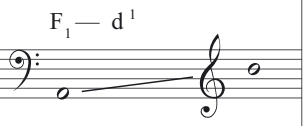
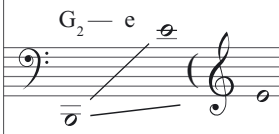
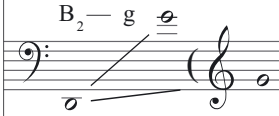
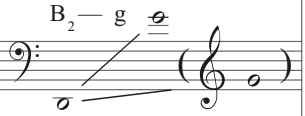
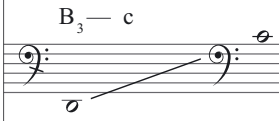
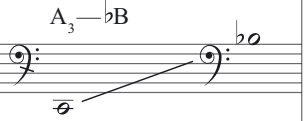
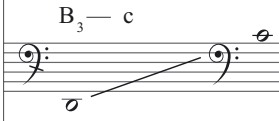
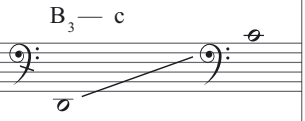
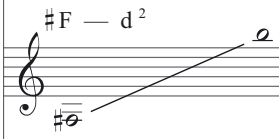
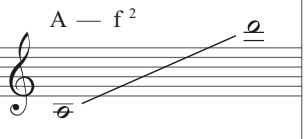
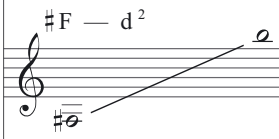
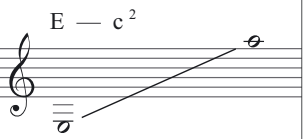
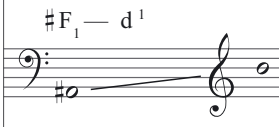
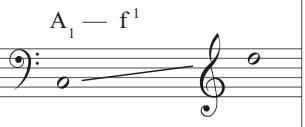
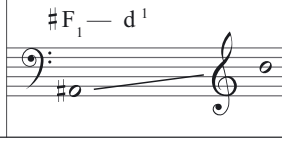
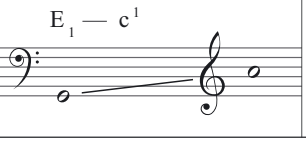
Synopsis of the diagram of musical instruments and human voices, with the notation in the respective keys and with real sounds, referring to the frequencies on the Hexagram.

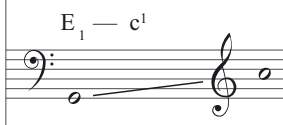
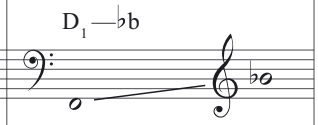
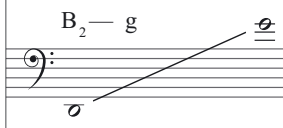
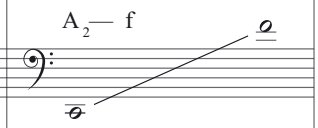
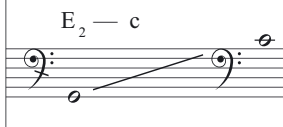
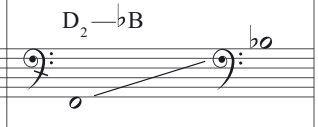
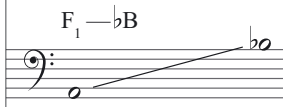
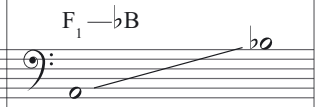
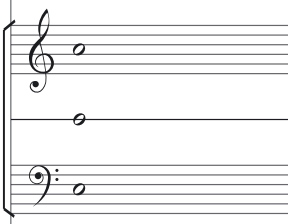
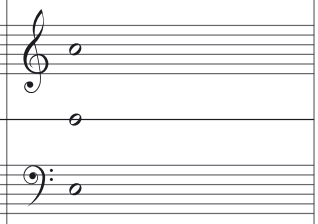
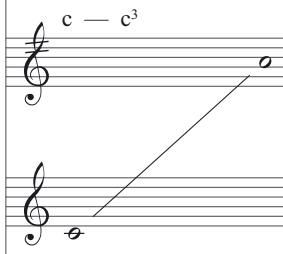
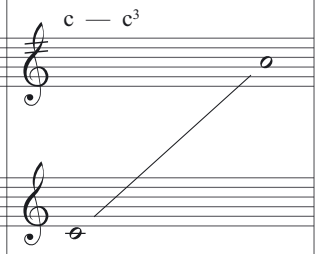
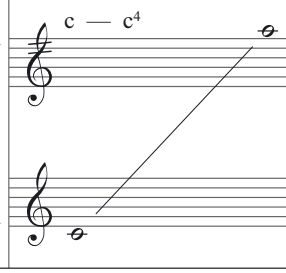
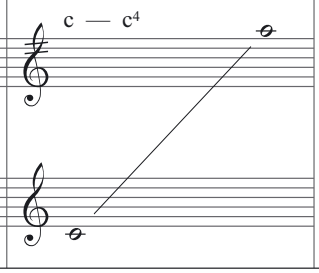
NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
			(Hz tone "a" = 440.0)
Piccolo			Hz 523.2 — 4185.6
Flute			Hz 261.6 — 2092.8
Oboe			Hz 246.9 — 1568.0
Oboe d'amore in La			Hz 207.6 — 1318.4
English horn in F			Hz 164.8 — 1046.4
Clarinet in B ♭			Hz 146.8 — 1568.0
Clarinet in A			Hz 138.6 — 1480.0
Clarinet in E ♭			Hz 196.0 — 2092.8

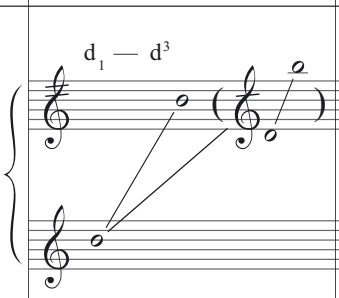
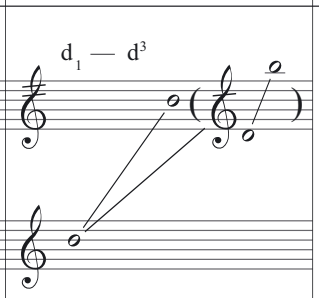
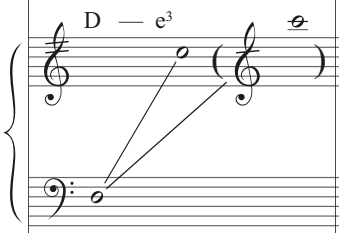
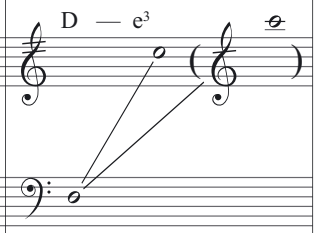
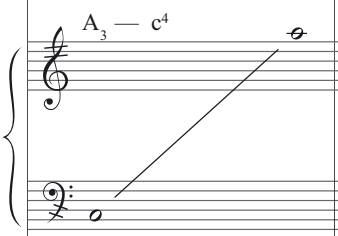
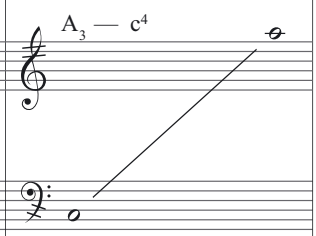
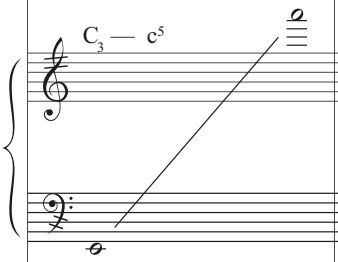
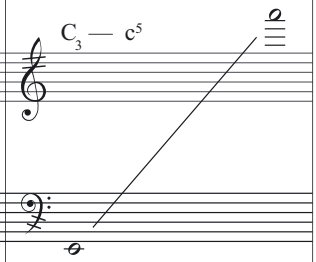
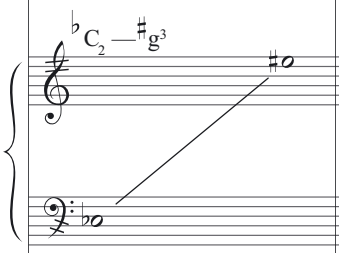
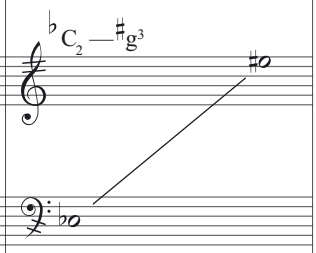
NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Clarinet in D			Hz 185.0 — 1975.2
Clarinet in C			Hz 164.8 — 1760.0
Bass Clarinet in B♭			Hz 73.40 — 784.0
Bass clarinet in A			Hz 69.30 — 740.0
Bass clarinet in C			Hz 82.40 — 880.0
Bassoon			Hz 61.73 — 698.4
Double bassoon			Hz 30.86 — 174.6
Soprano saxophone in B♭			Hz 220.0 — 1046.4
Soprano saxophone in C			Hz 246.9 — 1174.8
Contralto saxophone in F			Hz 164.8 — 880.0

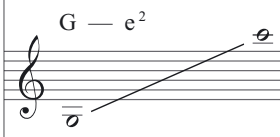
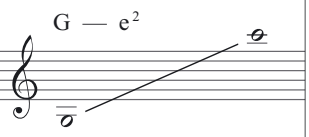
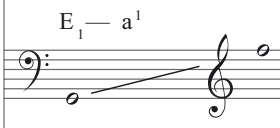
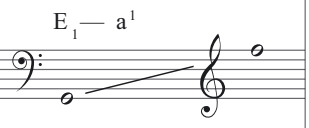
NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Contralto saxophone in E♭			Hz 146.8 — 784.0
Tenor saxophone in B♭			Hz 110.0 — 587.4
Tenor saxophone in C			Hz 123.5 — 659.2
Baritone saxophone in E♭			Hz 73.40 — 392.0
Bass saxophone in B♭			Hz 55.00 — 293.6
Bass saxophone in C			Hz 61.73 — 329.6
Soprano recorder			Hz 523.2 — 2349.6
Tenor recorder			Hz 261.6 — 1174.8
Basset horn in F			Hz 87.30 — 698.4
Horn at double tonality in B♭/F			Hz 77.78 — 932.4 Hz 58.27 — 698.4

