Foundations of the economic and social history of the United States: Metaphysical

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Volume Three

Metaphysical Foundations of the Economic and Social History of the United States

by Scott A. Albers

I am having second thoughts about having restrained you from publishing your idea on a unification of gravitational and electricity two years ago. Your approach seems in any case to have more to it than the one by H. Weyl. If you wish I shall present your paper to the academy after all, provided you send it to me. That, however, could happen only at the end of November, as I shall be absent from Berlin until then.

Einstein to Kaluza, 14.X.1921.

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Introduction

Oppositional Analysis proposes a number of dichotomies through which one may analyze and understand systematically the structure of every level of reality. Based upon the circuit given for a musical note (see Introduction to Volume 2) and the circuit of being which will be introduced herein, a model supporting five dimensions as suggested by Theodor Kaluza may be proposed. I suggest that these dichotomies may underlie the unity created by Kaluza's work between General Relativity and Maxwell's equations for electro-magnetism.

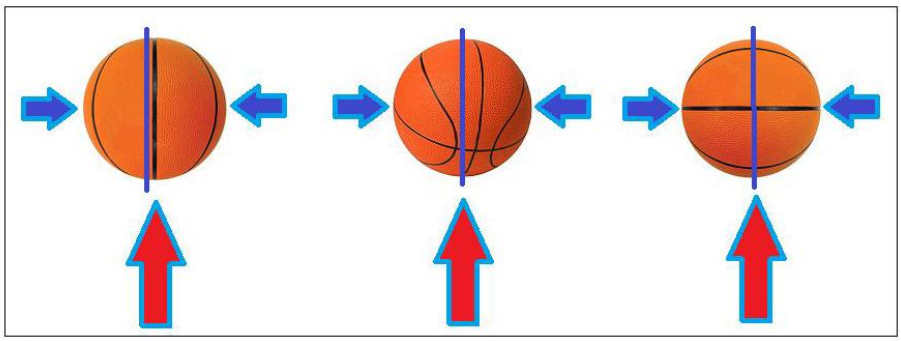
One may contemplate a fifth dimension, as added to the three dimensions of space and one of time studied in physics, if we first imagine a basketball floating in a pool of water. If the basketball is spun in the water as one holds the ball at two fixed points (blue arrows below), it is clear that the image of the equator of the ball will be quite different depending upon the poles chosen, even using the same direction of spin for each of the balls.

Referring to the basketball on the left, the basketball's equator (in black) will appear to be a steady, straight line, one which is parallel to the equator of spin (in blue).

Referring to the basketball in the middle, the basketball's equator (in black) will appear to wobble back and forth, forming a wave around the equator of spin (in blue).

Referring to the basketball on the right, the basketballs' equator will appear to be a set of flashing, solid lines (in black) perpendicular to the equator of spin (in blue).

In this way one may say that the equator of spin of the basketball is *relative* to the points chosen at which to hold the ball (poles, longitude) as it spins. Similarly one may say that the poles of the ball (longitude) are *relative* to the direction of the spin itself (latitude).

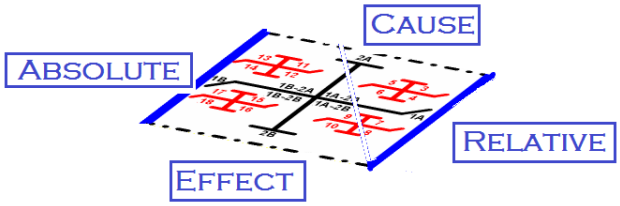


On the other hand the diameter of the ball is fixed at all times, and the area of the surface of the ball is directly related to the diameter. We may contrast the fixed nature of these properties by referring to them as *absolute*. The ball does not change its diameter or surface area based upon the points arbitrarily chosen as its poles, nor based upon the equator of spin.

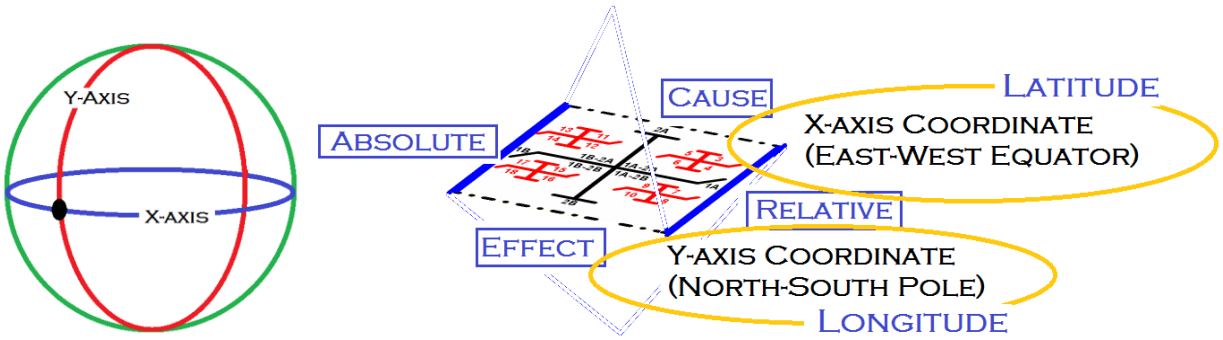
The logic of this set of relationships may be used to explain why, according to Einstein, there are four dimensions which are essential to our understanding of reality. This logic may be expanded to provide a place for a fifth dimension – one of "in - out" – which may be considered as the fifth dimension of consciousness.

In this brief introduction I present the dichotomies proposed by Oppositional Analysis as applied to the number of dimensions which we experience as human beings. These relationships will be developed at length throughout these essays. They are given here for the purpose of prompt exposition.

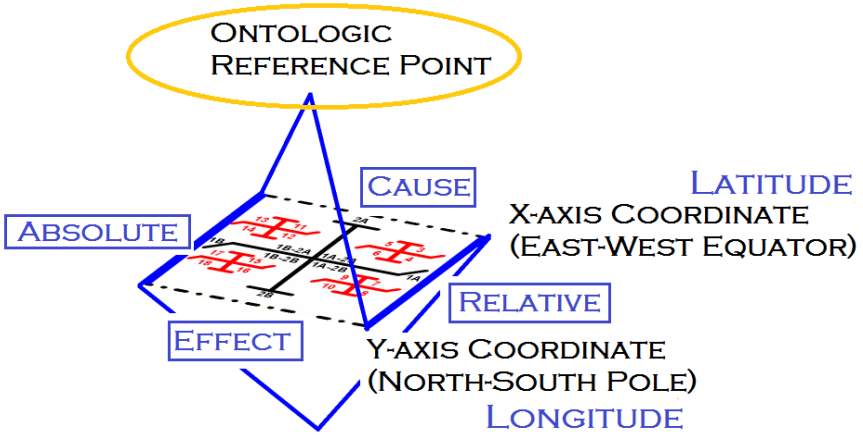
(1) The Primary Opposition of our understanding of physics is the distinction between (1) that which is Relative vs. (2) that which Absolute. The Secondary Opposition is the distinction between (3) Cause and (4) Effect. These are in blue. The study of these dichotomies will be referred to as "Oppositional Analysis."



(2) As we look at a statement of reality obtained from just walking on earth, a sphere, we have the equator as an east-west "x-axis" (latitude, a geometric figure with no endpoints) and the poles as a north-south "y-axis" (longitude, a geometric figure with two endpoints). Using these relative positions every point on the surface of the sphere can be located.

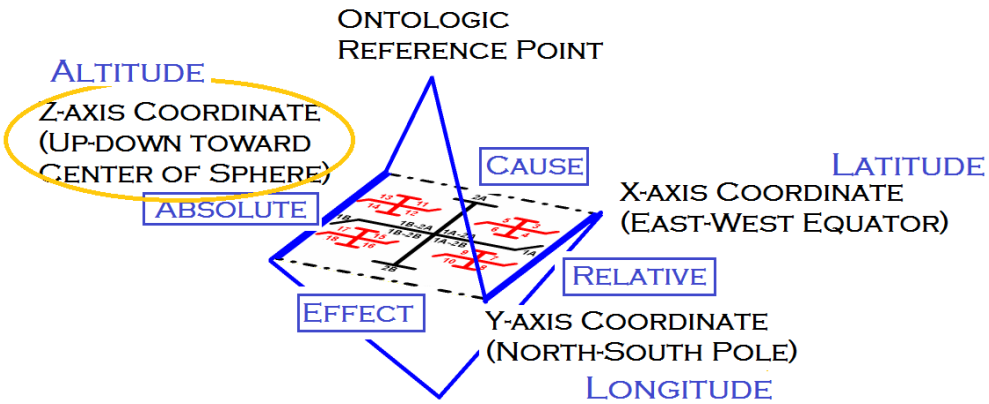


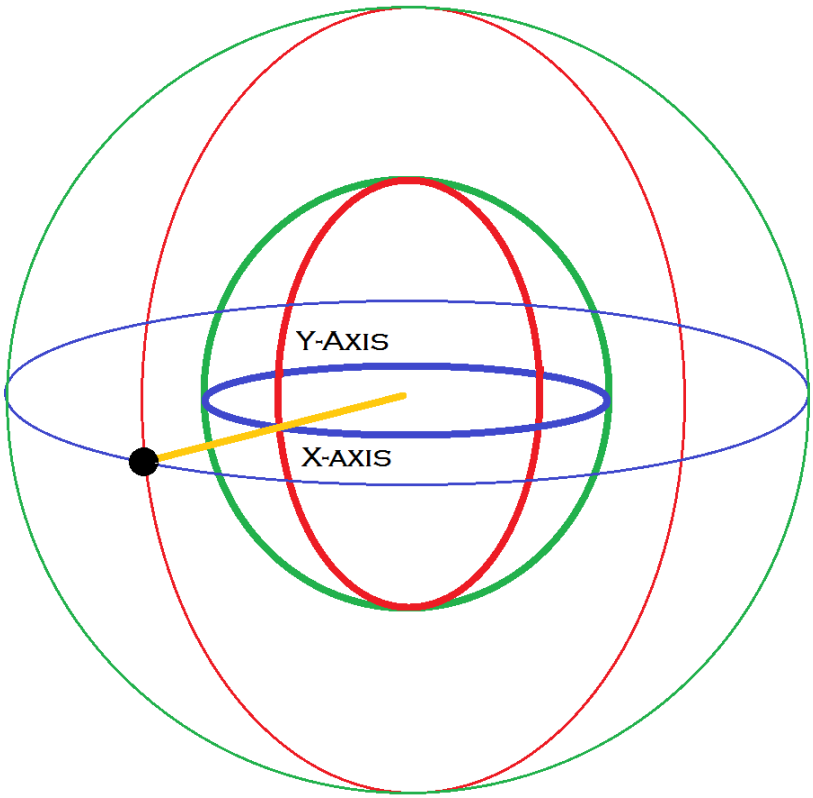
(3) These two positions state a Relative Cause (x-axis coordinate) and a Relative Effect (y-axis coordinate) which, in combination with each other, create the initial "point" of reference for the sphere. I use the term "relative" because the sphere may use any circumference as an equator and thereby indicate an infinite number of point-pairs as north-south poles.



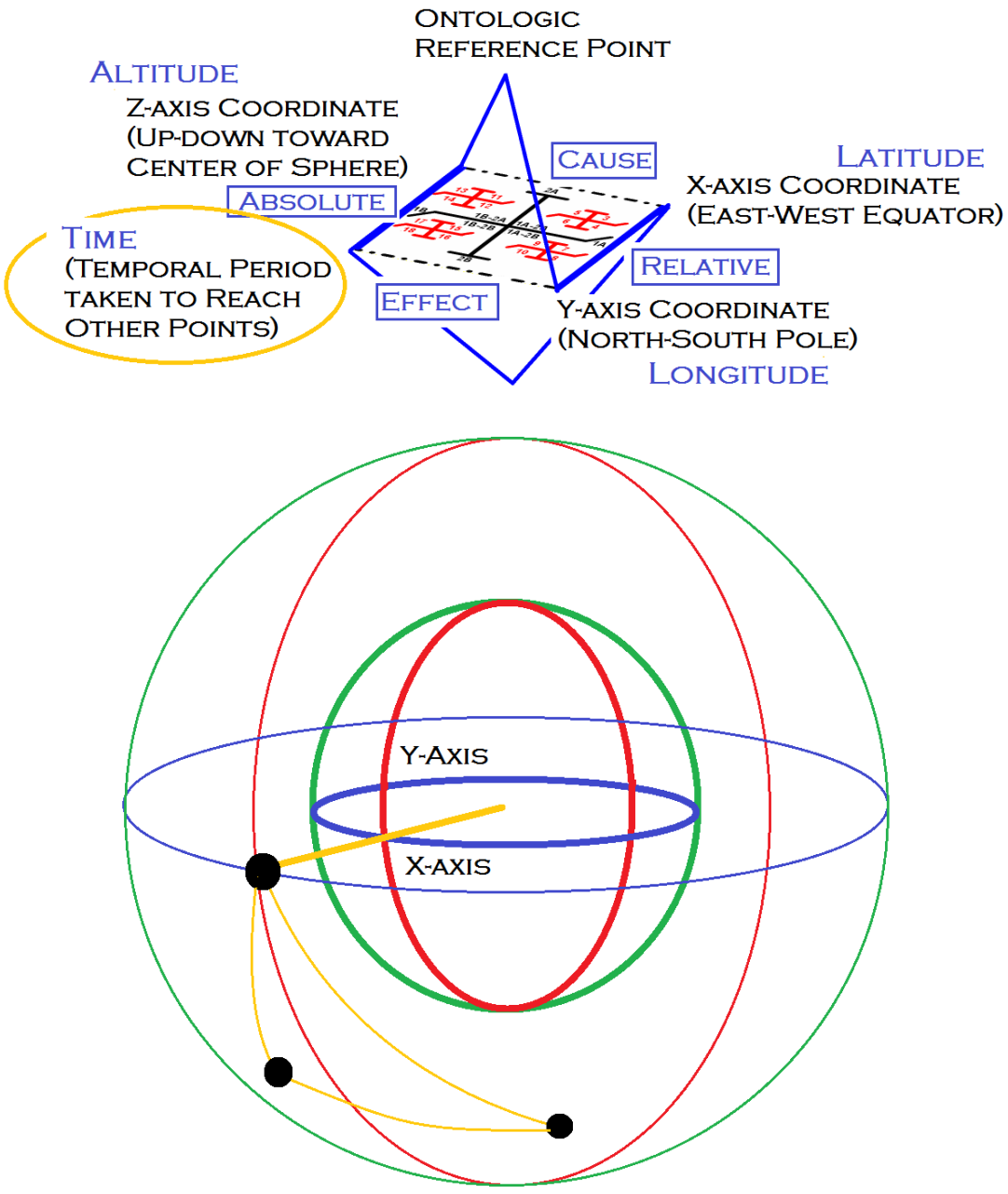
(4) Oppositional Analysis next requires an "Objective Cause," this being the distance from the point in question to the center of the sphere. I refer to this as "Objective" because there is a single point – one and only one point - from which this distance is measured (the center of the sphere). As this is applied vis-à-vis the Cartesian coordinate system we have a straight-forward up-down axis.

The difference between the relative dimensions of latitude and longitude, and the absolute dimension of altitude should be considered carefully. One may choose any number of circumferences as an equator, as then related to an infinite number of two-point pairs serving as the north-south pole of these coordinates. This is unlike the fixed, absolute distance of any point from the center of the sphere.

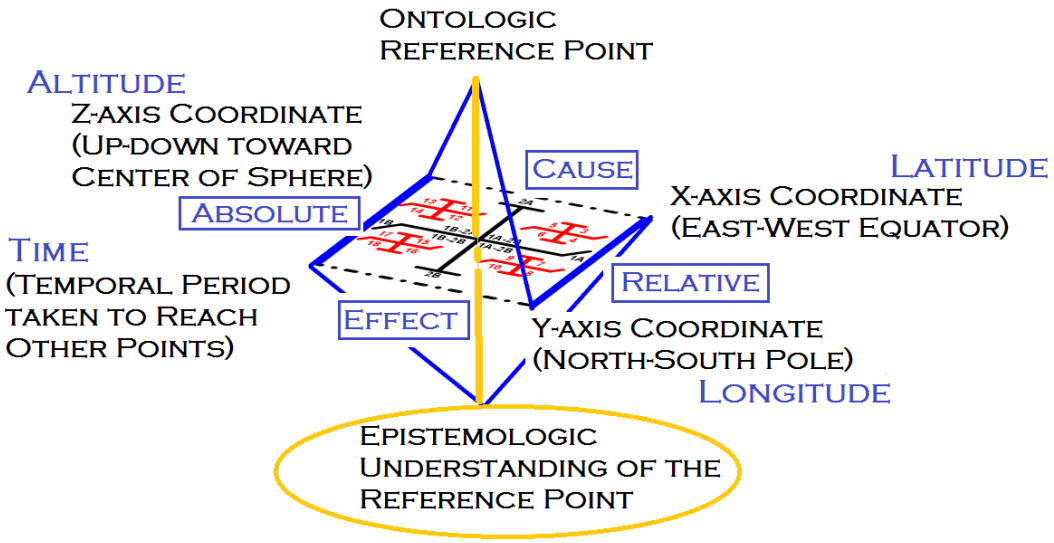




(5) Once we have an "up-down" dimension stated on this sphere, we come to the Objective Effect of this three-dimensional system, and this is the uniqueness of this point vis-à-vis all other points, i.e. the time spent moving from one place in a three-dimensional system to any other point in the system. In this fashion the "time-coordinate" of a four-dimensional system is logically required to make the system make sense.

