

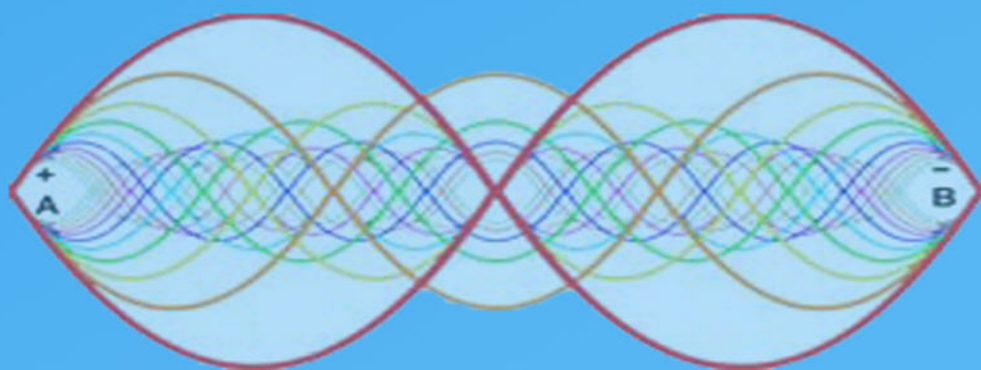
# NOVAPHONICS™

## A

# UNIVERSAL HARMONY

## FOR A

# NEW AGE



# ANTONIO L. NEWTON

Copyright (c) 1986 by  
Antonio L. Newton - Newsac Music Pub.

All rights reserved. No part of this  
book may be reproduced by any means  
without written permission from the  
publisher:

Newsac Music Publishing  
1731 1/2 N. Bronson Ave.  
Hollywood, CA 90028  
213-469-5603

Printed in the United States of  
America.

Library of Congress Cataloging:

Music Appreciation \*  
\* History \*  
Philosophy \* Metaphysics

I

## FOREWORD

In this time of progressing technology and awareness, music is not immune. This work, which is the seventh volume in the Novaphonic series, will attempt to show an evolutionary process that was basically unknown until now.

This process ultimately leads to a great reward of musical treasures and a holistic embracing of a broader sound color energy spectrum for the listener. This process will be shown at its innate levels in nature's harmonic series and its materials and psychosocial parallels, perspectives, and responses toward it.

This work is intended for the music listener and the artist, to better understand, comprehend, and enjoy the experience of the Novaphonic Sound of Quintal, Quartal, Hybrid, and Matrix Harmonies.

I will present information on how I sought and found certain mathematical formulae, which led me to these new dimensions of sound, where I found over 1,200 new chords. I also traced the experimentation and use of classic and contemporary master composers in this area.

I will also share some Metaphysical implications and speculations which provide for an interesting esthetic, philosophical view, which may prove to have more meaning than any of us can now perceive or realize towards the spiritual awakening and expansion of human consciousness, through music and harmony.

Harmony, and the significance of this progressive musical expansion at this time in history, is in the human consciousness, which is in a state of readiness for a fresh sonic

perspective, which embraces holistic characteristics, those characteristics being:

Total use of the Equal-Temperment 12-tone chromatic scale in all its intervallic combinations.

Broader and more vast use of sonority and color.

Harmonic freedom.

Quintal/Quartal harmony and its linking connotations and contributions to these aspects are discussed as to how we can get the most out of the Novaphonic Sound listening experience.

## NOVAPHONIC

The term, Novaphonic sound, is a term that descriptively explains the essence of the sonic character of Quintal, Quartal and Matrix harmonies. The word, Nova, means the birth and explosion of a "New" star which radiates bursts of energy into the Universe. This is analogous to the sounding of a musical tone which radiates its overtone series. The suffix -phonic, of course, has to do with the nature of sound. Therefore:

NOVAPHONICS: A UNIVERSAL HARMONY FOR  
A NEW AGE !

## TABLE OF CONTENTS

FOREWORD.....	1
NEW MUSICAL FRONTIERS.....	3
A PATH OF DISCOVERY.....	7
THEORY.....	26
Overtones.....	27
Overtones and the Ear.....	35
Sonority and Tone.....	39
A Sound Wave.....	41
Understanding Various Harmonies.....	45
Symbols Used.....	47
Harmonic Energy Groups.....	49
Quintal and Quartal Notation.....	51
Basic Quintal Chord Stacks.....	53
12-Tone Matrix Harmonies.....	56
HISTORY.....	63
THE COMPOSER, HARMONY, & COLOR.....	69
ACTIVE POWER OF THE FIFTH.....	71
RESONANCE & THE NOVAPHONIC SOUND.....	76
SUSPENSION CHORD.....	77
METAPHYSICAL PERSPECTIVES.....	79
QUINTESSENTIAL CONSCIOUSNESS AND QUINTAL HARMONY.....	92
NOVAPHONICS AS AN ART FORM.....	93
THE ART OF LISTENING.....	95
HISTORICAL COMPOSITIONS.....	99
LANDMARK COMPOSITIONS.....	102
APPENDICES:	
A..QUINTAL & QUARTAL CHORD STACKS.....	107
B..VARIOUS NOVAPHONIC COMPOSITIONS.....	123
C..VARIOUS COMPUTER CHARTS.....	141

## THANKS

First of all, I would like to express deep gratitude to Mitch and Gary Snyder for their belief in and financial assistance to this project. Next, I would like to acknowledge the invaluable assistance of Jay La Shell that I received in the preparation of this work. Also, I would like to extend thanks and appreciation to Kevin Donan for his sustained support and energy in production coordination.

I am also grateful to Mary Kay Brand for undying support throughout the years from idea to final creation. Again, I am grateful to Dr. Matt Doran, D.M.A., for encouragement.

A special thanks goes to Victor Aleman for his spiritual input as well as for his photographic art. And, also, to Cindy Beckwith for artistic and graphic design of the cover of this book and the audio albums.

AND THANKS TO THE SOURCE FROM WHICH ALL CREATION COMES!

NEW MUSICAL FRONTIERS OF THE 20TH CENTURY.  
THE NOVAPHONIC SOUND

Resonant, sonically rich, sonorous, colorful, mind-expanding sounds are what one should expect from the 20th Century Novaphonic sound of Quintal, Quartal harmony developed to its greatest extent by composer/keyboardist/electric bassist, Tony Newton.

These harmonies are innately colorful, resonant, and pleasing to the human ear, mind, and nervous system, because they are built of musical intervals (steps) of a fifth and fourth, which are the first two active harmonic tones in Nature's natural harmonic overtone series (the chord of nature). Innately, the human ear hears all the sound in relation to the overtone series. Also, the overtone series, and the natural evolution of Western musical harmony, represent, parallel, and are a musical representation of socio-cultural trends in harmonic sounds. The easiest way to grasp the concept of the overtone series is to understand them as contributing internal sound frequencies that are generated from the fundamental sound, and which have specific mathematical relations, and they contribute to color and resonance. Quite likely there are many different colors that contribute to one hue of a particular color.

Newton states that these harmonies and their evolution can be traced throughout History in individual chords, from ancient times (of the Gregorian chant) of the middle ages, to an influx of these harmonies in the 19th and 20th century music of Claude Debussy, Paul Hindemith, and Arnold Schoen-

berg. There are also emergings in contemporary jazz and pop idioms. Traditionally, for the past six thousand years, chords have been built of thirds (tertian), which appear farther up in the overtone series. Also, tertian structures only account for a partial view of the harmonic sound color energy spectrum. Whereas, with the addition of Quintal, Quartal, Hybrid, and Matrix harmony systems, we have a more expanded, complete harmonic sound color energy spectrum to work with and listen to.

Within Newton's Novaphonic harmonic system, there are 971 Quintal (5ths), 177 Quartal (4ths), 115 Hybrid (mixed), choral harmonies for a total of 1263 new chords with an astounding 15,156 total chord combinations in all twelve keys, including an advanced system whereby a 12-tone overtone row is derived through a specific formula from the first 28 harmonic overtones, which then form 84 new chord combinations.

The development of this revolutionary system is an ongoing process with Newton. The basic core information took over three years to develop through delving into musical and acoustical physics, deriving and observing certain mathematical formulae, and applying traditional musical compositional techniques, all of which can be found in the volumes of textbooks Newton has written, and which are available through Newsac Music Publishing Company. Newton feels that his thrust as a music artist in this creative effort was of organizing a mass of data that was, up to now, unobserved. He put it into a comprehensible system which links to and expands our traditional 12-tone chromatic equal tempered harmo-musical approach. This



new approach also includes an expanded concept of consonance (stable) and dissonance (unstable). Newton expands these to a tri-polar function through adding in the middle, "Transonance" (transient). Our traditional notation as well is extended, while at the same time using such fundamental techniques as an advanced form of figured bass.

Newton is a veteran composer and musician for over 20 years, recording, touring, and performing on over 25 award-winning hit recordings, including film sound tracks, as well as working with several top names in the professional music scene, such as Smokey Robinson, Stevie Wonder, Donnie and Marie Osmond, Jack Nitsche, Motown records, Warner Brothers, to name a few. Newton's compositions appeared on two of the now legendary fusion group, "Tony William's Lifetime" for Columbia Recording, "Believe It" and "Million Dollar Legs", along with Newton, Williams, Allan Holdsworth and Allan Pasqua were featured. Being a composer of both classical and popular music, Newton feels that his vast and diverse musical, philosophical, and scientific influences of the past, led him to these discoveries. As an instrumentalist, Newton started at the young age of seven, studying woodwinds for several years, then switching to electric bass for over fifteen years, then adding piano/synthesizer. Newton is an honor graduate of L. A. City College and holds a bachelor of music degree from Mount St. Mary's College, Los Angeles, in theory, composition and piano.

Newton feels that this new breakthrough in harmony will catapult the music artist and listener towards new dimensions in sound and awareness. "The collective consciousness of

the late 20th century mind is in a state of readiness for new harmonic vistas. Due to the mind's natural evolution and adjustment to sound, the time of harmonic color expansion has arrived, even though there are those who thought "harmony is dead." As the 20th century heralds its time of great technological and spiritual awakening in quintessential human consciousness, the Novaphonic Quintal /Quartal harmony sound is playing its role in awakening and catapulting humans toward our greater potential, harmonically, artistically, spiritually, and scientifically."

At present, Newton has created a sizable catalogue of over 40 compositions and recordings of contemporary classical, pop, and jazz idioms, of both acoustic and electronic synthesizer. There is also a five-volume instructional, historical, compositional, performance, and autobiographical text that deals with the Novaphonic sound exclusively. In simultaneous release with this book is the release on Novaphonic Records and cassette tapes: Newton's 1st LP recording titled "NOVAPHONIA," which is the debut of Newton's published compositions featuring the Novaphonic Sound with Newton performing on MIDI computer assisted synthesizers, creating an amazing palette of musical sound and experience.

"Music is the key to Universal Harmony"

.....Newton

## A PATH OF DISCOVERY

It was a hot, smoldering day in a blistering, second-floor, Hollywood apartment in July of '82. In a moment of meditation, taking a break from working on a project which was to be "Composition at the Piano," I was working on functions and foundations of traditional harmony, and other sounds/harmonies that exist apart from traditional tertian or Schoenbergian approaches. I asked myself, then: Where might the answer be? Actually I had contemplated this very question about a year previous as I strolled through the halls of Los Angeles Community College, where I was studying piano and composition. I thought to myself, "Could the answer be in Nature's overtones?" However, the exact answer and path was not to be known until a year later.

To return to that summer day when I asked myself that all-important question: In a flash of inspiration a voice inside of me proclaimed that "the overtone series and intervallic construction" would guide me toward new sonic vistas. I searched through every music and physics book that dealt with sound acoustics, timbre, and that had a graphic representation of the harmonic overtone series. To my surprise, most of the examples gave only scant attention to the series. And none went beyond the eleventh overtone except one, Ebenezer Prout's text, "Harmony, It's Theory and Practice" (p. 324) This English theorist represented the overtone series up to the twentieth overtone, making possible the analysis of the overtone series in full detail, showing all intervallic relationships.

THE HARMONIC SERIES.

Generator (Fundamental tone.)		Notes sounded. Aliquot part of string.
1	2	Vibration ratio.
3	4	Interval from the generator (or its upper octaves).
5	6	
7	8	
9	10	
11	12	
13	14	
15	16	
17	18	
19	20	

- Minor third.

- Minor ninth.

- Minor seventh.

- Major third.

- Perfect fifth.

From; Harmony, It's Theory and Practice  
Ebebenezer Prout, Augener LTD. London, 1903





My first task at hand was to find the order, and find which specific intervals fall where in the series. Let us do the same. (Fig ) First, we will find where the octaves fall, since the octave is the starting departure point of all scales. We then see that for every octave preceding another one there are specific intervals that fall within each octave as the overtones reach higher ranges.

Overtone series on C

4 5 6 7 8 9 10 11 12 13 14 15

1 2 3

G	A	E	A
E	F	D	G
C	D	B	F

OVERTONE MATRIX CHART

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

In the first octave there are no intervals. Within the second octave we find the intervals of a fifth and a fourth. In the third octave we find major and minor thirds. And from the fourth octave upward, we find major and minor seconds. My first instinct after assessing the situation was to project the series to the 28th overtone, since it was the octave point where the overtones became so close together so as to be harmonically unusable. Now we have four complete octaves.

Next, I thought to myself, "Could there be a natural formula "innate" to the series?" What if I were to find within each octave chords that were formed within each of these groups. However, if a chord tone were used in a previous group, then it could not be used in a preceding group. After applying this formula, lo and behold, a 12-tone overtone row emerged, which is basically all 12 tones of the chromatic, Western, equal-tempered scale in the most perfect sonic relationships. What this illumination provided, was a parallel between Western harmony and the overtone series. This parallel is discussed further in another chapter.

As to the formula which I applied, it was a starting point, advanced as it was, for 84 new chordal combinations. At this time, Arnold Schoenberg's influence was felt within me. Both the Matrix and 12-tone ideas were the catalysts for my own Matrix, which contains only 12 tones, not Schoenberg's 48. Also, my purpose was to find definite harmonic combinations through the numerical matrix combinations, not only a 12-tone row of chance. And that this 12-tone matrix would be overtone based. Upon implementing the various matrix chords/species, I knew that



these tonal combinations would be too advanced sonically for the average listener's ear, and I wanted a sound that would be accessible, yet progressive, to most human hearing.

On analyzing these matrix combinations further, I noticed that within each structure every other tone turned out to be a fifth in most cases, and a fourth in all remaining cases. I then noticed again that the first "octave" interval in the overtone series is a fifth, and the second interval is a fourth. This led me to a way of thinking opposed to traditional approaches. A harmony could be built of 5ths/4ths. My first step, then, was to experiment in building chords with these intervals. On adding three or more fifths, I found that a resonant, sonically rich chordal harmony was attained. I then began altering each of the fifths, a half-step lower or higher, creating various levels of tension and color, which assured me even more of the validity of this approach.

My next task at this time was to find and amass all possible chord combinations, a harmonic vocabulary of sorts. The larger the number of chord combinations I found, the more I became mystified and impressed by the sheer beauty and resonance of these sounds. After finding all combinations, there were still other important, tedious tasks at hand, one of these being to categorize these chords into greater or lesser dissonance and consonance. A thought came rushing into the forefront of my consciousness. Why does it have to be one extreme or the other, this or that? That type of thinking actually came from antiquated Aristotelian logic, "the law of the excluded middle." However, in the

20th Century, we know that there is a middle, a very important one. Now, at this point, we need to carry this analogy over to music. Understanding that consonant intervals are stable and that dissonant intervals are unstable, then there must be intervals that are analogous to passing or transient ones. Thus we have Transonance. With Consonance, Transonance, and Dissonance groups as categories, we can more easily categorize these events.

After amassing all possible combinations I began to compose, using this information, combining all possible voices from 2 to 12 in both acoustic and in electronic situations. After a year and a half of composing music in this way, firmly establishing grounding principles for myself, I decided to research the field to find what other data any other composers had tuned into with this approach. As discussed earlier, I found various composers throughout history had tapped into the sound, beginning in ancient China, Japan, and Europe in the middle ages. They had done this, however, to a limited degree. Basically, most of the composers had only found a few chord structures, and they had used them only in novel ways, with three exceptions. Debussy, Hindemith and Schoenberg had used them more in their compositions, but still in a limited fashion.

Hindemith did not cover all color possibilities, even though related to the overtone series. Schoenberg with his meager attempts at Quartal harmony did not implement alterations. Debussy, being the first, along with Hindemith and Schoenberg, of course, gave us the impetus to see beyond traditional harmony to this new world of sound.

As far as the present procedure with Quintal-Quartal Harmony, Schoenberg had the foresight to see a trend, and for this reason was compelled to use this sound. Let us hear his own words:

"...the method of building up chords in fourths is identical with that of fifths, and possibly appeals as strongly to the musical ear: it is certainly capable of conducting uniformly all manner of chords with greater surety than by the system of thirds."

Further, he says:

"I confined myself to giving my reason for discussing chords in fourths, which is that they are justified by the source from which they are derived...so far as I know, the first time I wrote them was in my symphonic poem, "Pelleas and M'Elisand." These chords form an isolated instance of the expression of one certain mood, the peculiarity of which forced me, against my will, to invent a new means of expression. Even to this day, I remember harmony written then with hesitance, but was compelled to do so by their inevitableness."

from "Harmonielehre" Universal edition.

In taking a hindsight perspective, I now see and unconscious evolution of the harmony taking place within me, even though I was consciously studying some areas, such as acoustics, but not toward the end of creating a harmonic system. I have always been interested in sound quality, color, and how it is formed. I guess that is why I was interested intensely in the study of music and instruments starting from the age of seven. My first instrument undertaken was the clarinet family, which took five to six years of study

to master, and today, I still play bass clarinet occasionally. After that, I moved to the saxophone family for at least 12 years. Then came the electric bass, which I have experienced for over 22 years, up to the time of this writing. Then there was vocal training and cello training for a few years and intense study in piano and composition for over five years, which began later in life. Retracing further reveals a study of acoustics in the years 1969-1975, which resulted in the design of speaker cabinets and more than 50 new patented speaker designs.

On a compositional level, in the years '76 to '77 there was the composition, "Red Alert: Snake Oil."

Actually, I have always been attracted to the sound quality of suspended fourths and the power of fifths. In the period '77 to '78, there was my Metaphysical studies, which culminated in a Doctoral thesis, "The Healing Effects of Music on the Mental, Physical, and Spiritual Nature of humans."

From '78 to '83 included working at a piano rebuilding facility where I learned piano tuning. I was also involved in several other musical projects. This period must have been the germinating stage, when all of my information was sifted through, analyzed, prioritized, and summed. However, even now, in early 1986, after having worked three years continuously, day by day, data is still unfolding, as I guess it always will throughout my life. And I am grateful for milestones, small and large, as they all constitute a part of the whole.

I must also point out that the training in form and analysis that I received in the colleges, Los Angeles Community College and

Mount Saint Mary's of Los Angeles, was definitely a process and a tool, although at the time I found this exasperating. Later I discovered it to be a valuable asset in music analysis for research purposes, and for truly understanding music and composition.

My first college music teacher was Professor L. L. Taylor (LACC) who, I later realized, was an important influence in direction, even though he neither cared about me or supported my ideas at the time. My second and third teachers were at Mount Saint Mary's College, Dr. Florence Jolly, a fine feminist scholar who totally supported my musical inclinations and creativity, and a traditional theorist, Dr. Matt Doran, both of whom reacted to my periods of experimentation and exploration in Quintal and Quartal Harmony with complete openness, which is unusual in any traditional theorist. Dr. Doran was also instrumental in my receiving the Merle Norman Scholarship so that I was able to achieve a degree status.

During my period at the Mount, which was two years, 1982-84, I wrote several compositions, including songs, to explore possibilities. These included 10 Shakespeare Sonnets set to music, and three movement works for chamber ensemble: "Novatina Suite" and "Mysticon," a string quartet which was later orchestrated for full orchestra. There were also various other short works, including two jazz pieces: "Novaette" and "Crusin'".

After this period, I spent the summer of 1984 organizing and finishing the composition and keyboard techniques textbooks. Later that year, during the fall and winter, I took a position as bassist in a quartet on a ship that cruised to Ensenada, Mexico two times weekly, the S. S. Azure Seas. Actually, this

was a chance for me to get a sort of working vacation, and time for a meditative perspective. As it turned out, one composition/song emerged as a result, "The Spirit of Xmas," written Christmas day, 1984.

The following year of 1985 proved to be a year of synthesizer and computer applications to the Novaphonic system. At this time MIDI (Musical Instrument Digital Interface) was quickly becoming popular. This universal interface was being used by the entire musical instrument industry as a way for different manufacturers of synthesizers and computers to chain together and communicate between synthesizers. This permitted the creation of a whole orchestra of synthesizers, orchestrated by one person, and performances programmed and controlled by way of computer. This made accessible now, the convenience of hearing and working with a composition without the expense and time delay of rehearsal, recording, and orchestra. This is a real boon to composers.

This year proved for me to be a year of realizing and composing music electronically that would catapult me forward in composition and popularity, as well as focus me, and provide a viable medium as an outlet for creativity.

With Midi synthesizers, I was able to delve into multi-timbre sonority and sound color to a great degree. With the new technology at hand, I could now hear the possibilities of Novaphonics with precision rhythm, multi-stacked sound colors, and using as many voices in a chord as I chose. Actually, I have been anxiously awaiting this particular time in music history when music technology would reach this level of sophistication in computer aided synthesis and composition.







The instruments themselves have evolved to an adequate level of performance, memory and control. Also, with touch and velocity sensitive keyboards, personal expression can now be achieved with synthesizers.

Computers were now affordable, and music software was available. This software records similar to the way a tape recorder records, however, with much more flexibility, in that parts of a composition can be manipulated, transposed, copied, deleted, etc., with the touch of a key, and with no sound quality loss, and there are many other advantages too numerous to mention here. Computers had already aided me in checking my formulae as well as doing some mundane tasks like listing the overtone series up through the seventh octave, sorting out all useful chord combinations, pitch frequencies, sum and difference tones, and a myriad of other functions, including word-processing all educational information, another aspect. Computer programming was another benefit that I learned while at Mt. St. Mary's. During that time, I was taking a class in Basic programming and studying privately from a brilliant programmer-astro-physicist, Jay LaShell. During this learning period my powers of logic and reasoning were getting stronger, while at the same time my creative horizons were expanding.

Throughout 1985 and early 1986 I concentrated, also, on organizing an instrumental LP recording of a broad range of Novaphonics for public debut. This range would cover contemporary Classical New Age, and Popular high-energy pieces. This particular group of were to express a variety of potential directions, so that more people might be exposed

to this direction of harmony. The first group to be composed were: Odyssey; March and Fanfare; Breakthrough; Lento; Crystals; and Space Boogie. These compositions, as well as those that followed, were realized on my Commodore 64 MIDI-based, computerized synthesizer system. My first system, which was later updated in late 1985, along with the C-64, was a Roland JX3P, Juno 106, and an Ensoniq Mirage sampling keyboard. This system, as was mentioned earlier, expanded to a Roland JX8P, a Yamaha TX7, and a Wersi MK1, all touch sensitive, along with a Yamaha RX15 and Wersi CX5 digital drum composers, using Emil Tobenfeld's Dr. T sequencing software.