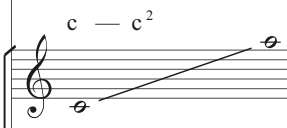
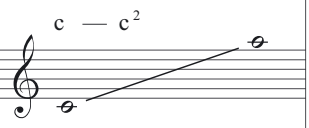
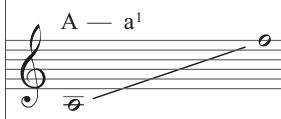
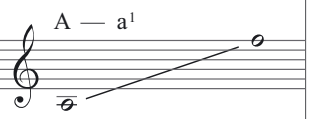
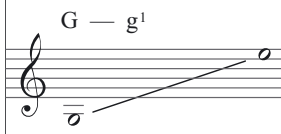
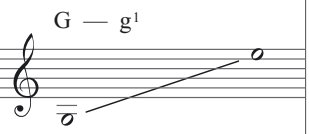
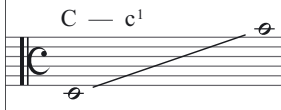
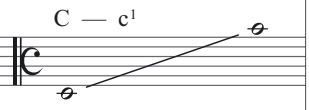
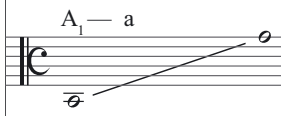
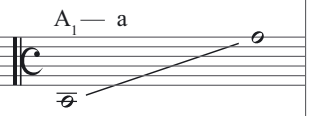
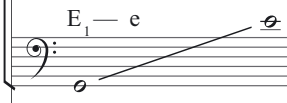
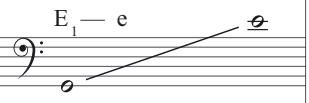
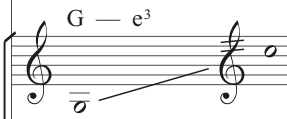
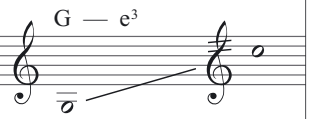
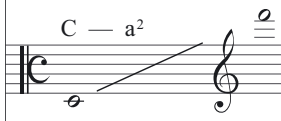
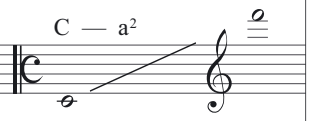
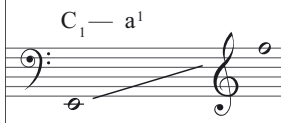
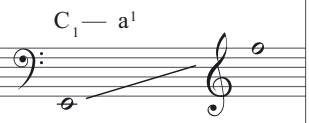
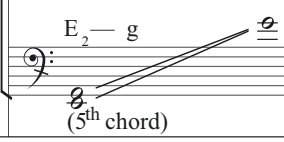
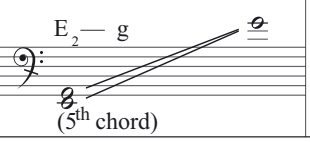
NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Cornet in B♭			Hz 164.8 — 1046.4
Cornet in A			Hz 155.5 — 987.6
Trumpet in B♭			Hz 164.8 — 1046.4
Trumpet in A			Hz 155.5 — 987.6
Trumpet in C			Hz 185.0 — 1174.8
Bass trumpet in B♭			Hz 82.40 — 523.2
Bass trumpet in C			Hz 92.50 — 587.4
Tenor trombone in B♭			Hz 73.40 — 466.2
Tenor trombone in C			Hz 82.40 — 523.2
Bass trombone in B♭			Hz 32.70 — 311.1

NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Bass trombone in C			Hz 41.20 — 349.2
Tenor tuba in B♭			Hz 87.30 — 587.4
Bass tuba in F			Hz 65.40 — 440.0
Bass tuba in C			Hz 61.73 — 392.0
Double bass tuba in B♭			Hz 27.50 — 233.1
Double bass tuba in C			Hz 30.86 — 261.1
Sopranino bugle horn in E♭			Hz 220.0 — 1396.8
Soprano bugle horn in B♭			Hz 164.8 — 1046.4
Contralto bugle horn in E♭			Hz 110.0 — 698.4
Tenor bugle horn in B♭			Hz 82.40 — 523.2

NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Baritone bugle horn in B♭			Hz 73.40 — 466.2
Bass bugle horn in B♭			Hz 55.00 — 349.2
Double bass bugle horn in B♭			Hz 36.70 — 233.1
Kettle drums			Hz 87.30 — 233.1
Side drum Bass drum Triangle Tambourine Castanets Cymbals Gong			Noise sounds (Notes of indeterminate pitch)
Xylophone			Hz 261.6 — 2092.8
Celesta			Hz 261.6 — 4185.6

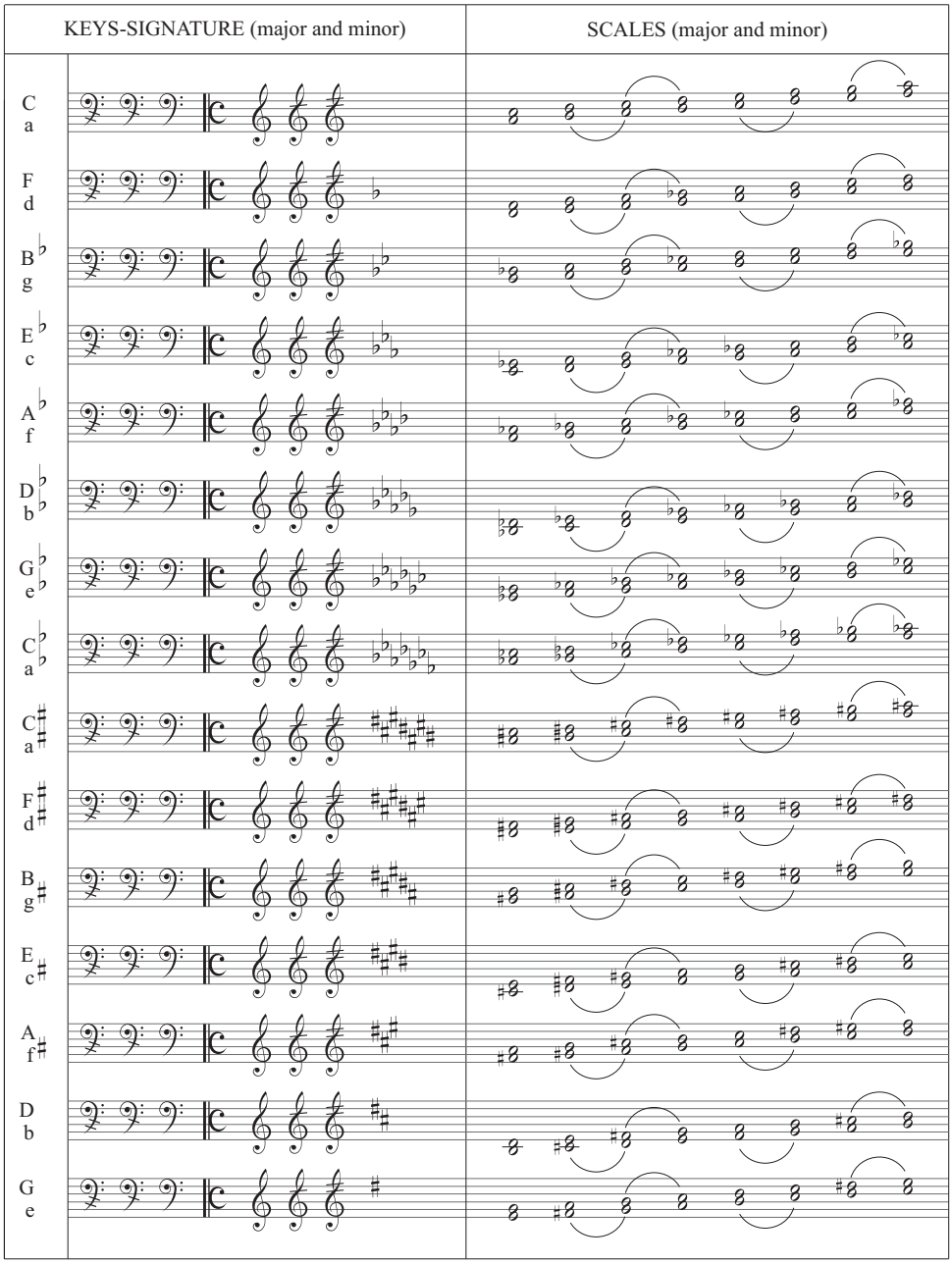
NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Bells			Hz 587.2 — 2349.6
Accordion			Hz 146.8 — 2636.8
Piano			Hz 27.50 — 4185.6
Pipe organ			Hz 16.35 — 8371.2
Harp			Hz 30.86 — 3322.4

NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
Mandolin			Hz 196.0 — 1318.4
Guitar			Hz 82.40 — 880.0

NAMES	NOTATIONS	REAL SOUNDS	FREQUENCIES
(Human voice)			
Soprano			Hz 261.6 — 1046.4
Mezzo soprano			Hz 220.0 — 880.0
Alto			Hz 196.0 — 748.0
Tenor			Hz 130.8 — 523.2
Baritone			Hz 110.0 — 440.0
Bass			Hz 82.40 — 329.6
Violin			Hz 196.0 — 2636.8
Viola			Hz 130.8 — 1760.0
Violoncello			Hz 65.40 — 880.0
Double bass	 (5th chord)	 (5th chord)	Hz 41.20 — 392.0

APPENDIX (2)

System of the keys-signature in Hexagram notation

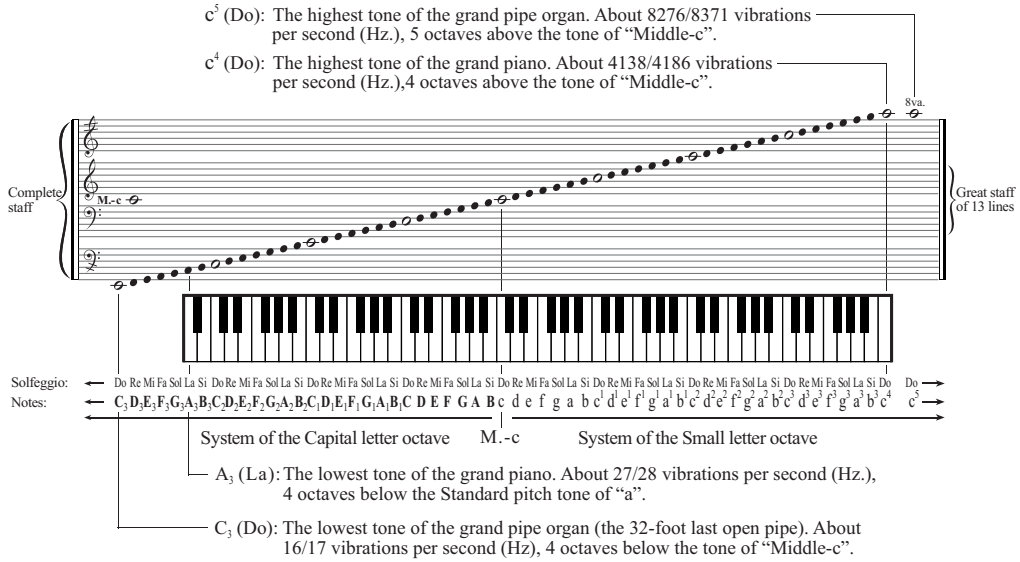


Note: The music of atonality (12-tone system and 24-tone system) can use natural keys (without the key-signature) by applying the accidental signs: ♭ 𝄫, ♯ 𝄪, ♮; 𝄳 ♭ 𝄬 𝄫, 𝄲 ♯ ♯ 𝄪, ♮.

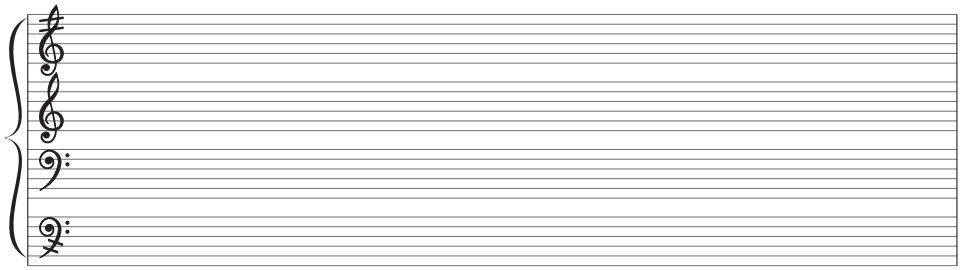
APPENDIX (3)

Unified "Complete staff" of 27 gradual lines

The unified "Complete staff" of 27 gradual lines, can be used directly for the piano and organ score (there remains also the "Great staff" of 13 lines). With less space, without ledger lines, and with eight octaves the range and the freedom are expanded, musical perceptiveness is strengthened. The use proves to be more clear and concise.