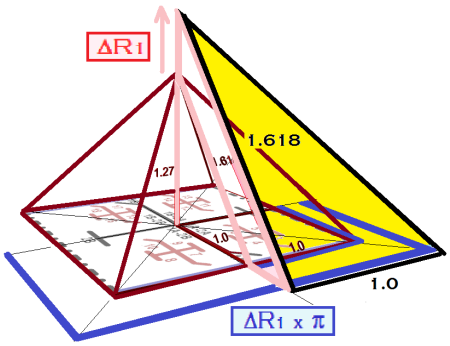


(6) However, and in accordance with the patterns developed through Oppositional Analysis, once we have each of these four dimensions stated, we have created an epistemologic statement of the previously ontologic point given initially.



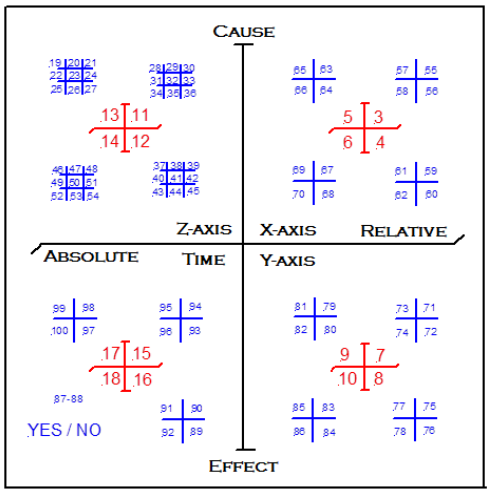
(7) This difference between that which is Ontologically Real vs. that which Epistemologically Known creates a "Fifth Dimension." This might be termed a "spatial dimension" of "in-out," i.e. the difference between the exterior world which is viewed and the interior world in which these experiences are registered as meaning something.

The oscillating, back-and-forth dynamic between the "in" of epistemology and the "out" of ontological reality is reduced in these essays to the Fibonacci series, 1, 1, 2, 3, 5, 8, 13, 21, etc. The fractions which result from this series, 1/1, 2/1, 3/2, 5/3, 8/5, 13/8, etc. have the Golden Mean, 1.6180... = φ as their asymptote. These proportions, in association with the ratio 1:π, are essential to an understanding of the economic structure of the United States, 1868 – present.



It is therefore possible to propose a thorough program of research toward the discovery of these ratios in economics in order that they may be of use to the physical sciences in their investigation of any phenomenon which requires an understanding of a fifth dimension, including in particular the effort on the part of Kaluza to unify gravity and electromagnetics. The similarity of these proportions to those of the Great Pyramid of Giza suggests that there may be more to the study of the fifth dimension than might be expected from a mathematic device.

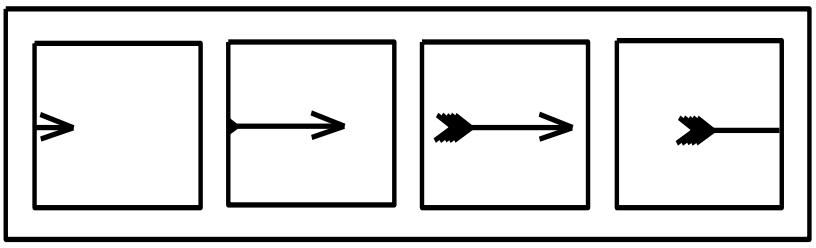
(8) This program of research will describe ultimately a set of relationships which resolves itself into the conclusions of this pattern when we come to the uncertainty of the "up-down" z-axis. The initiating question seems to be: "Where Is Up?" In a sense, "Up" is everything outside the sphere. But if "Up" is everything outside the sphere, how can this dimension relate to a dimension of a point *on* the sphere? This uncertainty initiates gravity toward the sphere, and even toward the very center of the sphere, because each moment of time will demand a more ordered state, or at least a less uncertain state. Because the "Up" aspect of the Z-axis is suspect, (upper left quadrant), the "Down" aspect of the Z-axis is unchallenged and predominates by default.



(9) The uncertainty of the Up-Down Axis, the Z-Axis, (top left quadrant) represents the possibility of a "hole" in the system, a place which may be filled in by the certainty of other things, a form of gravity, a motion into the center of the sphere.

The certainty which we associate with the x and y axis (top right and lower right quadrants) represents the certainty generally ascribed to geometry.

The Yes-No aspect of Time (lower left quadrant) represents the chronologic, frame-by-frame notion of motion "under the challenge of Zeno's Paradox" which is what we are trying to described in the book.



Oppositional Analysis supports a logic for five dimensions, one which allows us to propose a formal fifth dimension of consciousness. I propose that this fifth dimension fulfills the specifications of the fifth dimension which Kaluza used to unify General Relativity with Maxwell's equations.

The consistency and logic of the approach is for the reader's consideration alone.

Metaphysical Foundations of the Economic and Social History of the United States

Essay One

Oppositional Analysis

The Tao is constant in non-action
Yet there is nothing it does not do.

Lao Tzu

ABSTRACT

Aims: To develop a philosophy based upon the patterns described at the lower levels of research in these essays.

Study design: Philosophic presentation of the necessary principles underlying any description of reality.

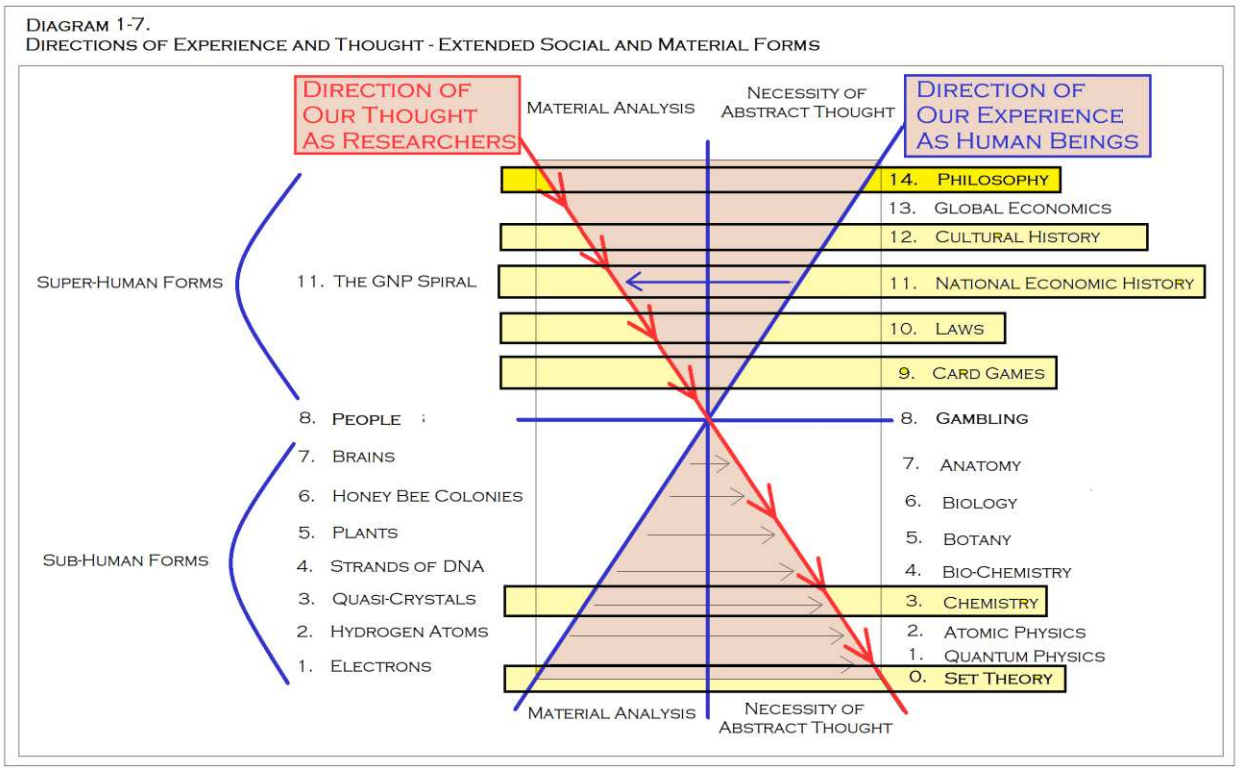
Place and Duration of Study: Library research.

Methodology: In this essay we present the Principle of Non-Contradiction in contrast to the Principle of Contradiction, fashioning these in their necessary developments toward a description of reality.

Conclusions: We conclude that "reality" may be understood as the operation of consciousness applied to every level of endeavor.

1. Hypothesis

We propose that a philosophy may be presented which ties the lower aspects of this design together through the operation of dichotomies.



2. Methods

We use the dichotomies introduced in previous essays to present a philosophy which builds upon them, to wit: Oppositional Analysis.

3. Data

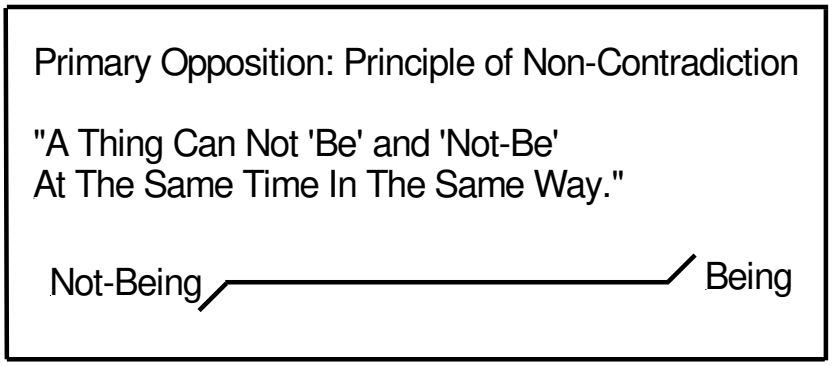
A study of basic principles of philosophy.

4. Procedure

In this paper we present a working alphabet of reality, one intended to follow up on the Socratic conversation presented in the introduction whereby letters seen "bigger and in a bigger place" may assist in reading these same letters at smaller dimensions.

4.1. "The Principle of Non-Contradiction" (The Letter "A")

A thing cannot "Be" and "Not Be" at the same time in the same way.



A toy cap gun can not "BE" a toy cap gun, and "NOT BE" a toy cap gun, at the same time and in the same way. Nor can a star *be* a star and *not-be* a star. Nor can any other thing which actually has Being simultaneously possess its own Not-Being. Briefly, to "BE" something - a toy cap gun, a nuclear weapon, a star - implies that the object cannot "NOT-BE" itself simultaneously. True, a rose may be simultaneously a flower and a symbol of love. However the words "in the same way" restrict the meaning given to a particular object at a particular time. Likewise, a seed may be a seed at the beginning of one century, and a tree at the beginning of the next. However the words "at the same time" again restrict the meaning of "a thing" to the BEING of the thing itself.

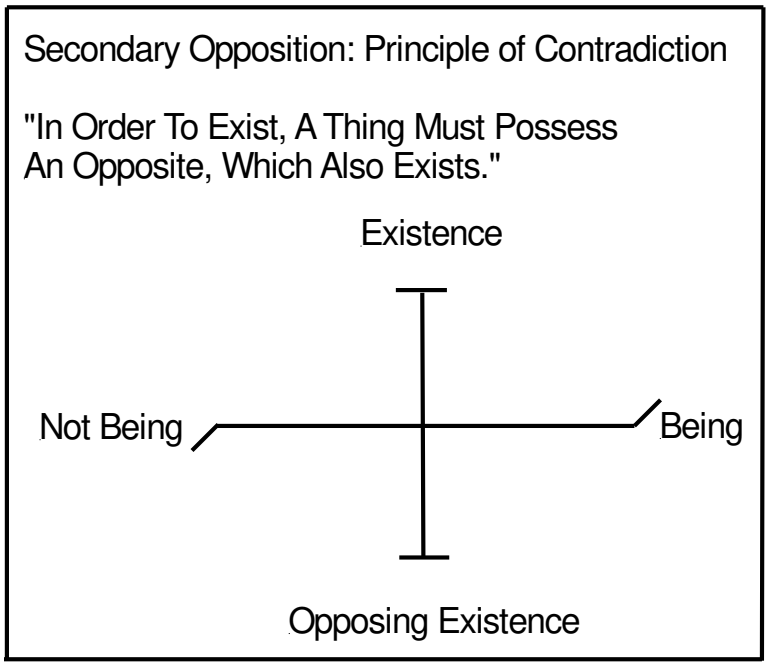
The horizontal symbol between these dichotomies is taken as a gulf between opposites, named here as the "Primary Opposition." The Primary Opposition represents a *difference in kind*, a difference in the basic nature of two things, as opposed to oppositions arising from a struggle between similar elements or a difference in gradation between similar elements.

On the right hand side we place any object which "IS." On the left we have an enormous opposition, all objects other than the object which "IS," *including in this opposition all that the object "IS NOT."* This statement might be represented as the statement "a ⊗ -a" where "a" represents "Being"; "-a" represents "Not-Being"; and "⊗" represents a fundamental and necessary opposition between these two states. This symbol "⊗" is distinguished from the opposing symbol, as represented by "ⓘ" or "is," which states – not a contradiction or eternal opposition between beings – but rather their fundamental equivalence within "Being."

The ability to form an opinion about the relationship between "a" and "-a" (read "not a") creates a Secondary Opposition.

2. "The Principle of Contradiction" (The Letter "B")

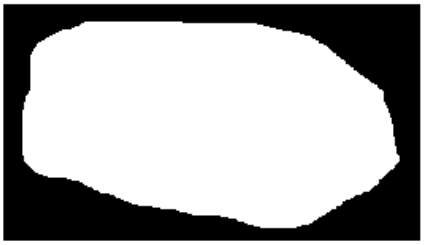
In order to exist, a thing must possess an opposite, which also exists.



The vertical symbol is intended to represent a Secondary Opposition, a different type of gulf between the ideas organized by the diagram. The Secondary Opposition represents an opposition based upon like natures in conflict or in some competition with one another as *gradations of the same basic nature*. A Secondary Opposition is one which, unlike the Primary Opposition, is not absolute or complete, because it deals with a form of opposition which is based upon difference within like categories, not differences in kind between the categories themselves. The importance of the Secondary Opposition might be thought of in the following way. Imagine that I draw a dot of white chalk on a blackboard. How many dots are on the blackboard? The single-ness of the white dot against the solidity of the black blackboard make the answer of "one" very easy.

If I then enlarge the dot to a large solid circle, as if the dot was seen through a zoom lens, Now how many dots are on the blackboard? The answer again is “one” based upon the contrast between the large white dot, and the black of the blackboard itself.

If I enlarge the dot again to the size of a basketball, the answer will be the same.



If I enlarge the dot to cover the entire blackboard with white chalk, eliminating all black from the blackboard entirely, how many dots do we have? The answer is “none” because there is no way to see a single dot contrasted against its opposite, any more than a single black dot on the original empty blackboard would exist.

To give a second example, imagine a universe dominated by and containing only the color “white.” Does a relationship exist in such a universe whereby the existence of the color “white” may be demonstrated? My answer is “no.” Without the existence of some color “not-white,” the existence of the color “white” is itself impossible to show, imagine or prove. Because the color “white” in such a world is not permitted to define its opposite (the color "gray" for example), *The Principle of Contradiction* is not met and the color "white" can not exist. Therefore the universe of “white” as described does not “exist.” *The Principle of Contradiction* is as vital to the understanding of existence as *The Principle of Non-Contradiction*.

One might also propose as an illustration the loss of the sense of sight among various species of fish or salamander evolving within subterranean caves. The absence of light eventually deprives the species of sight, just as an absence of sight deprives a creature of the ability to detect light. As each generation of the species in the cave finds sight a useless sense in the struggle for survival, so the importance of the differentiation between sighted and non-sighted salamanders ceases to exist, and - ultimately - the sense itself is eliminated.

Without something upon which to base an opposition, the existence of any object is itself in question, just as shapes of indistinguishable shades of white superimposed upon one another are lost to view without some intervening criteria (shadow) by which to indicate their existence within one another. If we postulate that there exist no such independent criteria, we must conclude that these shapes do not "exist." If we imagine a universe containing only the color white and no other colors or shades in opposition, we eliminate "the color white" itself.

To say that these objects might be demonstrated as functions of a mathematic imagination begs the issue. Like the "ether," we must declare the non-*existence* of any "object 'a' " which according to *The Principle of Contradiction* can not be shown to exist. Postulating the absence of all such criteria, eliminating from consideration all "opposites," we must conclude that the object DOES NOT exist. Although in a theoretic way the property might "BE," it does not "EXIST."

