# MARTINO <br> FUNDAMENTALS 

A BROADER INTERPRETATION<br>OF OUR INSTRUMENT



I've often heard this said:
"I recently went to your website, and I
looked thru the window you call The Nature of Guitar.
I don't quite understand what some of your diagrams represent, can you be more specific?"


I'll do the best I can to describe what those particular "drawings" meant to me, how they began to unfold, and in the process share information that in many ways transcends a music curriculum alone, and moves closer to the Nexus $\qquad$ a point where all points meet.

I remember when I began to graphically display music in ways that helped not only to define specific topics of my studies, but also began to suggest other implications. The following is one of the first diagrams that functioned in that way.


Upon what appeared like an orchestral manuscript, rested 5 scales of intervals, divided into separate parts, as a larger matrix. Presentation in this way began to suggest the importance of greater dimension for the sake of analysis.

As this progressed, the chromatic scale no longer confined itself to a horizontal line, it suddenly visually circumscribed its twelve tones on the face of my wristwatch, revealing
for the first time the geometric shapes of its intervals, and revealing melodies each time I looked at the time.


My use of Letroset, along with calligraphy pens helped to capture, as well as present some of the first diagrams used for private teachings.


Martino 1972

"The Nature of Guitar" began, (in the late 60's, early 70's) as seen above, not specifically as a study of music, but more like a study of perception. To this day it's continued to redefine the interpretation of information. The following text, focuses upon the application of it to the Guitar.

## A Change in Dimension

Thru comparison it's interesting to view a procedure known as "The Circle of Fifths".
Its tonal values can be seen moving clockwise in 5ths, or moving counter-clockwise as a series of perfect 4ths.


In either way the 3 equilateral points, (of 12 o'clock, 4 o'clock, and 8 o'clock) geometrically form the Augmented triangle, while 4 equilateral points, (at 12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock) form the Diminished diamond.

If viewed within the normal theoretical approach, a major triad is subtracted in the key of C from the horizontal major scale, (the white keys of the piano) at three points, the root (C), the third (E), and finally the fifth (G).


If it's viewed chromatically on a circular stave that's sympathetic to the guitar it now can be seen as follows:

## Structure



On the Guitar, when the G,Db,E,Bb Diminished "parental form" fingered on the 6543 adjacent set of strings is transfered directly below itself, (with the identical fingering) to the 5432 set it becomes D7th, and finally to the next set of strings, 4321, (in the same way) it then becomes G7 (b5), (tritones). This brings a display of the three important elements born within a vertical array of the Mi 3rd interval.


It's obvious how important the V7th structure is when it's attained by lowering any of the four single tones within the diminished parental form.


## Primaries

If we begin with exactly how we visualize different tonal intervals, we're normally taught to see an arrangement of tones as an ascending, or descending order of pitches viewed upon a horizontal staff as follows:

Eg. $1 \quad$ A Twelve Tone Scale, from E


When arranged in a circular array, (as opposed to being horizontal) that same chromatic pattern begins to define itself in quite a different way.

Eg. 2 A Twelve Tone Scale, from E (two circumscribed intervalic systems)


We can now view the triangle and the square, as two innate divisions of the chromatic circle.

The difference found in two separate instruments, specifically the piano and the guitar, immediately defines itself as follows.

Let's begin with the first drawing presented in "Nature of the Guitar".

Piano


The Piano is a stringed percussion instrument. Its keyboard operates horizontally, and although it contains multiple keys, (hammers) only 12 of them are needed to display its automatic functions.

The keyboard itself is a white and black structure. The first of these two automatic forms, (the white keys) from the tones $C$ to $B$, (Diatonic) are 7 in number, while the second one, (the black keys) from the tones Db to Bb , (Pentatonic) are 5 in number, after which, repetition takes place. These elements indicate that the addition of $7+5$ results in a full chromatic scale. These keys also contain 7 modes, (Ionian, Dorian, ...... etc).

Eg. 3


Take note that a curriculum generated from the piano alone often bypasses elements concealed within some of the other instruments, but in a social context remains extremely valuable when used to educationally establish a general language, shared as a prerequisite by the members of an interacting musical community.

Let's now consider the Guitar.


Similar to the piano the guitar is also a stringed instrument, although its automatic functions appear in quite a different way. Unlike the auto-functions of the piano, symbolized as a heptagon and pentagon, $(7+5=12)$ the auto-functions of the guitar symbolize themselves simplistically as a triangle and a square, $(3 \times 4=12$, or $4 \times 3=12)$.