During 1985, I was also commissioned to write two songs for the famine in Africa. In one of these pieces I decided to use Nova-phonics, "One Are We," the piece was titled. It turned out excellently for me. I used a fifty-voice inter-denominational choir, and several lead singers. Later, this song would become a song for World peace with new verse lyrics in 1986. Also, during late 1985, I would begin work on Volume 4: Historical Sources and Analysis of Quintal/Quartal Harmony. That work examines the historical use and evolution of Quintal/Quartal harmony as used by past master composers who used the harmony to a limited degree. This work could be used by the composer or a class to analyze various compositional approaches. As I mentioned earlier, all works that contain sources of the other composers came AFTER I developed the system, as I would now look at what progress others made in this direction. Also, this work could prove my point, that there was actually an evolutionary process underlying Quintal/Quartal harmony.

The actual evolutionary process can be perceived in this Q/Q Historical tree (Fig. 1). Although each of these composers explored this harmonic direction, none had the insight and fortitude and perseverance to completely develop the whole system. Perhaps they felt it was largely an infertile area. That is why they used it only to a limited degree. However, each composer had his own purpose in the growing thread throughout History, leading up to this point in time. With the common thread being that each chose to look at sound for sound's sake, and not as traditional function.

Returning to the subject of the LP recording, I continued throughout the year, between historical analysis, research, and the daily Hollywood grind, to survive as well as succeed.

In rounding out the breadth of the album material, I felt that I should use a rhythm machine on some of the material so that some of it could get commercial radio airplay. This would help to get quicker exposure of the Novaphonic sound. Thus, three compositions were born to fulfill this need. "Astro," a high energy, up-tempo piece manifested itself first, with the incredibly beautiful "Star Romance" second, and the pulsating Novatron 2, third. These pieces were composed and recorded during early 1986.

In February of 1986, I was asked to present a project for an art showing saluting Halley's Comet, so I then started looking for film and computer-generated graphic material so that a visual-music presentation could be offered. As it turned out, I had a forty minute presentation of music and art video synchronized to form a sensory experience. The final video tape was performed

QUINTAL, QUARTAL HISTORICAL EVOLUTION COMPOSER CHART

DOMINANT INNOVATORS

MIDDLE AGES  
600-1450

ORGANUM

LEONIN...PEROTIN

19TH CENTURY  
1800-

BACH.....ELGAR.....DVORAK.....BEETHOVEN

ERIK SATIE  
1866-1925

BARIOS MILHAUD.....CAMILLE ST.SAENS.....RAVEL

IMPRESSIONISM  
1880-1918

CLAUDE DEBUSSY  
1862-1918

NEO-CLASSICAL

PAUL HINDEMITH  
1895-1963

GUSTAV HOLST

20TH CENTURY  
1900-

ARNOLD SCHOENBERG  
1874-1951

R. STRAVINSKY...A. COPLAND...A. BERG...B. BARTOK...A. WEBERN...C. IVES...A. SCHIANI  
K. ALBERT....

(JAZZ) H. SILVER...F. HUBARD...H. HANCOCK...J. FARRELL...M. TYNER...K. JAGELL

\* MAIN: Explored and made harmony part of their style, and used in more than two compositions.

\* Secondary: Used the harmony occasionally.

within a small geodesic dome which housed a 30-watt stereo system with large-screen color video. Each composition had its own visual art treatment. The reception to this project was encouraging to say the very least. Here, I thought, may be a new outlet for the composer/visual musical artist. The presentation went so well, that besides being asked to do the showing at other art museums, a very prominent laser image company liked the music so well, that they wanted to choreograph some laser images to music in one of their shows at a later date.

While all this was going on: the art show, and finishing the LP, I was thinking of ways to successfully market the Novaphonic sound. I was fed up with the usual procedure of sending tapes around, because most of the results would turn out disappointing, as the material was supposedly too advanced, or marketing know-how was at an all time low.

This is when I decided that I should find private backing, and release my material on a newly created label that would handle the Novaphonic sound exclusively. Creating the label was easy. However, getting the rest of the machinery to work was another story: the distribution, marketing, promotion, collection, airplay, and management, working efficiently and in harmony. This will be a continuing saga to achieve the desired results, which should soon be realized, as I hope to market and release the material in late September and early October of 1986.

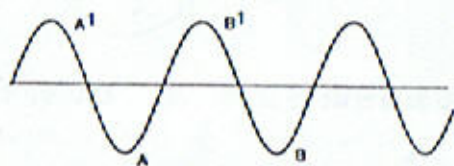
////////////////////////////////////  
/  
/                    T H E O R Y                    /  
/  
////////////////////////////////////

## OVERTONES

Within every musical tone sounded, there are additional intra-sonic tones that emanate from the generating tone that contribute to the overall sonic character of the tone. These sonic tones are traditionally called "overtones" (some use the term "partials").

For our purposes, we will study the overtone series as a source of Harmonic components and information that ultimately leads to a greater understanding of how to use musical pitch toward its full potential. In our understanding of sound, we know from Sir Issac Newton that sound consists of "waves" of energy that are "pulsating puffs" of sound energy in the atmosphere. Graphically represented, a pure sound wave would look like the example shown.

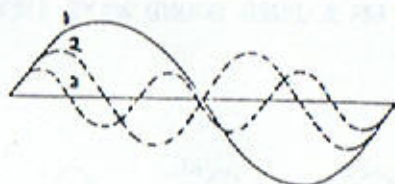
### EX. GRAPH OF A PURE SOUND WAVE (NO OVERTONES)



Each point in the example represents a pulse of sound energy. The points A1 to B1 represent show peaks of the highest energy level (loudness). The portion from A to B is the wavelength of the pulsation, which gives the pitch, because of the length of the vibration. These sound pulsations travel at a speed of 1150 feet per second in air at sea level.

Overtone are created from vibrating bodies, such as tubes, that are set into motion by the fundamental/generator, and vibrate in equal ratios of the fundamental.

1. Fundamental/generator
2. 1st. overtone
3. 2nd. overtone





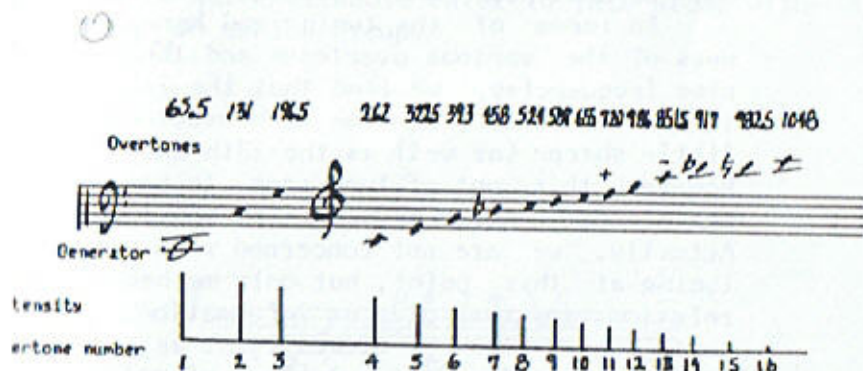
EX. GRAPH OF COMPOSITE TONE, FUNDAMENTAL  
AND FIRST TWO OVERTONES.



2nd. overtone p5th  
1st. overtone 8va

Fundamental/generator

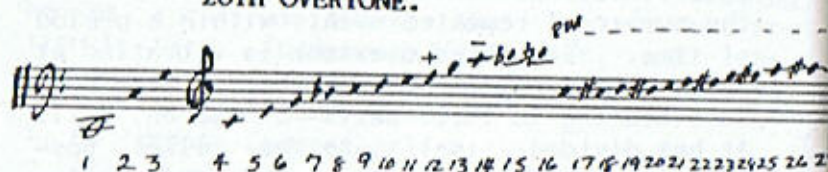
The second overtone has twice the frequency of the generator, because the body is also vibrating in two parts. Frequency means the number of repeated events within a period of time. The third overtone is vibrating at three times the frequency, because the body is vibrating in three parts—and so on, until it has divided itself into the smallest possible part. Theoretically, overtones are infinite, however, only a certain amount contribute to the overall sonic timbre of a pitch. This number is approximately up to the sixteenth overtone. The frequency of any overtone is found by multiplying the frequency of the generator by the number of the overtone, (O):  $G \times O = F$



EX. HARMONIC OVERTONE SPECTRUM TO THE 16TH  
OVERTONE.

When overtones are farther apart, like the first four, the resulting sound is a consonant sonic event. Whereas, if they are very close to each other, as in the upper ranges, they produce a dissonance which is created from the friction of acoustical sonic energy of close inharmonic overtones. This observation will aid us greatly in the future for the purpose of understanding consonance and dissonance.

EX. HARMONIC OVERTONE SPECTRUM - UP TO THE 28TH OVERTONE.

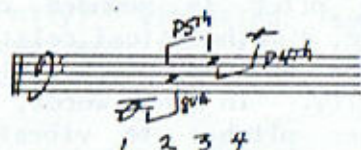


\* NOTE: Actually, from the 32nd overtone up, the intervals are very close, becoming hemitones. However, for our purpose, using the equal temperament as a sort of hypothetical guide to our calculations will suffice adequately. The Overtone chart given here should be analyzed and studied further.

In terms of the tuning and harmoniousness of the various overtones and their precise frequencies, we find that the 7th overtone will be flat, and the 11th overtone is a little sharp (as well as the 13th and 14th). However, this out-of-tune-ness is precisely the element that provides extra sonic color. Actually, we are not concerned with precise tuning at this point, but only mathematical relationships that give us information. This concept can also be viewed (just as a chord with many different variations of color can be viewed) only on a more subtle level.

\* The generator tone, because of its most intense energy quantity, has the strongest sonic influence on the overall sonic event or overtones.

In our further analysis of the overtone series, we will find all of the intervals of the 12-tone chromatic scale. However, for the present, we will concentrate on the first few.



Between the 4th, 5th, and 6th overtones, we have a C Major triad, and with the addition of the 7th overtone, we have a C7 chord. This organic nature of the overtone series to the present chord relationships will prove to be quite valuable later in this study with the "S" series group.



Those relationships are the ones which have been explored the most by musicians. However, in this study we will explore other possibilities and sonorities of the overtone series relationships.

There are several simple experiments to illustrate overtones. However, we will choose the one that will allow us to hear more than one overtone simultaneously. This can be achieved with the aid of a piano. Our first task is to understand the concept of "sympathetic vibrations." This concept means that if a pitch is sounded, other strings, which have a mathematical relationship relative to the sounded pitch will vibrate sympathetically. In other words, one pitch can cause other pitches to vibrate. Overtones can be demonstrated using this approach.

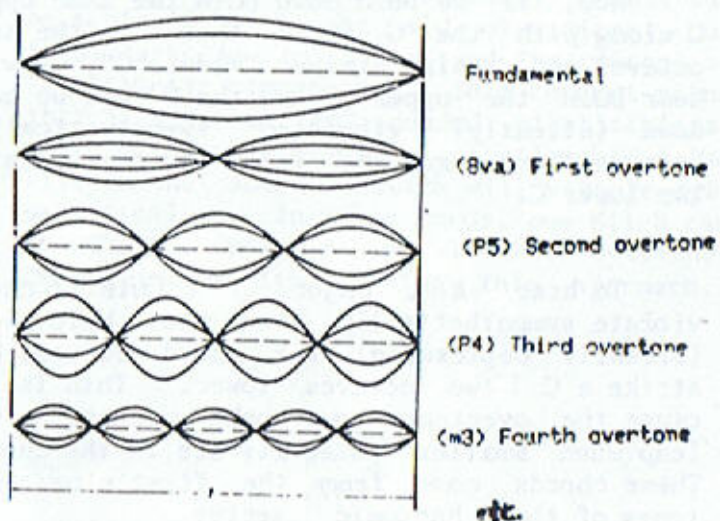
EX. Silently depress the C above "Middle C" and hold this key down while you strike the "Middle C" key. You will hear the upper C vibrating sympathetically, as long as you hold the key down. This is because the upper C is the first harmonic overtone of the lower C.

Now, if we hold down BOTH the same upper C along with the G above that ( in the same octave) and again strike "Middle C", we will hear BOTH the upper C and the G that we held down (silently) vibrating sympathetically, because these are the first two overtones of the lower C.

To hear a C major or C Quintal chord vibrate sympathetically, we must hold down (silently depressing) the chord desired, and strike a C two octaves lower. This is because the overtones must make an extra octave leap when smaller intervals are in the chord. These chords come from the first nine overtones of the harmonic series.

\* On string instruments such as Guitar, violin, etc., overtones are known as harmonics. These harmonics can be heard by stopping the string at various points that divide the string into mathematical parts.

Modes of overtone vibration  
on a string fixed at both ends.



## OVERTONES AND THE EAR

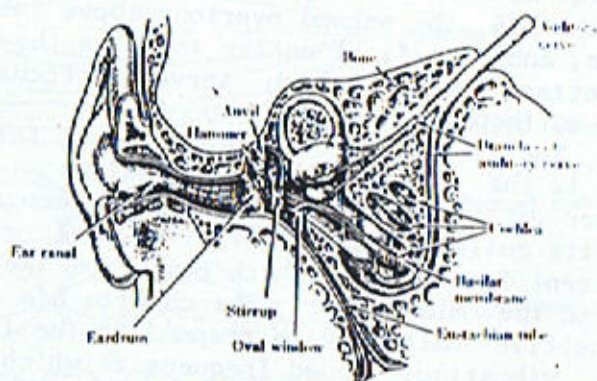
Overtone series also play an important part in Nature and the Human physiological make-up. The human ear in its natural healthy state hears audible sounds in relationship to the overtone series. The ear perceives little puffs of sonic energy against the tympanic membrane (eardrum, as it is known). In its natural hearing state, the ear focuses on the 5th, the second overtone above the octave, and the first active tone, as the most important pitch, which serves to focus the ear on incoming sound to it.

The filter of incoming sounds for the ear is the cochlea, which resides in our inner ear. The cochlea is easily recognized by its coiled shape. It filters tones of different frequencies, which come from the outer to the middle ear. The cochlea has tiny, sensitive hairs, which respond to the incoming, vibrating, sound frequencies which then activate nerve cells connected to the cortex in the brain.

The ear is essentially made up of three sections: the outer, middle, and inner ear. The Pinna is the part most visible on the side of our head, and helps to focus and collect sound from the environment. Next in line is the auditory canal.

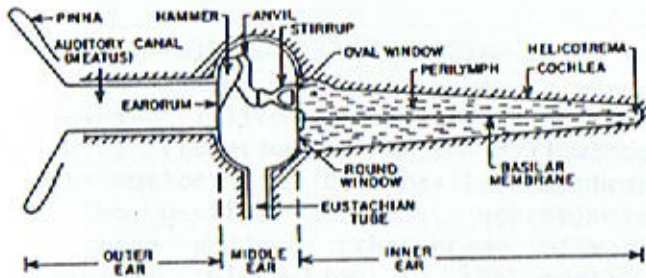
The auditory canal focuses the sound even more toward the eardrum (tympanic membrane), which is at the end of the auditory canal, closing it off.

The eardrum membrane is actually a divider between the outer and middle ear. When incoming sounds create air pressure against the eardrum, three small bones that are linked together, the hammer, anvil, and stirrup,



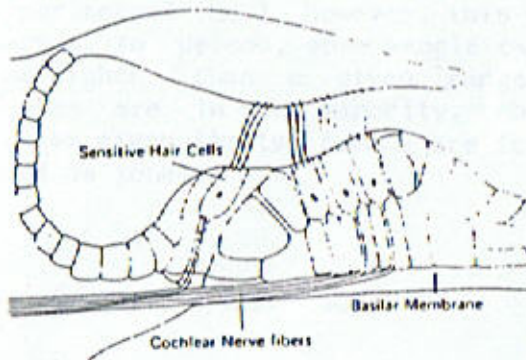
Diagrammatic section of the right ear.



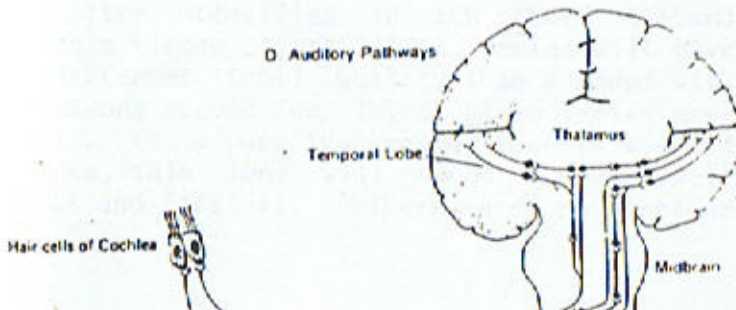


Schematic diagram of the human ear, with the cochlea uncoiled.

Organ of Corti



D. Auditory Pathways





Faint text or labels, possibly describing the drawing above, but illegible due to fading.



Faint text or labels, possibly describing the drawing above, but illegible due to fading.



Faint text or labels, possibly describing the drawing above, but illegible due to fading.

to the oval window, which is the outer portion of the inner ear. The inner ear, or cochlea, is filled with fluid that, when excited by vibrations from the oval window, produces motion in the basilar membrane. Within the basilar membrane, approximately 25,000 nerve endings (the organ of corti) transmit the information to the cortex of the brain by a conversion of mechanical energy into electrical, neural impulses. These impulses are then perceived as sound by the brain.

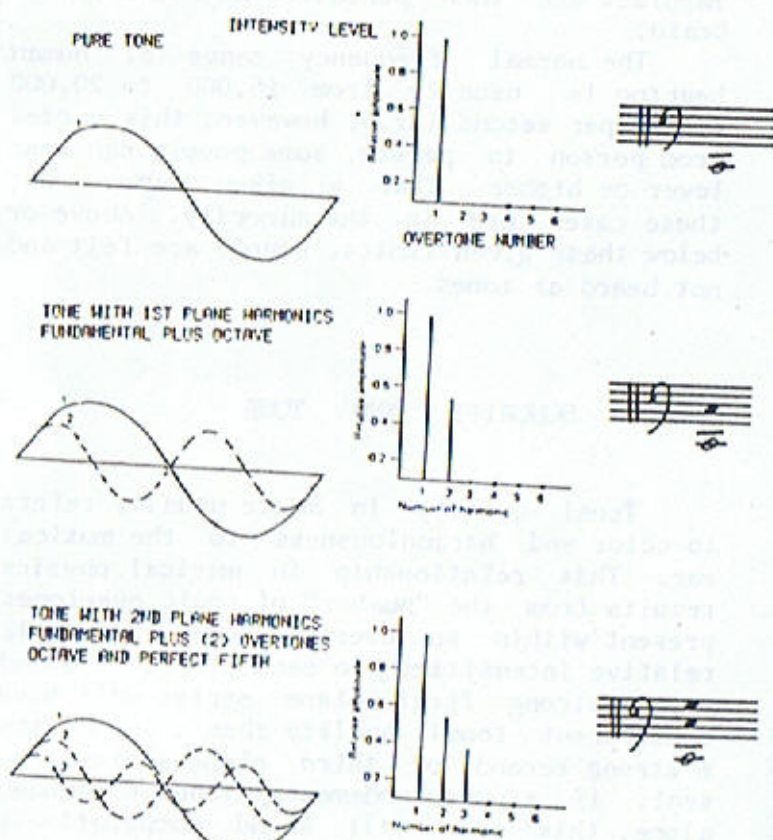
The normal frequency range of human hearing is usually from 16,000 to 20,000 cycles per second (Hz.), however, this varies from person to person, some people can hear lower or higher than a given range, but these cases are in the minority. Above or below these given limits, sounds are felt and not heard as tones.

### SONORITY AND TONE

Tonal quality in music usually refers to color and harmoniousness to the musical ear. This relationship in musical physics results from the "number" of sonic overtones present within an overall tone, and their relative intensities to each other. A sound with a strong first plane series will have a different tonal quality than a sound with a strong second or third plane series present. If a pure fundamental tone is sounded alone, this tone will sound comparatively dull and lifeless. There are no overtone

factors--meaning, the tone is not generating any resonance. On the other hand, with overtones added a resonance is created by the first three overtones, the octave, the fifth and the fourth, which, along with the other, smaller intervals, contribute to creating a living, energetic, vital tone.

### EX. WAVE AND OVERTONE INTENSITIES



## A SOUND WAVE

A sound wave can be compared to a wave of water. When a small rock is dropped into a pail of water, the initial "plop" starts the waves radiating outward with a specific mixture of "overtones" and at a set speed.

A pendulum can represent how a sound wave is propagated in air. The pendulum swinging forward is like the air being compressed forward, and when the pendulum swings backward it represents the air bouncing back from the pressure created, like the air returning toward and past its original position.

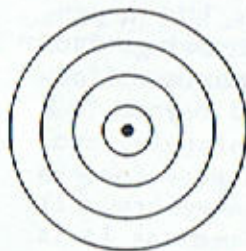
Both of these analogies represent mathematical waveforms. A pure waveform (a single frequency) is called a sine wave, which on a graph traces a characteristic curve from zero to a maximum, back to zero, then to a minimum and back to zero again. This is like a pendulum or a child's swing, which swings from a position at rest, zero, to a maximum (forward), and then back to zero and beyond to a minimum (far back), then returning to zero.

⊙ A complex tone is not a pure tone in that it is made up of a complex waveform. It is more pleasing to the ear, because it is richer in harmonics. Harmonics are exact multiples in frequency of a pure tone or fundamental frequency.

To experience the concept of "frequency" we merely have to imagine different lengths in our pendulum. A pendulum on a shorter string will swing back and forth more frequently than a pendulum on a longer string. The longer length makes a "lower" frequency. Simply speaking, we mean the frequency of a repeated event in a limited unit of time, for example, the number of swings of a pendulum

in ten seconds, or the number of swings forward and back that repeat each second. This is why we say that C2 vibrates at a frequency of 261 cycles per second (cps).

**EX. GRAPHIC REPRESENTATION OF OUTWARD RADIATING SOUND WAVE.**



**EX. GRAPHIC REPRESENTATION OF A PENDULUM.**

## THE ESSENCE OF THE QUINTAL/QUARTAL NOVAPHONIC SOUND RESONANCE

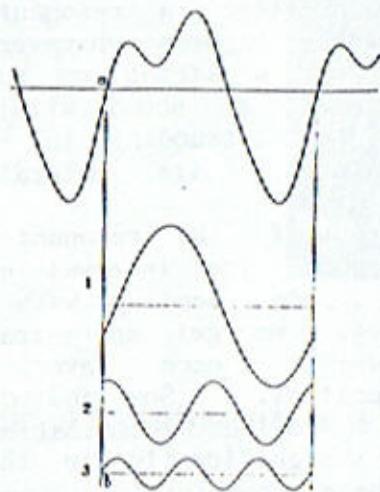
Because of the characteristics of a vibrating body with its sonic overtone series, and the relationship of the fifth, being the first active tone in the sonic series, the way is clearly pointed toward understanding why two or more superimposed fifths or fourths create a "Free Floating Resonant Sonic Chamber" (a free floating sound mass, which is divided into chambers with the spacing of a fifth—much like a resonant chamber box).

Resonance happens whenever any vibrating body, such as a string or tube producing any sound, produces a sound within itself as a result of tones sounding in its environment, which stimulates its natural frequency of vibration.

Because of the resonant space that is created (beyond the interval of a third), and because we are dealing with overtones made by overtones, we get an extra cushion of resonance between each layer, which creates richer sonorities. Sum and difference tones (sometimes called combination tones) also contribute significantly to the resonant character. These combination tones will be discussed in a later chapter.