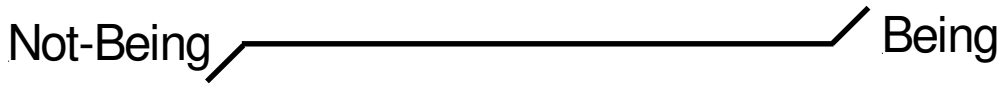
In our discussion of *The Principle of Non-Contradiction*, we noted that this principle might be represented by the statement "a ⊗ -a" where "a" represents "Being"'; "-a" represents "Not-Being"; and "⊗" represents a fundamental and necessary opposition between these two states. What occurs if we reverse this statement?

We might represent *The Principle of Contradiction* as giving primacy to the concept of "Not-Being" or "-a", in an opposite of the statement of *The Principle of Non-Contradiction*. If this can be imagined, then we have the statement: "-a ⊗ a." That is, just as "a" was the primary opposite of "-a" or "not a" (or "a ⊗ -a") in *The Principle of Non-Contradiction*, so is "not a" something different from "a" (or "-a ⊗ a"). From this reversal stems the ability to say that both "a" and "not a" *exist* as opposites, each one to the other, under *The Principle of Contradiction*. Assuming only two separate items "exist" in our universe ("white" and "gray" for instance), each is a necessary element in determining the existence of the other. Without the one, its opposite is similarly in jeopardy of leaving the stage of existence, to wit, there is nothing existent from which to tell it apart or distinguish it as an actual existing object.

3. "The Standard Cross" (The Letter "C")

Oppositional Analysis, as developed in these essays, begins with two symbols, each representing the tenor of the above principles. These symbols are placed in a union whereby the intellectual relationships supporting any whole object "a" may be broken down into constituent parts.

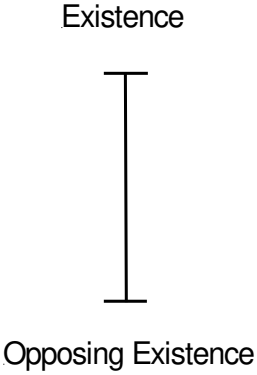
The first of these symbols, representing the Primary Opposition, is:



In Oppositional Analysis this symbol represents *The Principle of Non-Contradiction*, symbolizing the exclusivity of being at either endpoint. It is assumed that a thing cannot "be" simultaneously at both endpoints of our above symbol. This prohibition on "Being" or "a" places "a" on the right, and all "-a" (read "not-a") on the left. The concept presumes a gulf, a separation, between the concepts to the left and right: "a" ⊗ "-a".

This is our first alphabet letter, a letter "A," which will be used in "reading" every phenomenon considered in these essays. This principle does not "affect" phenomena, in the sense that a ball crashes into a wall with a particular weight, force, momentum, etc. and leaves a dent or a disaster. Rather, if the phenomena truly IS, then it must satisfy *The Principle of Non-Contradiction* and in doing so, thereby manifests this "first letter" of our philosophical alphabet.

The second of these symbols, representing the Secondary Opposition, is:

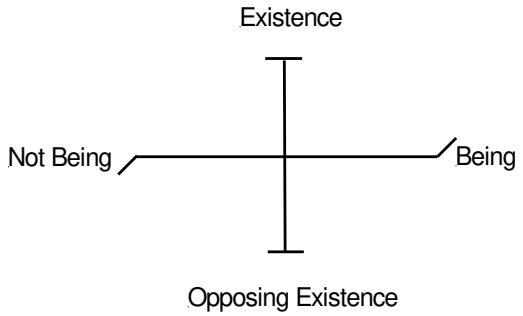


This symbol represents *The Principle of Contradiction*, i.e. the requirement that any Object Which Has Being "a", in order to exist, must define in its existence some "-a" (read "not a") by which to distinguish its existence as an object. This Opposite is also an Object Which Has Being. The existence of "a" is above, and the opposing existence of "-a" ("not a") is below. This symbol represents a different type of gulf, or tension, or separation, than that the first horizontal symbol: "-a" ⊗ "a".

The horizontal symbol, the Primary Opposition, here represents "Being/Non-Being": "a ⊗ -a". In this Primary Opposition we have our first letter, the "letter A." The vertical symbol, the Secondary Opposition, here represents "Existence/ Opposing Existence: "-a ⊗ a." In *The Principle of Contradiction* we have a second letter, the "letter B."

The combination of the letters A and B could be numerous in an infinite number of arbitrary ways. For example (1) A, (2) AA, (3) AAB, (4) B, (5) BB, (6) BBA, (7) BABA, (8) ABAB, (9) BAAB, (10) ABBA, etc. As used herein, however, *The Principle of Non-Contradiction* and *The Principle of Contradiction* relate to one another in a fixed fashion, and phenomena are required to adhere to these axioms. When phenomena follow these rules, reality provides something which (1) makes sense, and (2) mimics all other phenomena wherein these two *Principles* are at work.

These two symbols when combined yield what will referred to as "*The Standard Cross*." This new symbol is as follows:

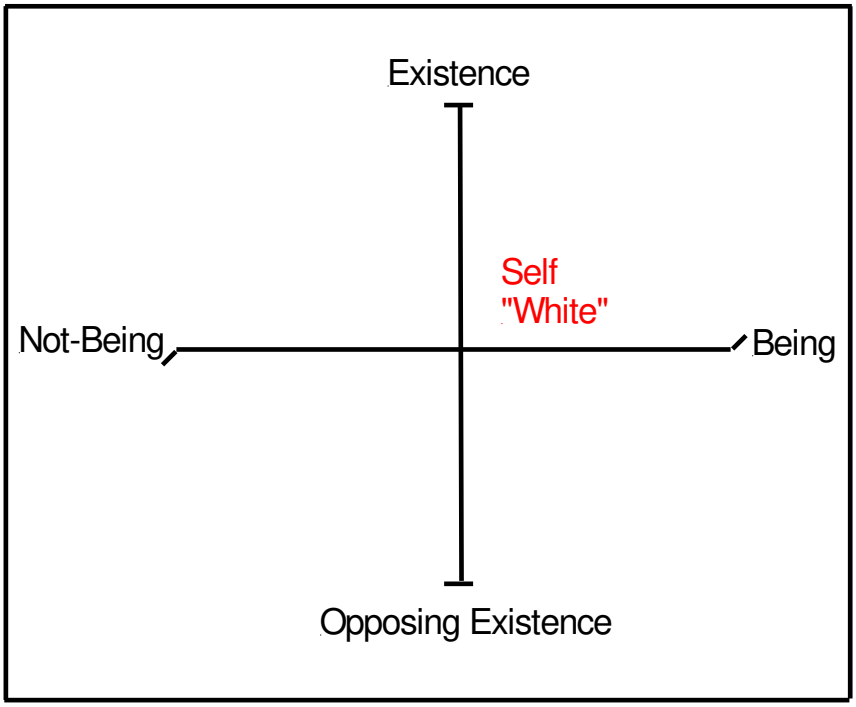


The joining of these picture-symbols indicates a “third letter C” of philosophy: the idea that two principles – *The Principle of Non-Contradiction* and *The Principle of Contradiction* – can merge and create between them four essential components of any and every study.

4. "The Plane Of Definition" (The Letters "D," "E," "F," and "G")

Once these opposing forces are put in place, we must develop language which will describe their four intersections, the four spaces which these forces define.

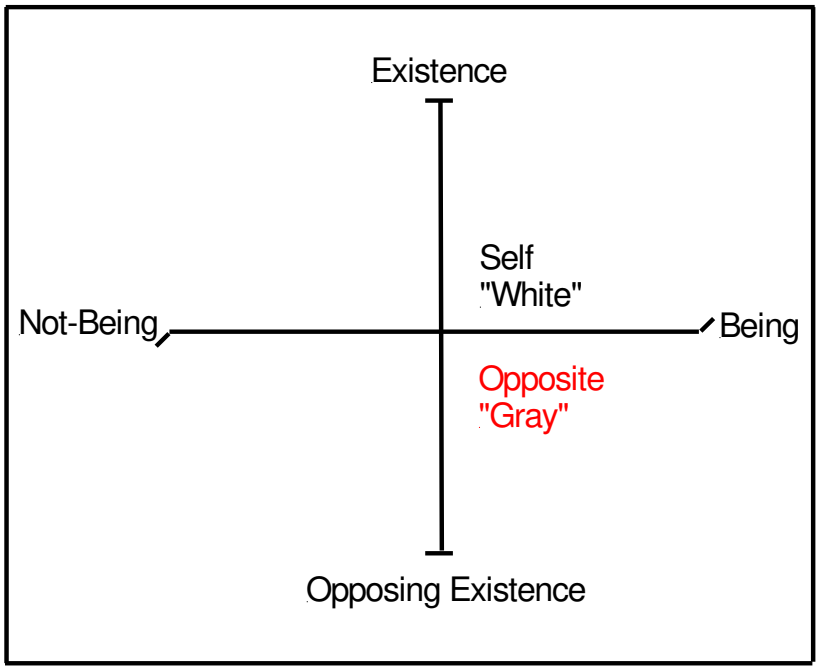
The word "self" is defined as "having a single character or quality throughout."[1] The "white" dot on a blackboard represents such a "single character or quality throughout," a very simple "self." If we combine the concepts "Being" and "Existence" we have the basis for any "self," something having "a single character or quality throughout," an existent being.



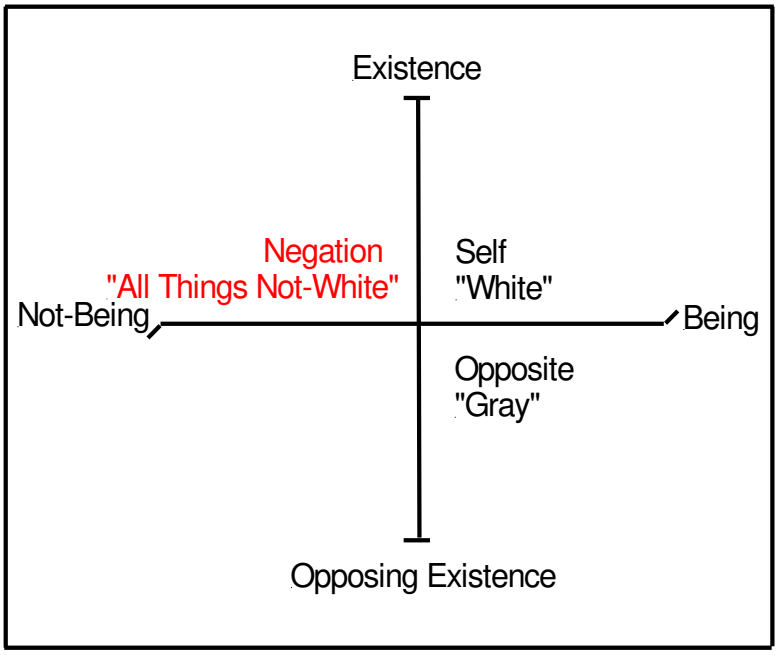
[1] *Webster's New Collegiate Dictionary*, G. and C. Merriam and Company, Springfield, Mass, USA, 1975. Definitions for all terms given in this essay are taken from this basic source.

The word “oppose” is defined as “to offer resistance to,” and the word “opposite” is defined as “occupying an opposing and often antagonistic position …; diametrically different (as in nature or character) …; contrary to one another or to a thing specified.” In the second quadrant of a “Being” we have an “Opposing Existence” to the Self, i.e. an “Opposite.”

If the concept “white” is placed upon a blackboard, it is obvious that resistance offered by the black of the blackboard provides the “antagonistic position” or the “diametrically different” or the “contrary” element necessary to see and appreciate the concept “white.” In the same fashion, shades of gray in an otherwise all white universe provide the resistance necessary to appreciate the existence of the “white” world itself.

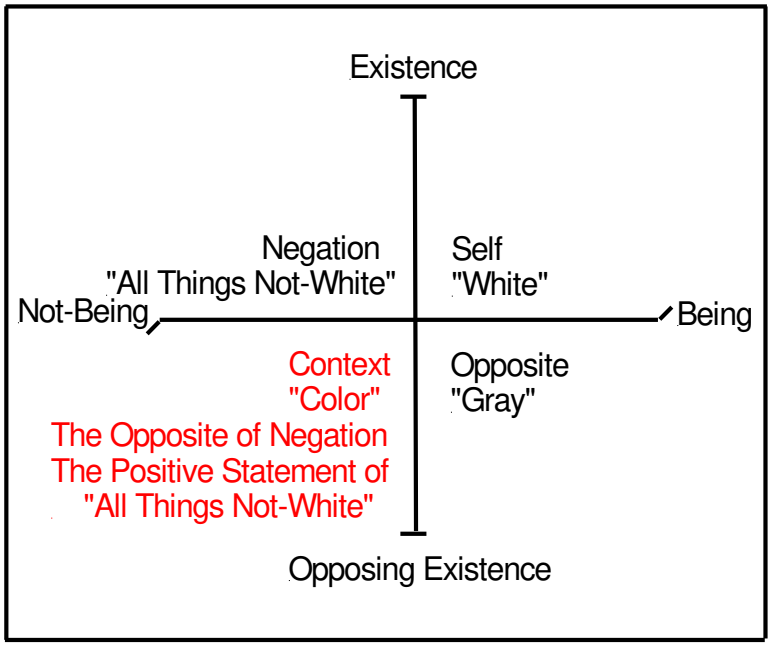


The word “negation” is defined as “something that is the absence of something actual.” This is the concept conveyed by “Non-Being’s” “Existence.” If the concept “white dot” on the blackboard is “actual,” then the negation of the white dot is not simply the blackboard, but includes with it the school room, the professor, the students, the weather outside, the concept of democracy, etc.; i.e. “the absence of something actual.” As used here the word “negation” is taken to be the sum total of all selves which have no part in the “self” under consideration.



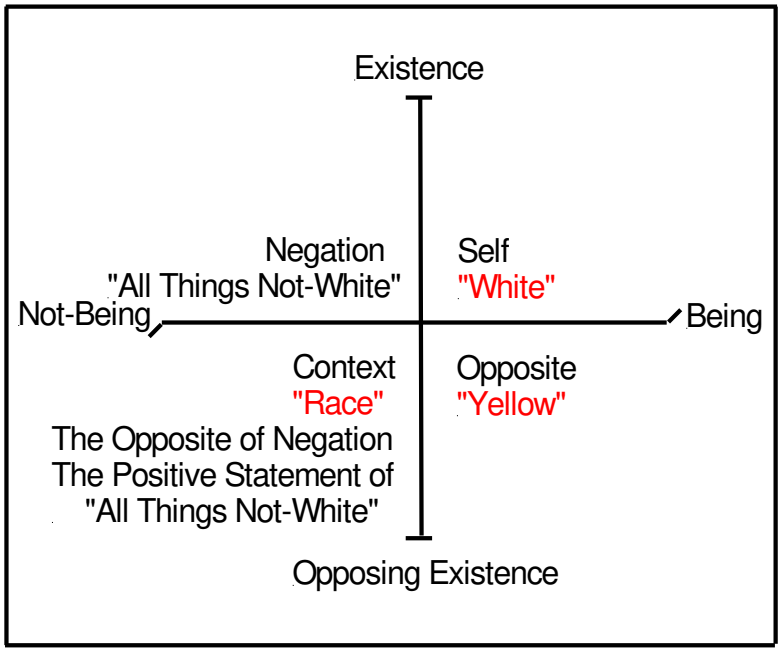
The requirement that "Negation" have its own "Opposite" is stated by the quadrant wherein "Opposing Existence" is combined with "Not Being." If the Negation of something is the sum total of all things NOT that self, *then some sense of the nature of the Self must apply, if for no other reason than to ensure that the Self, properly understood, has been negated*. The word "context" is defined as "the interrelated conditions in which something exists or occurs." In this sense, "Context" opposes the Negation of the self, because it states the full understanding of the Self, without which a Negation of the Self can not occur.

For example, although the concept of a white dot on a blackboard is clear enough, the word "white" is used in many ways: white as color, white as innocence or purity, white as a position in a chess game, etc. In as much as the understanding of "white" shifts and changes with the context in which it is used, the "context" of the word "white" must be considered in relation to (1) the white (self), (2) blackboard (opposite) and (3) all things not white (negation). These are the "interrelated conditions in which (white) exists or occurs," i.e. white's "context."