The unified "Complete staff" of 27 gradual lines for the score of piano and organ

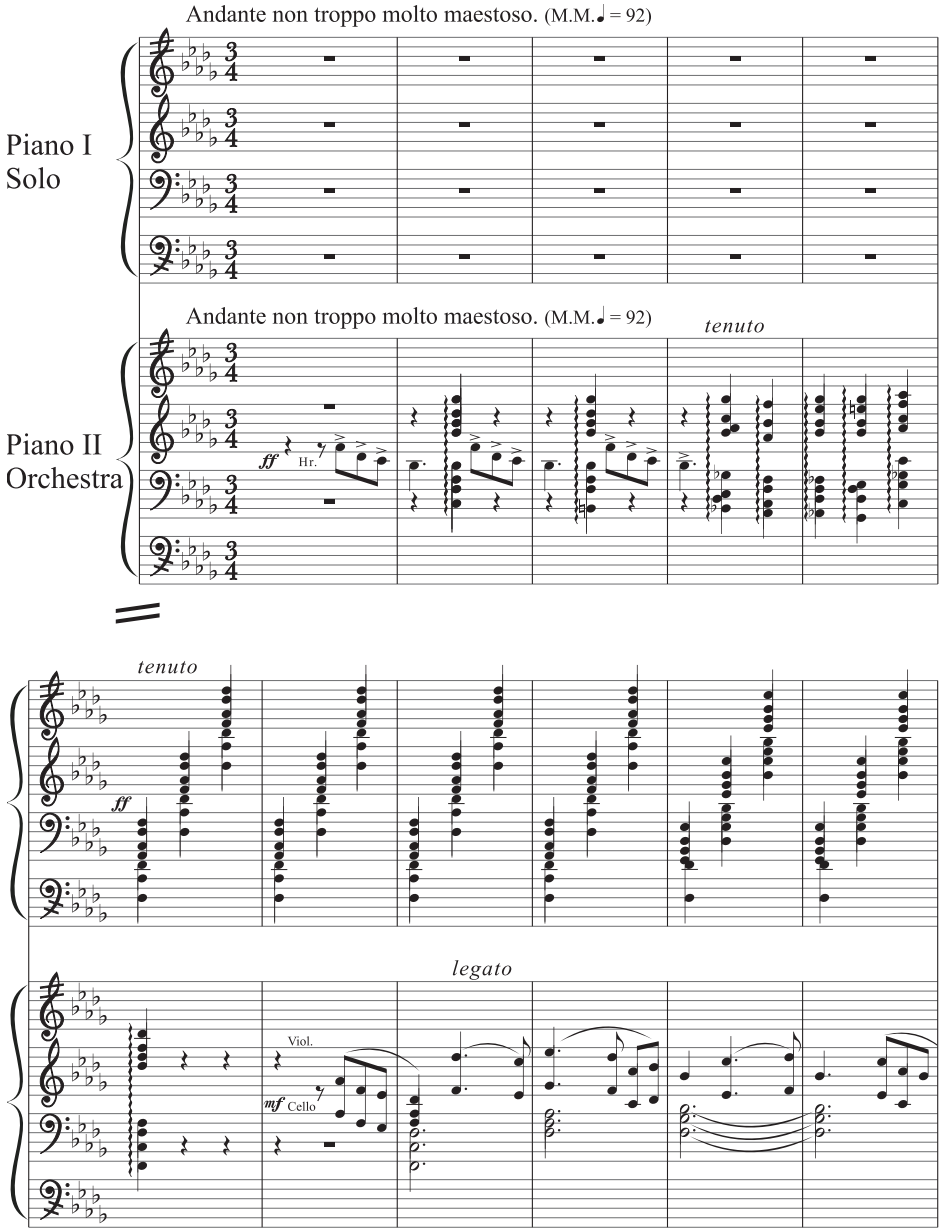


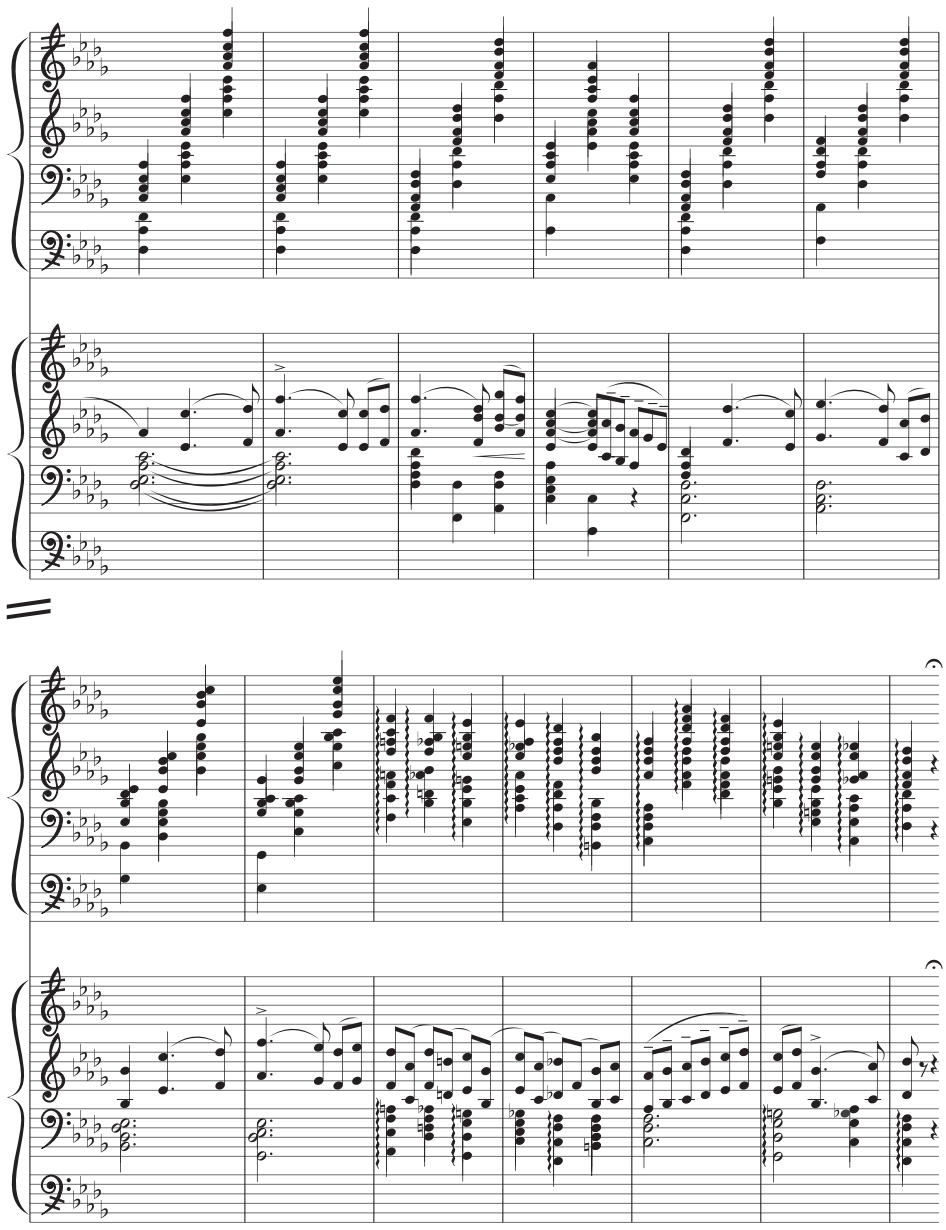
Example 1.

FOR PIANO (With the unified “Complete staff” of 27 gradual lines of the Hexagram notation)

Peter Tschaikovsky

CONCERTO N°1 in B♭ minor Op.23





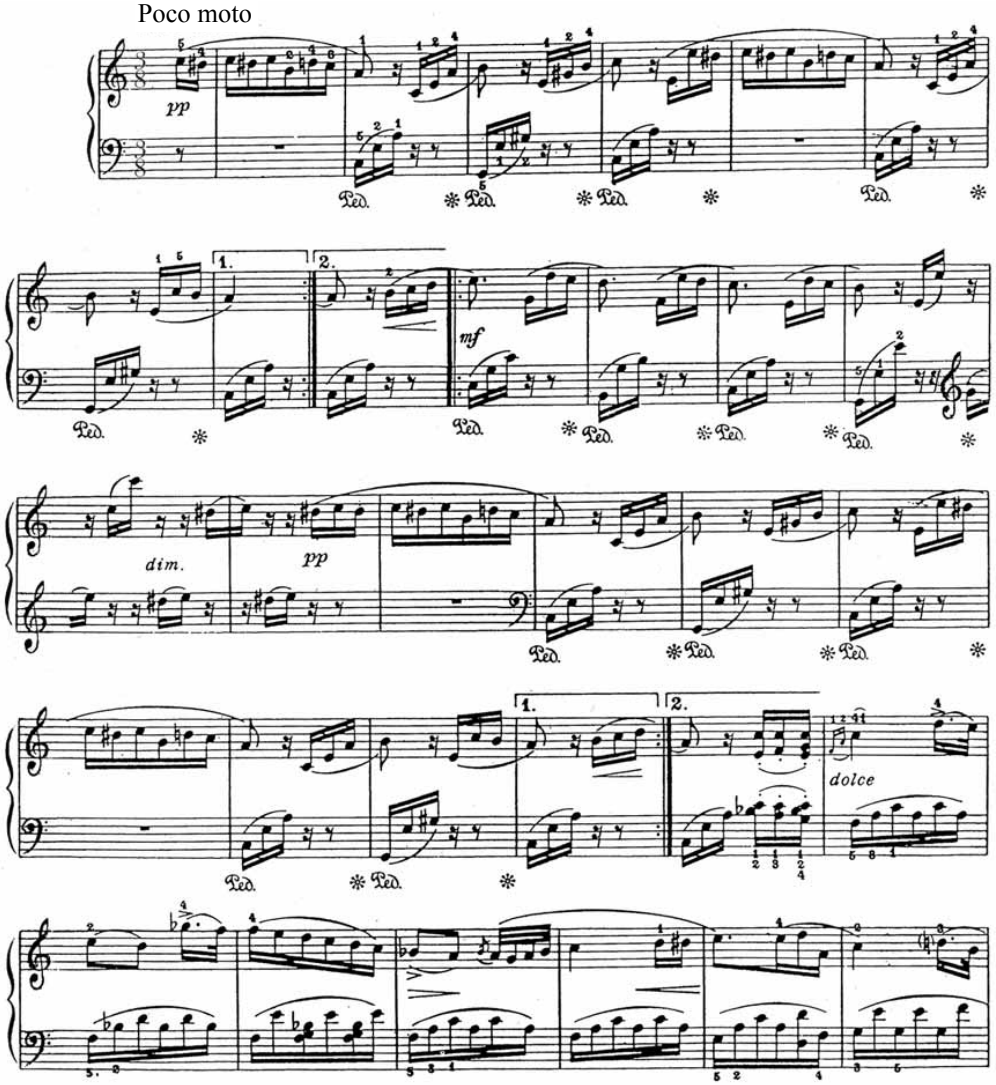
Example 2.

