Mensionization Complementation

The Mathematics of Hermetic Alchemy

Section 2

Introduction

The holistic meaning of *Philosophy* can be briefly defined as a *search* for a general understanding of *Nature, reality,* and *existence* within our physical world. It is an early-era ordered structural discipline of study which first began as a means to solve and explain the *visible* reality of Nature.

One of the first observations of the early philosophers was the existence of *oppositional dualities* such as *light* & *dark* and *hot* & *cold*. From the two example sets of oppositional natures, the term "*Alpha*-*Beta,* (α,β), Base 2 oppositional system" is introduced. The oppositional system contains the *two* (2) discrete variables *Alpha* (α) and *Beta* (β) whose *opposing* natures evolve from *one* and the *same* physical entity, for example: the physical entity *luminosity* has the *two* oppositional binary qualities of (α) *light* & (β) *dark*, which is referenced as a Base 2 oppositional nature. The term "*Base* 2" references both the α & β opposition's *two* (2) variables and the numerical *binary* number system of mathematics. The Base 2 nature is both *Harmonic* and *Proportional*, constantly alternating *in turn* to its' opposite by an almost equivalent internal *exchange* of *energy* from one to the other. It was subsequently found that almost *every* beginning ancient philosophy used a Base 2 complementary system as its fundamental foundation for deriving their *primary* principles.

All α,β type oppositional dualities also have *two* identifying properties in common, *Harmonics* and *Complementation*. The term *harmonics* is a manifold physical concept which is present in our every-day interactions. The term *complementation,* when used in a mathematical form, has often taken on many lateral meanings over the years and its true meaning has essentially been overly misused.

There are many disciplines of philosophy that can help explain a wide range of topics about reality and existence, however, the *Men-Comp* system has selected *three* (3) salient ancient to modern philosophies which have *survived* to the present era. The *three* philosophies, listed in order of *reference*, are *Hermetic Alchemy* (their orderly 2^n based principles), along with the Eastern ***"****Yi Jing****"*** (*I-Ching* or Book of Changes, a *binary structural* system), and the *Judaic Kabbalah* (its hexagram and repeating *fractal* nature). The *three* philosophies above including *Albert Pike's* "*Morals* and *Dogma****"*** (a late 19*th* century treatise o*f Freemasonry* principles) are the primary references used in the manuscript.

There are several beginning observations that need to be defined for a basic knowledge of the system. For instance, in *Hermetic Alchemy's Kybalion* (a newer version of an original manuscript), in its 4th Hermetic principle (The principle of *Polarity*); the early philosophers explained that change within *Nature* basically occurs through an interconnecting *network* of *dualities* which are fundamentally balanced in such a way they interact in a *complementary oppositional binary* type relationship of *light* & *dark, hot* & *cold, dry* & *wet, good* & *evil****,*** etc. According to the *Kybalion's* 4th principle, the early philosophers determined "*every* concrete or virtual manifestation in the universe has an *opposing element* associated with it.*"* The opposing alternative is what we presently term simply as an *"opposite* and/or an *inverse*". The *opposite* will be explained in *Lateral* 1 below.

Lateral 1

The Mathematical Binomial

The above mentioned oppositional dualities consist of mostly *simple harmonic motion* dualities which only *partially* define the properties an oppositional duality. In mathematics, there is a more analytical *comprehensive* discipline of math which more effectively explains the interactions of the dualities; it is known as the "*Binomial Theorem*." Whereas simple harmonic motion types systematically replace each other in the order of *''warm* changes to *cold,* then *cold* changes back to *warm,* each oscillating *in turn* to the other*;''* the *binomial's* oppositional dualities are defined in a more *physical* concept of *"contraction* and *expansion* (an indirect inference to a *"form* or *structure*").

A binomial is defined *mathematically* as a *sum* or *difference* of an oppositional duality's *Energy*. In binomial dualities we also have many other distinct disciplines and routines of math available for use. Because of the *Binomial Theorem's* flexible, *analytical* nature, it is one of the first comprehensive principles students encounter in beginning *algebra*.

The principles of the *Binomial Theorem* also contain an *exponential* explanation of the oscillations in oppositional dualities. To understand how a mathematical process such as a binomial opposition's interactions can occur in *Nature*, we first need an understanding of the binomial's *"sum* or *difference* definition," "*equilibrium*," and "the *Law* of *Conservation of Energy*."

Beginning with the *Law* of *Conservation of Energy;* energy can neither be *created* nor *destroyed* - only converted from *one form to another form*. Every existing interaction or process in *Nature* needs some form of *internal energy* to fuel its operations. *Equilibrium* means there must be an *equal* and *orderly* distribution of this *internal energy* for an oscillation process to *repeat* itself.