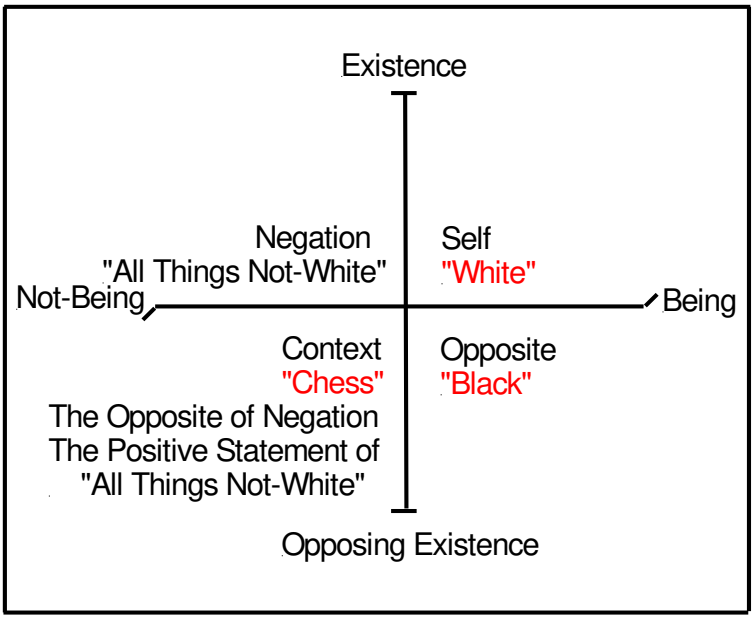


In the foregoing example, the "context" in this case applies is "Color." However the term "White" could apply equally as well in a discussion of race; or to sin and forgiveness ("Though your sins are as scarlet, they shall be white as snow." Isaiah 1:18); or to chess pieces; or to any number of other ways in which the term "White" is used. In these cases, the "Context" of the Self must change, even as the meaning of the Self has changed.

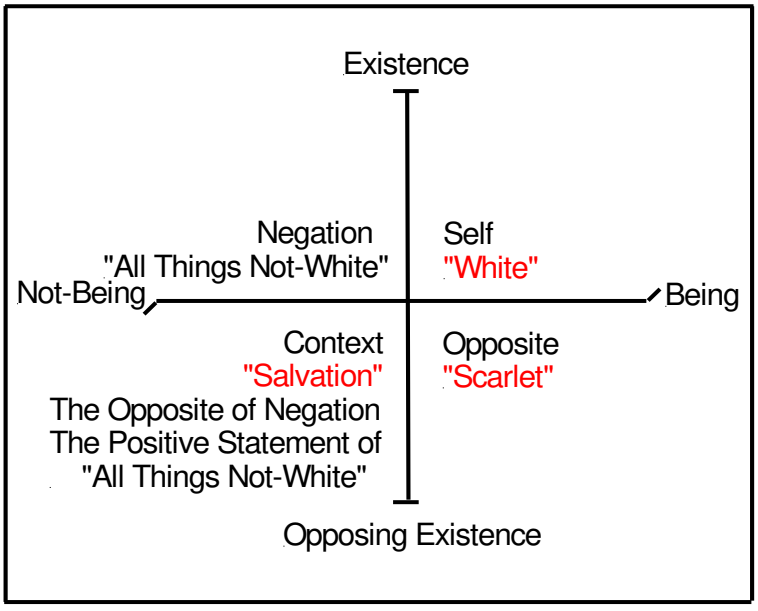
The analysis of Being and Non-Being, Existence and Opposing Existence is used to indicate the necessary aspects of any thought to which the mind can attach understanding. These principles form the psychological basis for understanding. If the term "White" is used in regard to a conversation regarding racial differences the categories may appear as:



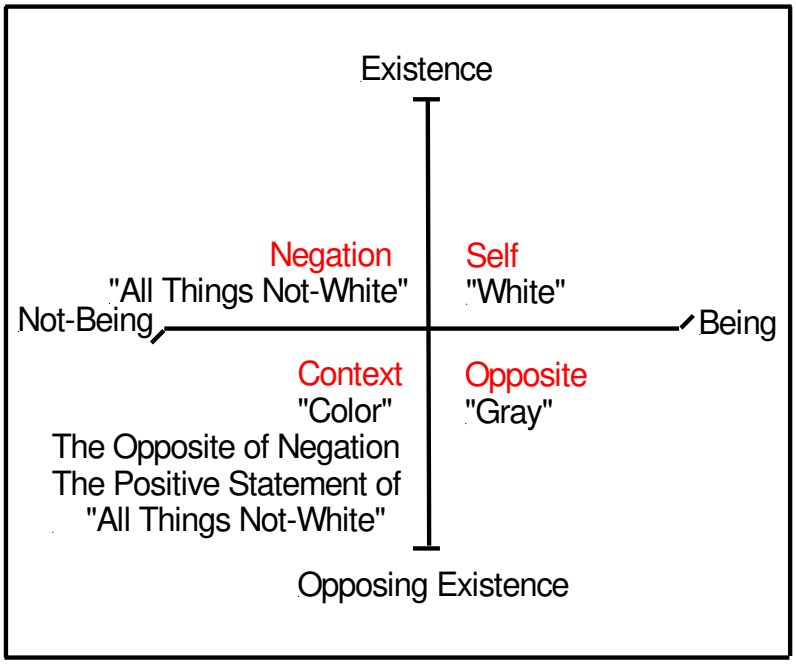
If we discuss “White” in the context of a game of chess, we might find that the existence of “White” is premised upon:



If we discuss the poetic metaphor of “White” as used in discussions of morality, we might consider the terms as follows:



Ultimately the term “White,” or any term which is deemed capable of understanding, must generate the above categories of thought. It is through the generation of these categories that the mind “moves” to accept the reality, the existence and the importance, of the object discussed. Placing within the quadrants created by our brief discussion of the necessary concepts supporting recognition of the color "white," we have:



The resulting four quadrants of thought are:

1. “a's self,” the being “a” as it exists (white); something “having a single character or quality throughout.”

2. “a's opposite,” the thing defined by the existence of “a” whereby “a” demonstrates or proves its existence (gray); something “to offer resistance to,” or “occupying an opposing and often antagonistic position …; diametrically different (as in nature or character) …; contrary to one another or to a thing specified.”

3. “a's negation,” or “the set of all not-a,” whereby “a” demonstrates its inability to both be itself and be not-itself simultaneously under *The Principle of Non-Contradiction*; (all things not white); the sum total of all things which are “the absence of something actual.”

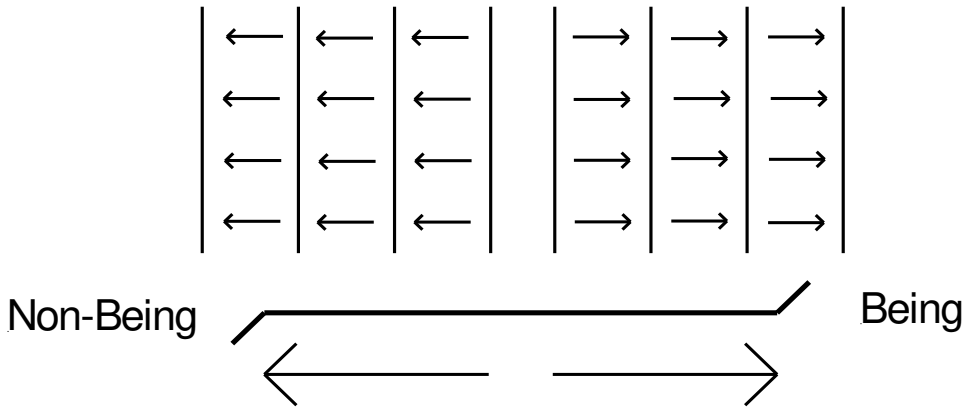
4. “a's context,” the opposite of “a’s negation” above it, stating in a positive fashion all that “a” is not (color); “the interrelated conditions in which something exists or occurs.”

These four new components of our scheme – like the letters “D,” “E,” “F” and “G” – provide us with an expanding alphabet of philosophical relationships. These components exist simply because the first three letters “A”, “B” and “C” – *The Principle of Non-Contradiction*, *The Principle of Contradiction*, and *The Standard Cross* – *pre*-exist them.

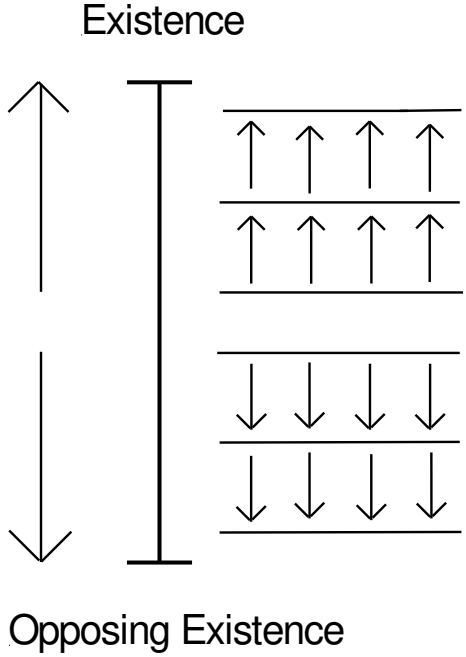
5. Comparisons To Earlier Essays

At this point we have described a partial "alphabet" of philosophical elements, one which permits us to organize distinctly different phenomena into analogous patterns. This in turn permits us to "read" the phenomena in systematic and helpful ways.

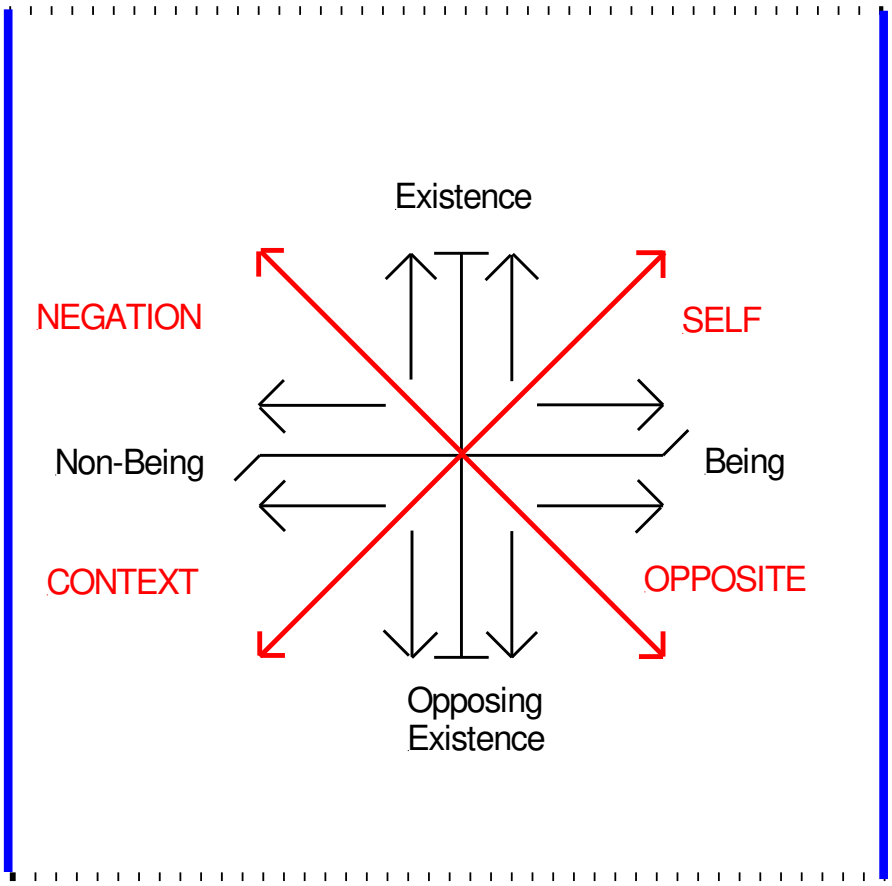
To continue at the level of philosophy, the further development of this "alphabet" is helped by imagining the opposition inherent in *The Principle of Non-Contradiction* - Being, Non-Being - as a "force" or a wave in philosophy, separating these two sides of the discussion by an enormous gulf or chasm. One might imagine a rod striking the water, sending up a series of waves moving in opposite directions from one another.



It is also helpful to imagine the opposition between the concepts of "Existence" and "Opposing Existence" as a separate force, or a separate wave in philosophy between opposing ideas or concepts.



Finally, we might imagine that the combination of these two different oppositions creates four "vectors," four logical outcomes which must play out through the rest of the discussion.



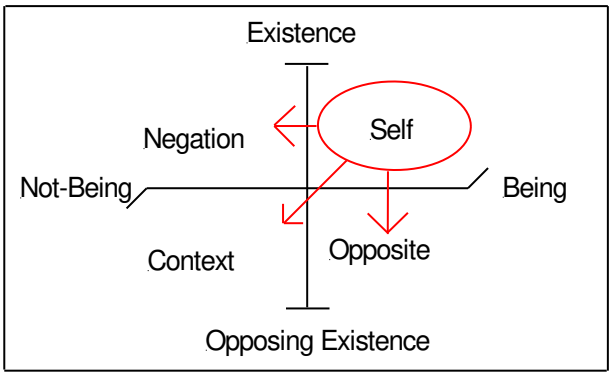
If this "alphabet" works, it helps us to "read" the underlying characteristics of any phenomenon. Reading the underlying structure is simply a matter of "seeing" the phenomena accurately, that is, "to read little letters from afar (but with) the thought that the same letters are somewhere else also, but bigger and in a bigger place…"[2] Viewed in this fashion, reality becomes something self-referential, in effect telling us its secrets at one level and then hinting that some similar structure exists at a different level, one where such relationships might otherwise be entirely invisible or difficult to anticipate. Joining all levels into such a system, an understanding of the whole is developed.

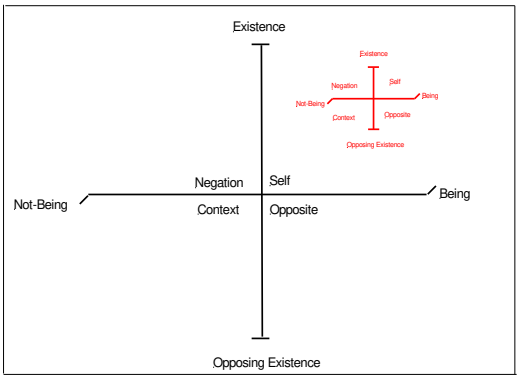
By condensing the similarities into a philosophic alphabet, we can better approach the remaining levels, i.e. Sub-Physics, Physics, Biology, Law, Economics, the Nation-State, Race and Economics. If an over-all system can be completed, these remaining levels might be explored more thoroughly and in a new way. Once the system is complete, each level should relate to the others by way of a common analysis.

[2] Plato's *Republic*, see supra, page 3, and Essay Four.

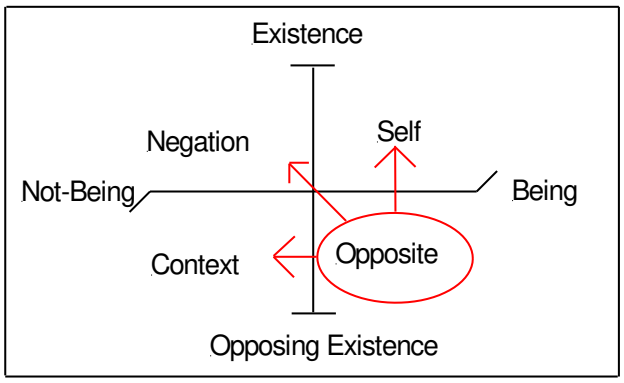
6. "The Plane of Relationship" (The Letters "H" through "W")

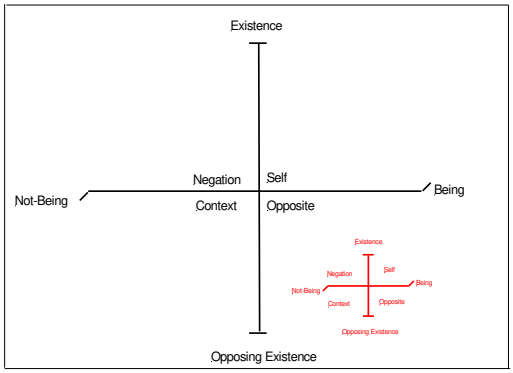
To expand our "philosophical alphabet" further, note that each of the quadrants must have a relationship with one another. That is, the self must have a relationship with itself, with its opposite, with its negation "all things not itself," and with the context in which it is understood. This set of relationships - an "H", "I", "J", and "K" - can be pictured as:



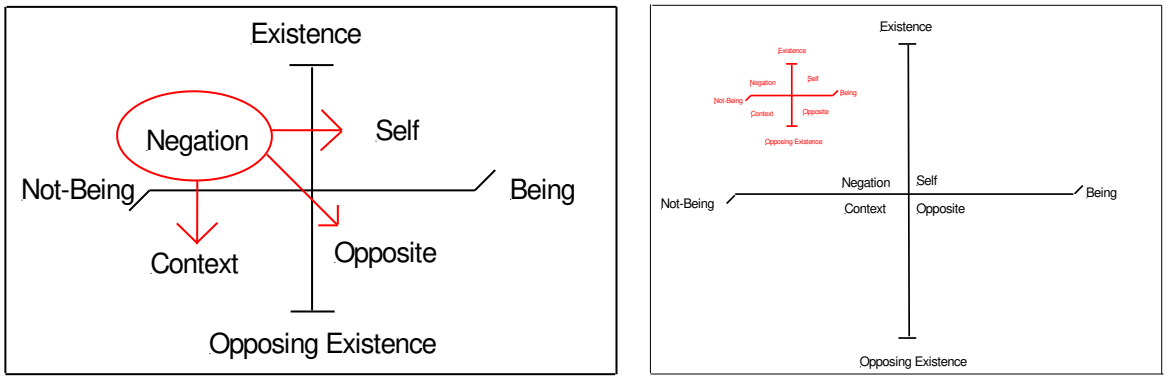


Similarly the "opposite" identified also must have a relationship with itself, with the originating "self," with all things not "self" and with the context in which this opposite is created. This set of relationships - an "L", "M", "N", and "O" for example - can be pictured as