## GRAPH OF COMPOSITE TONE AND ITS THREE COMPONENTS

Through a mixture of fundamental and related sonic overtones, a composite tone is created. This is generally termed forced resonance or re-enforcement -- not unlike one wave of water forming other waves. Now, because air is all around us, and these little musical, resonating, energy chambers are creating instantaneous explosions of sound, the wider and bigger the chambers, the more sonorous and resonant the acoustical sound wave. In other words, sound energy vibrations can share and intermingle in the same space and time slot--quite like many colors blending to form a single color.





UNDERSTANDING                      VARIOUS                      HARMONIES

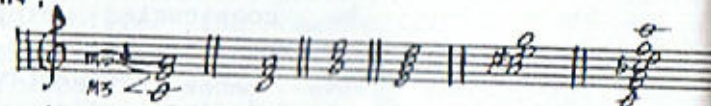
Harmony, in the general sense, means the sounding of two or more pitches simultaneously to produce a single sound. From our past studies of the single generating pitch and its sonic overtone series, all intervals of usage in Western Harmony can be found. The main focus here is in the understanding that Harmony may be constructed using both pure intervallic structures as well as mixed intervallic structures. This perspective could be analogous to a painting artist with his spectrum of colors. When the painter uses both pure and mixed colors to create the image he wishes to project, he is creating like a composer of music. Here is a list of primary Harmonies and their components.

- |          |   |
|----------|---|
| SECUNDAL | - HARMONIES BUILT IN 2NDS.              |
| TERTIAN  | - HARMONIES BUILT IN 3RDS.              |
| QUARTAL  | - HARMONIES BUILT IN 4THS.              |
| QUINTAL  | - HARMONIES BUILT IN 5THS.              |
| HYBRID   | - HARMONIES BUILT WITH MIXED INTERVALS. |

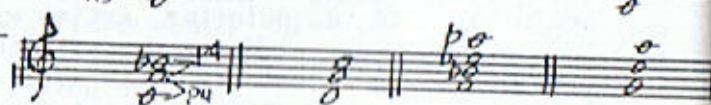
## SECUNDAL



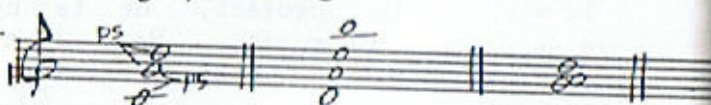
## TERTIAN



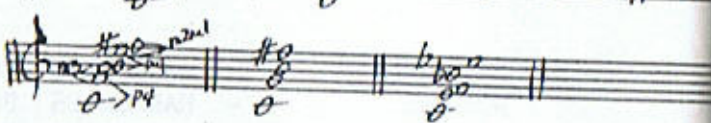
## QUARTAL



## QUINTAL



## HYBRID



SYMBOLS AND FUNCTIONS OF  
SOUND VIBRATION ENERGY:  
CONSONANCE \* TRANSONANCE \* DISSONANCE

The subject of consonance and dissonance being relative, has long been a debated issue. Most people will agree, during these times, that the subject of consonance and dissonance is an ambiguous factor at best, owing to a person's cultural, psychological, and environmental influences which make up one's perception of realities. What is sought here is to set up variables and constants through which we can measure a certain spectrum of vibrational energy-patterns. Our first manipulation is to adjust the dichotomy of positive vs. negative and consonance vs. dissonance. We shall embrace a more sensitive and distinct clarification of ranges. This is achieved by adding a third division between consonance and dissonance that contains both consonance and dissonance. This middle area we will call "transonance."

Traditionally, consonance has been said to be vibratory movement which is at rest, and dissonance is said to be vibration on a chord which is unstable and "seeks" resolution. We will say, for our purposes, that consonant vibratory energy is vibrational energy which is stable and at rest as well as containing harmonious "harmonic" energy patterns. The symbol we will use will be  $\Delta$ .




These graphic symbols are used only for "shorthand" and simplicity, and they are optional for notation. However, use of the symbols does provide a clearer mental-aural "map" of the physical sound energy. "Transonance," which is (as we mentioned earlier),

a harmonic energy in transit (or in passing) contains both consonance and dissonance, or both harmonious and inharmonious vibratory energy patterns. Transonant structures sound active with relative degrees of activity. The transonant energy symbol will be  $\triangle$ .

Our last energy group, named "dissonance," contains relative degrees of dissonant or inharmonious and unstable, clangorous vibrational energy patterns. These vibratory patterns create a high degree of energy friction and tension, because of the "closeness" of the combinational tones of the overtone series. Our symbol for dissonant energy will be  $\blacktriangle$ . Within each group, various degrees will be found which will be revealed upon closer inspection.

As to the principles underlying vibrational energy relationships and intervallic construction, the direct relationships seem to emerge again from the sonic overtone series. Therefore, we will find the information as follows:

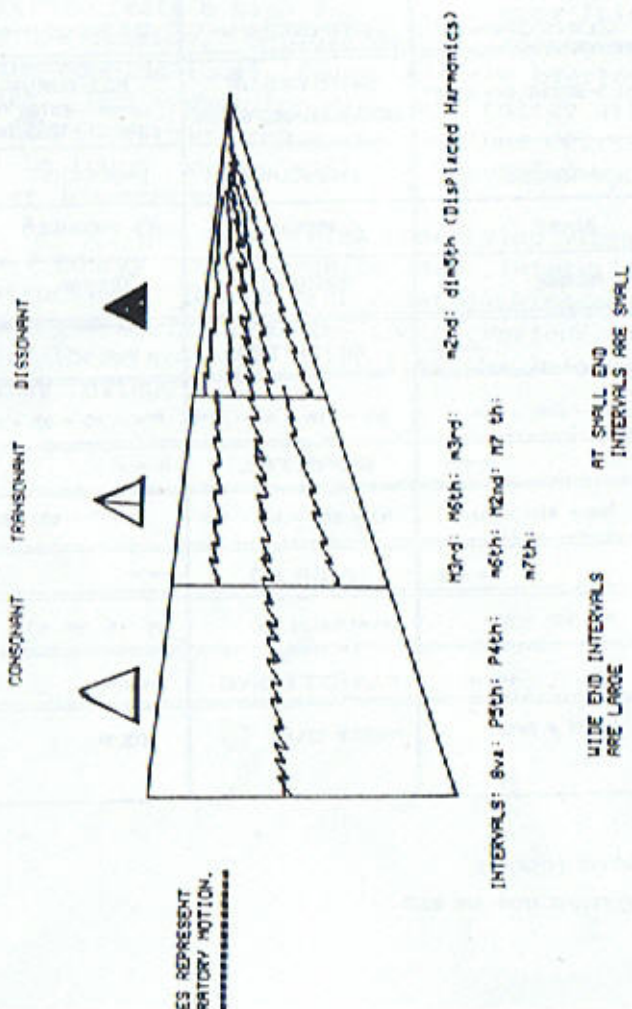
\*\*\* NOVAPHONIC \*\*\*  
HARMONIC ENERGY CHART

			
CONSONANT	TRANSONANT	DISSONANT	
MILD-BRIGHT-BRILLIANT	STATIC-STRIVING INCREASING-DECREASING	MILD-BEARING -HIGH --EXTRA HIGH TENSION--TENSION	INTENSITY GROUP
HARMONIOUS	MIXED-RELATIONS	DIHARMONIOUS	-VIBRATION
STABLE	PASSING	UNSTABLE	-ACTIVITY
RELEASE	AMBIGUOUS	TENSION	-FUNCTION
+++	QUINTAL	+++	-CHORD TYPE
5th - 6th - 9th	b3 - 4th - b7 - 3rd	7th - +5 - b9 - b5	
+++	QUARTAL	+++	-CHORD TYPE
3rd - 4th - 5th	b3 - 6th - b7 - 9th	+5 - 7 - b9 - b5	
+++	HYBRID	+++	-CHORD TYPE
β - 6th - 9th	5th#4th#b7#2#9	b5 +5 b9 b7	
+++	FUNCTIONS	+++	-COMPOSITIONAL
START * END	PASSING COLOR	COLOR	

+++ ACTIVE INTERVALS-  
RELATIONS FROM THE ROOT

-Analogous to sonic overtone series-  
Near the Fundamental, the first three overtones are consonant, and conversely:  
the higher up the overtones become, the closer the intervals become, thus dissonance occurs.

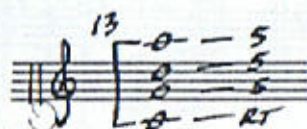
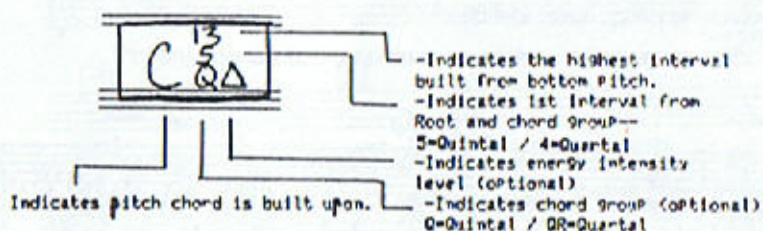
\*\*\* NOVAPIONIC \*\*\*  
HARMONIC ENERGY CHART



## QUINTAL AND QUARTAL NOTATION

There are four types of notation of Quintal and Quartal harmony (of course we are building in 5ths when we are dealing with Quintal, and we are building in 4ths when dealing with Quartal). Regardless of the system used, all four types can be understood by the same system of analysis of intervallic components to build the structure. These alternatives are merely tools to accommodate the musical artist. Here are some examples of the various notations, symbols, and logic.

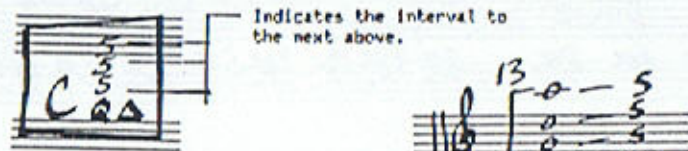
### QUANTUM NOTATION



In "Quantum" notation the top number will always indicate the highest interval used from the bottom pitch.

### STRATUM NOTATION

In stratum notation intervals are cumulative and are calculated using simple intervals sequentially. This is actually a very simple, yet efficient method.



\*\*\* SONORITY GROUPS \*\*\*

6 VOICE POLY-QUINTAL Q GROUP

CONSONANT TRANSONANT DISSONANT

$\triangle$   $\triangle$   $\blacktriangle$

Gq/Cq Aq/Cq Dq/Cq E<sup>b</sup>q/Cq Fq/Cq G<sup>b</sup>q/Cq Aq/Cq Bq/Cq Cq/Cq Dq/Cq E<sup>b</sup>q/Cq Fq/Cq G<sup>b</sup>q/Cq Aq/Cq Bq/Cq Cq/Cq

QUARTAL QR GROUP

CONSONANT TRANSONANT DISSONANT

$\triangle$   $\triangle$   $\blacktriangle$

CQR FQR GQR E<sup>b</sup>QR AQR B<sup>b</sup>QR DQR AQR BQR DQR EQR GQR

HYBRID H GROUP 4TH/5THS

CONSONANT TRANSONANT DISSONANT

$\triangle$   $\triangle$   $\blacktriangle$

FQR AQR DQR GQR FQR AQR BQR CQR F<sup>b</sup>QR A<sup>b</sup>QR D<sup>b</sup>QR EQR



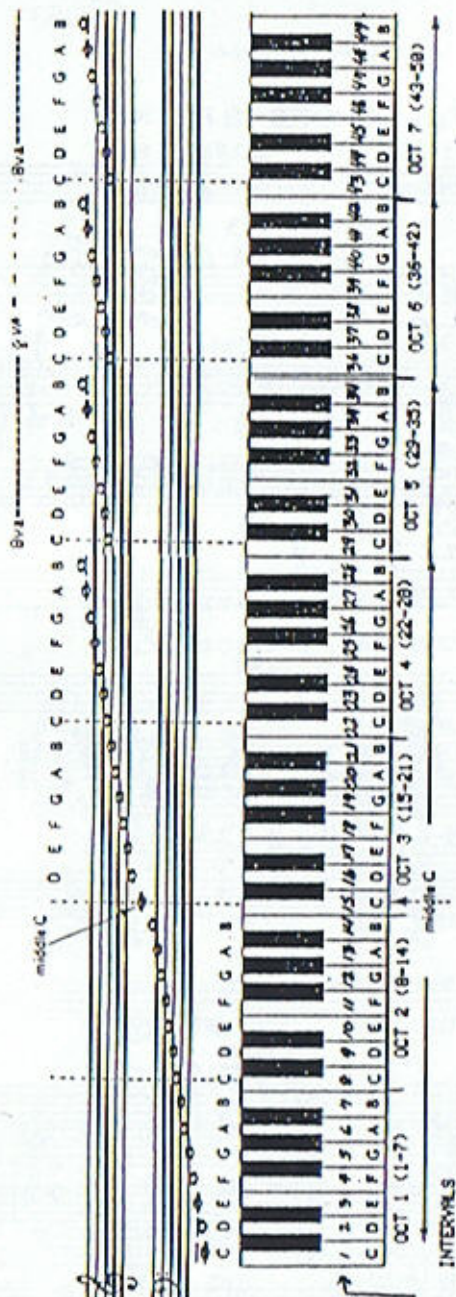
## BASIC QUINTAL CHORD STACKS

Handwritten musical notation for examples 1, 2, and 3. Example 1 shows a C major triad (C-E-G) with a 5th (G) and a 7th (Bb) below it. Example 2 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 3 shows a C major triad with a 5th (G) and a 7th (Bb) below it.

Handwritten musical notation for examples 4, 5, and 6. Example 4 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 5 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 6 shows a C major triad with a 5th (G) and a 7th (Bb) below it.

Handwritten musical notation for examples 7, 8, and 9. Example 7 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 8 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 9 shows a C major triad with a 5th (G) and a 7th (Bb) below it.

Handwritten musical notation for examples 10 and 11. Example 10 shows a C major triad with a 5th (G) and a 7th (Bb) below it. Example 11 shows a C major triad with a 5th (G) and a 7th (Bb) below it.



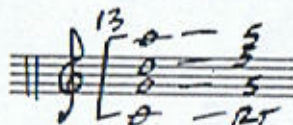
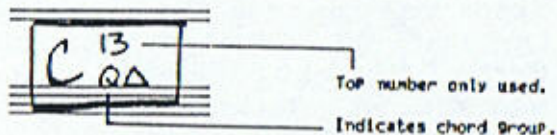
INTERVALS		QUINTAL		QUARTAL	
INTERVAL	3THS FROM ROOT	INTERVAL	4THS FROM ROOT	INTERVAL	4THS FROM ROOT
OCT 1:	5 Indicates	OCT 1:	4 Indicates	OCT 1:	4 Indicates
OCT 2:	9 Indicates	OCT 2:	8 Indicates	OCT 2:	8 Indicates
OCT 3:	13 Indicates	OCT 3:	12 Indicates	OCT 3:	12 Indicates
OCT 4:	17 Indicates	OCT 4:	16 Indicates	OCT 4:	16 Indicates
OCT 5:	21 Indicates	OCT 5:	20 Indicates	OCT 5:	20 Indicates
OCT 6:	25 Indicates	OCT 6:	24 Indicates	OCT 6:	24 Indicates
OCT 7:	29 Indicates	OCT 7:	28 Indicates	OCT 7:	28 Indicates
OCT 8:	33 Indicates	OCT 8:	32 Indicates	OCT 8:	32 Indicates
OCT 9:	37 Indicates	OCT 9:	36 Indicates	OCT 9:	36 Indicates
OCT 10:	41 Indicates	OCT 10:	40 Indicates	OCT 10:	40 Indicates
OCT 11:	45 Indicates	OCT 11:	44 Indicates	OCT 11:	44 Indicates
OCT 12:	49 Indicates	OCT 12:	48 Indicates	OCT 12:	48 Indicates

The key to easy use of Quintal and Quartal notation is in recognition of the various octaves within which the compound intervals fall. The interval numbers are always in relation to the root, as in traditional notation.

Please note that the starting number 1 (ROOT TONE) is represented here on a C pitch. This is for reference purpose only. The root tone may start from any pitch, and that pitch will become the '1'.

## SYMBOLIC NOTATION

In Symbolic notation we use only the essential symbols as a shorthand method to denote an entire structure. Symbolic notation is, of course, the most economical in notation, but requires Precise memory in retaining component elements.



## TONAL NOTATION

Tonal notation uses Roman numerals to establish what relationship the chord structure has with the main tonal center; when used, can be used with Quantum or Stratum techniques.



-NOTE! Any Roman numeral can be used up to VII, and only upper-case numerals are used.

## 12-TONE OVERTONE MATRIX HARMONY APPROACHES

If the first 28 overtones of the overtone series is divided into four equal sections of seven notes each, and we locate the chords that make up each section, we will find that these four triads contain all 12 tones of the equal tempered chromatic scale in a sonorous relationship. Also to be noted is that the first triadic set is of major quality, and the second triadic set is of minor quality. The third and fourth sets are found to be ninth chords in their shell form.

From these four sets we can form what is called an array matrix, and from this matrix set of twelve we can form various combinations: (84 total--42 in root position and 42 in inverted position) using 12 tones or less to form what will be called a NEWSONIC RESONATOR STACK/CHORD which is very rich and sonorous. Also, the tones from the resonator stack can be used to form scales for compositional and improvisational studies.

○  
\*\*\*\*\* FORMULAE \*\*\*\*\*

SET 1. Take the first four tones of the sonic overtone series set (as they make up a basic major triad with the minor seventh as an option).

SET 2. From the second set of seven tones, we take the 2nd, 4th, and 6th tones from that group, which will be a minor triad (or could be thought of as a 11 chord).

SONIC OVERTONE SERIES -  
on Pitch C (261cps)

+ INDICATES TONES CHOSEN

CHORDS FORMED FROM SERIES

CHROMATIC SCALE 12 TONES

ORDER OF APPEARANCE

NEWSONIC GENERATOR MATRIX  
OF RESONATOR SONIC SERIES

CLASS				
(9)-	12			
(3)-	3	6	9	12
(2)-	2	5	8	11
(1)-	1	4	7	10
GENERATOR	(1)	(2)	(3)	(4)
	SET.			

( COMPLETE )

	B <sup>b</sup>			
	G	A	E <sup>b</sup>	A <sup>#</sup>
	E	F	D <sup>b</sup>	E <sup>#</sup>
	C	D	B	F <sup>#</sup>
GENERATOR	(9a)	(11)	(9b)	(9c)

INVERT  
POSITION

B7	C1
A6	F3
F3	D4
D4	B7
Bb7	F#11
G3	F#10
E2	D#9
C1	C#8

WRT. POSITION

SET 3. Derives from tones 1,3, and 5 of the third set, which will form a basic 9th chord in its shell form. This set also contains the leading tone of the scale.

SET 4. Comes from tones 1,3, and 5 of the fourth set of harmonic series, and also forms a basic 9th in shell form.

\*\*\*\*\* NOTE: Taken all together, these tones will form the 12 chromatic semitones of the scale in a sonorous relationship of their own sequence.

-\* From the 12 tones of the sonic series we form a \* MATRIX. EX. 4

-\* From the MATRIX, SPECIES are formed. This specie formation is applied through combinational formulae within the MATRIX using the resonators/sonic tones within the generator sonic series. In total there are 84 SPECIES (42 in root position and 42 in inverted position), each SPECIE GROUP having its own RESONATOR from within the generator matrix. EX. (see chart 1)

-\* Each RESONATOR within the GENERATOR MATRIX has 2 to 9 species per individual RESONATOR.

-\* The various formulae for the RESONATOR SPECIE FORMS can be found through analysis of logical and combinational order of the generator matrix. The author's purpose here is to show that they exist, and to show in what forms they manifest themselves. (See EX. 4A)

						E-9		0011*		A012*		
		0011				D-0		F010	0011*	0011	C1	A012 03*
A6*	B7*	F5	0011	E-9		B7	03	E-9	D-0	F010	B-12	0011 D4
F5	F5	D-0	F010	0011	F5	A6	D-0	D-0	A6	E-9	03	F010 B7
D4	D4	03	D4	E2	E2	F5	A012	B7	E2	D-0	E-9	E-9 F*10*
A012	A6	E2	B7	D-0	A012	D4	F010	A6	C1	B7	D-0	D-0 E-9
03	03	B-12	F5	B7	03	A012	C1	F5	F010	A6	F5	B7 D-0
E2	E2	F010	E-9	03	F010	03	0011	D4	A012	F5	E2	A6 A6
C1	C1	C1	C1	C1	C1	E2	E2	03	03	D4	D4	F5 F5

						C1*	B-12					
		C1*				E2	D-0*	A6	03			A012
0011*	B-12	B-12	F010	C1	F5	F5	E2					03
F010	03	0011	E-9	A012	A6	D4*	C1	03*	A6	E2		
E-9	E-9	F010	D-0	0011	03	B7	B7	E2	D4	F5	C1	
D-0	D-0	E-9	B7	F010	E-9	0011	0011	C1	B7	D4*	B7	
B7	B7	D-0	F5	E-9	0011	F010	F010	A6	F010*	B7	0011	
A6	A6	B7	D4	D-0	D4	E-9	E-9	F5	E-9	F010	F010	
F5	F5	A6	A6	B7	B7	D-0	D-0	D-0	D-0	E-9	E-9	

		C1*													
0011*	B-12	B-12				A6	0011*	D-0				03			
0011	03	B-12				D4	F5	F5	03	C1	A012	D-0	F5	E2	03*
F010	D-0	D-0	03*			C1	D-0	E2	D-0	A6	03	B7	A6	C1	F5
D4	F5	F5	F5	03	03	D4	A012	F5	E2	A6	E2	A6	C1		
B7	A6	E2	C1*	F5	E2	E-9	F010	D4	C1	F5	C1	F5	A6		
F5	03	D4	A6	A012	A012	B7	C1	B7	B7	D4	F010	D-0	E-9		
E-9	E-9	E-9	E-9	F010	F010	F010	0011	0011	0011	B-12	A012	B-12	B-12		

MATRIX

B-12			
03	A6	E-9	A012
E2	F5	D-0	0011
C1	D4	B7	F010

**C GENERATOR STACKS TOP TONE**

---

C1	C1	E2	E2	03	03	03	D4	D4	D4	F5	F5	F5
A6	B-12	C1	C1	D4	F5	C88	B-12	B7	B7	E2	D4	D4
F5	03	A#12	A6	B7	C1*	A#12	03	04	F5	A#12	B7	B7
D4	E-9	0#11	F#10	0-10	A6	F#10	E2	F#10	E-9	03	0#11	0#11
B7	D-8	F#10	C88	E-9	E-9	C1	C1	D#9	C1	F#10	E2	F#10
0#11	B7	D#9	0#11	D-8	B-12	0#11	A6	C88	A6	C1	C1	D#9
F#10	A6	C88		A6		E2	F5	F#10		A#12		C88
D#9	F5	B7		F5				E2*		03*		D#9
C88	D4											C88

F5	F5	A6	A6	A6	A6	B7	B7	B7	B7	D-8	D-8	D-8	D-8	D-8
C1*	C88	D4	F5	F5	03	F5	A6	0-10	A-11	F5	F5	B7	A6	B7
A6	0#	C1	D4	D4	D4	D4	F5	E-9	0-10	E2	A6	A6	F5	F5
E-9	E2	03	B-12	B7	A#12	A6	D4	D-8	E-9	D4	03	F5	D4	D4
B-12	B-12	F5*	03	0#11	0#11	03	B-12	A6	D-8	E-9	D#9	D4	B-12	A6
0#11	F#11	A#12	E2	F#10	F#10	E2	03	F5		B7	A#12	B-12	03	03
F#10	C1	F#10	C1	D#9	D#9	C1	E2	D4		F#10	0#11	A-11	E2	E2
												F#10	0-10	C1

E-9	E-9	E-9	0-10	F#10	0#11	A-11	0#11	0#11	0#11	0#11	A#12	B-12	B-12
D-8	A11	D-8	E-9*	D4	F#10	E-9	D4	F#10	F5	C88	0#11	03	03
B7	E2	B7	D-8	B7	E-9	D-8	B7	D4	C88	A6	F#10	E2	E-9
A6	D-8	F5	B7	F5	D-8	B7	C1	B7	03	E2	D#9	C1	D-8
F5	B7	D4	F5	E-9	B7	A6		F5	E2	C1	C88	B7	B7
D4	03	A6	D4	C1	A6	F5		E-9	A#12	F#10	B7	A-11	A6
B-12	C1	03	A6	A6	F5	D4		C1	F#10	A#12	A6*	0-10	F5
03	A6	E2	03	F5*	D4	B-12			C1	03	F5*	E-9	
E2		C1*	E2		03	*						D-8	

**MATRIX**

---

	B-12		
03	A6	E-9	A#12
E2	F5	D-8	0#11
C1	D4	B7	F#10



MASTER FORMULA

GENERATOR STACKS <BOTTOM TONE>

							9*	10*		11*		12*	
			11				8	9*		10	11*	11	1*
6	7	5	11	9			7	8	3	9	8	10	12
5	5	8	10	11	3		6	7	8	8	6	9	3
4	4	3	4	2	2		5	5	12	7	2	8	9
12	6	2	7	8	12		4	4	10	6	1	7	8
3	3	12	5	7	3		12	6	1	5	10	6	5
2	2	10	9	3	10		3	3	11	4	12	5	2
1	1	1	1	1	1		2	2	2	3	3	4	4

			3*										
12	4	12	11	1*						1*	12		
11	7	11	11	12						6	3		
10	10*	10	10	3	12*	10*				1	5	2	10
9	9	9	9	9	11	9				12	6		3*
8	8	8	8	8	10	8				7	7	2	4
7	7	7	7	7	9	7				11	11	1	7
6	6	6	6	6	8	5				10	10	6	10*
5	5	5	5	5	11	4				9	9	5	9
					6	6				8	8	8	8

			12										
6	2	11											
5	1	10	8	8	3*								
4*	7	4	5	5	5								
7	11	7	6	2	1*								
10	10	5	3	4	6								
9	9	9	9	9	9								

MATRIX

1*				
9*	11*			
8	8	8*	2	3*
7	6	5	1	5
6	2	6	6	10*
5	1	3	5	6
4	10	9	8	9
12	12	12	12	12

	12		
3	6	9	12
2	5	8	11
1	4	7	10

-\* Each RESONATOR within the GENERATOR MATRIX can be identified by its class name / number. RESONATOR names and class, as follows: (see chart 3). The number of SPECIES differ from class to class.