Eg. 4

## Guitar

( Multiplication )

Triangle

Bb

Diminished


Square



Chromatic

Instead of addition, the guitar is naturally managed thru multiplication, and is not only horizontal but vertical as well, it's a matrix. Like the piano, it will horizontally produce an open-ended chromatic scale on each of its six strings, but this is where their intervalic similarity ends, and where a different metamorphosis begins.

One of the first things that should be noticed on the guitar is how there are only two chordal forms that repeat themselves horizontally without any change in fingerings. The first type is the Augmented, and the second is the Diminished. When something, (as a source) continuously, as well as automatically repeats itself it re-creates mirror images, and in each of those mirror images unveils specific secrets. Furthermore, not only do these two forms, (A \& D) mechanically repeat themselves across the guitar fingerboard, but they also geometrically display themselves graphically in startling balance, and by doing so guarantee an ongoing legitimacy.

Eg. 5



Diminished



Square

## The Augmented Parental Form

The augmented form displays its inversions, (per string group) horizontally across the fingerboard with each position a major 3rd apart.

Eg. 6


When placed in a vertical stack at the 6th, 7th, \& 8th frets from one string set to the next, $(654,543,432,321)$ the following unfolds:

Eg. 7


F, A, or C\#
Augmented


These harmonic forms naturally reveal three separate structures. Two augmented triads, (similar as one) a pure major, and one pure minor triad.

With a single augmented triad, if instead of moving it fully outside of itself, (to its next vertical inversion) we horizontally move only one of the three tones within it, the following takes place. Moving that tone $1 / 2$ step down produces a pure major triad, while the same tone if moved $1 ⁄ 2$ step up produces its relative minor triad.

Eg. 8


For the guitarist this process alleviates a need for the traditional approach, based upon an extraction of the root, third, and fifth from any diatonic scale to form its major triad.

## Eg. 9

The C Major Scale


C Major


In fact, this method not only unveils the C major triad, and its relative A minor, but two others as well, E major / C\# minor, and Ab major / F minor. It also automatically transposes thru all twelve keys horizontally across four frets, (three keys per fret) prior to its next series of auto-inversions on this particular string group, (654).

Remember, $4 \times 3=12$.

As seen on page 5, (Eg. 7) the fingering being moved from one string set to the next reveals a valuable suggestion, that this "parental form", the augmented triad contains opposite polarities of major \& minor results. What's most important to be done from this point forward is to flip the coin, and recreate the parental inversions from those "siblings", so that the end result establishes a complete array of augmented inversions, both vertically and horizontally.

Eg. 10


As viewed in Eg. 10, when the original augmented form, (654) was vertically transfered to its next 3 string set, (543, using the same fingering) it remains augmented. But when moved to the next set, (432) it becomes a Bb major triad.

Because of the guitar's tuning of the second string as a ma 3rd, (instead of a perfect 4th) all that has to be done to recreate the new augmented inversion, on that group of
strings, (432) is to raise the tone on the second string $1 / 2$ step higher. Likewise, when the same fingering of that form, (as an augmented) is transfered to the next and final adjacent set of three, (321) it automatically appears as a B major triad, and once again, by raising the tone on the second string $1 / 2$ step higher it produces the final augmented inversion on that set of strings, (321).

To form vertical inversions in the opposite direction, (from higher to lower sets of strings) the procedure is reversed in the following way. This time we begin with the IV triad, (321) in Eg. 10,

and after transferring it to the next set, (432) the following takes place:

## Eg. 11



As it can be seen, the augmented, (321) now transposes itself to an Eb minor on the 432 string group, then by lowering the Eb, (located on the 3rd string, 8th fret) $1 / 2$ step the next augmented inversion is created on that string group, (432).

Eg. 12


After its fingering takes shape on the 543 group it automatically repeats in the same way on the 654 set.

In retrospect the most interesting facet of this process is polarity itself. Keep in mind how opposites have continuously appeared, (ascent \& descent, major \& minor, etc.) for this shall continue to occur.

Adjacent fingerings are transformed into non-adjacent ones by transposing the tone on the central string one octave higher. The following diagram contains 4 adjacent sets, along with 3 non-adjacent as well.

Eg. 13


In summary, these augmented triads auto-invert horizontally across the fingerboard in ma 3rd intervals upon each of the groups chosen. Also, each of these augmented triads contain 3 major, as well as 3 minor forms culminating with the addition of 4 in a row, (containing all twelve keys).