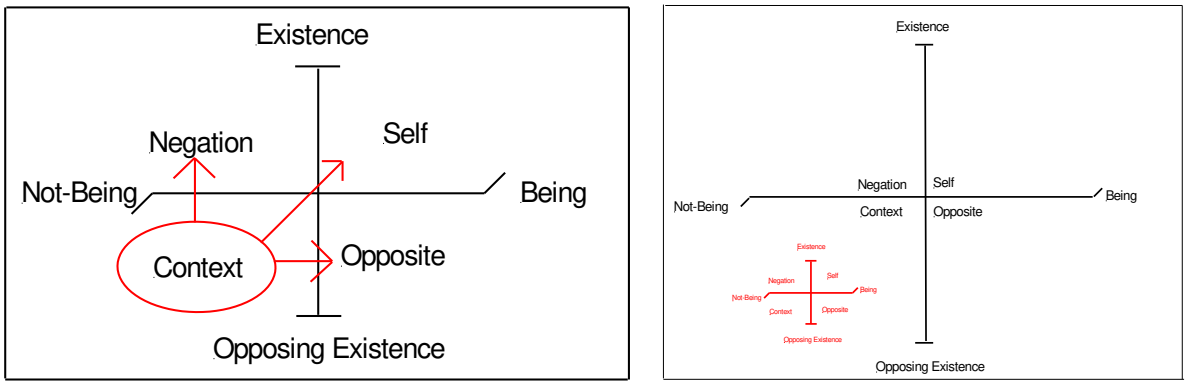




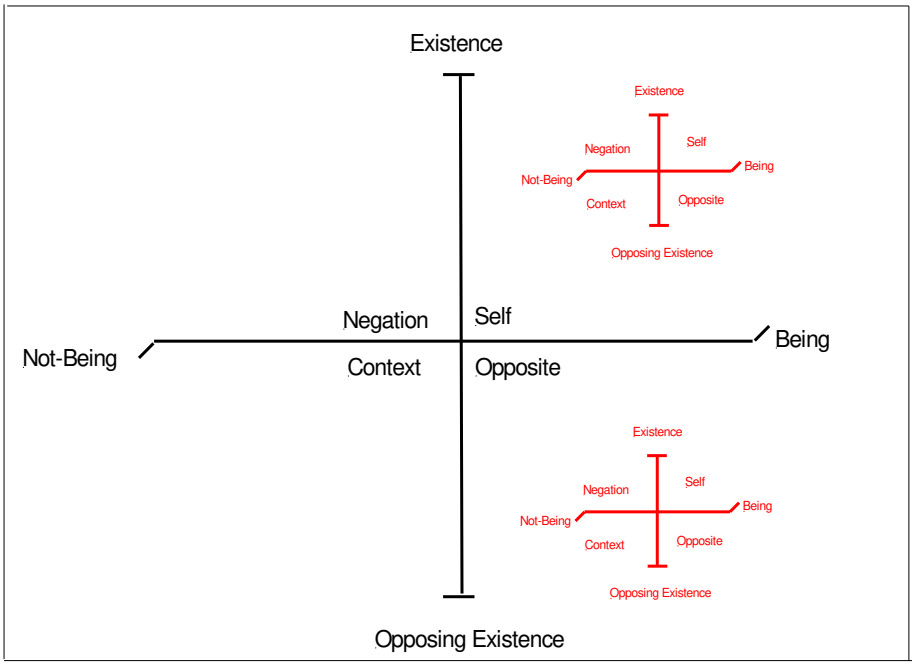
Additionally the negation of the self, “all things not ‘white’ ”, must have a relationship with itself, with the originating “self,” with the self’s opposite and with the context in which the self is understood. This new set of relationships - a “P”, “Q”, “R” and “S” - can be pictured as:



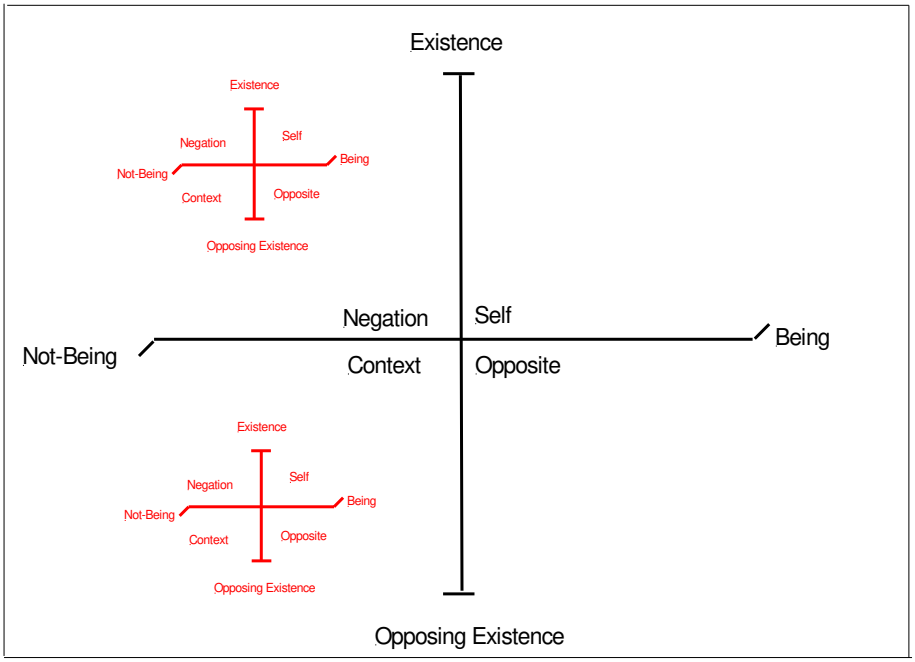
Finally the context of the self must have a relationship with itself, with the originating self, with the opposite permitting an understanding of the “self” and with the collection of things “not the self.” This new set of relationships – a “T”, “U”, “V”, and “W” - can be pictured as:



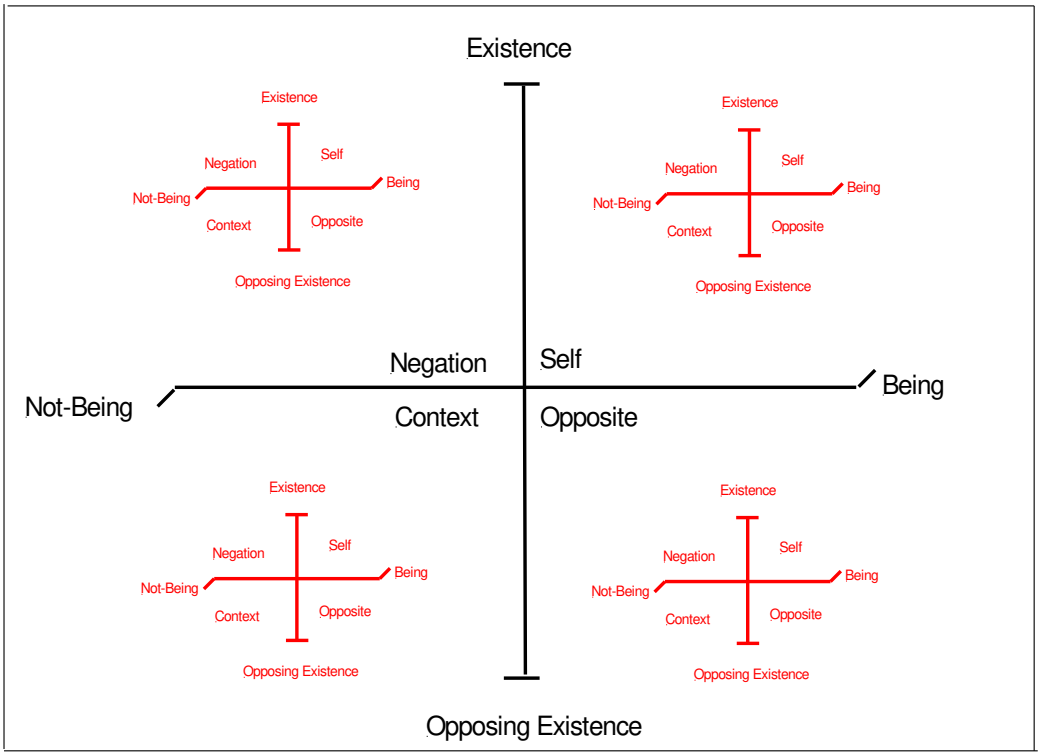
Dividing these along the categories of "relationships of being" we have:



The same set of relationships as applied to the left hand quadrants of "Not-Being" are:



Collectively, these may be placed as:



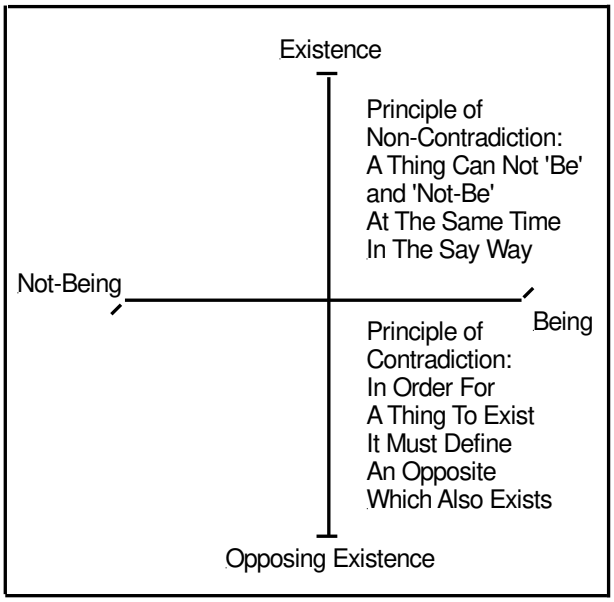
OPPOSITIONAL ANALYSIS

PART TWO

7. "The Principle of Consciousness" (The Letter "X")

The development of the ontological/epistemological dichotomy is a central concept related to consciousness. Such a dichotomy is on a par with the original *Principle of Non-Contradiction* and *Principle of Contradiction.* But how might this sort of "letter" be developed using only the most basic and pre-existing letters of our "alphabet"? In other words, what sort of effort within the philosophy presented justifies an ontological / epistemological dichotomy for anything? To answer this question, let us consider the following:

What occurs if we apply *The Standard Cross* to Axioms I and II themselves? In other words, what happens if we treat *The Principle of Non-Contradiction* as a "Self" and *The Principle of Contradiction* as its "Opposite"? Letting Axiom I be the "Self" we investigate, and Axiom II be its opposite, we have:



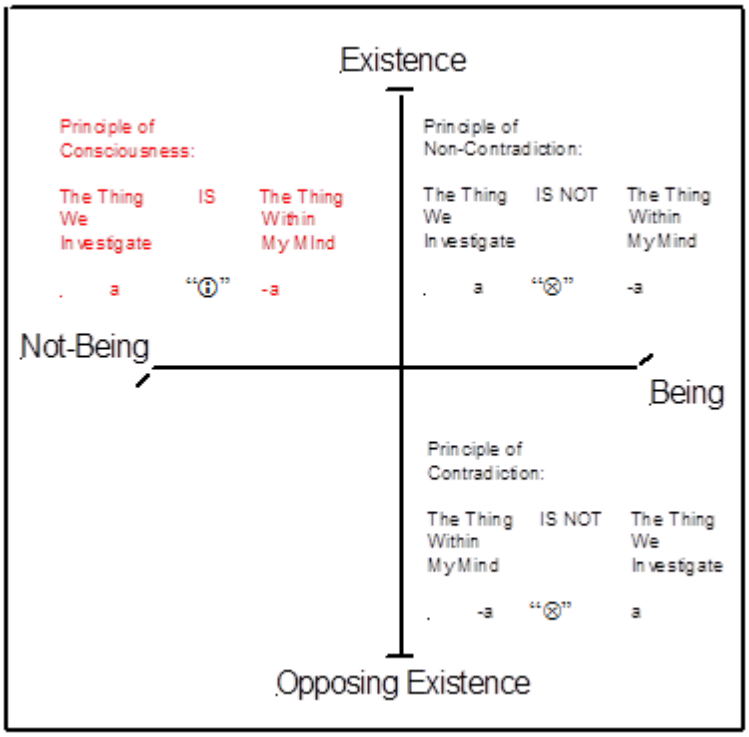
Under the technique of oppositional analysis, the third square *must negate The Principle of Non-Contradiction*, "a ⊗ -a," "A thing can not be itself and be not-itself simultaneously." *To negate this is to state that a thing both "IS itself" and "IS NOT itself" simultaneously*.

We have then the riddle:

Question: When can a thing both be itself and be not-itself simultaneously?

Answer: When I'm thinking of it.

If we re-state *The Principle of Non-Contradiction* with this possibility in mind, we can associate "a" with "any object which we investigate," and "–a" ("not a") with the *thought* of that object within my mind.



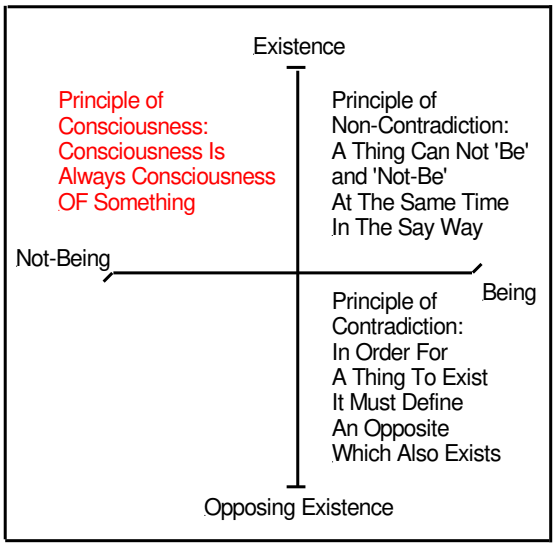
Stated concisely, a union exists *in the use of our consciousness* between any "object a which is investigated" and "the thought of object a." Consciousness leads us to believe that the reality in which we are living, although on the one hand simply a thought of that reality, is yet "real." We have in this axiom a union between the epistemological and ontological viewpoints of any object "a."

In symbolic form we would negate “a ⊗ -a” with the statement “a ⓘ -a” where “⊗” represents an opposition between two poles of a dichotomy, and “ⓘ” represents a union or merger of two poles in a dichotomy. If “-a” (“not a”) represents one's “Consciousness of ‘a’ ” or “perception of ‘a’ ” or “image of ‘a’ ”, one sees that in this context and this context alone, OUT OF THE ENTIRE "SET OF ALL NOT A”, “a ⓘ -a."

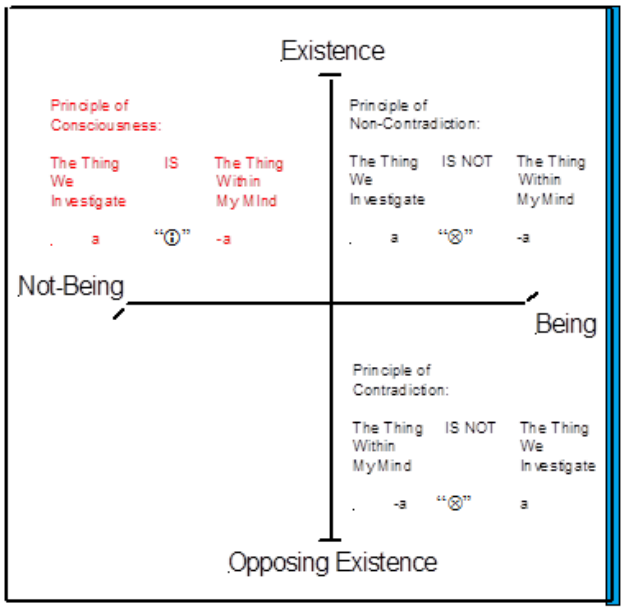
If we place the central idea of this situation into a simple rule, we have:

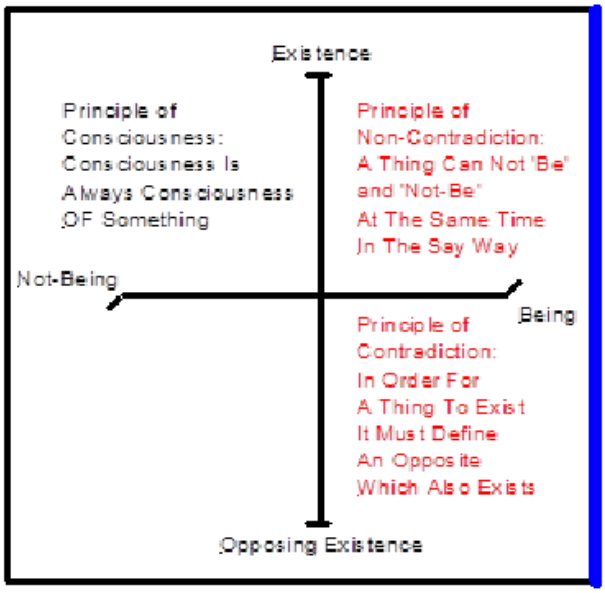
Axiom III: The Principle of Consciousness

Consciousness is always consciousness OF something.