-\* The number of tones that are found in each SPECIE can be identified through the following table: (chart 1).

-----  
**GENERATOR STACKS <TOP TONE>**  
 -----

-----  
**MASTER FORMULA**  
 -----

1	1	2	2	3	3	3	4	4	4	5	5	5	5	5	5
6	12	1	1	4	5	8	12	7	7	2	4	4	1	8	
5	3	12	6	7	1	12	3	11	5	12	6	7	6	3	
4	9	11	10	18	6	10	2	10	9	3	3	11	9	2	
7	8	10	8	9	9	1	1	9	1	10	2	10	12	11	
11	7	9	11	8	12	11	6	8	6	1	1	9	11	10	
10	6	8		6			5	3	5		6	8	10	1	
9	5	7		5			8	2			3	7			
8	4							1							

6	6	6	6	7	7	7	7	8	8	8	8	8	9	9	9
4	5	5	3	5	6	10	11	5	5	7	6	7	8	11	8
1	4	4	9	4	5	9	10	2	6	6	5	5	7	2	7
3	12	7	12	6	4	8	9	4	3	5	4	4	6	8	5
5	3	11	11	3	12	6	8	9	9	9	4	7	6	5	7
12	2	10	10	2	3	5		7	12	12	3	3	4	3	6
10	1	9	9	1	2	4		10	11	11	2	2	12	1	3
		8						8	9	10	10	1	1	3	2
													2	6	1

10	10	11	11	11	11	12	12	12
9	4	10	9	4	10	11	3	3
8	7	9	8	7	4	10	2	9
7	5	8	7	1	7	9	1	8
5	9	7	6		5	8	7	7
4	1	6	5		9	7	11	6
6	6	5	4		1	6	10	5
3	5	4	12			5	9	
2		3	8				8	
			6					

-----  
**MATRIX**  
 -----

12			
3	6	9	12
2	5	8	11

## HISTORY OF QUINTAL/QUARTAL HARMONY

Throughout History, composers have sought various ways to express themselves through harmony. Harmony has played a vital role in the evolution of music and the history of Western music.

The earliest form of harmony, as described by Lloyd's Encyclopedia of Music, is two or more musical tones sounded together, found in the ninth century in Europe. This early harmony, known as Organum, uses intervals of perfect fifths and fourths and octaves exclusively. Organum was first used with parallel motion in performing Gregorian Chant melodies. Then, it continued evolving into freer uses of oblique motion, in which the second voice sings fifths, fourths, or an octave above the tenor melody, and then later this developed into an improvised "melismatic" form, which sang above the slow-moving Chant melody.

Two Frenchmen, Leonin and Perotin, of the twelfth century are recognized as two of the earliest great composers of this style. These composers wrote Organum in as many as four parts. This approach reached its peak in the twelfth century in Paris.

By the middle of the thirteenth and the beginning of the fourteenth century, composers began to use intervals of thirds and sixths to form a so-called sweeter sound, until the 1880's when the French composers, Erik Satie and Claude DeBussy began using fourth/fifth harmonies again.

Prior to the fifteenth century, composers structured harmonies through a linear fashion, through tension and resolution of

intervals. After the fifteenth century, a vertical approach was taken by constructing "chords" through stacking intervals of thirds on top of each other. In the nineteenth century conventional harmony gave way to freer use of harmony through adding non-chordal tones to conventional triads, building chords of fourths and fifths and other interval combinations, with freer chord progression. These newer approaches to chord building paved the way for Quintal/Quartal harmony.

Since the twentieth century began (in 1900), composers have taken another approach to harmony. Harmony systems are seen as various colors with which the composer paints sound, therefore, all harmonies are used to capture the mood and spirit of a given composition and its components.

The composers most responsible for this approach during the 20th century are the French composers, Claude DeBussy, Maurice Ravel, and Darius Milhaud, who used added and extended chord tones, whole tone and pentatonic scales, as well as the church modes and free creation to create added color. Alexander Scriabine, a Russian composer, as well as Moussorgsky, built their harmonies from a series of perfect, augmented, and diminished fifths and fourths. German composers Paul Hindemith and Arnold Schoenberg also experimented with harmonies built of fifths and fourths.

Actually, these last two have been the most prolific, to a limited degree, in the Quintal/Quartal harmonic style.

In Jazz, composers such as Horace Silver and Herbie Hancock and McCoy Tyner, to name a few, have employed these harmonies into their style. In Jazz, seventh chords with a suspended fourth are used quite floridly, due

From Harvard Anthology of Music, Baroque  
Harvard University Press c1950 Cambridge Mass

## C. Early Polyphony (to 1200)

### 25. Parallel Organum

*Scholia enchiriadis* (c. 850)

Organum of the octave

Musical notation for Organum of the octave. It consists of two staves. The upper staff contains a single melodic line with square neumes. The lower staff contains a single line of square neumes, representing the organum. The two lines are in parallel motion, with the organum line consistently an octave below the melodic line.

Nos qui vivimus benedicimus Dominum ex hoc nunc et usque in saeculum.

Organum of the fifth

*Vir principalis*

*Vir organalis*

Composite

Musical notation for Organum of the fifth. It consists of two staves. The upper staff contains a single melodic line with square neumes. The lower staff contains a single line of square neumes, representing the organum. The two lines are in parallel motion, with the organum line consistently a fifth below the melodic line. The word 'Composite' is written above the organum staff.

Organum of the fourth

*Vir principalis*

*Vir organalis*

Composite

Musical notation for Organum of the fourth. It consists of two staves. The upper staff contains a single melodic line with square neumes. The lower staff contains a single line of square neumes, representing the organum. The two lines are in parallel motion, with the organum line consistently a fourth below the melodic line. The word 'Composite' is written above the organum staff.

to the fact that this chord is actually a Quartal triad with an added fifth from the root. Predominantly, Quartal triads to hexads have been used in Jazz. Also, they are mainly used in parallel fashion and with a limited degree of alteration.

Some composers relate Quintal/Quartal harmony to Tertian (3rds) structures, while others use the harmony in an exclusive manner. Mostly in historical instances, composers viewed and used these structures for an effect during and within a short duration of music, such as a fanfare, or to simulate bells, etc., or to create a certain mood and color which these harmonies lend themselves toward. In later contemporary works, both Classical and Jazz, from the early 20th Century to the present, the harmonies have become more widely used throughout a composition, and in some cases, used exclusively. One can hear an actual, profuse use of these harmonies in TV commercials and TV News programs, due to the fact that the producers are aware that Quintal/Quartal harmony makes a distinct impression upon the ear and mind, causing the listener to pay more attention to the broadcast. Film composers also use these harmonies in string parts or the same use of color and resonance. One can do themselves a great favor through listening to the use of these harmonies in the preceding contexts. Most of the historical material is found to be Quartal rather than Quintal, probably due to the reason that Quartal chords are less complex in number and in quality when compared to Quintal harmonies.



QUINTAL, QUARTAL HISTORICAL EVOLUTION COMPOSER CHART

DOMINANT INNOVATORS

MIDDLE AGES

600-1450

ORGANUM

LEONIN... PEROTIN

RACH... ZIGAR... DVORAK... BETHOVEN

19TH CENTURY

1800-

ERIK SATIE  
1866-1925

DARIUS MILHAUD... CAMILLE ST. SAENS... RAVEL

IMPRESSIONISM

1880-1918

CLAUDE DEBUSSY  
1862-1918

NEO-CLASSICAL

PAUL HINDEMITH  
1895-1963

GUSTAV HOLST

20TH CENTURY

1900-

ARNOLD SCHOENBERG  
1874-1951

I. STRAVINSKY... A. COPLAND... A. BERG... B. BARTOK... A. WEBERN... C. IVES... A. SCRIABIN

K. ALLEN...

CLAUDE H. TERRELL... J. BERG... H. BANCOFF... J. TAPPEL... M. TYNER... K. JARRELL

\* MAIN: Explored and made harmony part of their style, and used in more than two compositions.

\* Secondary: Used the harmony occasionally.



## THE COMPOSER, HARMONY, AND COLOR

Here, in the late 20th Century, moving fast into the 21st Century, the music artist must be concerned with the total spectrum, as it were, of tonal color and harmony available to one, so as to be able, freely to express himself and his music to its highest degree. This basic tonal vocabulary is the basic fundamental required to use music totally. From this base we can then shape the sound and the color to our taste through various functional techniques at our disposal. Through these techniques we may build rich, colorful, sonorous textures.

At the moment that I tuned into various harmonic sound colors and planes, a whole new world of sound dimension opened to me. I was no longer stuck in monochromaticism, as it were. My mind and soul became Ultra-chromatic. Now my experiences seem to have more vehicles and outlets. My creative world expanded sevenfold, so to speak.

Harmony and color to the composer is as color and variety to the painting artist. The composer must have in his vocabulary a large palette of sound color energy to work with. This palette of sound, of course, gives greater freedom in expression.

The composer of the late 20th Century must be willing to evolve and progress with time, technology, and the universe in order to make a true statement in ones time. One cannot be shackled by antiquated ideas or consciously delving into the mental comfort zone, wallowing in "cloning" or unidentity. True, profound artistic statements come from artists who are committed and open to new

knowledge, as well as being attuned to the pulse of the people.

Harmony, being a very powerful sound energy, can be both for the composer and the listener a source and a catalyst for enlightenment and expansion, if approached through a respecting, reverent perspective. Harmony affects the human nervous system and brain in a way that will be stimulative or meditative, etc. The choice is yours, so why not use all of the available color. After all, life is a rainbow of color and sound energy.

The behavioral function, active energy factor, and quality, changes considerably in relationship to the number of components present. A 2-note fifth, or fourth, structure has a stable, raw, crude character with an open, hollow sound. Also, within this relationship, if the upper interval is lowered, creating a tri-tone, or raised, creating an augmented fifth, the stability factor becomes transonant. Also, if these intervals are inverted or reversed, the character juxtaposes itself between the stable and the unstable. When we add a third, or more elements, being three or more fifths or fourths, the aural and sonorous character take on new character and color. This is due to the root and the first fifth, which create a phenomenon known as a "sonic energy resonating pocket," conversely understood to be a structure of predominant, first-level overtones. Creating a structure made up of "overtones of overtones." At this point, the musical artist working with these structures is able to operate tonally or atonally, and the musical sound becomes vitalized and sonically rich.

The beginnings of writing in fifths and fourths started in the early 9th century. They were used by the Catholic Church to induce an enlightening experience. It was then known as Organum. Also, in vocal music it was known as the Gregorian Chant. Many huge Masses, involving intertwining counterpoint were written. This was the height of musical art for that time. However, there are even earlier uses of human singing in 5ths and 4ths to be found in regions of Africa, which

was also linked with a natural spiritual experience. The power of the influence of 5ths and 4ths on humans definitely lies within Nature's ability to bestow upon our ears the ability to perceive sound in relation to the natural overtone series, to which the 5ths and 4ths have a direct relationship. As it has always been, we must return to our source to gain further impetus to surge ahead into productivity and creativity. It is said that a monk named Hucbald of St. Armand in Flanders was the first to use voices in this way. Also, the earlier Greek's Lyre was tuned in 5ths and 4ths.

The first 800 years (AD) of Western music was permeated by Gregorian chant throughout Western European countries (of Italy, with the central Church of Rome, France, Switzerland, and Spain), which were performed mostly in Church settings, being based on pre-existing Greek and Jewish chants (Delone, 350). Also, during this period of the Middle Ages emerged a style of polyphony which was an extension of Organum, characterized by the use of the intervals of the octave, fifth, and fourth, but of no triadic harmonic structures (chords).

During the period from 1300-1600, embracing the Ars Nova and Renaissance periods, the octave, 5th and 4th was still used, however there were increasing uses of 3rds and 6ths, as well as the Triad being introduced by Zarlino near the end of the period.

During the Baroque period, approximately 1600-1750, diatonic harmony was established, mainly through Bach, with the Dominant (fifth scale degree chord) playing an axiomatic and catalytic part in cadences and tonality. Secondary Dominants in Chromatic Modulation from key to key, as well as counterpoint relying on the interval of 5th and 4th.

During the Classic period (1770-1827), and the Romantic era, (1830-1900), the fifth in tonality acted as a pivotal center for stability or development, and remained a powerful influence in Symphonies, Sonatas, and Concertos.

During the nineteenth Century, Impressionism emerged mainly from Paris, France, where composers like Erik Satie, Claude Debussy, Maurice Ravel, and Darius Milhaud started to build chords of 5ths and 4ths. They used them for the sheer sound quality.

During the 20th Century, Paul Hindemith is the dominant influence in 5th/4th harmony, along with Arnold Schoenberg, Aaron Copeland, Bela Bartok. Even Igor Stravinski used these structures occasionally. Actually, the 20th Century in classical music marked the end of Tertian (3rds) tonality, and heralded the beginnings of attempts to use an expanded harmonic vocabulary and freer use of these harmonies. Basically the role of 20th Century harmony (from the composer's view) is one providing color rather than traditional function.

Actually, Hindemith did found his harmonic system on natural overtone relationships in regard to harmonic tension and release, but still dealt with Tertian harmony predominantly, which I feel was the limitation of his system. This is because I do not hear a large variety of color. Nonetheless, it did pave the way for varying perspectives on harmony.

The influence of the 5th and 4th as well as the 5th and 4th scale degrees are still present with us in folk music, blues, jazz, and popular idioms. Most popular songs on the record charts, these days, still evolve

from and pivot around I, IV, and V predominantly. These progressions are the foundation and staple of music, and until we find and use other approaches, I, IV, and V will always be present to ground us in Nature's universal principles.

Several composers have discovered the impact of the interval of the 5th. Beethoven in his 5th and 9th symphonies attests to this. Other composers, like Debussy and Ravel, have used the emotional energies of the 5th for a wide span of environmental effects. Some view 5ths as barbaric and much too crude whereas others use them as a spiritual experience, as in Gregorian Chants.

The interval of the fifth is the most perfect consonance, other than the octave. It begins to seem like Nature's own magic number in music, since it is near the beginning in the series of partials, or overtones. It not only governs the circle of keys, the distances from tonic to either dominant (V), and to outer dimensions of major and minor triads, but also such matters as the interval between strings on most bowed instruments, the timbre and fingering on the clarinet, and the distance between ranges of the F and C, or the C and G clefs. Now we find one more application of the fifth in the order of accidentals for any key (Newman pg. 90).

The interval of the Augmented fourth and its inversion, the Diminished fifth, commonly called the Tri-tone, has been an important influence throughout the history of Music. Because of its instability, it was used carefully and sparingly. Early music, which used this interval, was referred to as the "Diabolus in Musica" --Interval of the Devil.

In the music of the Major/Minor period, its instability was used as a driving force in the resolution of chords that contain it. In impressionistic music, and later in Stravinsky, the two tones became interchangeable as roots of chords. The interval also divides the octave in half. Since 1900, the Tri-tone has come into accepted use when used as a basic sound in 7th chords.

RESONANCE:  
THE ESSENCE OF THE NOVAPHONIC SOUND

Because the characteristics of a vibrating body, with its sonic overtone series, and the relationship of the fifth, being the first active tone in the harmonic series, clearly points the way to understanding why two or more superimposed 5ths or 4ths creates a "Free floating, resonant, Sonic Chamber." This free floating energy mass, which I divided into chambers within the space of the interval of a fifth, is much like a resonant chamber box.

Because of the resonant space, that is created by multiple 5ths, which is more often used with 3rds, and also, because we are dealing with "overtones of overtones," we get an extra air cushion of resonance between each Intervalic layer which creates richer sonorities/sounds. With each superimposed 5th, the sonic resonance factor increases by an energy ratio of 22 percent (see energy ratio table) through a mixture of Fundamental and related sonic overtones.

This is generally termed "Forced Resonance, or Reinforcement." Not unlike how one wave of water reinforces other waves. Now, because air is all around us, and these small musical, resonating, energy chambers are creating little explosions of sound, the wider and bigger the chamber (intervalic space), the more sonorous and resonant the acoustical sound energy. In other words, sound energy vibrations can share and intermingle within the same time and space slot, quite similar to there being many components of color within what seems like only one color.



## THE SUSPENSION CHORD AND ITS CATALYTIC ROLE

The suspension is the first triad to have a 1, 4, 5 interval content. Suspensions have been used throughout the history of harmony, since a suspension was created by sustaining a chord tone over into the next measure chord. But there had always been a resolution to consonance, because the suspension created a dissonance. I see it, basically, as a Transonant chord that is passing color.

The interval of the second between four and five was a source of dissonance in the 19th Century. But we find that Debussy, in his "Pelleas et Mellisande," is the first not to resolve the second (Apel, pg. 193). During this period, the Major Second Whole-tone dissonance is established, and starts to condition the ear and mind toward acceptance.

The sustained flat 7th chord is the first Quartal structure with an added tone, the 5th. It also contains two 4ths, one 5th, one minor 3rd, and one major second.

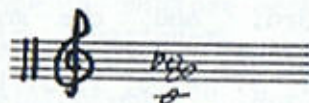
The sustained chord in all its inversions: 1, 4, 5; 4, 5, 1; 5, 1, 4; 4, 1, 5, maintains sonic quality, and can become a Quintal or Quartal triad.

In the 16th Century, suspensions were found at the cadence in the works of Palistrina, Lassus, and others. Bach is the first to suspend a whole chord. However, these composers still resolved the suspension to the third.

In contemporary music, the use of the resolution is still prevalent. However, more and more composers are not resolving their chords, but move them in parallel motion to other scale degrees.

In contemporary Jazz, streams of suspensions and Quartal chords are rampant. It seems that some composers are locked into this device to a limited end. Actually, the ear hears the second within the structures, now, in these times, as pleasing. When one hears streams of suspended chords, one gets the feeling, right away, that this is another (enlightened) dimension of sound (Lloyd).

The suspension throughout history was introduced by composers as a device to introduce tension. However, through the years, the mind and ear has grown accustomed to this dissonance, and perhaps accepts it now as consonance, or at least, a very low level of dissonance.



## METAPHYSICAL PERSPECTIVES

In dealing with the Metaphysical and esthetic principles of the Quintal-Quartal based Novaphonic sound, we have, at the very foundation, Nature and her sonic overtone series being the nucleus for all sound. The fifth, being the first active tone in the sonic series to begin with, is mathematically made up of numbers of completion in the Universe, seven. Seven semitones make up the interval of the fifth with the ratios being 3:2, expressly with the qualities of the Trinity with number 3, and universal laws of balance and opportunities being embraced by the number 2. The 5th, also, could be viewed as an expression of  $4 + 1$ , symbolizing the four qualities of the tetragrammaton and elements of Earth, Air, Fire, and Water operating from the One (1) Supreme Source.

The 5th has played an important part throughout history, making its powerful influence felt at the innermost levels. There is said to be a great cosmic chord composed of the first, third, and fifth of the fundamental root. The number, 1, symbolizes God, the Father, the number, 3, embraces the trinity aspects of Father, Son, and Holy Spirit, and the number, 5, symbolizes man, in whose destiny it is to express and realize the full potential of these powers. Some even say that the 5th represents the struggle for human supremacy between the negative and positive energies, and when the 5th is viewed by a compact Universe of seven (7) components, the metaphysical possibilities become even broader.

These metaphysical connections with music, math, and Nature were explored exten-

sively by Pythagoras and Plato. They considered these to be the most effective path toward higher virtue. With Pythagoras, tone was a psychic experience, and number was the stable, logical and measurable element. Actually, it was Pythagoras, the Greek philosopher and Scientist, who, nearly 2500 years ago, established the fact that the 3 most consonant intervals represent the simplest numerical proportion, mainly, 2:1, the octave, 3:2, the fifth, and 4:3, a fourth, which is also a mirror or inversion of the first. The interval of a third was originally heard as dissonant. The diminished fifth, because of its dissonant and powerful sound was deemed the "devil" interval until later in history, but today, still retains a powerful mystical effect on any listener's ears.

In the natural sonic overtone series, the ear hears octaves, fifths, and fourths more pronounced. These are followed next by thirds, sevenths, and other tones.

## RUDOLPH STEINER PAPERS

Rudolph Steiner was a prominent Rosencrucian scholar, and in his group of lectures (pp. 22-23) on the inner nature of music and its expression of tone, he spoke of music as a messenger from the spiritual world, speaking to us through tones. Here, Steiner further correlates the world of tone and human evolution, such as in the Post-Atlantean period, when man could only hear and perceive the interval of a fifth, whereas in the modern age, the experience of the third became dominant, and we perceive the fifth to sound and be empty, due to a separation between the tones and humans. Steiner relates these incidents to human perception. In the experience of the fifths, a person felt as if he were carried into a different dimension: a human being felt lifted out of himself. When thirds were dominant, humans felt an inward experience, in other words, thirds brought about a subjective experience, and fifths treated an objective direction. In the experience of the fifth, man felt united with the environment, as the fifth was a complete experience, and the third was a partial experience.