In a binomial oscillation, for change to take place, the *Independent Variable* (α) of the oppositional duality has to *contract* by reducing its element's *exponent* (*dimension or range of influence*) by one *integer* unit, which is a *subtraction* (or *reduction*) of that element's energy. Before the opposing element can expand, the *subtracted energy* is obtained by the opposing (β) *Dependent variable* (*sum* or *addition*) to provide the needed energy for the expansion of its element, which results in an increase of its *exponent* by one *integer* unit; or, through a similar process; as the independent variable *contracts* the dependent variable *expands* in a *simultaneous* action. The complete process of *contraction* and *expansion* is a mathematical *equilibrium* in the transfer of energy between the two elements of an opposition. The *contraction* of the (α) variable and subsequent *expansion* of the (β) variable in a set of binomial opposites can be shown *mathematically* by a *Pascal* expansion of a composite *3*-dimensional *binomial* $f(m_3) = (\alpha + \beta)^3$.

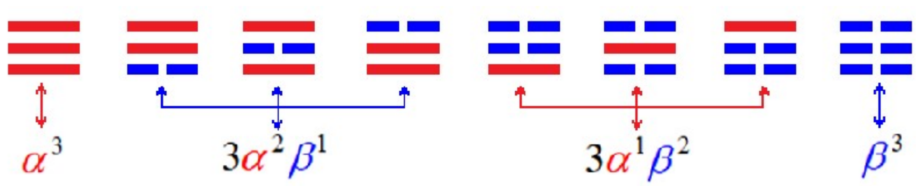
$$(\alpha + \beta)^3 = 1\alpha^3\beta^0 + 3\alpha^2\beta^1 + 3\alpha^1\beta^2 + 1\alpha^0\beta^3 \qquad \textit{Sect. } (2)\text{-}3$$

In the *Pascal* expansion above, *Alpha* (α) and *Beta* (β) are the binomial set of oppositions such that (α) is the *independent volatile-active* variable and (β) is the *dependent passive-inactive* variable. Note that within each *individual* inner term within the above expansion, the (α) *exponent decreases* by one *integer* unit and at the same instant (β)'s *exponent increases* by one *integer* unit. This action is representative of an equal distribution (*sum* and *difference*) of *energy* in the process. Also, in each term, α & β are multiplied. In basic *algebra* when two variables within a term are multiplied the exponents can be added (*summed*). The *sum* of the exponents in each term results in a numerical value of *three* (3), the same value as the beginning *exponent* in the original $f(m_3)=(\alpha+\beta)^3, 2^n$ binomial.

Although there are *individual* changes in dimension within each individual *term,* there is no *holistic* change in dimension throughout the complete process. The overall *energy* of the process only slightly changed because of "*Damping*." The outcome of this expansion results in the (α^3) changing into its' *opposite* the (β^3).

In the holistic process of the expansion, Alpha's (α^3) *exponent* decreases (*contracts*) to *zero* (α^0) and the (β^0) exponent increases (*expands*) to (β^3). *Alpha* becomes a *virtual* (α^0) and the *virtual* beginning (β^0) becomes a *corporeal* (β^3).

The *calculus* process of the binomial polynomial is the *derivative* of the (α^3) and the subsequent *integration* of the (β^0). To show this process, note the exponential (*dimensional*) change in the first two mathematical *Pascal* terms $(\alpha^3$ & $3\alpha^2\beta^1)$ of the graphic expansion below.



The above illustration is an expansion of the *I Ching's trigrams;* it is a graphic representation of the starting expansion we used earlier in this explanation and also a graphic representation of the *Binary Number* system from zero (0 to seven (7). The *Pascal* arrangement does not order the *binary* numbers by numerical order.

The mathematical *derivative* of (α^3) is $3\alpha^2$ which is the *prefix* for the second term of $3\alpha^2\beta^1$, also note, β^1 is the *integration* of (β^0). The *derivative* of the (α) element multiplied by the *integration* of the (β) element is an *equivalent* transfer of *energy* and the mathematics behind the operations of a binomial oscillation. It is also the *logic* and *reasoning* behind the formulation of the *Duality* of *Form* polynomial.

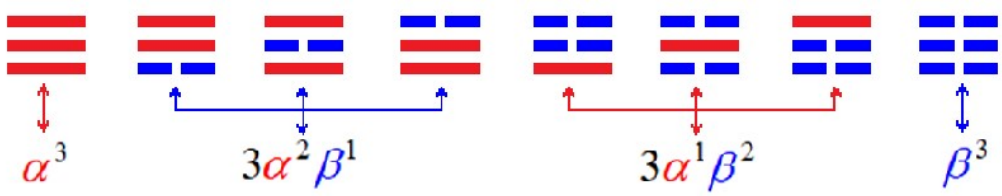
$$\mathrm{E}(\alpha+\beta)^n = \sum_{k=0}^{n}\left\{\left(\frac{d^k}{d\alpha^n}(\alpha^n)\right)\cdot\left(\int_k\left(\frac{\beta^0}{(0!)}\right)d\beta\right)\right\}$$

The Duality of Form Summation Polynomial

The next observation leads to another logical conclusion that adds another *lateral* to the mathematical *calculus* derivative. We won't get into the specifics at this time, however, from a glance of the *trigram* graphic above (shown again below for convenience); we observe from the trigram expansion, the fact the *coefficient* of derivatives is the number of *permutations* of its lower exponent output variables.