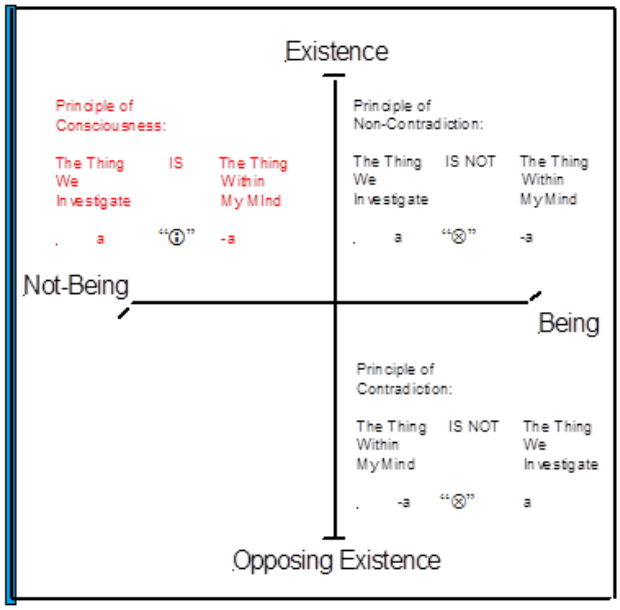


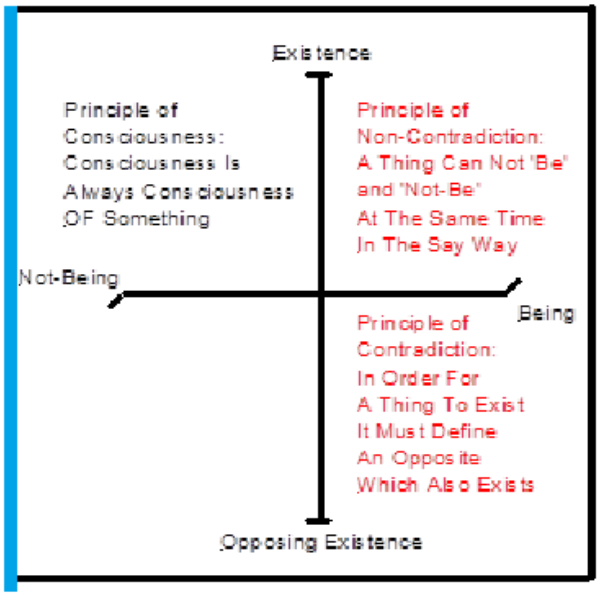
If we re-define “a” as “any object which we investigate,” and “-a” as “the consciousness of a” we have on the “Being” side of our above symbol a strict duality between mind and object (“a ⊗ -a” , “-a ⊗ a”).





Negating this on the "Non-Being" side of our symbol, we see a merger of mind and object (a ⓘ -a).





To make these distinctions clear: Imagine that I hold before you a pencil. Do I hold before you a pencil, or simply your thought of pencil? After considering the matter, is it not clear that there is a unity between these two "objects" in that one can not be separated entirely from the other? This is the essential unity suggested by Axiom III, *The Principle Of Consciousness*.

Note that under the concepts described above that *The Principle of Non-Contradiction*, a fundamental principle of "the hard" sciences, *is negated* by *The Principle of Consciousness*. It becomes an axiom, consciousness as a necessary principle. Axiom III states that to be "conscious" is to have something within the mind upon which consciousness focuses. Without

the simultaneous existence of the point and the thought of the point, consciousness of the point does not exist. Axiom III, *The Principle of Consciousness*, negates Axiom I, *The Principle of Non-Contradiction*, because it states a circumstance under which a thing IS both itself and not-itself simultaneously. Note also that this Third Axiom, *The Principle of Consciousness*, arises when we apply *The Standard Cross* to the two Axioms which make up the basis of *The Standard Cross*.

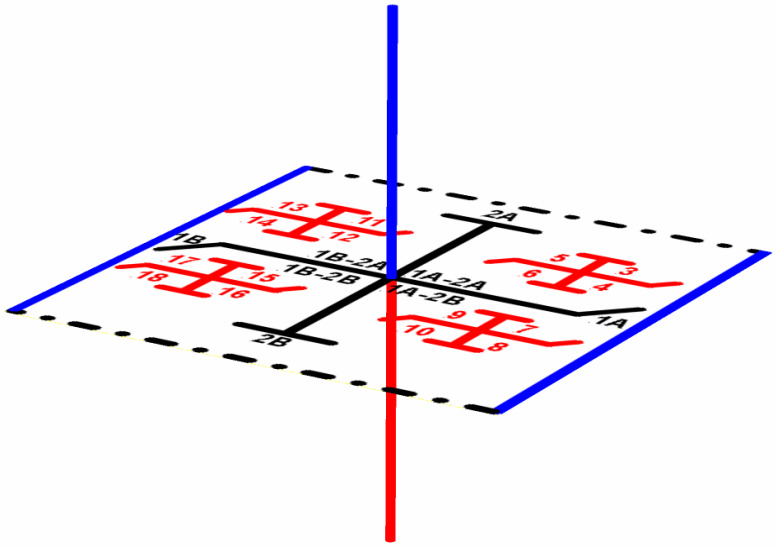
To review:

1. As we have developed this "alphabet" we are required to apply the Standard Cross to the only two "things" in existence, i.e. *The Principle of Non-Contradiction* (as a "Self") and *The Principle of Contradiction* (as an "Opposite" to an existent "Self").

2. Obviously we are not *required* to state "Consciousness" as a principle; we can simply refuse to consider what – if anything – might negate *The Principle of Non-Contradiction.*

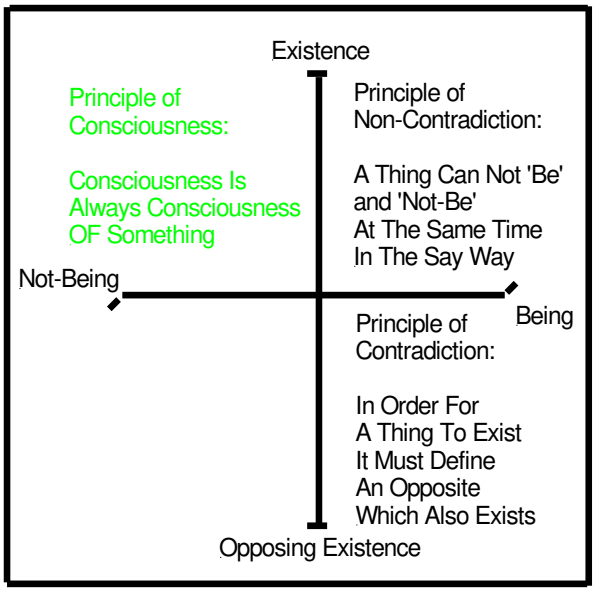
3. On the other hand if we develop this *Principle of Consciousness* we are forced to include it as an axiom, something imposed upon the Standard Cross in a fashion equivalent to that of *The Principle of Non-Contradiction* and *The Principle of Contradiction*.

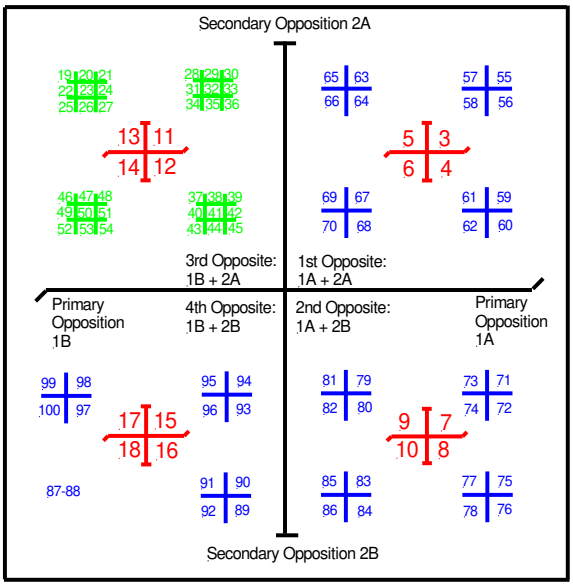
4. If we are to include Axiom III, *The Principle of Consciousness*, as a part of the model developed and on a par with the first two Axioms of *Non-Contradiction* and *Contradiction*, a Third Axis is created, an "Image Axis" is created, as follows:



5. This "Image Axis" differs from the previous two axes, because it states the idea that "Two Are One," i.e. that there exists in "Consciousness" a necessary and simultaneous existence – A MERGER (not a separation) – of two polar opposites: the way something *is*, and the way something is *within my mind*. In the alphabet analogy we now have a new letter: "X".

If we consider the uncertainty typical of the "negation" quadrant, one would anticipate that any discussion of "Consciousness" must demonstrate an inherent, unavoidable uncertainty.





In other words one must consider: How can Consciousness, which *negates The Principle of Non-Contradiction*, be known by any science which *founds* itself upon *The Principle of Non-Contradiction*?

We might anticipate that an inherent uncertainty will arise in pursuit of an understanding of Consciousness. This inherent uncertainty will be described at the conclusion of this essay. For now we simply notice that a great deal of uncertainty presently surrounds not only the scientific importance of Consciousness, but also the methods and tools which should be used to approach it. Contrast this with the approach used here.

For as stated above, we view Consciousness as an axiom, a central and unavoidable part of all mathematical models of motion, change and development, and moreover an axiom which negates the Principle of Non-Contradiction, one of the central tenets of the physical sciences.

8. Other Approaches To Consciousness

The scientific study of consciousness and its physical origins has taken on considerable interest recently due at least in part to the efforts of Francis Crick, microbiologist and Nobel Prize winner for his discoveries regarding the double-helix structure of the DNA molecule. In an effort to distinguish between the ideas presented here and others prevailing at the present time, some mention might be given as to the wealth of views on this topic.

In an article by John Horgan, senior writer for *Scientific American*, the question is asked "Can Science Explain Consciousness?"[3] In this article Mr. Horgan describes the extensive number of opinions and approaches to consciousness at the present time. The views described by Mr. Horgan permit us to distinguish these approaches to Consciousness from that used herein.

Regarding Francis Crick of the Salk Institute for Biological Studies Mr. Horgan states:

> In 1990 Crick and Christof Koch, a young neuroscientists at the California Institute of Technology who collaborates closely with Crick, proclaimed in Seminars in the Neurosciences that the time was ripe for an assault on consciousness.
>
> They rejected the belief of many of their colleagues that consciousness cannot be defined, let alone studied. Consciousness, they argued, is really synonymous with awareness, and all forms of awareness - whether involving objects in the external world or highly abstract, internal concepts - seem to involve the same underlying mechanism, one that combines attention with short-term memory.
>
> Contrary to the assumptions of cognitive scientists, philosophers and others, Crick and Koch asserted, one cannot hope to achieve true understanding of consciousness or any other mental phenomenon by treating the brain as a black box - that is, an object whose internal structure is unknown and even irrelevant. Only by examining neurons and the interactions between them could scientists accumulate the kind of empirical, unambiguous knowledge that is required to create truly scientific models of consciousness, models analogous to those that explain transmission of genetic information by means of DNA.[4]

[3] *Scientific American*, Vol. 271, No. 1, July 1994, p. 88.
[4] Id., p. ----

Mr. Horgan mentions a number of other approaches to the study of consciousness at the present time. Persons rejecting the strictly biological nature of consciousness are referred to by Mr. Horgan as "mysterians," i.e. persons who look for significant insights into consciousness outside the realm of neuroscience and molecular biology.

> ...Roger Penrose, a physicist at the University of Oxford, proposes that the mysteries of the mind must be related to the mysteries of quantum mechanics, which generates non-deterministic effects that classical theories of physics (and neuroscience) cannot. Although at first ignored and then derided by conventional neuroscientists, this alternative has steadily won popular attention through Penrose's efforts. ...
>
> ...Since the 1930s some physicists have speculated on the principle that the act of measurement - which ultimately involves a conscious observer - has an effect on the outcome of quantum events. Such notions have generally involved little more than hand waving, but they have become more prominent lately because of Penrose.
>
> ...The key to Penrose's argument is Godel's theorem, a 60-year old mathematical demonstration that any moderately complex system of axioms yields statements that are self-evidently true but cannot be proved with those axioms. The implication of the theorem, according to Penrose, is that no deterministic, ruled-based system - that is, neither classical physics, computer science nor neuroscience - can account for the mind's creative powers and ability to ascertain truth.
>
> In fact, Penrose thinks the mind must exhibit non-deterministic effects that can be described only by quantum mechanics or "a new physical theory that will bridge quantum and classical mechanics and will go beyond computation." He even suggests that non-locality, the ability of one part of a quantum system to affect other parts instantaneously (Einstein dubbed it "spooky actions at a distance") might be the solution to the binding problem.[5]

The "binding problem" is described as follows:

> The answer (to problems relating to attention and visual input) is complicated by the fact that "there is no single place where everything comes together" in forming a perception; even a single scene is processed by different neurons in different parts of the brain. One must therefore determine what mechanism transforms the firing of neurons scattered throughout the visual cortex into a unified perception. "This is known as the binding problem," Koch explains, noting that it is considered by many neuroscientists to be the central issue of their field.[6]

[5] Id., p. ----
[6] Id., p. ----

A separate and significant group of persons insist that physical systems cannot predict non-physical systems including that of consciousness.

> Another group of mysterians, which consists for the most part of philosophers, doubts whether any theory based on strictly materialistic effects - quantum or classical - can truly explain how and why we humans have a subjective experience of the world.
>
> "The question is, how can any physical system have a conscious state?" says Jerry A. Fodor, a philosopher at Rutgers University. Scientists who think that science alone can answer the question "don't really understand it," Fordor declares.[7]

Describing a conference on consciousness at the University of Arizona, Mr. Horgan includes additional points of view.

> (Attending the conference was) Steen Rasmussen, a biologist and computer scientist from the Santa Fe Institute, headquarters of the trendy fields of chaos and complexity. He suggests that the mind may be an "emergent" - that is, unpredictable and irreducible-property of the brain's complex behavior, just as James Joyce's *Ulysses* is a surprising outcome of applying the rules of spelling and grammar to the alphabet.[8]

Other points of view are voiced as well.

> Brian D. Josephson of the University of Cambridge, who won a Nobel Prize in 1973 for discovering a subtle quantum effect that now bears his name, calls for a unified field theory that can account for mystical and even psychic experiences.
>
> Andrew T. Weil, a physician at the University of Arizona who is an authority on psychedelia, asserts that a complete theory of mind must address the reported ability of the South American Indians who have ingested psychedelic drugs to experience identical hallucinations.
>
> In his 1992 book *Consciousness Reconsidered*, (Owen) Flanagan, (a philosopher at Duke University) argues on behalf of a philosophy called constructive naturalism which holds consciousness to be a common biological phenomena occurring not only in humans but in many other animals - and certainly all the higher primates. Other adherents to this position include Daniel C. Dennett of Tufts University (author of *Consciousness Explained*, also published in 1992) and Patricia S. Churchland of the University of California at San Diego. "We say you can acquire knowledge of consciousness by triangulation," Flanagan remarks, that is, by combining neural and psychological data from experiments on humans and animals with subjective reports from

[7] Id., p. ---
[8] Id., p. ---

humans.[9]

A final opinion given by the article is that of David Chalmers of Washington University who "agrees with McGinn that no strictly physical theory - whether based on quantum mechanisms or neural ones - can explain consciousness."

> All physical theories, Chalmers claims, can describe only specific mental FUNCTIONS - such as memory, attention, intention, introspection - correlating to specific physical processes in the brain. According to Chalmers, none of these theories addresses the really "hard" question posed by the existence of the mind: Why is the performance of these functions accompanied by subjective experience? After all, one can certainly imagine a world of androids that resemble humans in every respect - except that they do not have a conscious experience of the world.
>
> "Science alone cannot supply an answer to this question," Chalmers declares. Unlike McGinn, however, Chalmers holds that philosophers can and must construct a higher-level theory to bridge that "explanatory gap" between the physical and subjective realms. In fact, Chalmers has such a theory. He asserts that just as physics assumes the existence of properties of nature such as space, time, energy, charge and mass, so must a theory of consciousness posit the existence of a new fundamental property: information. The concept of information, Chalmers explains, has aspects that are both physical and "phenomenal" (a philosopher's term that is roughly equivalent to "experiential" or to "subjective").[10]

The union which is speculated by philosophers between the way something IS and the way something is WITHIN MY MIND forms one of the most important points in logical inquiry. This point is summed up in *the Encyclopedia of Physics* as follows:

> We have to distinguish between the *ontological priority* of physical objects (their fundamental status among existing things) and an assumed *epistemological priority* (their being the basis of the rest of our knowledge). Strictly speaking, of course, we do not know physical things, only their appearances. The attempt to provide a purely phenomenological foundation for science, however, has been unsuccessful, and most philosophical accounts accept an initial hypothesis of matter in some form or other.[11]

We are approaching Consciousness in these essays as an Axiom, something as basic as a letter of an alphabet in the reading and understanding of all phenomena, something from which other points follow, and which can only be investigated in this context. The significance and meaning of the term "consciousness" should be discussed.