Steiner attempts to prove his statements through viewing all keys through the range of seven octaves, and finds that fifth occurred twelve times within these seven scales, meaning, also, to quote: "within the experience of the fifth, man with his 'I' in motion outside his physical organization, and the experience of the third is an inner experience." Therefore, one can say that in the use of the third, the mood experienced is one of consolidation of the inner being. The

experience of the fifth brings man to an awareness of the Divine World Order. The experience of the fifth is an expansion into the Universe, while the experience of the third is a return of the human into the structure of his own organization, with the experience of the fourth lying in between. The interval of the fourth, he further states, is the dividing line between the outer and inner experiences. The "fourth" experience is one sense in the spiritual world and stands at the border of human-ness, retaining it, yet viewing it from a broader perspective.

Steiner views each of these manifestations as a transitory period of evolution from the more spiritual age to the later materialistic age.

In the holistic cycle/circle of twelve fifths, a great mystery of man is innate. According to Steiner, this mystery is that human evolution is expressed in human development and perception more clearly than anywhere else, through a sensitivity of our perception to all the intervals contained within the octave. However, in this new age, the perception of the fifth must transform itself from a feeling of emptiness to a perception and re-discovery of the divine within all life and humanity.

Another opinion and perspective that is significant is that of Dane Rudyard, a well-known composer, philosopher, poet, romantic, and astrologer. Rudyard has operated on several levels through his seventy years of experience, and also correlates evolution of human mind with the development of music. Rudyard now offers scholarly, yet aesthetical concepts of thought. Rudyard states that: "the harmonic series as an archetypical model of the cosmogenic sound energy process as it radiates or emanates from a creative spiritual source "

Through the association of two factors, geometric and arithmetical progressions, which manifest themselves through an internal hierarchy of musical intervals, this is manifested.

The harmonic series and its many levels, according to Rudyar, is a geometric series of octaves which reflect ones desires, whereas the geometric series of 12 fifths and fourths refer to the development of consciousness. He states that "the relationship between the series of seven octaves and twelve fifths is analogous to the relationship of Nature to Mind." This is viewed this way, because within every intonation there is a natural harmonic series of vibrations that occur.

Rudyar also sees that when the series of twelve fifths that cover all musical keys and fundamental relationships are reduced to the span of one octave, all twelve tones of the chromatic scale are produced. Rudyar here attributes each of the twelve fifths as being symbolic of the twelve apostles of the Bible. I will not discuss these perspectives further as it ends with religious judgment. Anyone interested should consult Rudyar's text.

Ultimately, Rudyar views sound as essential energy of creative power, as this power seeks to act upon matter as a transmission of power. The octave, which symbolizes the wholeness of the whole, the fifth as the organic factor of expansion in all living wholes, the fourth, which seeks to re-integrate the centrifugal elements within the whole, and further, the whole-tone, which is the basic building block of the organism, and the semi-tone all make up this energy. The semi-tone refers to circulation of sonic energy, the fluidity of life, as well as as-

pirations, longing, suffering and traumas of individualized consciousness. As far as the third goes (C to E), Rudyar says that it was apparently derived from the fifth note of a series of five fifths reduced to within an octave range by using the theory of Pythagorus. The equalized series of seven octaves and twelve fifths for Rudyar has become, for two and a half centuries, the primary material of Western and global music. This means, for Rudyar, that in both musical and sociopolitical terms, that musical intervals and tonality symbolize a citizen operating within complex democracies.

Harmony, then, to Rudyar, (i. e. Greek root harmony) refers to the process of joining together objects previously having a separate existence. Thus, we have the music of life as a manifestation of spirit as the principle of unity in operation, and the cycle of the fifths as the zodiac of sound, and the transformation of the fulfilling of musical space into oneness of divine creative light.

In Hal A. Lingerman's book, "The Healing Energies of Music," he speaks of the greatness of music as a healing agent. Earlier I spoke of how the Greeks used music therapy. However, here, Lingerman speaks on a more specific level as to which compositions impact various spiritual and emotional qualities. Here, we also have a person that is a professionally trained minister, counselor, and teacher, who actually uses music in each of these professions. His results have been improvement in physical health, emotional stability, mental focus, and spiritual sensitivity, as well as balance in personality, peace in the psyche, and improvement of the soul within. Lingerman believes that music can be a catalyst for good, and is an instru-



ment of the Divine. I, also, guess that many of us have been touched in some way by music.

In Lingerman's text he speaks of the music of Gregorian chant, and the exaltation that comes from experiencing it. Lingerman describes Gregorian chant as "restful, strengthening, and clearing to the system," and that, when you wish to experience peace and the timeless grandeur of Divine Presence, you should listen to Gregorian chant.

As we have learned in an earlier chapter on history, Gregorian chant was a very important part of, and influence of the Roman Catholic Church for many centuries in early music. Indeed, Gregorian chant and its internal constituents of octaves, fifths, and fourths show the healing and emotional power behind a harmony using exclusively these intervals.

Even the Lyre of Pythagoras of Samos in Greece was tuned to the intervals of fifths and fourths as he taught students how to alter human behavior patterns and accelerate the healing process. There is even an old myth that one day in ancient Greece, two men were fighting, and one lunged at the other with a sword, at which moment a student of Pythagoras sounded a chord on his Lyre. All anger and hatred was drawn out of the situation.

The therapeutic value of music has also been explored in China, where again, we find a dominance of fifths and fourths within instrument tuning and composition. One source says that the Chinese were influenced by the Greeks occurring after the conquests of Alexander the Great, approximately the 3rd Century B. C., which brought the two cultures

together. However, there are sources that say that before the time of Alexander, during the Hang dynasty, standard tones were produced by bells, which again resonated the octave, the fifths, and fourth harmonic overtones the loudest.

Bulgarian or Polish folk songs are also dominated by these intervals, whereas parallel fifths and fourths are more common in East Africa, and thirds and sixths dominate the Congo and Guinean Coast.

In the great philosophical Indian Sufi work on music, "The Mysticism of Sound," Inayat Kahn speaks of the five different aspects of the art of music: "The Popular"—that which induces motion of the body; "The Technical"—that which satisfies intellect; "The Artistic"—that which has beauty and grace; "The Appealing"—that which pierces the heart; and "The Uplifting"—that in which the soul hears the music of the spheres.

Hindu ragas are also derived from five different sources: the mathematical law of variety, the inspiration of the mystics, the imagination of the musicians, the natural laws peculiar to the people residing in different parts of the land, and the idealization of the poets. All of these principles make a four-pole world of Ragas: Rag (male), Ragini (female), Putra (sons), and Bharja (daughters-in-law).

To take another perspective, we look at the Divine Monochord of Robert Fludd, a physician, philosopher, alchemist, and music esotericist, who lived in the period from 1574-1637. Fludd's lifespan straddled the Middle Ages and the Renaissance with his views of a dimension of experience often foreign and unintelligible to rationalists and empiricists. Fludd definitely knew, during

  
*The Divine Monochord*

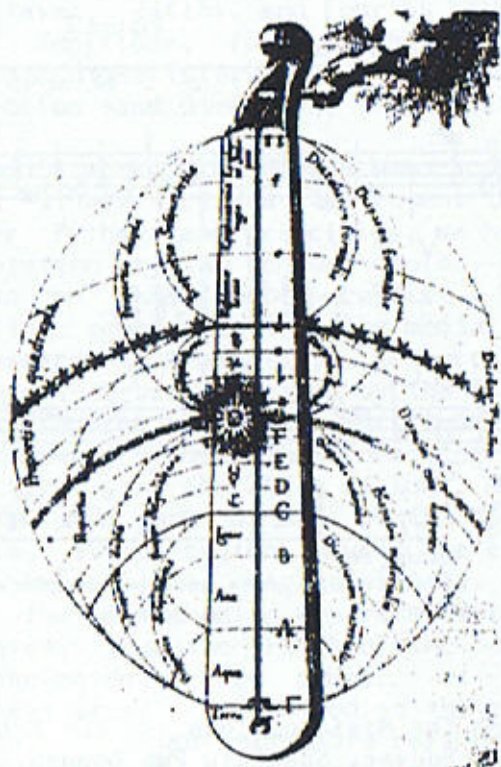


Figure 2

*Descending Series*

C	C	F	C	A♭	F	D	C	B♭	A♭	G♭	F	E	E♭	D	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨ ∨

octave fifth fourth third major third minor third ultra-interval whole tone large whole tone octave

*Ascending Series*

C	C	G	C	E	C	B♭	C	D	E	F♯	G	A	B♭	B♭	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧ ∧

*Ascending Series*

The octave notes, C, are the same in both series, but all other notes are different.

From *The Magic of Tone and the Art of Music*  
Dane Rudyar, Shambala Pub. London, 1982

his time, about the phenomenon of overtones, which he recognized as faint sounds that came through after the generating fundamental tone was sounded. Fludd also knew the loudness ratio of octaves, fifths, and fourths having the highest amplitude, followed by thirds, sevenths, and other intervals. Fludd called this interaction and dimension, "sympathetic vibration."

In Fludd's work, "The Divine Monochord," which is a single-stringed instrument designed after Pythagorean principles, we have an interpretation by the London scholar, Peter J. Arman on Renaissance occultism. His interpretation emphasizes that the mediating soul (*Diatesseron Materialis*), the octave, the most pure interval, followed by the fifth and then the fourth, which he identified with the four elements. Above these, forming the material octave, is the Fifth of luna, Mercury, Venus, and part of Sol. This is the intermediate, ether region, beyond the elements, but beneath the higher planets, and well below the disembodied uppermost voices and epiphanies. Thus the "Fifth of the Soul" or the psychological range proper is the Quintessence, usually understood as the planetary fifth. It is an imaginable refinement of the world that does not leave embodiment altogether, a range of fantasy, memory, and reflection, purer than unreflective reactions of ordinary living, less pure than the rarified thought and contemplation.

In each of these metaphysical views, we see a common element of the human being reaching out for guidance or striving after a more spiritual level. Even though some of these views might be unacceptable from a logical and reason level of mind, we surely

cannot deny the existence and power of the influence of music in our lives here and now in the late 20th Century. At the very least, there is a harmonizing effect in the process, an effect that transcends logic, mind, race, color, and politics. This effect strives to reach our humanities and full self-potential.

**MUSIC IS A PSYCHO-PHYSICAL-SPIRITUAL EXPERIENCE  
..... NEWTON .**

\* All string instruments (ex: violin, guitar, lyre) are all tuned in fifths/fourths as well as all tubular instruments. Trumpets and horns and tubas are built and played with mouthpiece using overtone principles of fifths and fourths relationships.

\* Fruit trees and berry bushes blossom according to a pentamerous system (5).

\* Percy Goetschius: "The perfect fifth is of the greatest significance in harmony, as it represents the simplest mathematical proportion, and consequently, the most intimate relation which can exist between actually different tones, and therefore constitutes the basic of all 'tone combinations'." ("Theory of Harmony").

\* The circle/cycle of fifths represents a cosmological whole (Gestalt) with an equalizing effect through dividing the octave into 12 equal parts (in Western music). (12 fifths = 1 whole = 7 octaves = 7 wholes)

\* Five-tone (Pentatonic) scales are used in other countries: China, Africa, Scotland, Ireland, and the Celtic.

\* The cycle of fifths are an innate Gestalt/holistic mechanism which acts as a unifying element in the Equal-Temperment tuning.

## QUINTESSENTIAL CONSCIOUSNESS AND QUINTAL HARMONY

As part of the new-age evolutionary perspective of the late 20th Century, we are going through various evolutionary stages of mind and spiritual development, during Humanity's inhabitation on the planet, Earth, and we are always evolving toward our greater potential.

This time (of the late eighties) is deemed "the age of Quintessential consciousness." To fully understand the idea, here, we must first analyze the meaning of Quintessential. In Webster's Dictionary, Quintessential has two forms: The first root part means "five," however, Quintessential means purest form--the highest form of the essential (coming from essence).

What all this implies in my opinion, is that we are in a time when humanity is taking a closer look at all its workings and environments, getting to understand the "pure essence" of things. And, that there is a breakdown of superficiality.

On the other hand, we have Quintal harmony deriving from the 5th, the first active overtone in Nature's harmonic series. This implies that the 5th is the purest tone, as well as that Quintal harmony may be the purest harmonic form. It definitely has more chord possibilities. Approximately 15,000 exist, whereas the other harmonic system, the Tertian (3rds), has 13,000.



## NOVAPHONICS AS AN ART FORM

Novaphonics as an art form holds great promise for the future. With the astounding number of over 15,000 chords with which to compose, in and of itself, because of the vast amount of combinatory possibilities, could keep a composer in any idiom busy for quite a while. Quintal/Quartal harmony, exclusively pure, or mixed with tertian structures, offers expanded horizons harmonically for both composer and listener, as it is a natural extension and evolution of present contemporary harmony. Based upon sound mathematical, musical, and acoustical principals creates a rock-steady foundation and catalyst to creativity.

Creatively, the Novaphonic sound can be explored in great depth in either of the musical idioms of classical, Pop, Jazz, or contemporary, at a time when music and our minds need a new perspective to add to our personal library of experiential rewards. Novaphonics is an outgrowth of the color and beauty of Impressionism, has the emotionalism and order of Expressionism, and the balance of Neoclassicism.

The mystifying effect of the fifth holds great esoteric promise by virtue of its past influence, and its seemingly future destiny in music. On an intellectual level, the mathematical, acoustical, and sonic implications and affects hold infinite ground to search and develop upon. It is a harmony of the enlightened, both of the composers who use it and the listeners who are aware of it. It is a higher level of consciousness that makes it so intriguing.

I have heard many say "harmony is dead." Not true. These are the people not willing to put the time and the energy into exploring harmonic possibilities. All that is needed is a little insight and faith in the natural laws of nature. Actually, through specific mathematical formulae, the Equal-Temperment can yield a vast amount of harmonic resources from any so-called harmony, be it Secundal, Tertian, Quintal, Quartal, Hybrid, or whatever.

But, as John Whitney points out in his prestigious work on visual graphic music, "Art, unlike science, is proved by art alone (D. H. p. 96). Thus, composers must delve into the harmonic possibilities through science and through sensitivity, emotion, and awareness, so as to emerge with a meaningful statement as a musical art form.

## THE ART OF LISTENING

What we hear largely depends on how we hear and the perspective from which we are hearing. Some sounds we hear will be based upon past sounds which we already have in our memory banks, and there will be sounds that will be new to our ears. Of course, the past sounds, we will feel comfortable with, and the new sounds may or may not feel comfortable on the first listening. Usually, human experiences of most things require the ability to attune to other levels and dimensions in relation to existing levels and knowledge. This is the holistic principle at work. If we never considered another perspective, we would be locked into a single, limited view.

Music in today's world is making quantum leaps through high technology in generating sound timbre and performance, as well as in compositional approaches. We need to be open to most all new musical forms, because they are representative statements of our time. We must consider that the knowledge and perceptual habits that we now have developed, be inadequate for the new. Thus, we must consciously enlarge our awareness in order to fully comprehend various colors, and enjoy the greater plethora of sound.

All art forms have human meaning, regardless of the degree of profundity. These meanings may be purely personal. Any artist or listener that seeks higher levels, must be willing to make an effort to go beyond personal reference points, and make a commitment to themselves to allow a total experience of the new form.

When listening to Novaphonic harmonies,

one is taken to an altered state of consciousness, where one experiences sound, totally for its sound-color qualities. Our nervous system and minds resonate sympathetically with the plethora of sound (being overtones of overtones). By opening our minds toward experiencing higher levels of vibratory consciousness, one can hear and see pure beauty in the mind's eye, and thoughts of broader awareness are unleashed.

In summation, one should listen with an open ear and mind--open to where the sound will take you. Be open to how it makes you think and feel on an instinctive and also on an intellectual level! Understanding it as a new dimension of sound, we know that it was always there, but we never gave it much attention until now.

### CONCLUSION

In conclusion, I believe that the Novaphonic, QUINTAL/QUARTAL harmonic sound is a new frontier, a new art form, and branch of musical sound to be explored in all its glory and depth. Traces of this new harmonic system have been emerging throughout history in its evolving path toward broader harmonic horizons. For the musical artist and listener, it innately marks a new consciousness both in the musical world, as well as in the universal human world. This harmonic approach is a way of thinking that has always been there but not used in its total potential. It shows us new paths based on familiar ground. Once perceived in the harmonious relationship that exists, other dimensions of sound, thought, and feeling can emerge.

Novaphonics can only grow, from here. Our minds, consciousness, and souls are now sensitive, and will resonate sympathetically to these unique, vibratory patterns. Our nervous systems are the sum total of ages past, therefore, we strive for and strive toward greater refinement and purity of life's experience of sound in our unconscious and conscious paradoxical minds. Though the paradox remains, purity still comes forth and shines its light, because purity is the quintessence of all life energy. The purity that comes from nature's harmonic overtone series and its innate, natural, intervallic relationships is purity which is as much a part of life as mathematics. The Novaphonic sound makes us listen even deeper to music. Its innate relationships resonate sympathetically with our nervous system and minds. Our nervous systems have been through the Organum, Baroque, Renaissance, Neo-classic, Impress-

ionistic, Romantic, Abstract, Surrealistic, Minimalistic, and Contemporary realms. A new holistic level inside us awaits a new, purer and more evolved sound that soothes the savage beast.

Also, as the overtone series reflects the psycho-social-cultural association and evolution of people, we can see that a new world harmony could be emerging in the form of Novaphonics. Here, in the purity and power of sound, lies a transcendental experience that lets us have greater heights of experience and potential through common musical vibrations that expand our minds through sound.

In the true spirit of Universalism, Novaphonics has its place in Humanity. The innate power of integration within the Q/Q Novaphonic sound brings an internal response that is grounding and propelling and unifying and still diversifying. It is the nucleus of the musical organic whole, and the symbol of evolution upon solid ground that parallels musical and mental evolution.

**MUSIC IS THE KEY TO UNIVERSAL HARMONY**

.....NEWTON

LIST OF HISTORICAL COMPOSITIONS  
USING QUINTAL/QUARTAL HARMONY

Ravel: Ma Mere; Laideronnette; Miroirs #2;  
La Valledes Cloches #5; Valse Nobles #1.

Debussy: Preludes, Bk. 1, #10 p. 42, Pour  
Le Piano (Sarabande); Prelude #8, Bk. 2, La  
Cathedral Engloutie.

Scriabine: 6th Sonata; Vers La Flemme; Pro-  
metheus; Poeme, Op. 52, #1.

Holst: Choral Symphony; Evening Watch; The  
Planets.

Schoenberg: Pellias & Melisande; Kammer-  
symphony, Op. 9; 3 Pieces for piano, Op. 11,  
#2, #1; Song #12 from Das Buch der Hangender  
Gurter.

Satie: Las Fils des Etoiles; Prelude to 1st  
and 2nd Act.

Bartok: Concerto for Orchestra, 2nd mov.;  
Piano Concerto #2; String Quartet #5; 2nd  
Piano Concerto; Sonata for Piano #3; Four-  
teen bagatelles, Op. 6, #11; Dim 5th (#101,  
Vol IV).

Guillame De Machaut : Kyrie, from Messe De  
Notre Dame.

Hindemith: 1922 Suite for Piano; Ragtime;  
Mathis Der Maler (ii); Entombment; Nobliss-  
imo Visione III; Since All is Passing.

Beethoven: Pastoral Sym. (Andantino).

Wagner: Tristan, Act II (molto vivace).

Ribikof: Feuille D'Album.

Milhaud: Sonata (Allegro); Saudades De Brazil; The Cat form the Household Muse.

Karg-Elert: Cathedral Windows; Seven Pastels Op., 96, #1.

Gould: March.

Ives: Song Majority; Psalm XXIV; The Cage.

Stravinsky: The Rite of Spring; Concertino.

Britten: Canticle III for Tenor, Horn, and Piano, Variation II.

Prokofieff: Symphony #6.

Berg, Alban: Lyrische Suite; Wozzeck.

Copeland, A.: Piano Fantasy.

Webern: Five Pieces for String Quartet, Op. 5, #5.

Honnegger: King David.

Mancini, Henry: Night Flower; Timothy; That's It, and That's All.

Tyner, McCoy: Passion Dance.

Hubard, F.: Red Clay (The Gaddest Hubbard).

Burton, G.: Walter L, From Carnegie Hall.



Gibbs, M. A Family Joy, from Gary Burton's  
Country Roads.

Shorter, Wayne: Mysterious Traveler

Hancock, Herbie: Maiden Voyage.

Nelson, Oliver: Stolen Moments, from Blues  
and the Abstract Truth.

Farrel, Joe: Moon Germs.

Harris, Eddie: Freedom Jazz Dance.

Bley, Carls: Ol Has De Gato.

McLaughlin, John: Follow Your Heart.

## LANDMARK COMPOSITIONS

- C. 850 Organum: Music Encradis
- C. 1175 Leonin: Hec Dies
- C. 1200 Perotin: Hec Dies
- 1890 Satie: Le Fils Des E'Toiles
- 1900 Debussy: La Cathedral Engloutie: Extensive use of Quartal Harmony.
- 1909 Scriabine: Prometheus: Mystic Chord: Various Fourths.
- 1910 Schoenberg: 2nd Chamber Symphony Op. 9 (Pelleas and M'elisande)
- 1934 Hindemith: Mathis Der Maler: Q/Q Harmony.
- 1936 Bartok: String Quartet #5: Quintal Harmony. (2nd Piano Con.- 1933)
- 1925 Berg: Wozzeck: Extended Quartal chords.
- 1921 Milhaud: Sades Du Brazil: Quintal/Quartal chords.
- 1956 Britten: Canticle for Tenor, Horn, and Piano: Q/Q hexads and Poly.
- 1957 Copeland, A.: Piano Fantasy: Extensive use of Q/Q linear and vertical harmony.
- 1954 Ives, C.: The Cage: Quartal Hexad Types.

1965 Silver, Horace: Red Clay: Jazz Idiom-  
Quartal.

1967 Hancock, Herbie: Maiden Voyage: Jazz  
Idiom- Quartal chords.

#### COMPOSERS BIRTHDATES

Darius Milhaud 1892-1974

Paul Hindemith 1895-1963

Erik Satie 1866-1925

Scriabine 1872-1915

Bela Bartok 1881-1945

Claude Achille Debussy 1862-1918

Alban Berg 1885-1935

A common thread through all these composers is that they all sought a new sound beyond traditional approaches. No doubt they wished to maintain and show personal uniqueness, expression, and identity in their compositions.

together. However, there are sources that say that before the time of Alexander, during the Hang dynasty, standard tones were produced by bells, which again resonated the octave, the fifths, and fourth harmonic overtones the loudest.

Bulgarian or Polish folk songs are also dominated by these intervals, whereas parallel fifths and fourths are more common in East Africa, and thirds and sixths dominate the Congo and Guinean Coast.

In the great philosophical Indian Sufi work on music, "The Mysticism of Sound," Inayat Kahn speaks of the five different aspects of the art of music: "The Popular"—that which induces motion of the body; "The Technical"—that which satisfies intellect; "The Artistic"—that which has beauty and grace; "The Appealing"—that which pierces the heart; and "The Uplifting"—that in which the soul hears the music of the spheres.