Lateral 2

Derivatives and Permutation Outputs



The *coefficient* three (3) in the expansion above shows the three *Pascal* permutations of the *first* derivative's $3\alpha^2\beta^1$ and the second derivative's $3\alpha^1\beta^2$ terms. Although this property is an obvious observation, it *highlights* a different perspective of the derivative. The existing property of a derivative's coefficients being permutations leads to an added understanding of its properties of *slope* and *rate of change*. As *trivial* as it may sound, the calculus' *integration requires* there be *three* (3) two dimensional inputs available to produce *one* 3-dimensional output $3\int \alpha^2 = \alpha^3$. This effect will become *prominent* when it is proven in *Section* 6, within the *Hermetic Alchemy* principles, there actually exists three (3) *sets* of the 2-dimensional four fundamental elements *Fire, Earth, Air,* and *Water*. In *Section* 4, I will introduce a mathematical proof the *coefficient* of derivatives determines the number of permutations of its outputs.

Standardization of the Base 2 α, β *Oppositional* System

If we logically structure the α, β oppositional process above, we can show it will provide an explanation of several *different* philosophies' properties which have similar Base 2 oppositional natures including some a person would normally never suspect, such as the classic 3-dimensions of *space*. The 3-dimensions of *space* follow the oppositional 2^n mathematics of *Hermetic Alchemy* and is also a Base 2 oppositional system.

In this manuscript, dimensions of space will be one of several *central* topics; therefore before we proceed we must have a simple way to visualize and understand these *infinite* dimensions plus explain their interactions. The following text introduces a *theoretical* concept of a fundamental 3-dimensional model of *spatial* dimensions that will be referenced throughout the remainder of the manuscript.

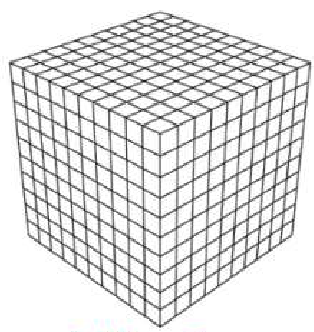
Lateral 3

The 3-Dimensions of Space $\mathbb{R}^3$

To introduce the 3-dimensional reference graphic, we will use a *magnified* version of it. A binomial duality is very evident in the virtual *'Classic'* 3-dimension's infinite cubic form in space where the *orientation* of each single dimension of space is viewed as either *up* or *down, front* or *back,* or *side* to *side*. This description of oppositional duality *orientation* in space *infers* each single dimension in the *three* (3) dimensions of space may be viewed as *one* (1), α, β *set* of dimensional oppositional dualities.

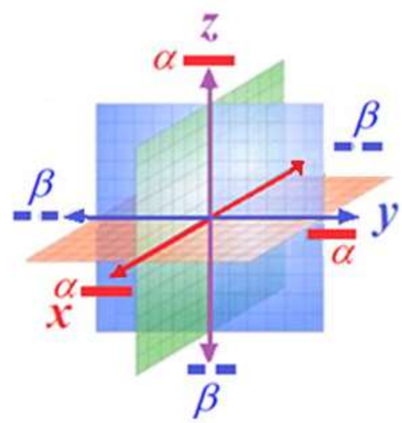
With our current understanding that classic space is presently assumed to consist of an *infinite length*, *width*, and *height*, in all *three* of its *binary* directions, the *Hermetic* philosophers' statement that all manifestations in the *universe* are composed of opposing alternatives includes the *infinite* as well.

The present holistic definition of our 3-dimensional universe is *infinite*. Each dimension goes on forever, never ending; it does not have a salient trinity of *beginning, middle,* or *end*. Any entity that is *infinite* cannot be measured by the *three* (3) properties of *Dimensional Analysis* (*Magnitude, Units,* & *Direction*); it does not have a definable *magnitude*, which is just an indication of its *largeness*. Therefore, an *infinite* dimension of space has a *non*-measurable, *non*-describable magnitude of *length*. In mathematics we can approach an *infinite* length but never actually reach it.