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[9] Id., p. ---

[10] Id., p. ---

[11] Peter Caws, "Philosophy of Physics," *Encyclopedia of Physics*, Editors Rita G. Lerner and George L. Trigg, Second Edition, VCH Publishers, Inc. New York, cc 1990, pp. 902-904.

9. Our Use of the Term "Consciousness"

Regarding the purely human experience of consciousness let us consider *The Principle Of Consciousness* presented here as an axiom, as a basic letter of a universal alphabet. Imagine that a person finds himself or herself in outer space. Imagine that there is no force of gravity, no sensation, no other object, star, light or countervailing "existence." In fact there is no sense of touch or sound or other contact in this dark void of outer space into which this individual consciousness has wandered, including even the sensation of touching one's own body. Let us go further and exclude the sense of previous touchings, contacts, motions, movements and occurrences, in fact excluding all sense or memory of history entirely such that the past is no more an object of the consciousness than is the present. The question arises, does the person's consciousness "exist?"

My answer is "no," for the ability to separate consciousness itself from consciousness OF SOMETHING does not exist. By removing all objects of consciousness entirely the consciousness - I speculate - will leave this unfortunate person as a dead and lifeless mass.

An interesting biological note might be made. On two occasions, once in Nazi Germany, once in thirteenth century Sicily under King Frederick II, "stupor mundi" 1194 ad. to 1250 a.d., experiments were made in which newborn infants were given all food, clothing, and warmth necessary for their development, but were deprived the love, comfort and interaction of their mothers. In both instances the children died.

I give this as an example of the need for human consciousness to attach itself to some thing other than itself as the very premise of its own existence. The example from the middle ages is as follows:

> Frederick's curiosity was limitless and wholly unconstrained by such few notions of mercy as light a savage age. One monkish chronicler relates that Frederick, "Wanting to find out what kind of speech children would have when they grew up, if they spoke to no one before hand ... bade foster mothers and nurses to suckle the children, to bathe and wash them, but in no way to prattle with them, for he wanted to learn whether they would speak the Hebrew language, which was the oldest, or Greek, or Latin, or Arabic, or perhaps the language of their parents, of whom they had been born. But he labored in vain, because the children all died. For they could not live without the petting and the joyful faces and loving words of their foster mothers."[12]

The above facts indicate the need for consciousness to be conscious OF something. If an infant's consciousness is one in which emotional needs are not met, then on a very basic level there is nothing to be conscious OF. This short-circuiting of consciousness, this refusal to return the love and affection of an infant from one conscious being to another, has been shown to end further development of the infant's consciousness, leading to death. This is taken herein as a basic fact of consciousness, the equation of the *idea* with the <u>*reality*</u> of any object as developed

[12] Taken from Edmund Stillman, "Frederick II: Wonder of the World," c. 1968, American Heritage Publishing Company, as found in <u>*Perspectives in Western Civilization: Essays from Horizon*</u>, Volume I, American Heritage Publishing Company, New York, New York, 1972, pp. 154-164, 163.

from birth.

The question "Does a tree falling in a forest make a sound if there is no person there to detect the sound?" is far from the point. In this question we have the laws of physics, gravity, sound, vibration, and planetary existence all assumed. On these assumptions, the "sound" of the tree falling can be predicted and assumed as the result of all previous assumptions of the question.

However removing these assumptions, such that the bare assumption of consciousness without "consciousness OF something" is attempted, existence is itself in question.

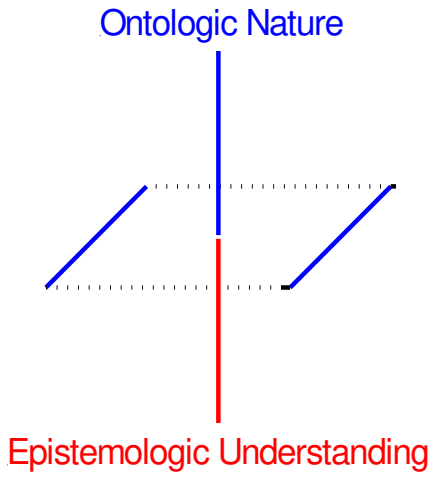
OPPOSITIONAL ANALYSIS

PART THREE

10. The Concept of a Circuit

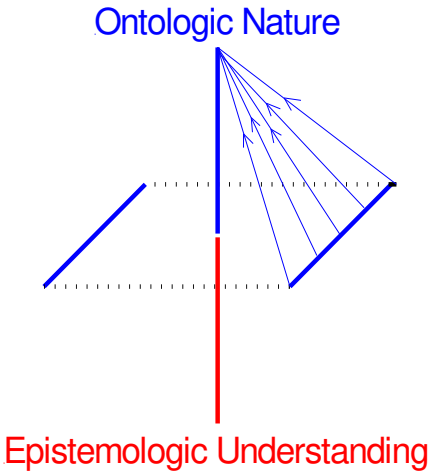
The fundamental question posed by the Mind-Body problem is well stated by Chalmers, *supra*: "None of these theories addresses the really 'hard' question posed by the existence of mind: Why is the performance of these (neural, physical, chemical) functions accompanied by subjective experience?"

To re-state the same question using the diagram proposed as the Image Axis: If it is axiomatic that the lower pole (Epistemologic Understanding) and the upper pole (Ontologic Nature) at some point merge in subjective experience, how does this merger take place?

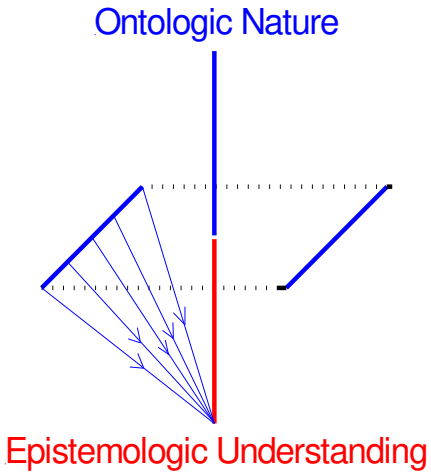


Let us analyze how this may occur.

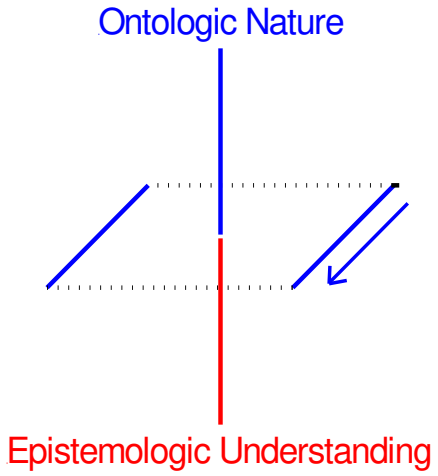
We begin with the observation that the basis for the Ontologic Nature of anything is the result of the Being side of reality.



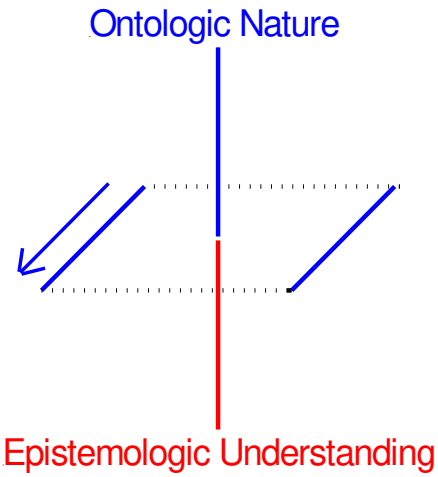
If this is true then the basis for an Epistemologic Understanding of that Ontologic Nature must be found in the Non-Being side of reality.



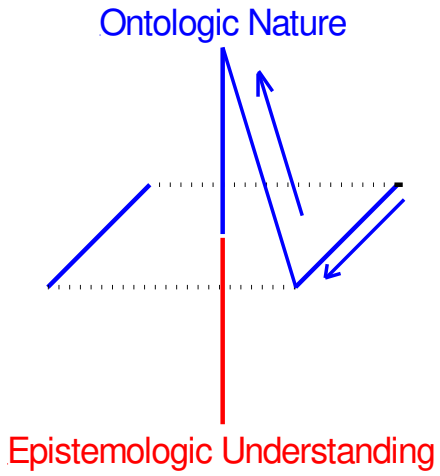
In terms of priority, the Self must come before its Opposite on the Being side of our diagram …



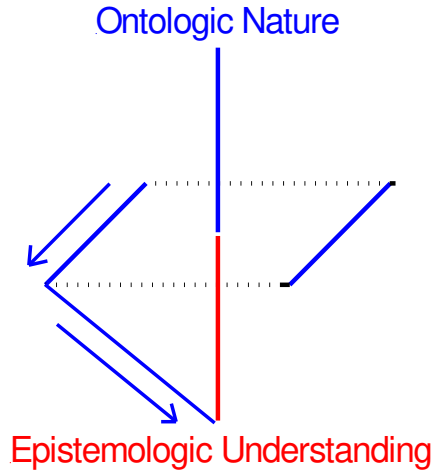
… Just as Negation must come before Context on the Non-Being side of our diagram.



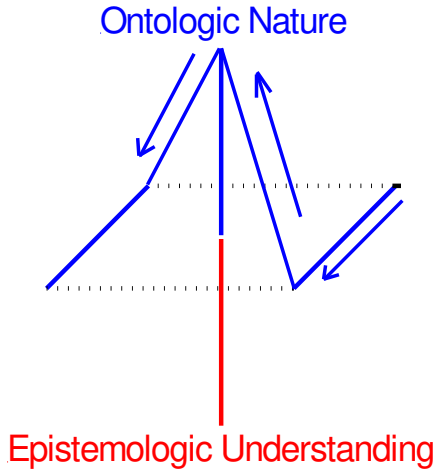
Using this approach, the struggle between the Self and its Opposite on the Being side of reality is the basis for the Ontologic Nature of any existing thing.



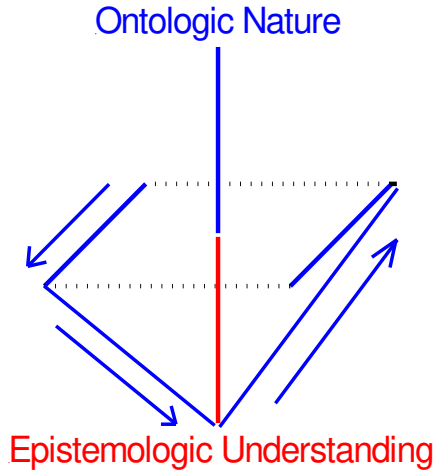
Conversely, the struggle between Negation and Context on the Non-Being side of reality is the basis for the Epistemologic Understanding of the Ontologic Nature.



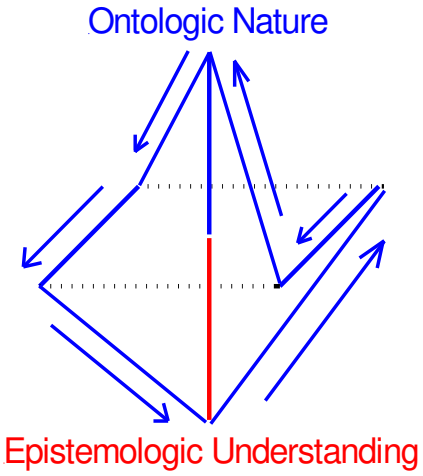
We must observe further that the Ontologic Nature must precede its Epistemologic Understanding…



And we may also observe that once an Epistemologic Understanding has been obtained, this Ontologic Nature has been affected in some fashion.

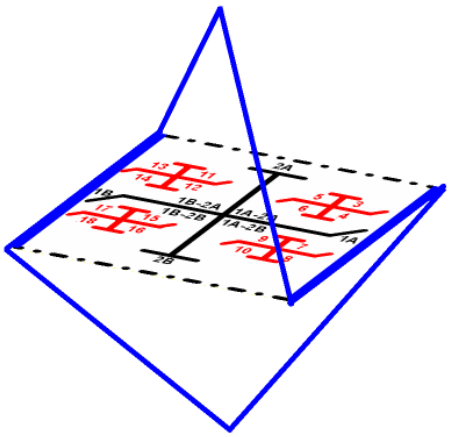


Connecting these ideas we have a in a circuit of relationships.



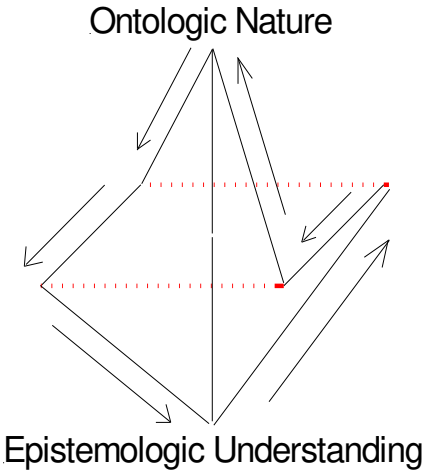
or to include the entire system as developed to this point:

ONTOLOGIC NATURE

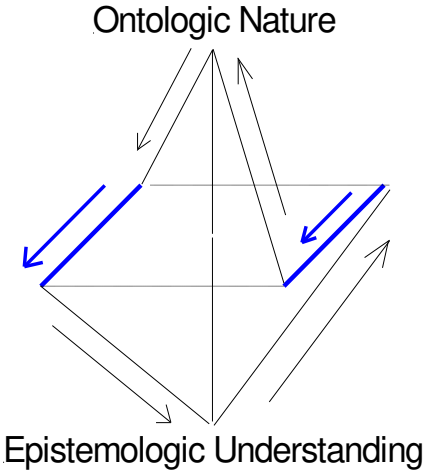


EPISTEMOLOGIC UNDERSTANDING

This figure avoids the gulfs imposed by the Primary Opposition, i.e. the *Principle of Non-Contradiction*, between "Self and Negation," and "Opposite and Context." The *Principle of Non-Contradiction* states: "A thing can not be itself and be not itself at the same time in the same way."



This figure is designed to include the tension created by the Secondary Opposition, i.e. the *Principle of Contradiction*, between "Self vs. Opposite" and "Negation vs. Context." The *Principle of Contradiction* states: "In order to exist, a thing must possess an opposite, which also exists."



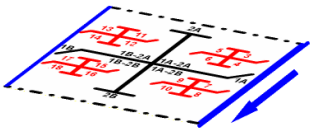
This figure suggests that a constantly self-referencing circuit is the basis of the merger between the Ontologic Nature and the Epistemologic Understanding of anything which exists.

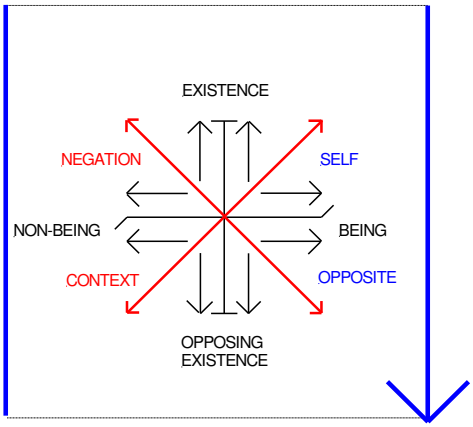
The analysis of these relationships at the philosophic level is intended (1) to simplify explanations of the characteristic structure of various levels of reality, and (2) to aid in an understanding of the whole by the way of providing a single, common reference for all levels.

Let us reformulate this circuit into a set of seven statements each of which is consistent with the tenor of the observations made so far. These statements provide a philosophic foundation for the investigation of consciousness at various levels of reality.