Eg. 14


## The Diminished Parental Form

A general compositional presence of pure major and minor triads can be found idiomatically within certain types of music, (classical, rock, country \& western, bluegrass, pops, etc.) while the use of the V7th chord, and its variations appear in idioms like blues, rhythm \& blues, jazz, (forms of be-bop, hard bop, etc.).

In the following example the diminished interval, (mi 3rd) displays itself on three separate planes, collectively covering the circular chromatic scale.

## Eg 15



Similar to its partner it also reproduces perfect inversions of itself, with no change of fingerings. The difference found in its ratios is how it moves itself, (in ascent) as three in a row, (before reaching its next inversion) with four horizontal inversions, (per string group) the opposite of the augmented triad, which moved in ascent as four in a row, (before reaching its next inversion) with three horizontal inversions per string group.

When organized upon its lowest adjacent set of strings, (6543) it appears in the following order:

Eg. 16


Named from its lowest tones it arranges itself as $\mathrm{G}, \mathrm{Bb}, \mathrm{Db}$, and E diminished.
When its first inversion, (G dim / 6543) is transfered to the next adjacent string set, (the inside group, 5432) it becomes a D7, also referred to as a semi-poly chord, (D major, over a C pedal tone). When transfered once again, this time to the third and final set, (4321) it becomes a G7 (b5) chord. They appear as follows:

Eg. 17


Similar to the two augmented methods, (ascent, and descent) of creating alterations to majors and minors the diminished becomes $V 7$ forms thru lowering any one of its tones
by $1 / 2$ step. A complete series of these diminished forms unfolds in the following diagram:

Eg. 18
Adjacent


As in string set 6543, the V7 forms emerge thru all the others in the same following way, (by separately lowering any single tone $1 / 2$ step, that tone becomes the root of the V 7 chord).

Eg. 19


## SUMMARY

The 12 Common Sets

## The Augmented Inversions



## The Diminished Inversions



Geometric blueprints for both of these parental forms appear in the following diagrams:
Eg. 20

The Augmented Formula The movement of any single tone $1 / 2$ step
Major Transformations

Eg. 21

## Transformations

The Diminished Formula
The movement of any single tone $1 / 2$ step down





In retrospect, when viewed fully (as separate types) both the Augmented and the Diminished parental structures define themselves as distinct areas of chromatic families circumscribed around larger 12 point infrastructures.

## Exponential Infrastructures

The anatomy of this information multiplies each time we apply its principles to another string group. Also, the 7 , or 5 sets referred to as "common groups" are merely the characteristics of a practical vocabulary of chord forms that allows an individual to be prepared as a competent instrumentalist. These auto-inversions apply to all of the twenty 3 string groups, as well as the fifteen 4 string groups.

When viewed in a circular context both the Augmented, and the Diminished forms begin to define themselves as alternate bands, or distinct areas of chromatic families spread around larger 12 point infrastructures.


These fields can also be seen as positions of activity across the instruments fingerboard, and both of these forms, (in every set) are always to be seen 'complete', either vertically or horizontally as one. The vertical profiles define specific string groups, while (3 or 4 fret) horizontal families transpose themselves a mi 2nd in ascent, or descent, (4 times augmented, or 3 times diminished) before reaching their next horizontal departure point. Their offspring, (alterations) do the same.

Both of these networks reveal architectural frameworks, divided in Ma 3rds, or Mi 3rds reproducing themselves on every string group, on systems of 3 or 4 both vertically and horizontally.

## Hexagrams

The strings of the guitar, and every combination of their use, (or non-use) can be traced into the past, prior to its invention as a musical instrument. An ancient form of philosophy from China, ( I Ching, "The Book of Changes") incorporates 6 line structures known as "hexagrams" which are used to represent separate stages of meaning within consultation of the Oracle.

Those forms are identical to each and every combination of the guitar's 6 strings, and can be instantly viewed as one of the tables found in this instruments blueprints.

The following clearly defines six strings of the guitar separately from the left to the right, (the 6th to the 1st).

Eg. 24


As seen above, the full line represents the string in use, while the divided line represents strings that are silent.

In the following diagrams the hexagrams that are dotted represent the most common string groups used in a normal repertoire.

# The String Groups of the Guitar 

(viewed as Hexagrams)

1 String


( the dotted hexagrams are the 2 string placement of octaves )

3 String

( the dotted hexagrams are the 7 common groups )

4 String

( the dotted hexagrams are the 5 common groups )
5 String

Silence


If these same combinations are viewed as numbers, (instead of hexagrams) set up in vertical columns, they'll appear as follows:

Eg. 26

The columns displayed are not to be seen as the guitar fingerboard, but as combinations of different sets of strings.