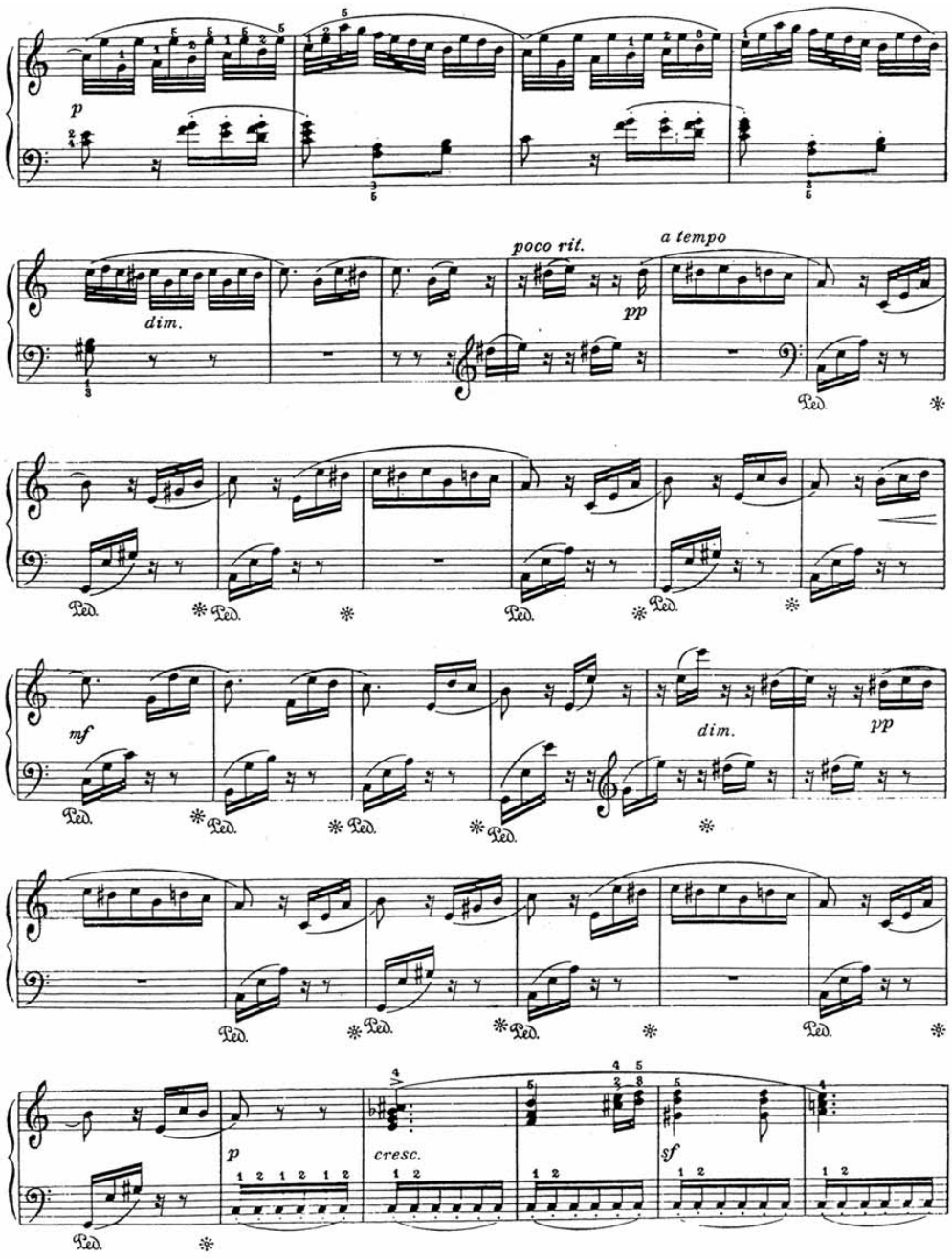
FOR PIANO (With the "Great staff" of 13 lines of the Hexagram notation)

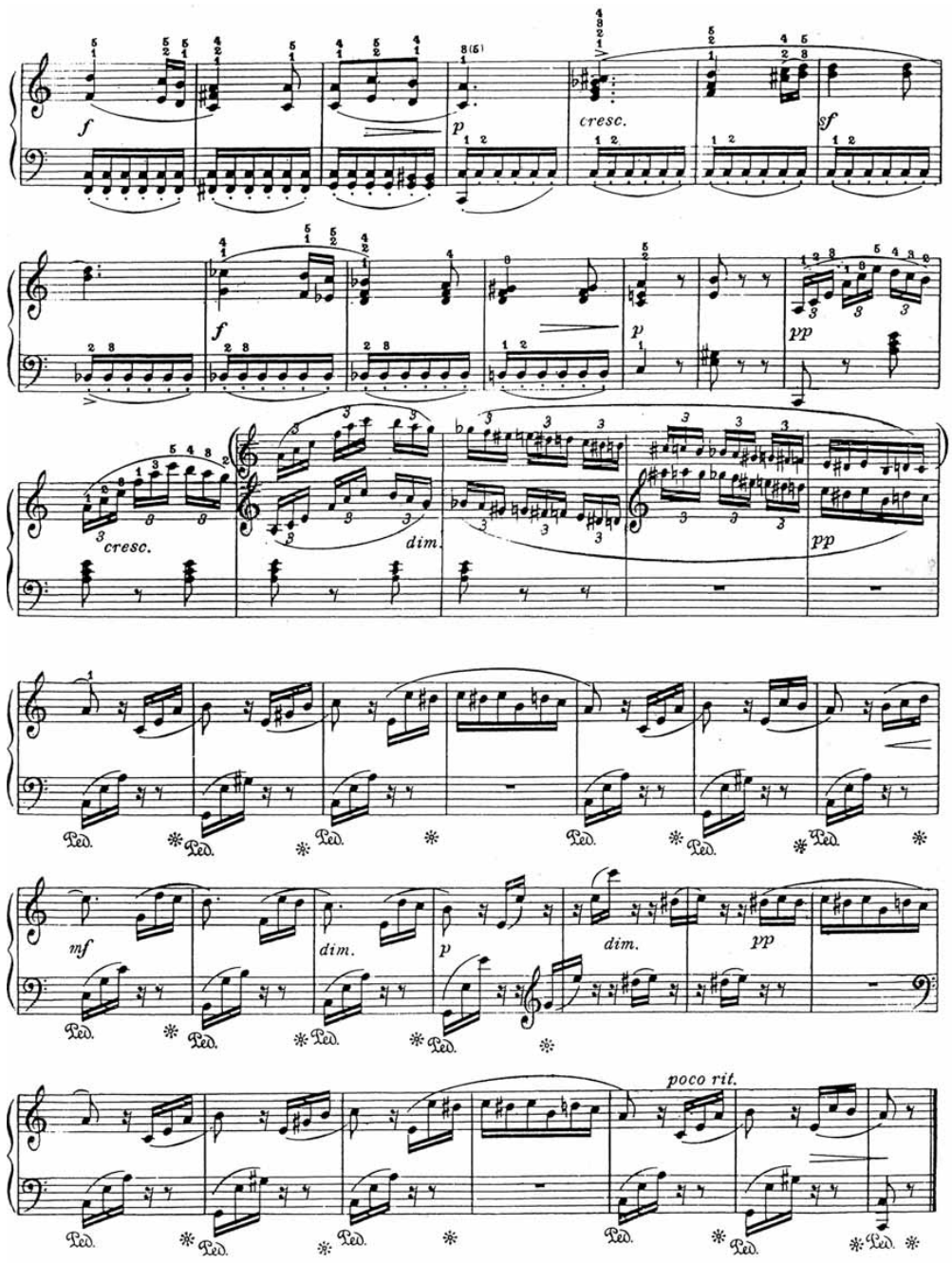
Ludwig van Beethoven

PAGE FROM ALBUM:

"For Elise"




p
dim.
poco rit.
pp
a tempo
Ped.
mf
dim.
pp
p
cresc.
sf


f
cresc.
p
sf
pp
dim.
mf
poco rit.
Ped.

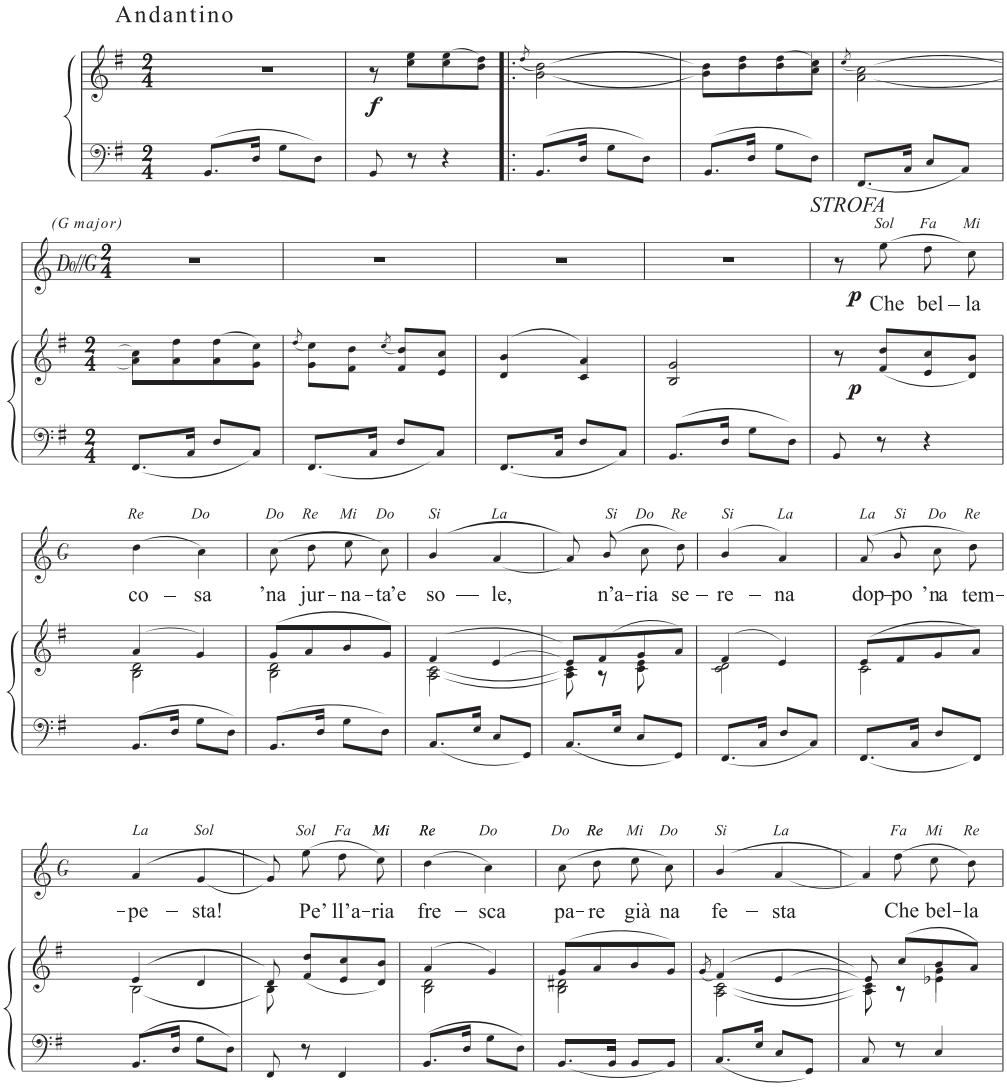
Example 3.