Hindu ragas are also derived from five different sources: the mathematical law of variety, the inspiration of the mystics, the imagination of the musicians, the natural laws peculiar to the people residing in different parts of the land, and the idealization of the poets. All of these principles make a four-pole world of Ragas: Rag (male), Ragini (female), Putra (sons), and Bharja (daughters-in-law).

To take another perspective, we look at the Divine Monochord of Robert Fludd, a physician, philosopher, alchemist, and music esotericist, who lived in the period from 1574-1637. Fludd's lifespan straddled the Middle Ages and the Renaissance with his views of a dimension of experience often foreign and unintelligible to rationalists and empiricists. Fludd definitely knew, during

*The Divine Monochord*

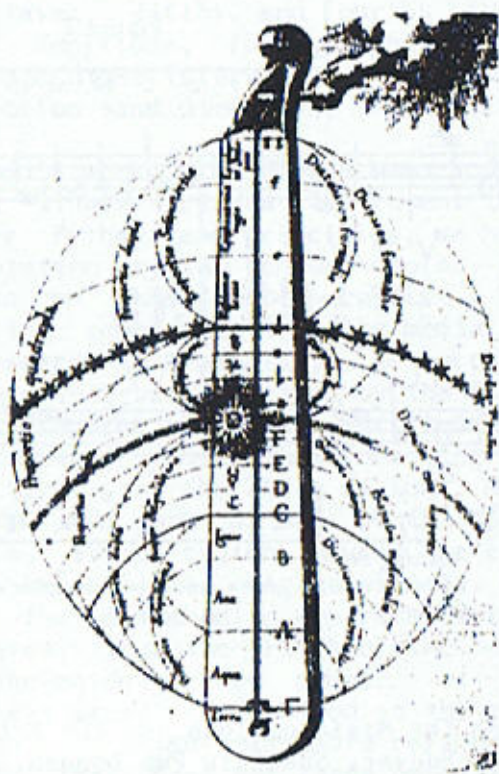


Figure 2

*Descending Series*

C	C	F	C	A♭	F	D	C	B♭	A♭	G♭	F	E	E♭	D	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇ ∇

octave fifth fourth third major third minor third ultra-interval whole tone large whole tone

*Ascending Series*

C	C	G	C	E	C	B♭	C	D	E	F♯	G	A	B♭	B♭	C
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

△ △ △ △ △ △ △ △ △ △ △ △ △ △ △ △

The octave notes, C, are the same in both series, but all other notes are different.

From *The Magic of Tone and the Art of Music*  
 Dane Rudyard, Shambala Pub. London, 1982

his time, about the phenomenon of overtones, which he recognized as faint sounds that came through after the generating fundamental tone was sounded. Fludd also knew the loudness ratio of octaves, fifths, and fourths having the highest amplitude, followed by thirds, sevenths, and other intervals. Fludd called this interaction and dimension, "sympathetic vibration."

In Fludd's work, "The Divine Monochord," which is a single-stringed instrument designed after Pythagorean principles, we have an interpretation by the London scholar, Peter J. Amman on Renaissance occultism. His interpretation emphasizes that the mediating soul (*Diatesseron Materialis*), the octave, the most pure interval, followed by the fifth and then the fourth, which he identified with the four elements. Above these, forming the material octave, is the Fifth of luna, Mercury, Venus, and part of Sol. This is the intermediate, ether region, beyond the elements, but beneath the higher planets, and well below the disembodied uppermost voices and epiphanies. Thus the "Fifth of the Soul" or the psychological range proper is the Quintessence, usually understood as the planetary fifth. It is an imaginable refinement of the world that does not leave embodiment altogether, a range of fantasy, memory, and reflection, purer than unreflective reactions of ordinary living, less pure than the rarified thought and contemplation.

In each of these metaphysical views, we see a common element of the human being reaching out for guidance or striving after a more spiritual level. Even though some of these views might be unacceptable from a logical and reason level of mind, we surely

cannot deny the existence and power of the influence of music in our lives here and now in the late 20th Century. At the very least, there is a harmonizing effect in the process, an effect that transcends logic, mind, race, color, and politics. This effect strives to reach our humanities and full self-potential.

**MUSIC IS A PSYCHO-PHYSICAL-SPIRITUAL EXPERIENCE**  
 ..... NEWTON .

\* All string instruments (ex: violin, guitar, lyre) are all tuned in fifths/fourths as well as all tubular instruments. Trumpets and horns and tubas are built and played with mouthpiece using overtone principles of fifths and fourths relationships.

\* Fruit trees and berry bushes blossom according to a pentamerous system (5).

\* Percy Goetschius: "The perfect fifth is of the greatest significance in harmony, as it represents the simplest mathematical proportion, and consequently, the most intimate relation which can exist between actually different tones, and therefore constitutes the basic of all 'tone combinations'." ("Theory of Harmony").

\* The circle/cycle of fifths represents a cosmological whole (Gestalt) with an equalizing effect through dividing the octave into 12 equal parts (in Western music). (12 fifths = 1 whole = 7 octaves = 7 wholes)

\* Five-tone (Pentatonic) scales are used in other countries: China, Africa, Scotland, Ireland, and the Celtic.



\* The cycle of fifths are an innate Gestalt/holistic mechanism which acts as a unifying element in the Equal-Temperment tuning.

### QUINTESSENTIAL CONSCIOUSNESS AND QUINTAL HARMONY

As part of the new-age evolutionary perspective of the late 20th Century, we are going through various evolutionary stages of mind and spiritual development, during Humanity's inhabitation on the planet, Earth, and we are always evolving toward our greater potential.

This time (of the late eighties) is deemed "the age of Quintessential consciousness." To fully understand the idea, here, we must first analyze the meaning of Quintessential. In Webster's Dictionary, Quintessential has two forms: The first root part means "five," however, Quintessential means purest form—the highest form of the essential (coming from essence).

What all this implies in my opinion, is that we are in a time when humanity is taking a closer look at all its workings and environments, getting to understand the "pure essence" of things. And, that there is a breakdown of superficiality.

On the other hand, we have Quintal harmony deriving from the 5th, the first active overtone in Nature's harmonic series. This implies that the 5th is the purest tone, as well as that Quintal harmony may be the purest harmonic form. It definitely has more chord possibilities. Approximately 15,000 exist, whereas the other harmonic system, the Tertian (3rds), has 13,000.

## NOVAPHONICS AS AN ART FORM

Novaphonics as an art form holds great promise for the future. With the astounding number of over 15,000 chords with which to compose, in and of itself, because of the vast amount of combinatory possibilities, could keep a composer in any idiom busy for quite a while. Quintal/Quartal harmony, exclusively pure, or mixed with tertian structures, offers expanded horizons harmonically for both composer and listener, as it is a natural extension and evolution of present contemporary harmony. Based upon sound mathematical, musical, and acoustical principals creates a rock-steady foundation and catalyst to creativity.

Creatively, the Novaphonic sound can be explored in great depth in either of the musical idioms of classical, Pop, Jazz, or contemporary, at a time when music and our minds need a new perspective to add to our personal library of experiential rewards. Novaphonics is an outgrowth of the color and beauty of Impressionism, has the emotionalism and order of Expressionism, and the balance of Neoclassicism.

The mystifying effect of the fifth holds great esoteric promise by virtue of its past influence, and its seemingly future destiny in music. On an intellectual level, the mathematical, acoustical, and sonic implications and affects hold infinite ground to search and develop upon. It is a harmony of the enlightened, both of the composers who use it and the listeners who are aware of it. It is a higher level of consciousness that makes it so intriguing.

I have heard many say "harmony is dead." Not true. These are the people not willing to put the time and the energy into exploring harmonic possibilities. All that is needed is a little insight and faith in the natural laws of nature. Actually, through specific mathematical formulae, the Equal-Temperment can yield a vast amount of harmonic resources from any so-called harmony, be it Secundal, Tertian, Quintal, Quartal, Hybrid, or whatever.

But, as John Whitney points out in his prestigious work on visual graphic music, "Art, unlike science, is proved by art alone (D. H. p. 96). Thus, composers must delve into the harmonic possibilities through science and through sensitivity, emotion, and awareness, so as to emerge with a meaningful statement as a musical art form.

## THE ART OF LISTENING

What we hear largely depends on how we hear and the perspective from which we are hearing. Some sounds we hear will be based upon past sounds which we already have in our memory banks, and there will be sounds that will be new to our ears. Of course, the past sounds, we will feel comfortable with, and the new sounds may or may not feel comfortable on the first listening. Usually, human experiences of most things require the ability to attune to other levels and dimensions in relation to existing levels and knowledge. This is the holistic principle at work. If we never considered another perspective, we would be locked into a single, limited view.

Music in today's world is making quantum leaps through high technology in generating sound timbre and performance, as well as in compositional approaches. We need to be open to most all new musical forms, because they are representative statements of our time. We must consider that the knowledge and perceptual habits that we now have developed, be inadequate for the new. Thus, we must consciously enlarge our awareness in order to fully comprehend various colors, and enjoy the greater plethora of sound.

All art forms have human meaning, regardless of the degree of profundity. These meanings may be purely personal. Any artist or listener that seeks higher levels, must be willing to make an effort to go beyond personal reference points, and make a commitment to themselves to allow a total experience of the new form.

When listening to Novaphonic harmonies,

one is taken to an altered state of consciousness, where one experiences sound, totally for its sound-color qualities. Our nervous system and minds resonate sympathetically with the plethora of sound (being overtones of overtones). By opening our minds toward experiencing higher levels of vibratory consciousness, one can hear and see pure beauty in the mind's eye, and thoughts of broader awareness are unleashed.

In summation, one should listen with an open ear and mind--open to where the sound will take you. Be open to how it makes you think and feel on an instinctive and also on an intellectual level! Understanding it as a new dimension of sound, we know that it was always there, but we never gave it much attention until now.

### CONCLUSION

In conclusion, I believe that the Novaphonic, QUINTAL/QUARTAL harmonic sound is a new frontier, a new art form, and branch of musical sound to be explored in all its glory and depth. Traces of this new harmonic system have been emerging throughout history in its evolving path toward broader harmonic horizons. For the musical artist and listener, it innately marks a new consciousness both in the musical world, as well as in the universal human world. This harmonic approach is a way of thinking that has always been there but not used in its total potential. It shows us new paths based on familiar ground. Once perceived in the harmonious relationship that exists, other dimensions of sound, thought, and feeling can emerge.

Novaphonics can only grow, from here. Our minds, consciousness, and souls are now sensitive, and will resonate sympathetically to these unique, vibratory patterns. Our nervous systems are the sum total of ages past, therefore, we strive for and strive toward greater refinement and purity of life's experience of sound in our unconscious and conscious paradoxical minds. Though the paradox remains, purity still comes forth and shines its light, because purity is the quintessence of all life energy. The purity that comes from nature's harmonic overtone series and its innate, natural, intervallic relationships is purity which is as much a part of life as mathematics. The Novaphonic sound makes us listen even deeper to music. Its innate relationships resonate sympathetically with our nervous system and minds. Our nervous systems have been through the Organum, Baroque, Renaissance, Neo-classic, Impress-

ionistic, Romantic, Abstract, Surrealistic, Minimalistic, and Contemporary realms. A new holistic level inside us awaits a new, purer and more evolved sound that soothes the savage beast.

Also, as the overtone series reflects the psycho-social-cultural association and evolution of people, we can see that a new world harmony could be emerging in the form of Novaphonics. Here, in the purity and power of sound, lies a transcendental experience that lets us have greater heights of experience and potential through common musical vibrations that expand our minds through sound.

In the true spirit of Universalism, Novaphonics has its place in Humanity. The innate power of integration within the Q/Q Novaphonic sound brings an internal response that is grounding and propelling and unifying and still diversifying. It is the nucleus of the musical organic whole, and the symbol of evolution upon solid ground that parallels musical and mental evolution.

#### **MUSIC IS THE KEY TO UNIVERSAL HARMONY**

.....NEWTON



LIST OF HISTORICAL COMPOSITIONS  
USING QUINTAL/QUARTAL HARMONY

Ravel: Ma Mere; Laideronnette; Miroirs #2;  
La Valledes Cloches #5; Valse Nobles #1.

Debussy: Preludes, Bk. 1, #10 p. 42, Pour  
Le Piano (Sarabande); Prelude #8, Bk. 2, La  
Cathedral Engloutie.

Scriabine: 6th Sonata; Vers La Flemme; Pro-  
metheus; Poeme, Op. 52, #1.

Holst: Choral Symphony; Evening Watch; The  
Planets.

Schoenberg: Pellias & Melisande; Kammer-  
symphony, Op. 9; 3 Pieces for piano, Op. 11,  
#2, #1; Song #12 from Das Buch der Hangender  
Gurter.

Satie: Las Fils des Etoiles; Prelude to 1st  
and 2nd Act.

Bartok: Concerto for Orchestra, 2nd mov.;  
Piano Concerto #2; String Quartet #5; 2nd  
Piano Concerto; Sonata for Piano #3; Four-  
teen bagatelles, Op. 6, #11; Dim 5th (#101,  
Vol IV).

Guillame De Machaut : Kyrie, from Messe De  
Notre Dame.

Hindemith: 1922 Suite for Piano; Ragtime;  
Mathis Der Maler (ii); Entombment; Nobliss-  
imo Visione III; Since All is Passing.

Beethoven: Pastoral Sym. (Andantino).

Wagner: Tristan, Act II (molto vivace).

Ribikof: Feuille D'Album.

Milhaud: Sonata (Allegro); Saudades De Brazil; The Cat form the Household Muse.

Karg-Elert: Cathedral Windows; Seven Pastels Op., 96, #1.

Gould: March.

Ives: Song Majority; Psalm XXIV; The Cage.

Stravinsky: The Rite of Spring; Concertino.

Britten: Canticle III for Tenor, Horn, and Piano, Variation II.

Prokofieff: Symphony #6.

Berg, Alban: Lyrische Suite; Wozzeck.

Copeland, A.: Piano Fantasy.

Webern: Five Pieces for String Quartet, Op. 5, #5.

Honnegger: King David.

Mancini, Henry: Night Flower; Timothy; That's It, and That's All.

Tyner, McCoy: Passion Dance.

Hubard, F.: Red Clay (The Gaddest Hubbard).

Burton, G.: Walter L, From Carnegie Hall.

Gibbs, M. A Family Joy, from Gary Burton's  
Country Roads.

Shorter, Wayne: Mysterious Traveler

Hancock, Herbie: Maiden Voyage.

Nelson, Oliver: Stolen Moments, from Blues  
and the Abstract Truth.

Farrel, Joe: Moon Germs.

Harris, Eddie: Freedom Jazz Dance.

Bley, Carls: Ol Has De Gato.

McLaughlin, John: Follow Your Heart.

## LANDMARK COMPOSITIONS

- C. 850 Organum: Music Encradis
- C. 1175 Leonin: Hec Dies
- C. 1200 Perotin: Hec Dies
- 1890 Satie: Le Fils Des E'Toiles
- 1900 Debussy: La Cathedral Engloutie: Extensive use of Quartal Harmony.
- 1909 Scriabine: Prometheus: Mystic Chord: Various Fourths.
- 1910 Schoenberg: 2nd Chamber Symphony Op. 9 (Pelleas and M'elisande)
- 1934 Hindemith: Mathis Der Maler: Q/Q Harmony.
- 1936 Bartok: String Quartet #5: Quintal Harmony. (2nd Piano Con.- 1933)
- 1925 Berg: Wozzeck: Extended Quartal chords.
- 1921 Milhaud: Sades Du Brazil: Quintal/Quartal chords.
- 1956 Britten: Canticle for Tenor, Horn, and Piano: Q/Q hexads and Poly.
- 1957 Copeland, A.: Piano Fantasy: Extensive use of Q/Q linear and vertical harmony.
- 1954 Ives, C.: The Cage: Quartal Hexad Types.

1965 Silver, Horace: Red Clay: Jazz Idiom-  
Quartal.

1967 Hancock, Herbie: Maiden Voyage: Jazz  
Idiom- Quartal chords.

#### COMPOSERS BIRTHDATES

Darius Milhaud 1892-1974

Paul Hindemith 1895-1963

Erik Satie 1866-1925

Scriabine 1872-1915



Bela Bartok 1881-1945

Claude Achille Debussy 1862-1918

Alban Berg 1885-1935

A common thread through all these composers is that they all sought a new sound beyond traditional approaches. No doubt they wished to maintain and show personal uniqueness, expression, and identity in their compositions.

		VISUAL ARTS	MUSIC	HISTORICAL FIGURES & EVENTS
500 B. C.   100 B. C.	GREEK	Phidias Praxiteles	Pythagoras Greek Musical Scales	Aeschylus Percyus Plato Aristotle
500 A. D.	ROMAN AND EARLY CHRISTIAN	Colosseum Pantheon		Julius Caesar Virgil Hadrian Constantine
1100 A. D.	ROMANESQUE	St. Vitale Ravenna Notre Dame Le Grand Poitiers Pisa Cathedral	Liturgical Gregorian Chants	Pope Gregory 2nd Council of Niceae
1400 A. D.	GOthic	Gothic Cathedral Amiens Chartres Salisbury Etc. Stained Glass Windows	Embanans Trouveres Minnesingers Organum Petrus Machaut	Crusades St. Francis St. Thomas Aquinas Dante Petrarch Chaucer
1600 A. D.	RENAISSANCE	N. Pisano El Greco Martin Giotto Verrocchio Donatello Botticelli Bramante da Vinci Grünewald Dürer Michaelangelo Giorgione Raphael Paladio Tintoretto	Orlay Des Prés J. Walter A. Gabrielli Palestrina Lasso Marenzio Grazzido	Columbus Da Gama Lorenzo de Medici Machiavelli Savonarola Copernicus Luther Pope Julius II Council of Trent Shakespeare
1725 A. D.	BAROQUE	Rubens Bernini Borromini Velasquez Rembrandt	G. Gabrielli Monteverdi Schütz Corelli Vivaldi J. S. Bach Handel G. Scarlatti Couperin	Lord Bacon Kepler Harvey Descartes Milton 30 Yrs. War Mabius Spinoza Louis XIV Newton

		VISUAL ARTS	MUSIC	HISTORICAL FIGURES & EVENTS
 1800 A. D.	ROCOCO CLASSIC	Topala Watteau Boucher Falconet Gainsborough Fragonard David Canova	Gluck Haydn Mozart	Voltaire Louis XV Frederick the Great Rousseau Maria Theresa Goethe Marie Antoinette American Revolution French Revolution
 1900 A. D.	ROMANTIC	Goya Constable Corot Delacroix Daubigny Courbet Manet Degas Rodin Monet Renoir Seurat	Beethoven Schubert Berlioz Mendelssohn Schumann Chopin Liszt Verdi Wagner Smetana Brahms Moussorgsky Tchaikovsky Debussy Richard Strauss	Byron Schopenhauer Longfellow Tennyson Darwin Lincoln Dickens Whitman Queen Victoria Pasteur Nietzsche Communist Manifesto
	20th CENTURY	Cezanne Kandinsky Braque Picasso Cocteau Gabo Moore Dali Pollock Op Art Van Gogh F. L. Wright B. Fuller Mondrian Klee Gropius App. Mies Giacometti Blume Pop Art	Schoenberg Ives Bartok Stravinsky Webern Hindemith Copland Carter Jazz Cage Stockhausen Penderecki Electronic Music Berg Dallapiccola Messiaen Rochberg Ligeti	S. Freud W. Churchill F. D. Roosevelt Stalin James Joyce B. Brecht T. S. Eliot Hemingway Motion Pictures 1st World War Radio Television 2nd World War United Nations Atomic Fission Hiroshima Sputnik 1st Moon Landing

Year	Month	Day	Time	Location	Remarks
1952	Jan	1	10:00	...	...
1952	Jan	2	10:00	...	...
1952	Jan	3	10:00	...	...
1952	Jan	4	10:00	...	...
1952	Jan	5	10:00	...	...
1952	Jan	6	10:00	...	...
1952	Jan	7	10:00	...	...
1952	Jan	8	10:00	...	...
1952	Jan	9	10:00	...	...
1952	Jan	10	10:00	...	...
1952	Jan	11	10:00	...	...
1952	Jan	12	10:00	...	...
1952	Jan	13	10:00	...	...
1952	Jan	14	10:00	...	...
1952	Jan	15	10:00	...	...
1952	Jan	16	10:00	...	...
1952	Jan	17	10:00	...	...
1952	Jan	18	10:00	...	...
1952	Jan	19	10:00	...	...
1952	Jan	20	10:00	...	...
1952	Jan	21	10:00	...	...
1952	Jan	22	10:00	...	...
1952	Jan	23	10:00	...	...
1952	Jan	24	10:00	...	...
1952	Jan	25	10:00	...	...
1952	Jan	26	10:00	...	...
1952	Jan	27	10:00	...	...
1952	Jan	28	10:00	...	...
1952	Jan	29	10:00	...	...
1952	Jan	30	10:00	...	...
1952	Jan	31	10:00	...	...