6 Strings

Full Use | 6 | 5 | 4 | 3 | 2 | 1 |
| :--- | :--- | :--- | :--- | :--- | :--- |$=\# 1$

5 String Groups
6
6 $5 \cdot 4$

2 String Groups


4 String Groups
654321

| 6 | 5 | 4 | 3 |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 6 | 5 | 4 |  | 2 |  |
| 6 | 5 | 4 |  |  | 1 |
| 6 | 5 |  | 3 | 2 |  |
| 6 | 5 |  | 3 |  | 1 |
| 6 | 5 |  |  | 2 | 1 |
| 6 |  | 4 | 3 | 2 |  |
| 6 |  | 4 | 3 |  | 1 |
| 6 |  | 4 |  | 2 | 1 |
| 6 |  |  | 3 | 2 | 1 |
| $\bullet$ | 5 | 4 | 3 | 2 |  |
|  | 5 | 4 | 3 |  | 1 |
|  | 5 | 4 |  | 2 | 1 |
|  | 5 |  | 3 | 2 | 1 |
|  | $\bullet$ | 4 | 3 | 2 | 1 |

1 String
$\begin{array}{llllll}6 & 5 & 4 & 3 & 2 & 1\end{array}$

\#64 = Silence

## Take Note:

## Line Forms

Positions and Inversions

## Linear Inversions

Ranges of chordal and linear activity organize in greater balance when they're viewed as self contained divisions of the fingerboard, (similar to separate floors in a larger house). These vertical areas comprise linear as well as chordal inversions encompassing all twelve keys in each of their five separate positions.

Eg. 27


Fourth Position


Fifth Position

When each of these separate areas are mastered, the sixth, (full fingerboard) becomes activated as a free canvas for any improvisational topic.


The Full Fingerboard

Eg. 28


FirstPosition

Before beginning a discussion on line forms, and their inversions, it's important to define the proper use of fingerings for what's normally categorized as open strings.

Players often use a completely different arrangement of their fingers each time they use open strings in lower areas of the neck. By placing the first finger behind the "nut", just as if it were another fret, familiar fingerings used in other areas take place in comfort here as well. The following patterns utilize this approach. Take note, the asterisk * when in use should be viewed as a reminder regarding placement of the first finger behind the nut whenever it appears on fingerings in the upcoming patterns.

The first and fourth finger of the left hand determine not only the beginning of the pattern, but also the position in which it unfolds vertically as well as horizontally. From "Fingering Inversions" patterns I and II reveal a full vertical / horizontal inversion.

Eg. 29

Inversion I/Position I |


II


Once again, when we give thought to a practical use of the opposites, (yin \& yang) and view the outer fingers of the hand, (Eg. 30) the two patterns seen above, (Eg. 29) are perfectly in line with the fourth and first fingers. Vertically, pattern I begins at the lowest point with the fourth finger followed by its next inversion, (in close range) beginning with the first finger. These are the first two vertical inversions of this line form.

Eg. 30


The patterns displayed next are twelve positions of vertical and horizontal linear inversions of the same motive.

Eg. 31

Inversion I/Position I I


Inversion V / Position V IX


XI
Inversion VI / Position VI


x


XII


In general, these linear forms, (seen as Eg. 31) are a tonal reproduction of Eg. 27, displayed on page 15.

The following series of this study uses descending transpositions, (in a wholetone scale) of the original form to define its change of position across the fingerboard. What initially was demonstrated as a pattern that's compatible with Gmi7 shall now be part of a descending framework that unfolds in six keys, beginning with D : Dmi7, Cmi7, Bbmi7, Abmi7, Gbmi7, Emi7, continued into the next of five ascending positions. The sixth, (invisible) position forms at the twelfth fret, (beginning with the first finger at D on the fourth string. The reason that it isn't included in the first string group, (4321) is that it's the departure point, (one octave lower) for the second string group, (5432) in this study. The dotted markings placed on Dmi7 in the example shown below represent the sequential inversions of the topic ascending horizontally across the entire fingerboard.

Eg. 32


The study is also arranged into three separate adjacent string groups, 4321, 5432 and 6543 before briefly moving thru combinations of these sets.

Whole Tone

## Inversions \& Transpositions

String Group
4321



String Group
5432





## Combinations <br> All Groups




## Complexity and Simplicity Substitutions

## Original Theme

( Welcome to a Prayer )
( from: " The Maker " \& " Live at Yoshi's "
Ballad :
Pat Martino

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## Chords \& Substitutions