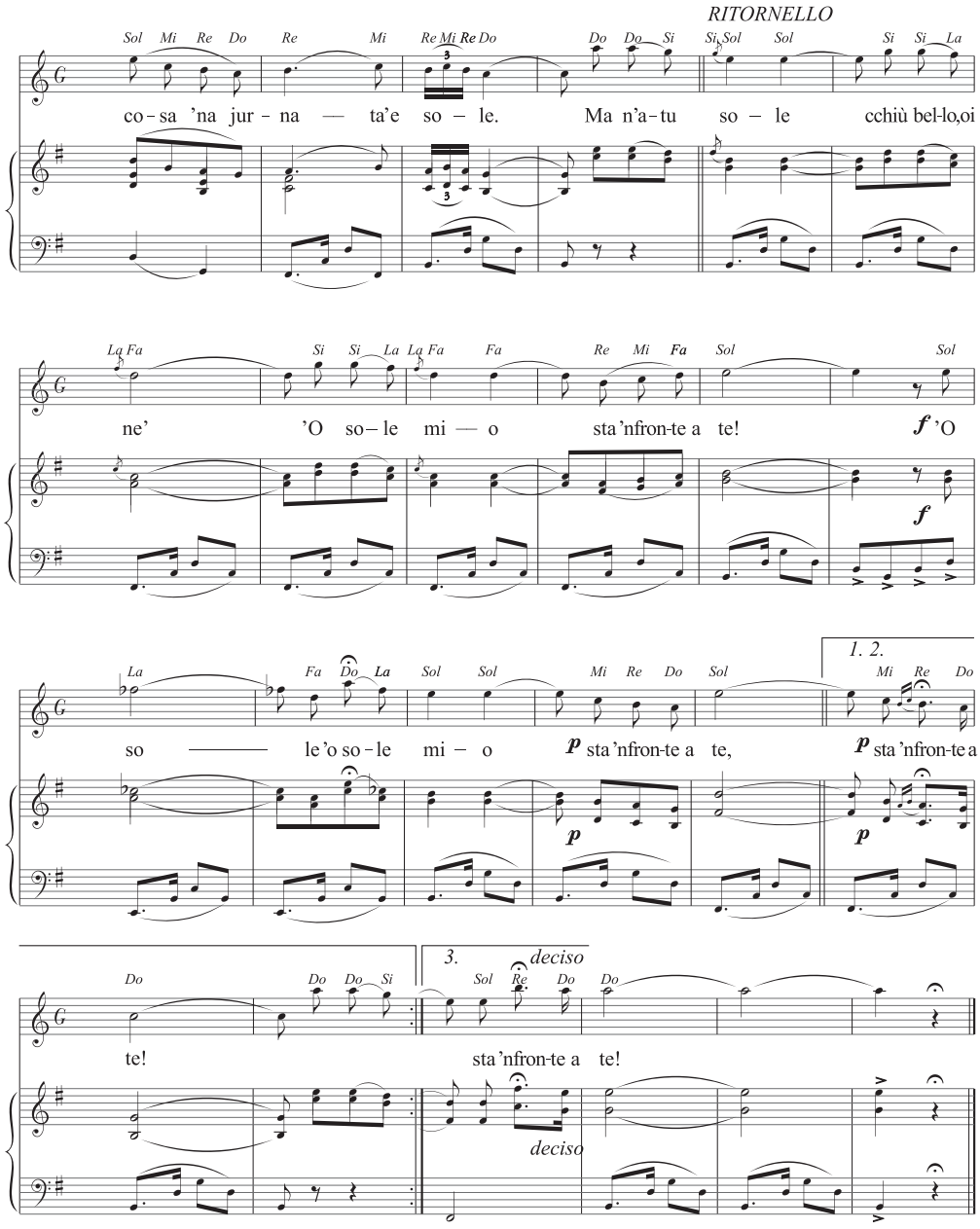
FOR VOICE WITH PIANO ACCOMPANIMENT

(The part of voice with the Tonic Do/La solfeggio notation on the Hexagram)

'O Sole Mio (Neapolitan song)

Words by G. Capurro
Music by E. Di Capua




RITORNELLO
co - sa 'na jur - na — ta'e so – le. Ma n'a - tu so – le cchiù bel-lo,oi
ne' 'O so – le mi — o sta 'nfron-te a te! f 'O
so — le 'o so - le mi – o p sta 'nfron-te a te, p sta 'nfron-te a
1. 2.
3. deciso
te! sta 'nfron-te a te!
deciso

’O Sole Mio

by G. Capurro & E. Di Capua, 1898
(Neapolitan song)

1. Che bella cosa na jurnata ’e sole,
n’aria serena doppo na tempesta!
Pe’ ll’aria fresca pare già na festa
Che bella cosa na jurnata ’e sole.

Refrain:
Ma n’atu sole
cchiù bello, oi ne’.
’O sole mio
sta ’nfronte a te!
’O sole, ’o sole mio
sta ’nfronte a te,
sta ’nfronte a te!

2. Lùcene ’e llastre d’ ’a fenesta toia;
’na lavannara canta e se ne vanta
e pe’ tramente torce, spanne e canta
lùcene ’e llastre d’ ’a fenesta toia.

Refrain

3. Quanno fa notte e ’o sole se ne scenne,
me vene quase ’na malincunia;
sotto ’a fenesta toia restarria
quanno fa notte e ’o sole se ne scenne.

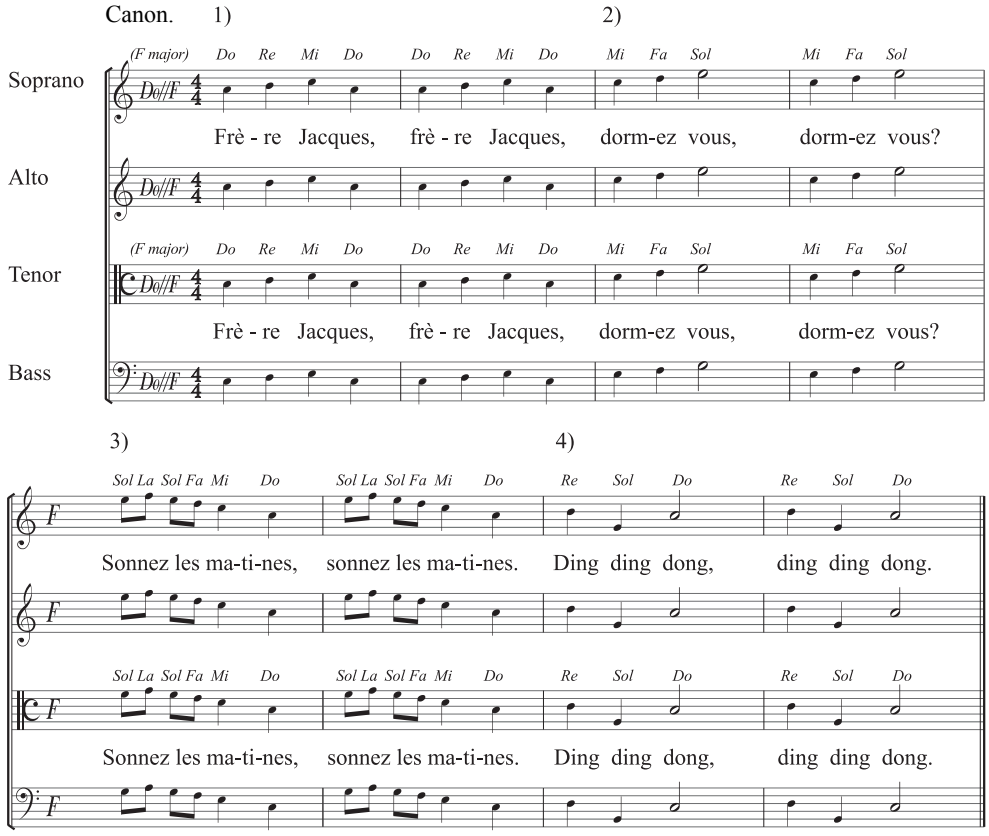
Refrain

Example 4.

FOR CHORUS

(With the Tonic Do/La solfeggio notation on the Hexagram)

Frère Jacques (Brother John / Bruder Jakob / Fader Jakob...)



English: Are you sleeping, are you sleeping, brother John, brother John?
Morning bells are ringing, morning bells are ringing, Ding ding dong, ding ding dong.

Italian: Fra Martino, campanaro, dormi tu, dormi tu?
Suona le campane, suona le campane. Din don dan, din don dan.

German: Bruder Jakob, bruder Jakob, schläfst du noch, schläfst du noch?
Hörst du nicht die klocken, hörst du nicht die klocken? Ding dang dong, ding dang dong.

Spanish: Martinillo, Martinillo, donde estás? donde estás?
Suenan las campanas, suenan las campanas. Ding dang dong, ding dang dong.

Rumanian: Tu dormi inca, tu dormi inca, frate íon, frate íon?
Clopotelul suna, clopotelul suna. Clinc clinc clinc, clinc clinc clinc.

Portuguese: Irmaj Jorge, irmaj Jorge, dorme tu, dorme tu?
Ja' soam ossinos, ja' soam ossinos. Ding dang dong, ding dang dong.

Norwegian: Fader Jacob, fader Jacob, sover du, sover du?
Hører du ej klokken, hører du ej klokken? Bim bam bom, bim bam bom.

Finnish: Jaakko kulta, Jaakko kulta, herää jo, herää jo?
Kellojasi soita, kellojasi soita. Ding ding dong, ding ding dong.

Swedish: Broder Jacob, broder Jacob, sover du, sover du?
Hör du inte klockan, hör du inte klockan. Ding dang dong, ding dang dong.

Danish: Mester Jakob, mester Jakob, sover du, sover du?
Hører du ej klokken, hører du ej klokken? Bim bam bum, bim bam bum.

Dutch: Vader Jacob, vader Jacob, slaapt gij nog, slaapt gij nog?
Alle klokken luiden, alle klokken luiden. Bim bam bom, bim bam bom.

Icelandic: Meistari Jakob, meistari Jakob, sefur þú, sefur þú?
Hvað slær klukkan, hvað slær klukkan? Hún slær þrjú, hún slær þrjú.

Latin: Quare dormis, o Iacobe, etiam nunc, etiam nunc?
Resonant campanae, resonant campanae. Ding, dong, dong, ding, dong, dong.

Czech: Brate Kubo, brate Kubo, ješt? spíš, ješt? spíš ?
Venku slunce zárí, ty jsi na polštá?i, vstávej již, vstávej již.

Russian: Bratez Jakow, bratez Jakow, spish li ti, spish li ti?
Slishish zwon na bashne, slishish zwon na bashne. Ding dang dong, ding dang dong.

Estonian: Sepapoisid, Sepapoisid, teevad tööd, teevad tööd,
Toovad tulist rauda, toovad tulist rauda, päeval ööl, päeval ööl.

Turkish: Uyuyor mursun, uyuyor mursun, kordes John, kordes John?
Sabah Çanlari Çaliyor, sabah Çanlari Çaliyor. Ding dang dong, ding dang dong.

Chinese: Liang zhi lao hu, liang zhi lao hu, pao de kuai, pao de kuai!
(Mandarin) Yi zhi mei you er duo, yi zhi mei you wei ba, hen qi guai, hen qi guai.

Japanese: Nemuimo, Nemuimo, okinasai, okinasai ?
Asano kane ga, natte iruyo. Kin kon kan, kin kon kan.

Thai: Puak tur yu nai, puak tur yu nai, yu nai camp, yu nai camp?
Tam mai mai ma sanuk kan, tam mai mai ma sanuk kan. Din dan don, din dan don.

Vietnamese: Kià con buom vàng, kià con buom vàng, xoe doi cành, xoe doi cành?
Buom buom bay tren cao vong, buom buom bay tren cao vong. Ra mà xem, ra mà xem.

RESEARCH MATERIALS
AND SOME CONSIDERATIONS

General observations on proposals of music notation reform

A. During the past two centuries (specifically from 1789 to 1990), one can find 223 cases of proposals of linear notation reform, from those of one line to those of sixteen lines (with the exception of fifteen lines). From the point of view of their formal structure, all of them are made up of groups of lines. Some are composed of single lines, double lines or quadruple lines; some of continuous and broken lines, others of full and undulated lines; some are formed of groups of equidistant parallel horizontal lines, while others are formed of groups of parallel horizontal and vertical lines. The reform proposals of note symbolism are even more numerous: there are some that use dots, curls, little triangles or squares; still others that use different types of graphics, letter symbols, etc. All of the research definitely seems to have been concentrated on formal structure, while a more thorough study of logic and mathematics has often been neglected.

B. We can divide these 223 reform proposals on the basis of the number of horizontal lines they use:

- 1 line: 30 proposals;
- 2 lines: 14 proposals;
- 3 lines: 40 proposals;
- 4 lines: 20 proposals;
- 5 lines: 41 proposals;
- 6 lines: 32 proposals;
- 7 lines: 20 proposals;

- 8 lines: 7 proposals;
- 9 lines: 2 proposals;
- 10 lines: 2 proposals;
- 11 lines: 6 proposals;
- 12 lines: 1 proposal;
- 13 lines: 2 proposals;
- 14 lines: 1 proposal;
- 15 lines: no proposal as yet;
- 16 lines: 5 proposals.