## \* \* \* QUINTAL CHORD STACKS \* \* \*

9THS	17THS	
C G D	C G D A E	C G+ D+ A+ E
C G D+	C G D A E+	C G+ D+ A+ E+
C G D-	C G D A E-	C G+ D+ A+ E-
		C G+ D+ A+ F+
C G+ D	C G D A+ E	
C G+ D+	C G D A+ E	C G+ D+ A- E
C G+ D-	C G D A+ E-	C G+ D+ A- E+
		C G+ D+ A- E-
C G- D	C G D A- E	
C G- D-	C G D A- E-	C G+ D- A E
		C G+ D- A E+
		C G+ D- A E-
	C G D+ A E	
	C G D+ A E+	C G+ D- A- E
	C G D+ A E-	C G+ D- A- E+
	C G D+ A D	C G+ D- A- E-
	C G D+ A+ E	C G- D A E
	C G D+ A+ E+	C G- D A E+
	C G D+ A+ E-	C G- D A E-
	C G D+ A+ E+	
		C G- D A+ E
	C G D+ A- E	C G- D A+ E+
	C G D+ A- E-	C G- D A+ E-
	C G D+ A- D	
	C G D+ A- D-	C G- D A- E
		C G- D A- E-
	C G D- A E	
	C G D- A E+	C G- D- A E
	C G D- A E-	C G- D- A E+
	C G D- A D	C G- D- A E-
	C G D- A- E	C G- D- A- E
	C G D- A- E-	C G- D- A- E-
	C G A- A- D	
	C G+ D A E	
	C G+ D A E+	
	C G+ D A E-	
		21ST5
	C G+ D A+ E	C G- D A E B
	C G+ D A+ E+	C G- D A E C
	C G+ D A+ E-	C G- D A E B-
	C G+ D A+ F	
		C G- D A E+ B
	C G+ D A- E	C G- D A E+ C
	C G+ D A- E-	C G- D A E+ B-
	C G+ D A- D-	
		C G- D A E- B
		C G- D A E- B-
	C G+ D+ A E	C G- D A+ E B
	C G+ D+ A E+	C G- D A+ E C
	C G+ D+ A E-	C G- D A+ E B-
	C G+ D+ A D	

C G- D A+ E+ B  
 C G- D A+ E+ C  
 C G- D A+ E+ B-

C G- D A+ E- B  
 C G- D A+ E- B-

C G- D A- E B  
 C G- D A- E C  
 C G- D A- E B-

C G- D A- E- B  
 C G- D A- E- B-

C G- D- A E B  
 C G- D- A E C  
 C G- D- A E B-

C G- D- A E+ B  
 C G- D- A E+ C  
 C G- D- A E+ B-

C G- D- A E- B  
 C G- D- A E- B-

C G- D- A- E B  
 C G- D- A- E C  
 C G- D- A- E B-

C G- D- A- E+ B  
 C G- D- A- E+ C  
 C G- D- A- E+ B-

C G- D- A- E- B  
 C G- D- A- E- B-

C G+ D- A E B  
 C G+ D- A E C  
 C G+ D- A E B-

C G+ D- A E+ B  
 C G+ D- A E+ C  
 C G+ D- A E+ B-

C G+ D- A E- B  
 C G+ D- A E- B-

C G+ D- A- E B  
 C G+ D- A- E C  
 C G+ D- A- E B-

C G+ D- A- E+ B  
 C G+ D- A- E+ C  
 C G+ D- A- E+ B-

C G+ D- A- E- B  
 C G+ D- A- E- B-

C G D+ A+ E- B  
 C G D+ A+ E- B-

C G D+ A- E B  
 C G D+ A- E C  
 C G D+ A- E B-

C G D+ A- E+ B

C G D+ A- E- B  
 C G D+ A- E- B-

C G D- A E B  
 C G D- A E C  
 C G D- A E B-

C G D- A E+ B  
 C G D- A E+ C  
 C G D- A E+ B-

C G D- A E- B  
 C G D- A E- B-

C G D- A- E B  
 C G D- A- E C  
 C G D- A- E B-

C G D- A- E+ B  
 C G D- A- E+ B-

C G D- A- E- B  
 C G D- A- E- B-

C G+ D A E B  
 C G+ D A E C  
 C G+ D A E B-

C G+ D A E+ B  
 C G+ D A E+ C  
 C G+ D A E+ B-

C G+ D A E- B  
 C G+ D A E- B-

C G D A E B  
 C G D A E C  
 C G D A E B-

C G D B E+ B  
 C G D A E+ C  
 C G D A E+ B-

C G D A E- B  
 C G D A E- B-

C G D A+ E B  
 C G D A+ E C  
 C G D A+ E B-

C G D A+ E+ B  
 C G D A+ E+ C  
 C G D A+ E+ B-

C G D A+ E- B  
 C G D A+ E- B-

C G D A- E B  
 C G D A- E C  
 C G D A- E B-

C G D A- E- B  
 C G D A- E- B-

C G D+ A E B  
 C G D+ A E C  
 C G D+ A E B-

C G D+ A E+ B  
 C G D+ A E+ C  
 C G D+ A E+ B-

C G D+ A E- B  
 C G D+ A E- B-  
 C G D+ A+ E B  
 C G D+ A+ E C  
 C G D+ A+ E B-

C G D+ A+ E+ B  
 C G D+ A+ E+ C  
 C G D+ A+ E+ B-

C G+ D A+ E B  
 C G+ D A+ E C  
 C G+ D A+ E B-

C G+ D A+ E+ B  
 C G+ D A+ E- C  
 C G+ D A+ E+ B-

C G+ D A+ E- B  
 C G+ D A+ E- C  
 C G+ D A+ E- B-

C G+ D A- E B  
 C G+ D A- E C  
 C G+ D A- E B-

## 25THS

C G D+ A+ E+ C F+	C G D- A E+ D- F+	C G D- A- E+ C F+
C G D+ A+ E+ C G	C G D- A E+ D- G	C G D- A- E+ C G
C G D+ A+ E+ C F		C G D- A- E+ C F
C G D+ A+ E+ D- F+	C G D- A E- B F+	
C G D+ A+ E+ D- G	C G D- A E- B G	C G D- A- E+ D- F+
	C G D- A E- B F	C G D- A- E+ D- G
C G D+ A+ E- B F+	C G D- A E- C F+	
C G D+ A+ E- B G	C G D- A E- C F	C G D- A- E- B F+
C G D+ A+ E- B F		C G D- A- E- B G
C G D+ A+ E- C F+	C G D- A E- D- F+	C G D- A- E- B F
C G D+ A+ E- C F	C G D- A E- D- G	
C G D+ A+ E- D- F+	C G D- A+ E B F+	C G D- A- E- C F+
C G D+ A+ E- D- G	C G D- A+ E B G	C G D- A- E- C F
	C G D- A+ E B F	C G D- A- E- D- F+
C G D+ A- E B F+	C G D- A+ E C F+	C G D- A- E- D- G
C G D+ A- E B G	C G D- A+ E C G	
C G D+ A- E B F	C G D- A+ E C F	C G+ D A E B F+
		C G+ D A E B G
C G D+ A- E C F+	C G D- A+ E D- F+	C G+ D A E B F
C G D+ A- E C G	C G D- A+ E D- G	
C G D+ A- E C F		C G+ D A E C F+
	C G D- A+ E+ B F+	C G+ D A E C G
C G D+ A- E D- F+	C G D- A+ E+ B G	C G+ D A E C F
C G D+ A- E D- G	C G D- A+ E+ B F	C G+ D A E D- F+
		C G+ D A E D- G
C G D+ A- E- B F+	C G D- A+ E+ C F+	
C G D+ A- E- B G	C G D- A+ E+ C G	C G+ D A E+ B F+
C G D+ A- E- B F	C G D- A+ E+ C F	C G+ D A E+ B G
		C G+ D A E+ B F
C G D+ A- E- C F+	C G D- A+ E+ D- F+	
C G D+ A- E- C F	C G D- A+ E+ D- G	C G+ D A E+ C F+
		C G+ D A E+ C G
C G D+ A- E- D- F+	C G D- A+ E- B F+	C G+ D A E+ C F
C G D+ A- E- D- G	C G D- A+ E- B G	
	C G D- A+ E- B F	C G+ D A E+ D- F+
C G D- A E B F+		C G+ D A E+ D- G
C G D- A E B G	C G D- A+ E- C F+	
C G D- A E B F	C G D- A+ E- C F	C G+ D A E- B F+
		C G+ D A E- B G
C G D- A E C F+	C G D- A+ E- D- F+	C G+ D A E- B F
C G D- A E C G	C G D- A+ E- D- G	
C G D- A E C F		C G+ D A E- C F+
	C G D- A- E B F+	C G+ D A E- C F
C G D- A E D- F+	C G D- A- E B G	
C G D- A E D- G	C G D- A- E B F	C G+ D A E- D- F+
		C G+ D A E- D- G
C G D- A E+ B F+	C G D- A- E C F+	
C G D- A E+ B G	C G D- A- E C G	C G+ D A+ E B F+
C G D- A E+ B F	C G D- A- E C F	C G+ D A+ E B G
		C G+ D A+ E B F
C G D- A E+ C F+	C G D- A- E D- F+	
C G D- A E+ C G	C G D- A- E D- G	C G+ D A+ E C F+
C G D- A E+ C F		C G+ D A+ E C G
		C G+ D A+ E C F

C G+ D A- E- B	C G D A E+ D- F+	C G D A- E- B F+
C G+ D A- E- B-	C G D A E+ D- G	C G D A- E- B G
C G+ D+ A E B	C G D A E- B F+	C G D A- E- B F
C G+ D+ A E C	C G D A E- B G	C G D A- E- C F+
C G+ D+ A E B-	C G D A E- B F	C G D A- E- C F
C G+ D+ A E+ B	C G D A E- C F+	C G D A- E- D- F+
C G+ D+ A E- C	C G D A E- C F	C G D A- E- D- G
C G+ D+ A E+ B-	C G D A E- D- F+	C G D+ A E B F+
C G+ D+ A E- B	C G D A E- D- G	C G D+ A E B G
C G+ D+ A E- B-	C G D A+ E B F+	C G D+ A E B F
C G+ D+ A+ E B	C G D A+ E B G	C G D+ A E C F+
C G+ D+ A+ E C	C G D A+ E B F	C G D+ A E C G
C G+ D+ A+ E B-	C G D A+ E C F+	C G D+ A E C F
C G+ D+ A+ E+ B	C G D A+ E C G	C G D+ A E D- F+
C G+ D+ A+ E+ C	C G D A+ E C F	C G D+ A E D- G
C G+ D+ A+ E- B	C G D A+ E D- F+	C G D+ A E+ B F+
C G+ D+ A+ E- B-	C G D A+ E D- G	C G D+ A E+ B G
C G+ D+ A- E B	C G D A+ E+ F+	C G D+ B E+ B F
C G+ D+ A- E C	C G D A+ E+ B G	C G D+ A E+ C F+
C G+ D+ A- E B-	C G D A+ E+ B F	C G D+ A E+ C G
C G+ D+ A- E+ B	C G D A+ E+ C F+	C G D+ A E+ C F
C G+ D+ A- E+ C	C G D A+ E+ C G	C G D+ A E+ D- F+
C G+ D+ A- E+ B-	C G D A+ E+ C F	C G D+ A E- D- G
C G+ D+ A- E- B	C G D A+ E+ D- F+	C G B+ A E- B F+
C G+ D+ A- E- B-	C G D A+ E+ D- G	C G D+ A E- B G
	C G D A+ E- B F+	C G D+ A E- B F
	C G D A+ E- B G	C G D+ A E- C F+
	C G D A+ E- B F	C G D+ A E- C F
	C G D A+ E- C F+	C G D+ B E- D- F+
	C G D A+ E- C F	C G D+ A E- D- G
	C G D A+ E- D- F+	C G D+ A+ E B F
	C G D A+ E- D- G	C G D+ A+ E B G
	C G D A- E B F+	C B D+ A+ E B F
	C G D A- E B G	C G D+ A+ E C F+
	C G D A- E B F	C G D+ A+ E C A
	C G D A- E C F+	C G D+ A+ F C F
	C G D A- E C G	C G D+ A+ E D- F-
	C G D A- E C F	C G D+ A+ E D- G
	C G D A- E D- F+	C G D+ A+ E+ B F+
	C G D A- E D- G	C G D+ A+ E- B G
		C G D+ A+ E+ B F

## 25THS

C G D A E B F+  
 C G D A E B G  
 C G D A E B F

C G D A E C F+  
 C G D A E C G  
 C G D A E C F

C G D A E D- F+  
 C G D A E D- G

C G D A E+ B F+  
 C G D A E+ B G  
 C G D A E+ B F

C G D A E+ C F+  
 C G D A E+ C G  
 C G D A E+ C F

## 25THS

C G+ D- A- E B F+	C G- D A+ E+ B F+	C G- D- A E- B F+
C G+ D- A- E B G	C G- D A+ E+ B G	C G- D- A E- B G
C G+ D- A- E B F	C G- D A+ E+ B F	C G- D- A E- B F
C G+ D- A- E C F+	C G- D A+ E+ C F+	C G- D- A E- D- F+
C G+ D- A- E C G	C G- D A+ E+ C G	C G- D- A E- D- G
C G+ D- A- E C F	C G- D A+ E+ C F	
C G+ D- A- E D- F+	C G- D A+ E+ D- F+	C G- D- A+ E B F+
C G+ D- A- E D- G	C G- D A+ E+ D- G	C G- D- A+ E B G
		C G- D- A+ E B F
C G+ D- A- E- B F+	C G- D A+ E- B F+	C G- D- A+ E C F+
C G+ D- A- E- B G	C G- D A+ E- B G	C G- D- A+ E C G
C G+ D- A- E- B F	C G- D A+ E- B F	C G- D- A+ E C F
C G+ D- A- E- D- F+	C G- D A+ E- D- F+	C G- D- A+ E D- F+
C G+ D- A- E- D- G	C G- D A+ E- D- G	C G- D- A+ E D- G
C G- D A E B F+	C G- D A- E B F+	C G- D- A+ E+ B F+
C G- D A E B G	C G- D A- E B G	C G- D- A+ E+ B G
C G- D A E B F	C G- D A- E B F	C G- D- A+ E+ B F
C G- D A E C F+	C G- D A- E C F+	C G- D- A+ E+ C F+
C G- D A E C G	C G- D A- E C G	C G- D- A+ E+ C G
C G- D A E C F	C G- D A- E C F	C G- D- A+ E+ C F
C G- D A E D- F+	C G- D A- E D- F+	C G- D- A+ E+ D- F+
C G- D A E D- G	C G- D A- E D- G	C G- D- A+ E+ D- G
C G- D A E+ B F+	C G- D A- E- B F+	C G- D- A+ E- B F+
C G- D A E+ B G	C G- D A- E- B G	C G- D- A+ E- B G
C G- D A E+ B F	C G- D A- E- B F	C G- D- A+ E- B F
C G- D A E+ C F+	C G- D A- E- D- F+	C G- D- A+ E- D- F+
C G- D A E+ C G	C G- D A- E- D- G	C G- D- A+ E- D- G
C G- D A E+ C F		
C G- D A E+ D- F+	C G- D- A E B F+	C G- D- A- E B F+
C G- D A E+ D- G	C G- D- A E B G	C G- D- A- E B G
	C G- D- A E B F	C G- D- A- E B F
C G- D A E- B F+	C G- D- A E C F+	C G- D- A- E C F+
C G- D A E- B G	C G- D- A E C G	C G- D- A- E C G
C G- D A E- B F	C G- D- A E C F	C G- D- A- E C F
C G- D A E- D- F+	C G- D- A E D- F+	C G- D- A- E D- F+
C G- D A E- D- G	C G- D- A E D- G	C G- D- A- E D- G
C G- D A+ E B F+	C G- D- A E+ B F+	C G- D- A- E- B F+
C G- D A+ E B G	C G- D- A E+ B G	C G- D- A- E- B G
C G- D A+ E B F	C G- D- A E+ B F	C G- D- A- E- B F
C G- D A+ E C F+	C G- D- A E+ C F+	C G- D- A- E- D- F+
C G- D A+ E C G	C G- D- A E+ C G	C G- D- A- E- D- G
C G- D A+ E C F	C G- D- A E+ C F	
C G- D A+ E D- F+	C G- D- A E+ D- F+	
C G- D A+ E D- G	C G- D- A E+ D- G	

C G+ D A+ E D- F+  
C G+ D A+ E D- G

C G+ D A+ E+ B F+  
C G+ D A+ E+ B G  
C G+ D A+ E+ B F

C G+ D A+ E+ C F+  
C G+ D A+ E+ C G  
C G+ D A+ E+ C F

C G+ D A+ E+ D- F+  
C G+ D A+ E+ D- G

C G+ D A+ E- B F+  
C G+ D A+ E- B G  
C G+ D A+ E- B F

C G+ D A+ E- C F+  
C G+ D A+ E- C F

C G+ D A+ E- D- F+  
C G+ D A+ E- D- G

C G+ D A- E B F+  
C G+ D A- E B G  
C G+ D A- E C F

C G+ D A- E D- F+  
C G+ D A- E D- G

C G+ D A- E- B F+  
C G+ D A- E- B G  
C G+ D A- E- B F

C G+ D A- E- C F+  
C G+ D A- E- C F

C G+ D A- E- D- F+  
C G+ D A- E- D- G

C G+ D+ A E B F+  
C G+ D+ A E B G  
C G+ D+ A E B F

C G+ D+ A E C F+  
C G+ D+ A E C G  
C G+ D+ A E C F

C G+ D+ A E D- F+  
C G+ D+ A E D- G

C G+ D+ A E+ B F+  
C G+ D+ A E+ B G  
C G+ D+ A E+ A F

C G+ D+ A E+ C F+  
C G+ D+ A E+ C G  
C G+ D+ A E+ C F

C G+ D+ A E+ D- F+  
C G+ D+ A E+ D- G

C G+ D+ A E- B F+  
C G+ D+ A E- B G  
C G+ D+ A E- B F

C G+ D+ A E- C F+  
C G+ D+ A E- C F

C G+ D+ A E- D- F+  
C G+ D+ A E- D- G

C G+ D+ A+ E B F+  
C G+ D+ A+ E B G  
C G+ D+ A+ E B F

C G+ D+ A+ E C F+  
C G+ D+ A+ E C G  
C G+ D+ A+ E C F

C G+ D+ A+ E D- F+  
C G+ D+ A+ E D- G

C G+ D+ A+ E+ B F+  
C G+ D+ A+ E+ B G  
C G+ D+ A+ E+ B F

C G+ D+ A+ E+ C F+  
C G+ D+ A+ E+ C G  
C G+ D+ A+ E+ C F

C G+ D+ A+ E+ D- F+  
C G+ D+ A+ E+ D- G

C G+ D+ A+ E- B F+  
C G+ D+ A+ E- B G  
C G+ D+ A+ E- B F

C G+ D+ A+ E- D- F+  
C G+ D+ A+ E- D- G

C G+ D+ A- E B F+  
C G+ D+ A- E B G  
C G+ D+ A- E B F

C G+ D+ A- E C F+  
C G+ D+ A- E C G  
C G+ D+ A- E C F

C G+ D+ A- E D- F+  
C G+ D+ A- E D- G

C G+ D+ A- E+ D- F+  
C G+ D+ A- E+ D- G

C G+ D+ A- E- B F+  
C G+ D+ A- E- B G  
C G+ D+ A- E- B F

C G+ D+ A- E- D- F+  
C G+ D+ A- E- D- G

C G+ D- A E B F+  
C G+ D- A E B G  
C G+ D- A E B F

C G+ D- A E C F+  
C G+ D- A E C G  
C G+ D- A E C F

C G+ D- A E D- F+  
C G+ D- A E D- G

C G+ D- A E+ B F+  
C G+ D- A E+ B G  
C G+ D- A E+ B F

C G+ D- A E+ C F+  
C G+ D- A E+ C G  
C G+ D- A E+ C F

C G+ D- A E+ D- F+  
C G+ D- A E+ D- G

C G+ D- A E- B F+  
C G+ D- A E- B G  
C G+ D- A E- B F

C G+ D- A E- D- F+  
C G+ D- A E- D- G

C G+ D- A+ E B F+  
C G+ D- A+ E B G  
C G+ D- A+ E B F

C G+ D- A+ E C F+  
C G+ D- A+ E C G  
C G+ D- A+ E C F

C G+ D- A+ E D- F+  
C G+ D- A+ E D- G

C G+ D- A+ E- B F+  
C G+ D- A+ E- B G  
C G+ D- A+ E- B F

C G+ D- A+ E- D- F+  
C G+ D- A+ E- D- G







\*\*\* QUARTAL CHORD STACKS \*\*\*

QUARTAL TRIADS (3)

7 THS (4)

C F B-

C F B

C F+ B

C F+ C

QUARTAL TETRADES (4)

10 THS (6)

C F B- E-

C F B- E

C F B E

C F+ B E

C F+ B F

C F+ C F

QUARTAL PENTADS (5)

13 THS (11)

C F B- E- A-

C F B- E- A

C F B- E A

C F B E A

C F B E A+

C F+ B E A

C F+ B E A+

C F+ B F A+

C F+ C F A+

C F+ C F F

C F+ C F+ A

## QUARTAL HEXADS &lt;6&gt;

16 THS &lt;16&gt;

C F B- E- A- D-  
 C F B- E- A- D  
 C F B- E- A D  
 C F B- E A D  
 C F B- E A D+  
 C F B- E A+ D+  
 C F B E A D  
 C F B E A D+  
 C F B E A+ D+  
 C F B E+ A+ D+  
 C F+ B E A D  
 C F+ B E A D+  
 C F+ B E A+ D+  
 C F+ C F A+ D+  
 C F+ C F B E

## QUARTAL HEPTADS &lt;7&gt;

19 THS &lt;21&gt;

C F B- E- A- D- G-  
 C F B- E- A- D- G  
 C F B- E- A- D G  
 C F B- E- A D G  
 C F B- E- A D G+  
 C F B- E- A D+ G+  
 C F B- E A D G  
 C F B- E A D G+  
 C F B- E A+ D+ G+  
 C F B E A D G  
 C F B E A D G+  
 C F B E A+ D+ G+  
 C F B E+ A+ D+ G+  
 C F+ B E A D G  
 C F+ B E A D G+  
 C F+ B E A+ D+ G+  
 C F+ B E+ A+ D+ G+  
 C F+ B E+ A+ D+ G

## QUARTAL DECADES &lt;10&gt;

## 27 THS &lt;24&gt;

C F B- E- A- D- G- B E A  
 C F B- E- A- D- G- B E A+  
 C F B- E- A- D- G- B F A+  
 C F B- E- A- D- G- C F A+  
 C F B- E- A- D- G C F A+  
 C F B- E- A- D G C F A+  
 C F B- E- A D G C F A+  
 C F B- E A D G C F A+  
 C F B E A D G C F A+  
  
 C F B E A D G C F B  
 C F B E A D G C F+ B  
 C F B E A D G C+ F+ B  
 C F B E A D G+ C+ F+ B  
 C F B E A D+ G+ C+ F+ B  
 C F B E A+ D+ G+ C+ F+ B  
  
 C F+ B E A D G C F A+  
 C F+ B E A D G C F B  
 C F+ B E A D G C F+ B  
 C F+ B E A D G C+ F+ B  
 C F+ B E A D G+ C+ F+ B  
 C F+ B E A D+ G+ C+ F+ B  
 C F+ B E A+ D+ G+ C+ F+ B  
 C F+ B F A+ D+ G+ C+ F+ B  
 C F+ C F A+ D+ G+ C+ F+ B

## QUARTAL OCTADS (8)

21 STS (19)

C F B- E- A- D- G- B  
 C F B- E- A- D- G- C  
 C F B- E- A- D- G C  
 C F B- E- A- D G C  
 C F B- E- A D G C  
 C F B- E A D G C  
 C F B E A D G C  
 C F B E A D G C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F B E A D G+ C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ B E A D G C+  
 C F+ C F A+ D+ G+ C+  
 C F+ C F A+ D+ G+ C+

## QUARTAL NEPTADS (9)

24 THS (22)

C F B- E- A- D- B- B E  
 C F B- E- A- D- B- B F  
 C F B- E- A- D- B- C F  
 C F B- E- A- D- B C F  
 C F B- E- A- D G C F  
 C F B- E- A D G C F  
 C F B- E A D G C F  
 C F B E A D G C F  
 C F B E A D G C F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F B E A D G C+ F+  
 C F+ B E A D B C F  
 C F+ B E A D B C F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ B E A D B C+ F+  
 C F+ C F A+ D+ G+ C+ F+  
 C F+ C F A+ D+ G+ C+ F+

## QUARTAL DUO-DECADS &lt;12&gt;

33 RDS &lt;26&gt;

C F B- E- A- D- G- B E A D G  
 C F B- E- A- D- G- B E A D G+  
 C F B- E- A- D- G- B E A D+ G+  
 C F B- E- A- D- G- B E A+ D+ G+  
 C F B- E- A- D- G- B F A+ D+ G+  
 C F B- E- A- D- G- C F A+ D+ G+  
 C F B- E- A- D- G C F A+ D+ B+  
 C F B- E- A- D G C F A+ D+ G+  
 C F B- E A D G C F A+ D+ G+  
 C F B E A D G C F A+ D+ G+  
 C F B E A D G C F A+ D+ G+  
 C F B E A D G C F A+ D+ A  
 C F B E A D G C F A+ E A  
 C F+ B E A D G C F A+ D+ G+  
 C F+ B E A D G C F A+ D+ A  
 C F+ B E A D G C F A+ E A  
 C F+ B E A D G C F B E A  
 C F+ B E A D G C F+ B E A  
 C F+ B E A D G C+ F+ B E A  
 C F+ B E A D G+ C+ F+ B E A  
 C F+ B E A D+ G+ C+ F+ B E A  
 C F+ B E A+ D+ G+ C+ F+ B E A  
 C F+ B F A+ D+ G+ C+ F+ B E A  
 C F+ C F A+ D+ G+ C+ F+ B E A  
 C F+ C F A+ D+ G+ C+ F+ B E A  
 C F+ C F A+ D+ G+ C+ F+ B F A+

## QUARTAL MONO-DECADS (1)

30 THS (26)

C F B- E- A- D- G- B E A D

C F B- E- A- D- G- B E A D+

C F B- E- A- D- G- B E A+ D+

C F B- E- A- D- G- B F A+ D+

C F B- E- A- D- G- C F A+ D+

C F B- E- A- D- G C F A+ D+

C F B- E- A- D G C F A+ D+

C F B- E- A D G C F A+ D+

C F B- E A D G C F A+ D+

C F B E A D G C F A+ D+

C F B E A D G C F A+ E

C F B F A D G C F B E

C F B E A D G C F+ B F

C F B F A D G C+ F+ B E

C F B E A D G+ C+ F+ B E

C F B E A D+ G+ C+ F+ B E

C F B E A+ B+ G+ C+ F+ B E

C F+ B E A D G C F A+ D+

C F+ B E A D G C F A+ E

C F+ B E A D G C F B E

C F+ B E A D G C F+ B E

C F+ B E A D G C+ F+ B E

C F+ B E A D G+ C+ F+ B E

C F+ B E A D+ G+ C+ F+ B E

C F+ B E A+ D+ G+ C+ F+ B E

C F+ B F A+ D+ G+ C+ F+ B E

C F+ C F A+ D+ G+ C+ F+ B E

C F+ C F A+ D+ G+ C+ F+ B F





1. The first part of the book is a general introduction to the subject of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
2. The second part of the book is a detailed study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
3. The third part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
4. The fourth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
5. The fifth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
6. The sixth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
7. The seventh part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
8. The eighth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
9. The ninth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.
10. The tenth part of the book is a study of the history of the English language. It covers the period from the beginning of the English language to the present day. It discusses the influence of Old English, Middle English, and Modern English on the development of the language. It also discusses the influence of other languages on the English language.