Lattice Space

There is a possible *alternative* to the problem of *infinity* in classic dimensions of space by making a couple of adjustments in the way spatial dimensions are viewed. Viewing the 3-dimensions of space as a composite *one* (1) *fractal* unit *lattice* structure; infinite space could be reduced to adjustable *Planck Level* units of continuous space (a level of units that would not collapse into a black hole). With a *Lattice structured* model of 3-dimensional *fractal* space (*left*); infinite space could be separated into virtual and possible measurable composite units that would be present in all $\mathbb{R}^3$ *space*.



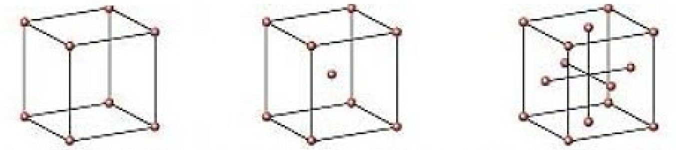
The Lattice Datum

$$f(m_n) = (\alpha + \beta)^3$$

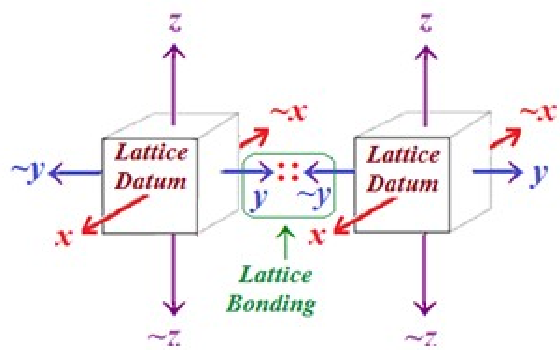
If we "*zoom in*" on one single lattice-unit of *fractal* $\mathbb{R}^3$ space, this magnification will provide a graphic illustration of its structure and properties. I refer to the 3-dimensional-*unit fractal* as a *Lattice Datum*.

Since *infinite* space, semantically, is logically defined by the *4th* Alchemical Principle as containg 3-sets of binomial opposites; a *Lattice Datum* would be defined as *one cubic orthogonal* lattice *unit of oppositional space*. It is *Quantized* and *Integralized* just from its basic *harmonic* nature. Notice each individual dimension in the *Lattice Datum* structure now has a possible *length*-definable (non-infinite magnitude) which reveals *three* (3) *sets* of binomial α, β oppositionals, noted *symbolically* by an alpha (α) solid line (▬) and a beta (β) broken line (▬ ▬) for its opposing natures. Being *incorporeal* or *virtual* in its nature; it would not be visually observed.

Each *Lattice Datum* unit can be described as a 3-dimensional *cubical* structure with *six* (6) faces, where each *face* would bind to an adjacent *face* by an attraction of *lattice bonding.* The *bonding* of adjacent *lattice datum's* would be a *face*-*centered* alignment in such a way that



each α, β dimensional oppositional duality within the *lattice structure* would bind to its opposite within an adjacent *lattice datum's* structure as presented in the graphic below.



Face-centered Bravis Lattice Attraction

The attraction would be a $(y) :: (\sim y)$ oppositional bond type attraction between adjacent *Lattice Datums*. The result would be a total of *six* (6) bonds within each of a lattice Datum's *six* faces.

Since one element of an oppositional duality binomially changes to its opposite in an oscillating *harmonic* motion, (the ***y*** changing to a ***~y*** and back to its original ordering ***y***), this type bonding would also be present in both the x & *zed* axes in each individual *Lattice Datum*. Although *Lattice Bonding* is just a theory, it could represent an elementary form of *gravitational* attraction.

In the following text of this explication, within the *realm* of the *"magnified" Lattice Datum* system and the use of the flexible analytical nature of the *Binomial Theorem*, the different interactions of *Nature's oppositions* and their *complementations* will be illustrated and mathematically analyzed, including their *presences* or elements. These interactions will then be used to formulate corresponding equations; *after which*, the results will be subjected to both *expanding* and *contracting* math operators which will reveal the *Lattice Datum's* dimensional α, β oppositional duality *nature*, *transformations*, *expansions*, and primary elemental binary "*bit-type*" data structures. We will begin this process both *mathematically* and *philosophically* with the most fundamental *equation* of oppositional dual presences, the *Fundamental* α, β oppositional binomial, or simply, what we will refer to for now as just an α, β "Base 2 *opposition."* We will begin with one caveat imposed; with the term "*dimension*" often having multiple semantic meanings "Unless otherwise noted within the text; whenever I speak of, *Spatial Dimensions,* or *Dimensions* of *Space",* I am referencing those *fractal Planck* level dimensions *of* space within the structure of the *Lattice Datum* system**,** not the holistic classic virtual *infinite* 3**-**dimensions*.* In addition, when using the term *"dimension"* in absence of a reference to spatial dimensions*,* I am referencing *"exponential"* changes within the *oppositional* system*.*

The Fundamental α, β Oppositional Binomial in Section 3