C. The 32 reform proposals that make use of six horizontal lines can be divided analytically as follows:

l) Six proposals that place C (Do) on the first line, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

-1789, Johannes Presbyter
"De musica antiqua et moderna", *Diphthérographie musicale 1, p. 396*

- 1883, August Wilhelm Ambros
Das System Ambros

- 1910, Karl Laker
Vereinfachung der Notenschrift und der Einführung in die Musiklehre

- 1948, Velizar Godjevatz
The New Musical Notation

- 1968, Thomas S. Reed
Equalized Music Notation

- 1968, Franz Herf
"Das Chromatische Tonsystem", *Musikerziehung* 21, 5, pp. 219-220

2) Five proposals that place C (Do) on the first line, followed by the other notes in ascending order, generally separated by an interval of a whole tone for each level (line or space):

- 1886, Kalo Morven
  Notation-Morven

- 1925, Arnold Schoenberg
  "Eine neue Zwölftonschrift", *Musikblätter des Anbruch* 7, 1, pp. 1-7

- 1961, Harry Bruce Armstrong
  Interval System of Musical Notation

- 1964, Hilbert Howe
  Howe-Way 6-3-3 Notation System

- 1973, Ralph G. Cromleigh
  Musical Notation and Actuator System

3) Four proposals that place C (Do) in the first ledger space below, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

- 1811, Johann Friedrich Christian Werneberg
  Allgemeinen Plan für eine neue viel einfachere Musik-Schule

- 1838, François Ange Alexandre Blein
  Principes de mélodie et d'harmonie déduits de la théorie des vibrations

- 1838, Michel Eisenmenger
  Traité sur l'art graphique et la mécanique appliqués à la musique

- 1860, Josiah Warren
  Written music remodeled and invested with the simplicity of an exact science

4) Three proposals that place C (Do) in the first ledger space below, followed by the other notes in ascending order, generally separated by an interval of a whole tone for each level (line or space):

- 1840, Emmanuele Gambale
  La riforma musicale riguardante un nuovo stabilimento di segni e di regole per apprendere la musica

- 1911, August Unbereit
  "Ein neues Notensystem von August Unbereit", *Blätter für Haus- und Kirchenmusik* XVI, I

- 1984, Louis Appell
  The Novox Piano Notation

5) One proposal that places D (Re) on the first line, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

- 1952, Parry Hiram Moon
  "A Proposed Musical Notation", *Journal of the Franklin Institute* 253, 2, pp. 125-144

6) One proposal that places D (Re) in the first ledger space below, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

- 1870, Gustave Decher
  Rationellen Lehrgebäude der Tonkunst

7) One proposal that places D (Re) in the first ledger space below, followed by the other notes in ascending order, generally separated by an interval of a whole tone for each level (line or space):

- 1832, Treuille de Beaulieu
  "Résumé d'un nouveau mode d'écriture musicale", *Revue Musicale de Fétis* XII, p. 281

8) One proposal that places D (Re) in the second ledger space below, followed by the other notes in ascending order, generally separated by an interval of a semitone or by two intervals of semitones for each level (space):

- 1837, Anonymous
  Nouveau système de notation musicale, suivi d'un essai sur la nomenclature des sons musicaux, par un ancien professeur de mathématiques

9) One proposal that places E (Mi) on the first line, followed by the other notes in ascending order, generally separated by an interval of a whole tone for each level (line or space):

- 1947, Herbert Rand
  The Trilinear System of Musical Notation

10) One proposal that places G (Sol) in the first ledger space below, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

- 1936, John Leon Acheson
  A Douzave System of Music Notation

11) Four proposals that place A (La) on the first line, followed by the other notes in ascending order, generally separated by an interval of one semitone for each level (line or space):

- 1851, F. A. Adams
  The Octave Staff; Diatonic and Chromatic; Reducing the Different Staves to One; Furnishing an Exclusive Place for Each Tone, without Flats or Sharps

- 1914, Arthur Eaglefield Hull
  "Duodecuple Staff ", *Modern Harmony*

- 1934, Marguerite Roesgen-Champion
  "L'écriture musicale nouvelle", *Le Courrier Musical* 7/8

- 1962, Marshall Bailey
  "Duodecuple Notation", *American Composers Alliance Bulletin* 10, 3, pp. 12-14

12) Four proposals of reform, based upon the Pentagram system, which make use of six lines only in order to unify the reading of the notes of the “Treble staff ” and of the “Bass staff ”:

- 1850, William Striby
  Universal System of Music Notation

- 1940, Bernard L. Bonniwell
  “Sixline Music Staff ”, *The Journal of Musicology* 2, 1, pp. 24-26

- 1958, Fang Jisheng and Zhao Songguang
  “The Presentation of the Sixline Music Staff ”, *The Beijing Songs*, pp. 28-29

- 1968, Traugott Rohner
  Musica: An Improved Modern System of Music Notation

How to evaluate the need for Pentagram notation reform

A. The development of Pentagram notation has already reached its acme. Today, on account of historical evolution, its technique has difficulty keeping up with the demands of musical development.

The reform is an inevitable consequence of this.

B. Pentagram notation has limitations, such as the need for an excessive use of ledger lines and substitute signs in order to respond to the demands of application, this causes difficulties in study, practice, and publishing.

The need for reform arises also from demands for efficiency and timesaving.

C. The note-reading system of Pentagram notation has non-identical laws. In particular the "Alto clef" presents continuous variations that cause difficulty in study and usage. Not having unified and standardized rules to apply within the score, one often incurs inevitable contradictions and erroneous impressions concerning the relations between the vertical and horizontal elements of the score itself, as between listening and reading, which add confusion and effort in practical application.

The reform is in conformity with the expectations of musicians.

D. In the attempt to standardize rationally the abstract and expressionistic notations that have emerged with contemporary and avant-garde music, the formal method of the Pentagram system has not succeeded in finding rules that are always valid. The more abstract the expression, the greater is the requirement for rigorous logic and law, which cannot be achieved with the Pentagram system.

The reform is also useful in the encounter with new reflections and research.

E. The formal and mathematical structure of the Pentagram system, having neither unified laws of variation nor a rational logical nucleus, also causes limitations in the modernized scientific application of technical musical development. For example, it is impossible to create simple and efficacious software using the Pentagram system. The universal application and diffusion of such programs also proves to be difficult.

The reform is a necessity of the progress of our times.

F. The more than 200 proposals of reform advanced over the past two centuries, even though unsuccessful, reflect demands widely shared among musicians, and amply demonstrate the inevitability of the reform of Pentagram notation.

The reform by now represents an inevitable historical mission that aims at recuperating the heredity of the past and creating a breakthrough towards the future.

How to evaluate the possibilities of Pentagram notation reform

A. The Pentagram notation has been in use for more than five centuries. By now it has been developed to the point of having become a worldwide musical ideography. In the face of such a vast range of usage and such longstanding customary application, it is necessary first of all to ponder the possibilities of accomplishing a reform.

The proposal of Hexagram notation is based upon ample research, with full respect for the above-mentioned considerations; it inherits and preserves the theoretical and artistic achievements of Pentagram notation and its customary application. It adopts a methodology that modifies the formal and mathematical logic, but does not change the way of writing and the system of the notes reading. Having thus found a *keystone* — a logical formula and a unified rule that is simple, versatile, and multifunctional — it does not involve beginning again from zero, but concerns instead only a conceptual conquest and a process of transformation.

Once musicians have understood the basic concepts of the Hexagram system, they can all master it immediately and be ready to soar again in flight from the ground of Pentagram theory.

B. The reform of Pentagram notation inevitably influences the categories of musical theory, performance, education, and publishing. All illustrious musicians and famous works are inseparable from the Pentagram. This is a social reality that the reform must confront.

Hexagram notation is a natural and rational evolution of Pentagram notation, all the achievements of the Pentagram category can be expressed in a way that is more correct, simpler, and more efficacious. The "Great staff" of 13 lines of the Hexagram comprises the "Great staff" of 11 lines of the Pentagram, it is also a combination of and a reciprocal complement to the system of reading the notes on the three lower lines of the "Treble staff" and the three upper lines of the "Bass staff". Thus the relations and reciprocal transformations between the two systems turn out to be very natural and harmonious, they can for a certain period be used together without any problem, and the transition from one system to the other can be accomplished gradually.

Only by means of actual application and comparison can the possibilities of reform be realized.

C. The artistic form of Pentagram notation has by now entered our hearts. It is perfect and harmonious and represents a gem produced by musical culture. This is an aspect that the reform must respect and defend.

Hexagram notation preserves and fully develops the artistic form of Pentagram notation. It cannot induce in musicians any sensation of extraneousness or any attitude of contrast. The reform does not violate the intellectual and emotional habits of anyone. It is, on the contrary, an innovation that can be easily adopted.

Reference 1.

THE MUSIC NOTATION REFORM PLAN IN THE "TREATISE ON THE HEXAGRAM" ACADEMIC STRUCTURAL ELEMENTS AND THEORETICAL APPLICATIVE CONNOTATIONS

Wu Dao-gong — presentation at the conference on the first Chinese publication of the ***Treatise on the Hexagram***, published in the national monthly periodical *Music of the People*, n° 11 of 1995.

On 11 April 1995, in the meeting room of the Central Conservatory of Music in Beijing, the conference was held on the first publication in Chinese of the ***Treatise on the Hexagram***. It was presided over by Zhao Feng, Vice President of the Association of Chinese Musicians, President of the Artistic Education Commission of the Committee of Public Instruction and of the Ministry of Culture Artistic Commission, and former director of the Chinese Central Conservatory. Among the organizers attending there were the Association of Musicians, the Artistic Education Commission of the Committee of Public Instruction, the Ministry of Culture Artistic Commission, the publishing house Music of the People, the editorial staffs of the periodicals *Musical Research* and *Music of the People*, and the Central Conservatory itself. Among the experts well known in the Chinese musical community, there were authoritative scholars and theoreticians, as well as journalists of the *People's Daily* newspaper, of the *Guangming Daily*, and of the China Central Radio. The conference was attended also by the Councilor of Public Instruction of the Chinese Embassy in Rome and the Cultural Councilor of the Italian Embassy in Beijing. Everyone acknowledges and appreciates the theory of the Hexagram notation, considered the most complete and viable reform plan of music notation in the last two centuries. All are in agreement that the musical Hexagram has on the one hand inherited, and on the other hand surpassed, the Pentagram notation, and that it deserves the attention and help of the authorities necessary in order to experiment and make known this result, first of all in China, and thus contribute to the blossoming of contemporary musical culture.

The complete Conference presentation is reported here below

During the past five centuries, the Pentagram (five-line staff) music notation as a form of representative musical ideography has been widely used in Europe and throughout the world, contributing greatly to a universal musical culture. Though still in use today, Pentagram notation has created and presented certain difficulties, due to its historical evolution with its intrinsic limitations and attendant problems. There is consequently an increasing gap between the Pentagram notation, on the one hand, and the demands of advancing musical development, on the other. Sensitive musicians have been aware of this problem for some time and have drawn attention to this tendency, while at the same time hoping for and seeking a new breakthrough.

In the course of the last two centuries, there have been numerous proposals of linear music notation reform, from those of one line to those of sixteen lines, with more than 30 proposals being of six lines. All these proposals have, however, consistently disregarded a fundamental principle: that if one seeks to completely overcome the past, it is necessary to fully retrieve its heredity. Furthermore, the general tendency has been to focus the attention on a renewal of the form, while neglecting further research into the logic.

It is necessary to recognize that the academic community and the theoretical foundation of Western music are well consolidated, but precisely for this, it is necesssary also to admit that such a theory, in spite of a vivacious and vital appearance, acts in a very deep-rooted and conservative way. As a result, the attempt at reform must deal with many restrictions and limits, and overcome apparently

unsurmountable obstacles. In fact, for about two hundred years, in spite of the hundreds of proposals of linear notation reform, a plausible solution for the reform of musical ideography has never been found.

In order to resolve this difficult historical problem and continue the search for an exact strategy, it is necessary to keep in mind the reality expounded above and the cause-and-effect relation between theoretical and practical research, in order to deal with possible difficulties. In fact, the practice is even more difficult than the theoretical research, since we are in the presence of a problem that is old, enormous, and difficult. Old, because the musical Pentagram is a usage that has lasted for five hundred years; enormous, for the fact that it is a notation widespread throughout the world; difficult, in the sense that it is necessary to review and re-elaborate the entire system of the score and the related applicative theory. Thus the appraisal and study of the theoretical formation of the musical Pentagram, practiced for five hundred years, and of the attempts to reform it in the course of two hundred years, constitute the basic preparations for the examination and research of a correct means of reform, keeping in mind the key points, in order to elaborate the most efficacious means and method.