I. LENTISSIMO

**dolce**

*Tanto Dulce*

**Ca**

**Ca**

**Ca**

**Ca**

**Fo**

**Fo**

**Ca**

**Ca**

D.S. AL CODA

**Coda**

II. ModeratoCON TSO

Handwritten musical score for "II. Moderato" (CON TSO). The score is written on five staves. The first staff is the vocal line, marked "cantata". The second staff is the piano accompaniment, marked "pianissimo" and "Semplice". The third staff is the cello part, marked "Cello". The fourth staff is the double bass part, marked "Basso". The fifth staff is the bass line, marked "Basso". The score includes various musical notations such as notes, rests, and dynamic markings. There are also some handwritten annotations and corrections. The piece concludes with a double bar line and the number "(2.)" below it.

Handwritten musical notation for the first system, featuring a treble clef and a key signature of one sharp (F#). The notation includes a melodic line with a slur and a fermata, and a bass line with a fermata. A box containing the key signature  $G\sharp/F$  is positioned above the staff. The text "AL TO EX" is written at the end of the system.

Handwritten musical notation for the second system, marked with a circled 'B'. It consists of three staves: a treble clef staff with a melodic line, a bass clef staff with a bass line, and a grand staff with a piano accompaniment. The notation includes various musical symbols such as slurs, fermatas, and dynamic markings like  $f$  and  $mf$ .

Handwritten musical notation for the third system, continuing the piece with three staves (treble, bass, and grand staff). The notation includes slurs, fermatas, and dynamic markings. The text "T. 24" is written at the end of the system.

**B2**

Handwritten musical score for section B2, measures 11-14. The score is written on four staves. The top staff is a vocal line with lyrics: *b p b p b p b p b p*. The second staff is for Clarinet (cl), marked *ff*, with triplets and the instruction *immens sup fl*. The third staff is for Piano, marked *ff*, with the instruction *STEMAS*. The bottom staff is for Bass, marked *ff*, with chords and dynamics. Measure numbers 11, 12, 13, and 14 are indicated at the bottom.

**B3**

Handwritten musical score for section B3, measures 15-18. The score is written on four staves. The top staff is a vocal line with lyrics: *b p b p b p b p b p*. The second staff is for Clarinet (cl), marked *ff* and *n/c*. The third staff is for Piano, marked *ff*, with the instruction *STEMAS*. The bottom staff is for Bass, marked *ff*, with chords and dynamics. Measure numbers 15, 16, 17, and 18 are indicated at the bottom.

Handwritten musical score for the first system, featuring a piano and a grand staff. The piano part has a treble clef and a 6/8 time signature. The grand staff has a bass clef. The score is divided into four measures. The first measure contains a piano introduction marked "ASDIARIED". The second measure is a whole rest. The third measure contains a piano melody with a slur and a fermata. The fourth measure contains a piano melody with a slur and a fermata, marked "RIT".

Handwritten musical score for the second system, featuring a piano and a grand staff. The piano part has a treble clef and a 6/8 time signature. The grand staff has a bass clef. The score is divided into four measures. The first measure contains a piano melody with a slur and a fermata. The second measure contains a piano melody with a slur and a fermata. The third measure contains a piano melody with a slur and a fermata. The fourth measure contains a piano melody with a slur and a fermata, marked "mf".

Two empty musical staves, one above the other, consisting of five lines each.





Handwritten musical score for guitar, featuring a 13/8 time signature and various performance instructions.

**System 1:** **13/8** (boxed). *p c/c/2*. *sm*. *11* *12*

**System 2:** **B** (boxed). *p*. *6*. *Drone*. *11* *12*

**System 3:** **B** (boxed). *6*. *Lucas*. *11* *12*

**System 4:** *11* *12*

**System 5:** *11* *12*

**System 6:** *11* *12*

**System 7:** *11* *12*

(?)

The page contains five systems of musical notation, each with a guitar staff and a piano staff.

- System 1:**
  - Guitar staff: Starts with a boxed chord diagram for  $F^{13} Q$ . Includes the instruction "p" and "c/4".
  - Piano staff: Features a chord diagram for  $F^{13} Q$  and a melodic line with accents.
- System 2:**
  - Guitar staff: Includes a boxed chord diagram for  $C^{21} Q$ .
  - Piano staff: Continues the melodic line with accents.
- System 3:**
  - Guitar staff: Features a melodic line with a  $\frac{3}{2}$  time signature.
  - Piano staff: Continues the melodic line.
- System 4:**
  - Guitar staff: Starts with a boxed chord diagram for  $F\#^{21} Q$  and the instruction "piano solo I".
  - Piano staff: Includes the instruction "piano solo I" and a melodic line.
- System 5:**
  - Guitar staff: Starts with a boxed chord diagram for  $F^{21} Q$ . Includes the instruction "piano solo I".
  - Piano staff: Continues the melodic line.

At the bottom center of the page, there is a circled number: (5)

Handwritten musical score on page 133, featuring three systems of staves with various annotations and a "FINE" marking.

The first system includes a boxed key signature of  $C \frac{3}{4}$  and a tempo marking of  $Allegretto$ . The notation consists of a treble clef staff with a melodic line and a bass clef staff with a rhythmic accompaniment. The second system continues the piece with a treble clef staff containing a melodic line with many slurs and a bass clef staff with a rhythmic accompaniment. The third system concludes the piece with a treble clef staff and a bass clef staff, ending with a large, bold "FINE" marking.

Additional annotations include "rit." (ritardando) and "cresc." (crescendo) markings, as well as various performance instructions like "p" (piano) and "mf" (mezzo-forte). The piece ends with a measure marked "16".

## Like as the Waves

J=60

FLUWING

TEXT. W. SHAKESPEARE  
MUSC. A. NEWTON

LIE AS THE WAVES

reb-bled SAME So do our MIN-UTES HASTEN TO THEIR

END EACH CRAWLING PLACE . WITH THAT WHICH GOES BEFORE  
 IN A SILENT QUANTUM JAIL ALL FOR-WARDS DO CONTEND  
 NA- TI-VI-TY ONCE IN THE PAIR of LIGHT  
 CRAWLS TO AN- THR-I-TY

(2)

(for organ)

*Grandioso* *Andante* *Allegro* *Andante*

GLORY FLU-  
 TURED TIME THAT CAME DOWN NOW HIS GI-FT COM-  
 PARED WITH ALL THE GIFTS OF HEAVEN

**A**

*Fornando* *Andante*

... .. *Rit.* ... ..

♩ ♪ [B] STILLE NO LINDEN

C  
 D  
 E  
 F  
 G  
 A  
 B

p  
 Arit.  
 pp Time doch TRANS-FIX

[C]

THE FLOCK SET IN MOUTH FEELS ON THE REA-TIES

OF NA-TURE TENTH AND YET TO TIMES IN HOPE

my VERSE SHALL STAND PRAISING TRY WORTH -

RESOLVE THUS CALD HAND NA-

*p. s. m. 1870*

( 8 )









The first part of the paper is devoted to a review of the literature on the effects of the 1997-1998 Asian financial crisis on the real economy of the Asian countries. The second part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The third part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The fourth part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The fifth part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The sixth part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The seventh part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The eighth part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The ninth part of the paper discusses the effects of the crisis on the real economy of the Asian countries. The tenth part of the paper discusses the effects of the crisis on the real economy of the Asian countries.

## \* MASTER OVERTONE AND AUXILIARY TONES \*

#FUND.	*** O/TONES	U/TONES	SUM/F+O****	SUM/F+U	DIF/O-F	**** DIF/U-F	
16.3515	1	16.351	16.351	32.702	32.702	0	0
16.3515	2	32.702	8.175	49.854	24.527	16.351	-8.175
16.3515	3	49.054	.345	63.405	21.801	32.702	-10.902
16.3515	4	65.485	4.807	81.7370001	20.439	49.054	-12.264
16.3515	5	81.7370001	3.27	90.188	19.621	65.485	-13.002
16.3515	6	98.188	2.725	114.46	19.075	81.7370001	-13.627
16.3515	7	114.46	2.335	130.811	18.687	98.188	-14.016
16.3515	8	130.811	2.043	147.163	18.395	114.46	-14.308
16.3515	9	147.163	1.816	163.514	18.168	130.811	-14.535
16.3515	10	163.514	1.635	179.866	17.986	147.163	-14.717
16.3515	11	179.866	1.496	196.217	17.837	163.514	-14.865
16.3515	12	196.217	1.362	212.569	17.714	179.866	-14.989
16.3515	13	212.569	1.257	228.92	17.609	196.217	-15.094
16.3515	14	228.92	1.167	245.272	17.519	212.569	-15.184
16.3515	15	245.272	1.09	261.623	17.441	228.921	-15.262
16.3515	16	261.623	1.021	277.975	17.373	245.272	-15.33
16.3515	17	277.975	.961	294.327	17.313	261.623	-15.39
16.3515	18	294.326	.908	310.678	17.259	277.975	-15.444
16.3515	19	310.678	.86	327.029	17.212	294.326	-15.491
16.3515	20	327.029	.817	343.381	17.169	310.678	-15.534
16.3515	21	343.381	.778	359.732	17.13	327.029	-15.573
16.3515	22	359.732	.743	376.084	17.094	343.381	-15.609
16.3515	23	376.084	.71	392.435	17.062	359.732	-15.641
16.3515	24	392.435	.681	408.787	17.032	376.084	-15.671
16.3515	25	408.787	.654	425.138	17.005	392.435	-15.698
16.3515	26	425.138	.628	441.49	16.98	408.787	-15.723
16.3515	27	441.49	.605	457.842	16.957	425.138	-15.746
16.3515	28	457.841	.583	474.193	16.935	441.49	-15.768
16.3515	29	474.193	.563	490.544	16.915	457.841	-15.788
16.3515	30	490.544	.545	506.895	16.896	474.193	-15.807
16.3515	31	506.896	.527	523.247	16.878	490.544	-15.825
16.3515	32	523.247	.51	539.599	16.862	506.896	-15.841
16.3515	33	539.599	.495	555.95	16.846	523.247	-15.855
16.3515	34	555.95	.48	572.302	16.832	539.599	-15.871
16.3515	35	572.302	.467	588.654	16.818	555.95	-15.887
16.3515	36	588.653	.454	605.005	16.805	572.302	-15.898
16.3515	37	605.005	.441	621.356	16.793	588.653	-15.91
16.3515	38	621.356	.43	637.708	16.781	605.005	-15.922
16.3515	39	637.708	.419	654.059	16.77	621.356	-15.933
16.3515	40	654.059	.408	670.411001	16.76	637.708	-15.943
16.3515	41	670.411001	.398	686.762	16.75	654.059	-15.953
16.3515	42	686.762	.389	703.114	16.74	670.411001	-15.963
16.3515	43	703.114	.38	719.465	16.731	686.762	-15.972
16.3515	44	719.465	.371	735.817	16.723	703.114	-15.98
16.3515	45	735.817	.363	752.169	16.714	719.465	-15.989
16.3515	46	752.168	.355	768.52	16.706	735.817	-15.997
16.3515	47	768.52	.347	784.871	16.699	752.169	-16.004
16.3515	48	784.871	.34	801.223	16.692	768.52	-16.011
16.3515	49	801.223	.333	817.574	16.685	784.871	-16.018
16.3515	50	817.574	.327	833.925001	16.678	801.223	-16.025
16.3515	51	833.925001	.32	850.277	16.672	817.574	-16.031
16.3515	52	850.277	.314	866.629	16.665	833.925001	-16.038
16.3515	53	866.629	.308	882.98	16.65	850.277	-16.043
16.3515	54	882.98	.302	899.332	16.644	866.629	-16.049
16.3515	55	899.332	.297	915.683	16.64	882.98	-16.055
16.3515	56	915.683	.291	932.035	16.643	899.332	-16.06

**FREQUENCY TABLE**  
 FOR VARIOUS OCTAVES. (0-6)

	OCT #0	OCT #1	OCT #2	OCT #3	OCT #4	OCT #5	OCT #6
C	16.4	32.7	65.4	130.8	261.6	523.2	1046.4
C#	17.3	34.7	69.3	138.6	277.2	554.4	1108.8
D	18.4	36.7	73.4	146.9	293.7	587.4	1174.8
D#	19.4	38.9	77.8	155.6	311.1	622.2	1244.4
E	20.6	41.2	82.4	164.8	329.6	659.2	1318.4
F	21.9	43.7	87.3	174.6	349.2	698.4	1396.8
F#	23.1	46.3	92.5	185.0	370.0	740.0	1480.0
G	24.3	49.0	98.0	196.0	392.0	784.0	1568.0
G#	25.6	51.9	103.8	207.7	415.3	830.6	1661.2
A	27.0	55.0	110.0	220.0	440.0	880.0	1760.0
A#	29.1	58.3	116.5	233.1	466.2	932.4	1864.8
B	30.9	61.7	123.5	247.0	493.9	987.8	1975.6
C	32.7	65.4	130.8	261.7	523.3	1046.6	2093.2

	OCT #7	OCT #8	OCT #9	OCT #10	OCT #11
C	2092.0	4185.6	8371.2	16742.4	33484.8
C#	2217.6	4435.2	8870.4	17740.8	35481.6
D	2349.6	4699.2	9398.4	18796.8	37593.6
D#	2488.0	4977.6	9955.2	19910.4	39920.8
E	2636.0	5273.6	10547.2	21094.4	42188.8
F	2793.6	5597.2	11174.4	22348.8	44697.6
F#	2960.0	5928.0	11840.0	23680.0	47360.0
G	3136.0	6272.0	12544.0	25088.0	50176.0
G#	3322.4	6644.8	13289.6	26579.2	53158.4
A	3520.0	7040.0	14080.0	28160.0	56320.0
A#	3729.6	7459.2	14918.4	29836.8	59673.6
B	3951.2	7902.4	15804.8	31589.6	63219.2
C	4185.4	8372.8	16745.6	33491.2	66982.4

HALF STEPS	PITCH	INTERVAL	FORMULA	RATIO	ENERGY, e.
0	C	0	$2^0 \times 0 / 12$	1	251.623765
1	C#	+2	$2^1 \times 1 / 12$	1.05946309	2.42442605
2	D	2	$2^2 \times 2 / 12$	1.12246205	3.27502177
3	D#	+1	$2^3 \times 3 / 12$	1.19920712	4.41421395
4	E	3	$2^4 \times 4 / 12$	1.28992101	5.8747102
5	F	4	$2^5 \times 5 / 12$	1.39480966	7.79179744
6	F#	+5	$2^6 \times 6 / 12$	1.41421356	8
7	G	5	$2^7 \times 7 / 12$	1.49500796	10.2449241
8	G#	+5	$2^8 \times 8 / 12$	1.58740102	13.7131421
9	A	6	$2^9 \times 9 / 12$	1.68179233	18.02342712
10	A#	+7	$2^{10} \times 10 / 12$	1.78937374	23.7143021
11	B	7	$2^{11} \times 11 / 12$	1.90774963	31.5912423
12	C	8	$2^{12} \times 12 / 12$	2	42.30000001
13	C#	+9	$2^{13} \times 13 / 12$	2.110092619	56.4019401
14	D	9	$2^{14} \times 14 / 12$	2.2449241	75.02969422
15	D#	+9	$2^{15} \times 15 / 12$	2.37841422	99.0235427
16	E	10	$2^{16} \times 16 / 12$	2.5110421	130.1201221
17	F	11	$2^{17} \times 17 / 12$	2.66267077	171.2712971
18	F#	+11	$2^{18} \times 18 / 12$	2.82442713	227.00000001
19	G	12	$2^{19} \times 19 / 12$	2.99881422	303.9296942
20	G#	+12	$2^{20} \times 20 / 12$	3.17496111	407.0751974
21	A	13	$2^{21} \times 21 / 12$	3.36333567	543.1137016
22	A#	+13	$2^{22} \times 22 / 12$	3.56373483	728.6932087
23	B	14	$2^{23} \times 23 / 12$	3.77549712	981.2543296
24	C	15	$2^{24} \times 24 / 12$	4.00000001	1300.000001
25	C#	+15	$2^{25} \times 25 / 12$	4.23787239	1739.021323

```

10 PRINT "0"
20 INPUT "PITCH #1 " : P1#
30 INPUT "FREQ. #1 " : F1#
35 INPUT "PITCH #2 " : P2#
40 INPUT "FREQ. #2 " : F2#
45 INPUT "PITCH #3 " : P3#
50 INPUT "FREQ. #3 " : F3#
51 S1=F1-F2 S2=F1-F3 S3=F2-F3
55 D1=F3-F2 D2=F3-F1 D3=F2-F1
58 OPEN "A:CMD:"
60 PRINT "SUM AND DIFFERENCES OF FREQUENCIES"
65 PRINT "F1=" ; F1 ; " NOTE IS " ; P1#
66 PRINT "F2=" ; F2 ; " NOTE IS " ; P2#
67 PRINT "F3=" ; F3 ; " NOTE IS " ; P3#
70 PRINT "F1+F2=" ; S1
75 PRINT "F1+F3=" ; S2
80 PRINT "F2+F3=" ; S3
82 PRINT "F3-F2=" ; D1
84 PRINT "F3-F1=" ; D2
86 PRINT "F2-F1=" ; D3
95 PRINT "PRINT"
96 PRINT "CLOSE"
98 GOTO 10

```

```

SUM AND DIFFERENCES OF FREQUENCIES
F1= 261.6 NOTE IS 1
F2= 415.3 NOTE IS 2
F3= 522.2 NOTE IS 3
F1+F2= 676.9
F1+F3= 783.9
F2+F3= 937.5
F3-F2= 206.9
F3-F1= 260.6
F2-F1= 153.7

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 251.6 NOTE IS 1
F2= 392.3 NOTE IS 2
F3= 587.3 NOTE IS 3
F1+F2= 643.9
F1+F3= 838.9
F2+F3= 979.6
F3-F2= 217.4
F3-F1= 335.7
F2-F1= 139.3

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 261.6 NOTE IS 1
F2= 392.3 NOTE IS 2
F3= 554.3 NOTE IS 3
F1+F2= 653.9
F1+F3= 815.9
F2+F3= 946.6
F3-F2= 194.4
F3-F1= 292.7
F2-F1= 130.7

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 261.6 NOTE IS 1
F2= 391.3 NOTE IS 2
F3= 587.3 NOTE IS 3
F1+F2= 652.9
F1+F3= 848.9
F2+F3= 978.6
F3-F2= 217.4
F3-F1= 325.7
F2-F1= 139.7

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 261.6 NOTE IS 1
F2= 391.3 NOTE IS 2
F3= 542.2 NOTE IS 3
F1+F2= 654.9
F1+F3= 803.9
F2+F3= 933.5
F3-F2= 194.4
F3-F1= 280.6
F2-F1= 130.7

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 261.6 NOTE IS 1
F2= 415.3 NOTE IS 2
F3= 587.3 NOTE IS 3
F1+F2= 676.9
F1+F3= 848.9
F2+F3= 1002.6
F3-F2= 172
F3-F1= 325.7
F2-F1= 153.7

```

## SUM AND DIFFERENCES OF FREQUENCIES

```

F1= 261.6 NOTE IS 1
F2= 391.3 NOTE IS 2
F3= 554.3 NOTE IS 3
F1+F2= 653.9
F1+F3= 815.9
F2+F3= 946.6
F3-F2= 194.4
F3-F1= 292.7
F2-F1= 130.7

```





The first part of the document is a list of names and titles, followed by a list of dates. The text is very faint and difficult to read, but appears to be a record or index of some kind. The names and titles are listed in a column, and the dates are listed in a separate column. The text is arranged in a table-like format.

The second part of the document is a list of names and titles, followed by a list of dates. The text is very faint and difficult to read, but appears to be a record or index of some kind. The names and titles are listed in a column, and the dates are listed in a separate column. The text is arranged in a table-like format.

The third part of the document is a list of names and titles, followed by a list of dates. The text is very faint and difficult to read, but appears to be a record or index of some kind. The names and titles are listed in a column, and the dates are listed in a separate column. The text is arranged in a table-like format.





## **“WHAT THEY’RE SAYING ABOUT NOVAPHONICS”**

- \* DR. MATT DORAN D.M.A. PROF. OF MUSIC. MT. ST. MARY’S, LOS ANGELES  
“I have found Antonio Newton’s book on contemporary harmony to be of great interest in exploiting certain trends, particularly in the fields of Quintal (5ths) and Quartal (4ths) harmony. It would undoubtedly be very useful in a class in contemporary theory. I am glad to recommend it.”
- \* JACK NITZSCHE: ACADEMY AWARD WINNING FILM COMPOSER AND RECORD PRODUCER, HOLLYWOOD, CA.  
“It’s about time.”
- \* JOACHIM KHUN: AWARD WINNING EUROPEAN PIANIST, HAMBERG, GERMANY.  
“I think Newton’s work is fantastic and the natural progression of contemporary music.”
- \* DR. HOWARD BARR, PROF. OF THEORY AND PIANO, LA. CITY COLLEGE  
“A unique combination of traditional and experimental techniques that provides a useful synthesis of ideas for practical use.”
- \* GENE PAGE: AWARD WINNING COMPOSER, ARRANGER, PRODUCER, HOLLYWOOD, CA.  
“A giant step for music.”
- \* STEVE HAMMOND: COMPOSER, ARRANGER, GUITARIST, LOS ANGELES,  
“Tony Newton has filled a gap in our traditional harmony approach that has been long overdue. The proof is in the listening. Music composed with Quintal/Quartal system sound sounds good and has beautiful harmonic qualities unachievable through purely tertian (thirds) traditional approaches.”