Given the perceptions and considerations mentioned above, one can establish several premises for the theoretical conception of the notation reform plan:

1. The first premise of the theoretical conception consists in fully recognizing the theoretical and artistic success of the Pentagram notation, in order to then study and analyse the difficult problems and intrinsic limits of its system, with the purpose of identifying a correct direction for the reform.

The musical Pentagram, developed in the 15th century, is based upon the Tetragram notation, already in use for sacred songs. The musical Tetragram was invented by Guido d'Arezzo, a religious Italian musician of the 11th century, who made a synthesis of the European musical notations up until his time. The musical Pentagram was established after two centuries of development and gradual unification, thanks to the creative efforts of European musicians. At the end of the 16th century, the Pentagram notation, widespread as an ideogram in European musical practice, had freed itself from the religious setting and entered into the social life of the people. It had also become perfected on the theoretical plane with the introduction of semitones, ledger lines, bar lines, etc. It reached the peak of its evolution in the 18th century, with the first establishment of the applicative dimension and theoretical structure that would then be transmitted up to the present time. It was further developed in the Baroque period (1600-1750 ca.), thanks also to the historical opportunities, and its perfection was already universally recognized. After the 19th century, it was accepted by all Nations and became the only musical ideography adopted in all the world, and the common denominator of the development of musical culture. With its incomparable advantage and its artistic values, the musical Pentagram plays a decisive role in the general development of musical culture, and it in fact obtains the greatest affirmation in history. Therefore, only the full recognition of the success of the Pentagram notation allows one to examine and then resolve the difficult problems and intrinsic limits of its system, and to search for a new and correct means of reform.

The course of the evolution of human civilization, and of the development of knowledge, is ongoing and uninterrupted, and this is a truth to be kept in mind for every kind of study or invention. The reform, then, cannot be isolated, without any precedents or successors, and it cannot demand originality by interrupting the historical continuity. It has the task of inheriting the past and of predicting the future, and it must allow the development of musical ideography to navigate towards a broader horizon and an even freer application. It must also consent the further evolution of a music notation suitable for the needs of our times, both on the theoretical and on the technical plane, which can provide new possibilities for a contemporary and scientific use of musical ideography.

2. The second premise of the theoretical conception is that of the in-depth search for the reform proposals of the last two hundred years, in order to analyse and identify the causes and effects of the successes and failures, with the purpose of accessing a new and feasible direction.

From a historical and academic point of view, the beginning of the Pentagram notation reform dates back to the end of the 18th century. During the last two centuries (precisely from 1789 to 1990), there

have been hundreds of proposals concerning the linear notation in the West, from those of one line to those of sixteen lines (there has not yet been found one of fifteen lines), of which 41 are of five lines, and 32 are of six lines. From a formal point of view, these proposals are horizontal and vertical compositions of lines, and the staves can be made up of single, double, even quadruple lines; continuous, interrupted, rippled; horizontal and vertical parallels that can be equidistant and non-equidistant. As far as regards the notes, they are even more imaginative: the dot, the little oval, the little triangle, the little square, the long or short stripe, graphic designs, literary symbols, etc. Also the keys of the lines are of various forms, though it's not the case to list here all the examples. There are still other reform proposals outside of linear notation. The examination and study of these proposals not only offer us suggestions, but they point out the problems of the Pentagram musical system from many points of view, and provide us also with ideas, projects, advice, and expectations concerning various ways and means of reform. Each proposal has its own peculiarity, and opens to us new exploratory horizons, along with suggestions of new directions to undertake. However, once all the proposals have been examined and studied, one passes to the cause-and-effect analysis of the successes and failures, in order to identify the pathway of reform, without falling back into the preceding errors.

In analyzing the general picture, one encounters three striking points: the general inclination of all the proposals listed here is that of having paid attention to, and in some way resolved, certain particular problems, but without furnishing a general transition and without having a continuity with the heredity of the past; the first cause of failure is to be attributed to the fact that these proposals aim at an innovative formal reform, while neglecting the research and the application of logic; although full of imagination and innovation, these proposals unfortunately do not have the completeness and complementarity of general knowledge, and this lesson must be kept in mind.

3. In the course of the evolution of human civilization, each thing contributes to the well-being of the other. Thus, in this work, one must look for interactive ties and relations between the art, philosophy, and science, and also find the complementary points and cultural incentives between East and West that favor civilization and common progress, in order to identify an efficient means and a workable method of reform. This is the third premise of the theoretical conception of reform.

The truth, as is natural and simple, helps us to grasp the nucleus of the development and the movement of things. The progress of contemporary civilization has confirmed an indisputable reality, from the academic point of view, stating that the more advanced the theory, the more concise is the concept; and from the technical point of view, that the more evolved the science, the more simple is the manoeuver. Art, especially music, is also a highly technical discipline. Thus the contemporary reform of music notation must follow the requirements and rules described above. The new notation must conform with the evolutive regularity of the theoretical development as an academic product and as a system, and it must have a synthetic structure and a rigorous logic, both of a formal and of a mathematic kind. All the conclusions must be based upon deductions, and all the deductions must be in conformity with logic. The foundation of the new system must satisfy the demands of the information-technology era, and it must be the result of the rational unfolding by means of the scientific essence and of the deductive philosophical method. The new system must not only resolve the present problems and intrinsic limits of the Pentagram system, but it must also eliminate everything that proves to be complicated, unreal, superfluous, and inadeguate. In short, it must adhere to a concise concept and to a simple application. Only in this way can one speak of a music notation reform that satisfies the needs of today, a reform that is worthy of being a mission of our time.

Now we shall examine the academic structural elements and theoretical applicative connotations of the ***Treatise on the Hexagram*** reform proposal, in terms of the cause-and-effect relationship:

The Hexagram (six-line staff) music notation is an innovation inspired by the foregoing considerations and developed in response to the problems indicated in the premise. With respect to the Pentagram notation, it represents the total preservation of its heredity and at the same time its complete evolution. It derives from the logic of the theoretical development of notation, while preserving the

traditional knowledge and customary rules for its application. At the same time it eliminates the Pentagram's present difficulties and limitations, while unifying and normalizing to the utmost its forms and rules. It thereby allows the musical ideography to unfold with great precision and versatility, while at the same time achieving perfect simplicity and functionality. The innovation of the Hexagram notation could thus facilitate today's most advanced theoretical and technical-musical demands, bringing new vigor to musical development.

Hexagram notation is based upon three essential elements: the theoretical and artistic achievements of Pentagram notation; the rational nucleus of the formal logic and of the mathematical logic; the system of philosophical thought and the deductive modality of the *Yi Jing* (see page 9*) and the "Ba Gua"(see page 11*). The staff system thus devised is characterized by its rational structure, concise concept, complete function, and simplified rules.

The formative modalities of the new system are the following: 1) Each set of three horizontal parallel lines forms a half staff — precisely, based on the traditional Pentagram, with the three lower lines of the "Treble staff" and the three upper lines of the "Bass staff" — every combined with the transitory natural ledger line, constitutes a mutable scale group, i.e. precisely an octave, a series of twelve tones or a series of twenty-four tones; each set of six horizontal parallel lines, made up of the combination of these two adjacent and opposite groups of mutable scales, forms a staff that, by means of the principle of reciprocal complement, becomes an autonomous expressive musical mode. 2) Each staff is a symmetrical combination of the 2:1 ratio both formally and mathematically; each staff can be evolved and duplicated logically according to the modalities of the binary system and of the graduality, so as to produce the "Complete staff" and the "Inferential staff". The "Complete staff", that is to say, a combination of the staves of 4 different levels with the clefs of the seven applicative programs made up of 27 lines and 8 octaves, comprises all the ranges of executable tones; the "Inferential staff", i.e. a series of variable combinations structured according to the principle of equivocality, can instead express specific categories of frequency and of the imaginary, beyond a practicable use. They can be concrete and abstract, realistic or fantastic, all at the same time. The application of this system, which has just one unified rule and one logical formula, can be unfolded from the microcosm to the macrocosm, from the interior towards the exterior, always beginning again in an endless cycle, capable of infinite variations without detaching from its principle.

In the Hexagram notation, the "Middle-c" is the centre of the staff structure and of the scale system. The staves and scales are formed by expansion from "Middle-c"; the "Middle-c" is the centre of unification for every combination of the staves and scales. They are at the same time complete and divided, similar and different. The rules are invariable and can be applied to different ranges.

The formal structure and theoretical basis of Hexagram notation, and especially its formal and mathematical logic, can also form the theoretical framework for the "Demonstrative staff" in the field of contemporary and avant-garde music, offering practicable and standardized rules for its application and future development.

The formation principle of the Hexagram system is a result of rational combination: from the applicative theory of notation, to the principles and deductive modality of the alternation of the Yin and Yang, and of the symbol and number changes, contained in the philosophy of the *Yi Jing*; as also to the principles of the binary system and of the 2:1 relation contained in the science of the computer. Analysing the 6-line structure and studying the formal and mathematical logic, one discovers the rational key, the common formula, and the versatile adaptable rule of changes: the evolutionary modality is an application of the alternation principle of the Yin and Yang, and of the binary system, such as Yin and Yang, 0 and 1; 1 + 1 = 10, 10 + 10 = 100. The explanatory method is an application of the symbol and number changes and of the 2:1 relation, for example, symbol and number, form and mathematic; half and whole, 1/2 + 1/2 = 1, 3 + 3 = 6, etc. This universal formula and rational rule are the basis of the musical Hexagram structure, and the nucleus formed by the ordinary system of the staffes uses only a single rule and one logical formula. It can be unfolded from the microcosm to the macrocosm, from the internal towards the external, always beginning the circle again in a continuous cycle, evolving uniformly and in a versatile way. Thus it could also be adapted to a computerized use, which would initiate a further means of divulgation.

The total system is composed of 20 illustrations of the notation and two theoretical frameworks of

special application, along with the indications for using the generalization of the “Notation of the tonic Do/La solfège”. It is an ordinary structure of the key application, which is explained in a general way, with its multipurpose functionality and its adaptable versatility. Its applicative system of generalization can surpass and substitute the Simple notation of the *Chevé System* (see page 27*). This is a system of complete functional notation that facilitates the professional improvement and amateur divulgation, while being also an exact and efficient expressive system for a modernization of musical ideography that integrates form, mathematics, and philosophy.

From the viewpoint of the theoretical content, the Hexagram notation has inherited entirely the artistic and theoretical conquests of the Pentagram notation, while at the same time developing its theory and form in a revolutionary way and eliminating the current problems and persistent limits of the Pentagram system. It has unified and simplified the system for the writing and reading of the notes; diminished or avoided the use of complex ledger lines; fixed the “Middle staff”. It has corrrected the notation of inversion and of transposition, resolving the contradictions and erroneous impressions in the relation between the vertical and horizontal elements in the general score, and between reading and listening. It has established the practicable norm of use for the notation of the “abstractist” and expressionistic forms of contemporary music. It has furnished the means of efficient use for the computerization of notation, opening a vast perspective for a scientific use and a modernization of musical technique. It has the function and significance of inheriting the good qualities of the past and of anticipating the future with avant-garde inspiration.

When one comes to a halt in self-satisfaction and laziness, one does not realize that from that moment on there is the beginning of regression and degeneration. The hope of humanity lies in proceeding constantly with the search for evolution. The appearance of the Hexagram notation aspires to be a valid contribution to the universal development of musical culture in the world.

Reference 2.

PRESENTATION OF THE FIRST ITALIAN EDITION
by *Editrice Europea*, Rome 1990

Is the Pentagram still valid as the common denominator of musical culture?

Raising the question is the Chinese musician Wu Dao-Gong, whose ***Treatise on the Hexagram*** proposes the addition of one line to the traditional Pentagram, in an attempt to provide music notation with increased rigor, a greater purity and immediacy, whether for composition, reading, or at the learning phase.

In the age of informatics and the most extraordinary development of models of communication since the time of Gutenberg, musical language can no longer be excluded from the process which the various systems of communication have undergone. No wonder, then, that critical examination should have affected also the more solid monument of the graphic representation of musical notes, which has gained the universal consensus of cultures, while respecting individual traditions, and diverse melodic genres and styles. The supposition that the Pentagram has reached a certain degree of obsolescence, rather than being considered a sacrilegious or iconoclastic notion, should be seen as an act of homage to the system of musical expression that flourished in the West about one thousand years ago and has been refined through continuous improvement. The innovative proposal in fact constitutes a subsequent contribution to improving the model, just as has happened so many times in the past, without altering the essential prototype.

Of the three fundamental systems of musical representation: i.e. the alphabetical system that was used originally and was common to the Chinese, Indian, and Greek traditions; the numerical system that flourished between the fourteenth and seventeenth centuries, but whose use was limited to stringed instruments such as the viola, lute, and guitar; and, finally, the system constructed with conventional signs that asserted itself at the beginning of the second millenium of the Christian era, it is the latter that ended up prevailing and being used by all civilized peoples. Before the definitive consecration of the Pentagram, which took shape in the eleventh century with Guido d'Arezzo's invention of the staff, of music notation, and of solfeggio, the conventional typology changed time and again the number of lines, the shape of the characters from square to rectangular to round, and for a time even the color of the notes. Precisely this long history of variations and alterations authorizes us to cultivate confidently the hypothesis that the international music community might wish to take the theory of the Hexagram into benevolent consideration.

Mr. Wu Dao-Gong, professor of violin and traditional Chinese violin, who graduated from the Anhui Academy of Arts and subsequently performed there as a concert artist, has lived since 1983 in Rome, where he has pursued further advanced and specialized study with the eminent violinist Maestro Arrigo Pelliccia of the National Academy of «Santa Cecilia», and carried out extensive research into the ideographic aspect of music notation. The innovative model is the result of a felicitous encounter between those elements of tradition and rationality, typical of Western musical culture, and several themes that originate in Chinese culture and that act as a catalyst, while respecting the basic framework of universally diffused music notation.

In fact, the formal structure of the Hexagram incorporates all the virtues of the Pentagram, in particular the nucleus of its formal and mathematical logic, enriched by the philosophical deductive modality of the *Yi Jing* and of the "Ba Gua", which introduces principles such as: the concept of the whole, the temporal-rhythmic concept, the concepts of versatility and of the unity of opposites; systematic thought, the idea of graduality, and the idea of the periodic cycle; the theory of the center, the symmetrical figure, the principle of equilibrium, of equivocality, of reciprocal complement, etc. The advantages of the Hexagram could affect the entire range of contemporary musical civilization both in the educational and professional fields, as in that of music publishing, including the use of computerized techniques, which are greatly facilitated. By eliminating or reducing the addition of ledger lines, the Hexagram notation in fact simplifies the

learning of music and rationalizes the printed transcription of scores, reducing the amount of time spent on graphic composition. Moreover, its structure can be applied to all the real registers, including those of the piano, organ, harmonium, harp, celesta, xylophone, bells, etc. The appearance of Hexagram notation is not the product of a passing fashion, nor the symbol of a current ephemera, but when adopted at the right moment, it aspires to be a valid contribution to the development of universal musical culture.

Reference 3.

SOME INFORMATION AND SITUATIONS WORTHY OF ATTENTION

- In July 1990, the Casa Editrice Europea (European Publishing House) published the first Italian edition of the ***Trattato sull' Esagramma*** (***Treatise on the Hexagram***). Shortly afterwards, on 19 October 1990, the Cultural Office of the Embassy of the People's Republic of China organized a large reception, in honor of the publication of the "Trattato", in the presence of experts from the musical academic community along with several journalists. All of them appreciated and held in high consideration the Hexagram notation.

- On October 20, 1990, the Italian [ANSA] Press Agency informed the entire world with an article that commented positively on the Hexagram notation of the "Dao-Gong System". Subsequently, the newspapers of all the Italian Regions and some professional periodicals presented and commented on the musical Hexagram, all in agreement concerning the validity of the new system. «IL TEMPO», one of the major Italian daily newspapers, published an article on the musical Hexagram and suggested that it be divulged and experimented in the schools.

- In February 1991, the Biblioteca Musicale Governativa del Conservatorio e Accademia di Musica «S. CECILIA» (National Music Library of the «St. Cecilia» Conservatory and Academy of Music) catalogued the work, in the Institute's Rome location, with the two inventory numbers 1157315 and 1557316.

- Following its appearance, many musicians have sustained, confirmed, and applied the Hexagram notation, while providing it with further contributions.

For example:

In the field of modern music: Eduardo Hubert, Professor at the Conservatory of Ancona, pianist and composer, in homage to the inventor of the system, composed the first work for piano with the Hexagram notation score, and he also had the orchestra perform it.

In the field of classical music: Giovanni Di Giacomo, a young concert organist from Pescara, has transcribed with the Hexagram notation two works of J. S. Bach and has submitted them to the inventor's view. The two transcribed works are, respectively, the *Prelude and Fugue for Organ in F minor — J. S. Bach, BWV 534,* and the *Prelude and Fugue in C major — J. S. Bach, BWV 547.*

In the field of jazz music: Alessandra Vinci, in Rome concert pianist, and Ivo Papadopoulos, concert saxophonist, composer and poet, have publish*ed the Musical Scores of the Dharm Duet*, in which they present the application of the musical Hexagram system and its inventor, while providing for the duet some transcriptions and compositions directed with the Hexagram notation. They have also organized concerts and published some CDs in conformity with the new musical score method.

Etc.

RECAPITULATIONS AND CONSIDERATIONS

Wu Dao-Gong*

Hexagram notation is the outcome of the rational evolution and comprehensive development of Pentagram notation. It is a system with applications of multiple functionality and adaptable versatility, composed of twenty illustrations of notation and two theoretical frameworks of special application, together with instructions for the generalization of the ¡°Tonic Do/La solfeggio notation¡±. Being a system made up of the unity of opposites, its application has just one single rule and one logical formula, which can be unfolded from the microcosm to the macrocosm, from the interior towards the exterior, always beginning again in an endless cycle, capable of infinite variations without detaching from its principle, while being also an exact and efficient expressive system for a modernization of musical ideography that integrates form, mathematics, and philosophy.

Hexagram notation has fully inherited the theoretical and artistic achievements of Pentagram notation, of which it thoroughly respects the traditional knowledge and preserves the applicatory uses. Its practical aspects are: to derive the logic of the music theoretical development; to unify and simplify the system of writing and reading of the notes; to expande and complete the range of notation; to reduce or eliminate the use of ledger lines; to determine the “Middle-c clef” (the “Alto clef” and “Tenor clef”); to correct the notation of inversion and of modification; to resolve and allow the overcoming of the contradictions and erroneous impressions concerning the relation between vertical and horizontal elements of the score, as also between reading and listening, to achieve a reciprocal unification based upon formal and mathematical logic; to simplify the page of the score, moreover the notation proves to be greatly rationalized and standardized, more practical to use, and of greater efficacy and precision. Hexagram notation, given the direct and efficient means and method, lends itself also to an use of generalization and computerization. The creation of the notation of registers beyond practicable use, and the particular categories of imaginative frequency, open a vast prospect for scientific use and a modernization of musical technique. Hexagram notation possesses the function and meaning of the heredity of the past together with the inspiration of the future and also of the avant-garde.

Some reflections and considerations elicited by the Hexagram notation:

A. The history of the evolution of human civilization and the course of development of human knowledge do not allow for any arbitrary human interruption. Thus if one seeks to completely overcome the past, it is necessary to fully retrieve its heredity. In academic research one cannot invent anything new, extraordinary, or unique that is without precedents that premise its future, much less can one invent something from nothing or elaborate conclusions that are without foundation. Hexagram notation rigorously respects these principles.

B. The truth is simple and natural. The search for truth requires an honest and straightforward attitude, even at the risk of not obtaining any precise and perfect result, it is preferable to present oneself as hypo rather than hyper, simple rather than complicated. Otherwise *too much is too much* and one strays further from the truth. Hexagram notation always refers back to the above reasoning.

C. “Each thing concurs in the good of every other”. All things interact among themselves and influence each other. Cognitive developments are even more communicative among themselves. The integration and reciprocal complement between Western and Eastern cultures, can find new inspiration and stimulation in the search for a common civilization and a collective progress. Hexagram notation is the result of the integration and reciprocal complement of these two different cultures.

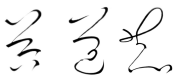
D. All existing things come about as a unity of opposites, this is the law of nature, from which nothing, from the atom to the cosmos, is excluded. Things are interdependent upon each other, but

they also change. Hexagram notation presents itself as a complete formality, from the microcosm to the macrocosm, from the interior towards the exterior, from its integrity to the parts of a structure composed of the unity of opposites. This structure proves to be a unit divided in two, but also a group of two. E. Music is an art, but also a science and a philosophy, for which music is a resonance of physical, mathematical, and philosophical theories; it is a tuning of time and space, as also of the body and soul. Music must therefore be sentimental and rational, or it will lack vitality. Hexagram notation is a completely rationalized applicative system.

F. The evolution of modern civilization has demonstrated the following rules: the more advanced the theory, the more concise the concept; the more developed the science, the simpler the operation. Hexagram notation corresponds to these requisites.

G. Evolution/degeneration and metabolism are inevitable laws of nature. The evolution of human society is like a ship going upstream, it goes backward if it doesn't go forward. When people languish in self-satisfaction and laziness, then regression and degeneration begin without their realizing it, whereas the hope of humanity lies in proceeding constantly with the search towards evolution. The appearance of Hexagram notation aspires to be a valid contribution to the universal development of the world's musical culture.

Wu Dao-Gong



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The Integradted edition of the text ***Treatise on the Hexagram*** is an enlarged and updated version of the first edition published in 1990, and the outcome of re-examination and research performed over a period of twenty years. The Hexagram system is a practicable one that is independent of any tendency and particular school. It can both fulfill the evolutional demands of contemporary and avant-garde music, and satisfy the need for the dissemination, promotion, and development of classical and popular music. It adopts a methodology that modifies the formal and mathematical logic, but does not change the way of reading and writing the notes. Having thus found a keystone — a logical formula and a unified rule that is simple, versatile, and multifunctional — it does not involve innovating again from the beginning, but concerns instead only a conceptual conquest and a process of transformation. Once musicians have understood the basic concepts of the Hexagram system, they can all master it immediately and be ready to soar again in flight from the ground of the Pentagram theory. This system is not only in effective accordance with professional application, but it also provides an efficient applicative modality for the popularization of singing activities and a simple method of musical education in primary and secondary schools. In fact, the appearance of Hexagram notation is neither the result of a momentary fashion nor the sign of an ephemeral trend, but rather a painless birth and peaceful revolution.

ENTERTAINMENT (Proposals of two musical poems in chinese ancient metrics, trial with musical Hexagram)

餘 興（敬獻古體詩曲兩首, 試用六線譜）

THE STYLE OF THE SEA

海 格（七律，一九六七年季春於青島）

—— 仰觀東海交響詩

光明寥廓蘊深坦，
托日行雲承半天。
滿盛世間辛辣苦，
一塵不染見真顏。
縱橫交奏胸潮曲，
起落回旋又易篇。
不是浮沉逐亢歎，
只緣千古應空前。

THE SENTIMENT OF THE MOUNTAIN

山 情（五言，一九九六年仲夏於義大利）

—— 阿爾卑斯山抒情曲

層層又嶺嶺，
綠綠更青青。
雲霧舞川壑，
風流韻谷林。
遠天映雪崖，
近地擺煙鈴。
西虹濛濛雨，
東崗曜曜晴。

INDEX

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