11. Circuit of Being

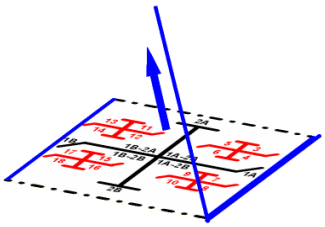
(1) *Every Self must have an Opposite in order to exist.*





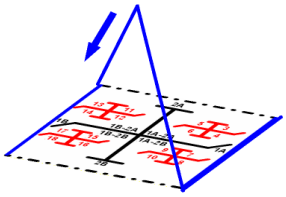
(2) *Once this "Opposite" has been declared, an Ontologic Entity exists. This does not mean that the Entity is known; it merely means that it Exists as an independent thing in reality.*

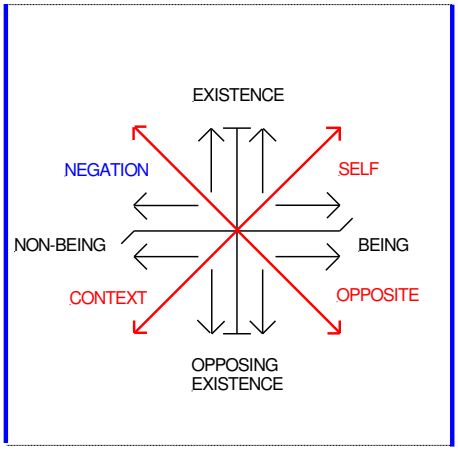
ONTOLOGIC NATURE



(3) *Status as an Ontologic Entity permits the Self to differentiate itself from every other thing in the Universe. This status permits the Self to have a Negation, i.e. "Everything which the Self is Not." In this manner, the Self is empowered to maintain its integrity under the Primary Opposition, the statement that "A thing can not 'Be' and 'Not-Be' simultaneously and in the same way."*

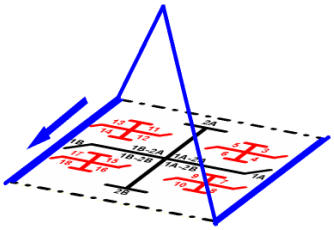
ONTOLOGIC NATURE

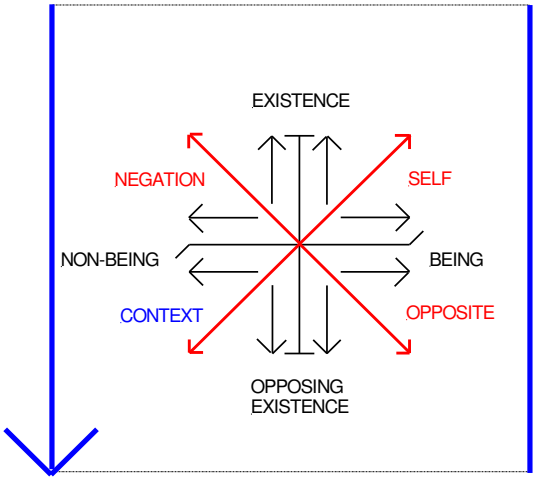




(4) *This Negation gives rise to a positive statement of the Self, a Context, in order to distinguish what the Self truly IS.*

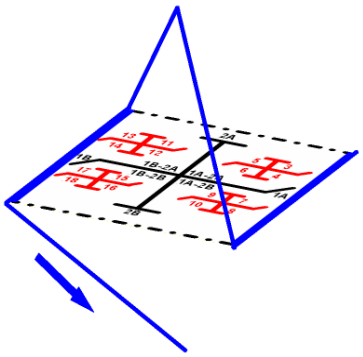
ONTOLOGIC NATURE





(5) *Upon satisfactorily identifying the Self and its Opposite, as well as its Negation and Context, an Epistemologic Understanding of the Self <u>of some sort</u> has been reached.*

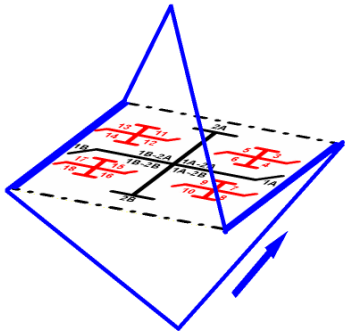
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

(6) *The Epistemologic Understanding of a Self has a direct bearing on the Self. Once the Self is known, it has become a "Known" Self rather than an "Unknown Self."*

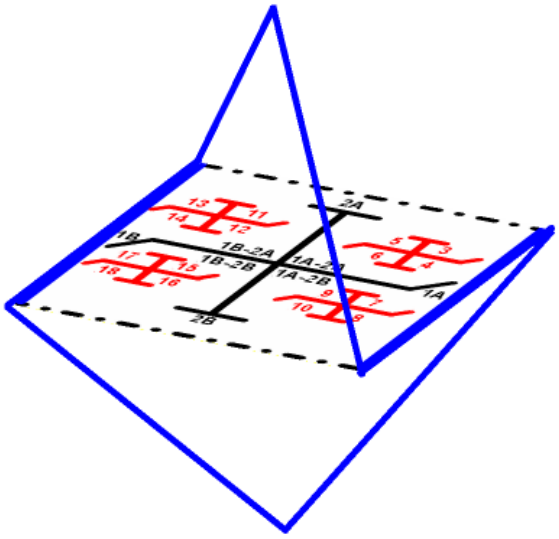
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

(7) *This circuit of considerations might be represented by the following figures, in which each line is of equal length.*

ONTOLOGIC NATURE

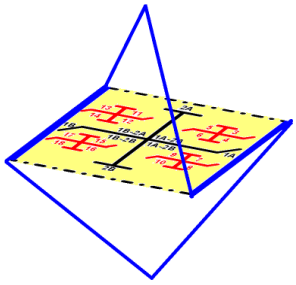


EPISTEMOLOGIC UNDERSTANDING

This model is of three planes:

(1) a plane of dichotomies, one which defines the basic categories of anything which can be deemed to exist,

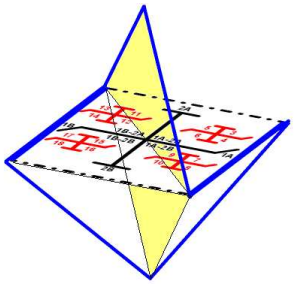
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

2) a plane of the essential Ontologic Aspects creating the level of reality in question, the contest between the Opposite and the Negation of the Self, and

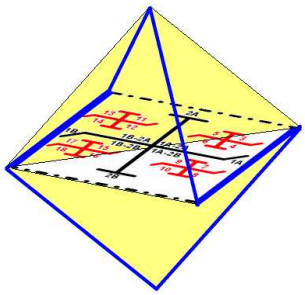
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

3) a plane defining the essential epistemologic relationship permitting the level of reality to be understood and comprehended, i.e. the epistemologic understanding of the Self and its Context.

ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

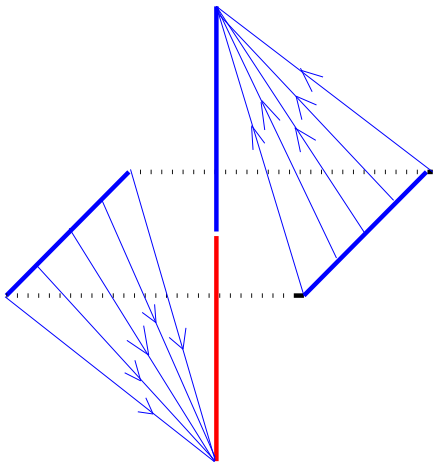
The circuit described answers the Mind-Body Problem first raised by Descartes in that this circuit permits the merger of an Ontologic Nature and an Epistemologic Understanding in a fashion which takes into account the *Principle of Non-Contradiction* and the *Principle of Contradiction*.

We have seen, however, that an uncertainty arises on the left hand "negation" quadrant. This occurred when we considered the impossibility of knowing with certainty the top draw card while remaining true to the rules of Gin Rummy.

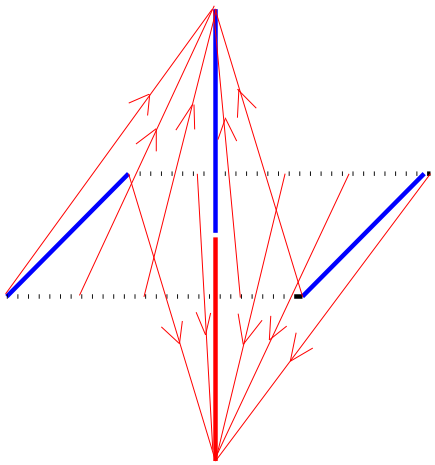
What is the philosophic basis of inherent uncertainty?

12. The Concept of Non-Being

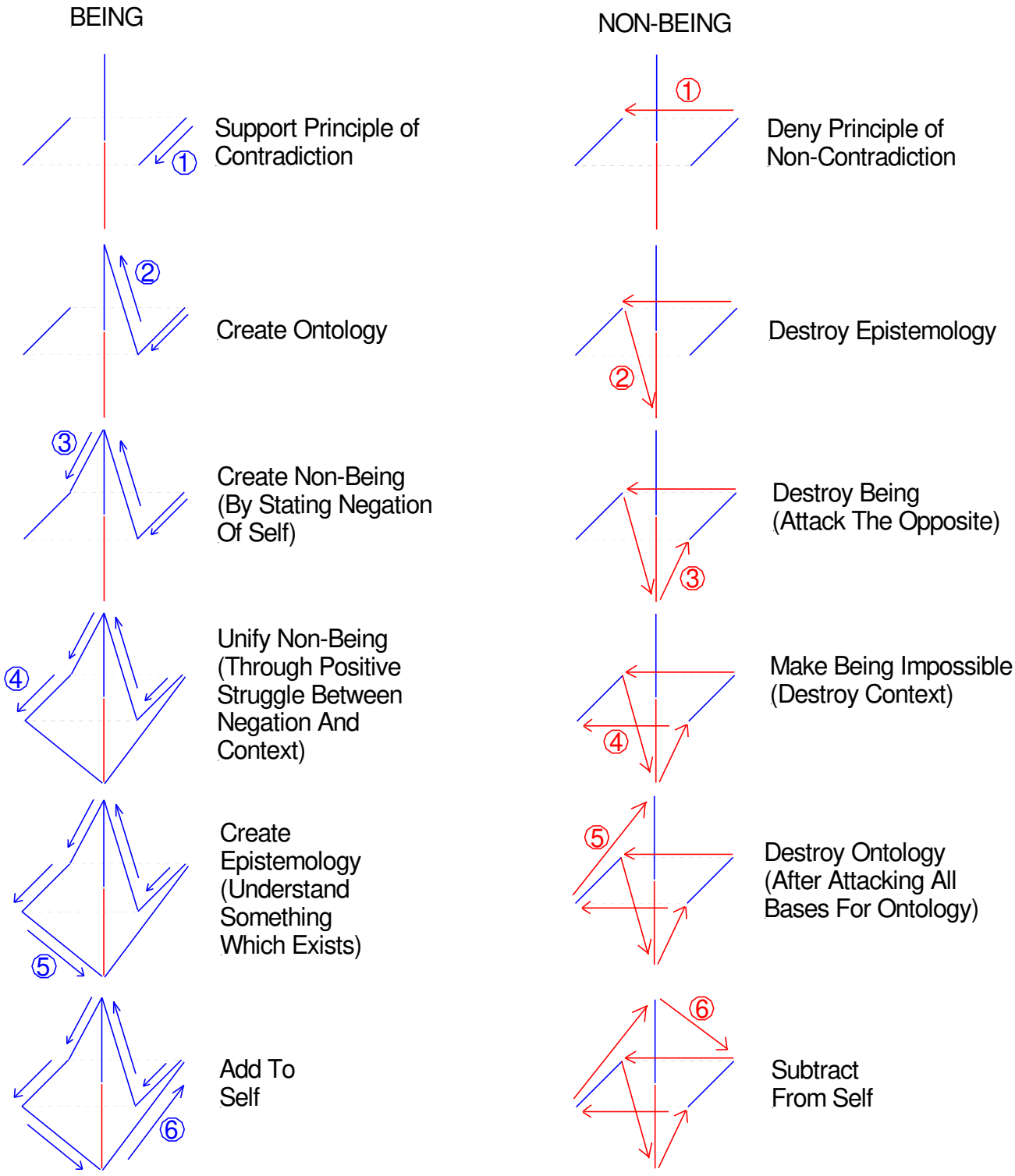
The Being side of this figure has been given as the basis for Ontologic Nature and the Non-Being side has been given as the basis for an Epistemologic Understanding. These arose when we adhered to the *Principle of Non-Contradiction* used the "Self" and "Opposite" generated by the *Principle of Contradiction* as the basis for an Ontologic Nature and Epistemologic Understanding.



But what happens if we violate the rules set down? In other words, what occurs if we deny the validity of the *Principle of Non-Contradiction*, ignore the *Principle of Contradiction*, and use this position as the basis for an understanding of the world around us? This must create the basis for an attack upon our scheme.



Let us begin with a "Circuit of Being" and label its opposite a "Circuit of Non-Being."



How can one deny the *Principle of Non-Contradiction*? One method is as follows:

Note first that the concept "Negation" has been placed as a "Primary Opposite" from the concept "Self." In other words, once a particular "Self" has been found to exist, this very existence gives rise to "everything which the Self IS NOT," i.e. the 'Self's" "Negation."

Moving further, what occurs if we use the concept "Negation" as an independent, originating "Self"? This is not the standard use of the term "Negation." Typically the use of the concept "Negation" makes sense only in light of some independent, originating "Being." In this standard usage, the concept "Negation" functions visa via an original, separate, independent, particular "Self." In this standard usage, the "Negation" of that particular "Self" represents "all that (a very particular, originating, independent) Self Is Not."

On the other hand, if we treat the concept of an undifferentiated "Negation" as an original, independent, originating "Self" we state that the concept "All that the Self Is Not" has some validity absent some separate, independent, particular and originating "Self." If, under the *Principle of Non-Contradiction*, a thing cannot "Be" and "Not Be" simultaneously and in the same way, then the assertion that the "Not Be" can function as an independent "Being" (without reference to a separate, independent, originating "Self") is inherently contradictory of this First Principle. In short, when the Negation is treated as a Self, we find ourselves asserting that "Not Be" can "Be" and "Not Be" simultaneously and in the same way. This violates the *Principle of Non-Contradiction*.

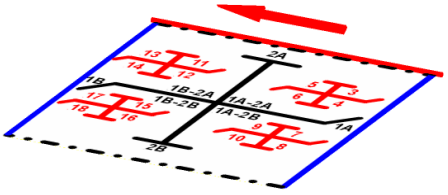
One philosopher referred to this as the topic which is never raised in philosophy. The very thought that "Negation" might have some independent existence absent reference to a particular "Self" gives rise to a number of philosophic problems, beginning with the impossibility of defining such a "Negation's" independent, originating existence in a rational way.

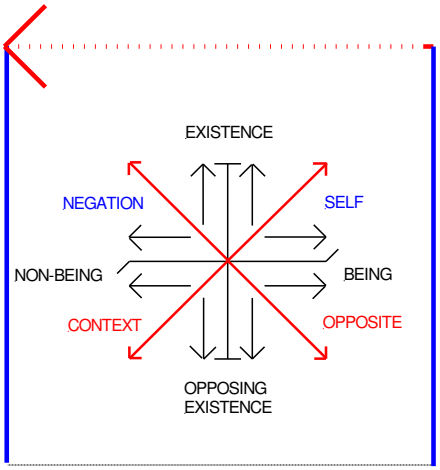
Let us consider a "Circuit of Non-Being" in connection with this effort. In this case, should the concept "Negation" be treated as a "Self," we face a number of challenges to our existing scheme. Let us label these as "prohibitions" and list them in seven statements. Allowing these assertions to follow the "Circuit of Non-Being," we have the following circuit.

13. Circuit of Non-Being

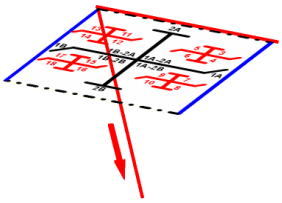
(8) *One prohibition exists upon the use of these concepts: The Concept of "Negation" must itself have something upon which to work, i.e. it represents everything that a particular Self IS NOT.*

If the Concept of Self is applied to Negation...



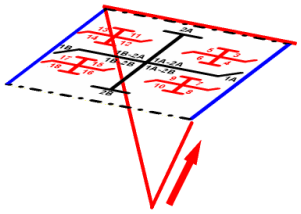


(9) *… an immediate Epistemological Difficulty arises …*



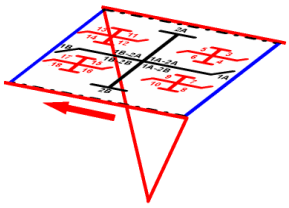
EPISTEMOLOGIC UNDERSTANDING

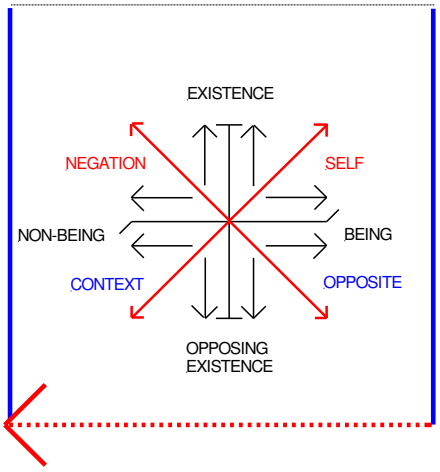
(10) *... in that no Opposite can be found for Negation treated as a Self. The Concept of Negation, treated as "Self," simply means "everything" and its Opposite would be "Nothing." (Moreover, how can Negation have a "Negation"?) This would give the absurd conclusion that (1) that "Negation" (treated as "Self") is "Everything", and (2) the opposite of the "Negation" is "Nothing", a double negative.*



EPISTEMOLOGIC UNDERSTANDING

(11) *Moreover, no Context for such an entity can exist, because neither an Opposite nor a Negation for "Negation" can exist.*

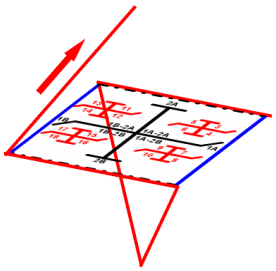




EPISTEMOLOGIC UNDERSTANDING

(12) *The very idea that Negation might be treated as a "Self" constitutes an attack on the concept of "Ontologic Nature."*

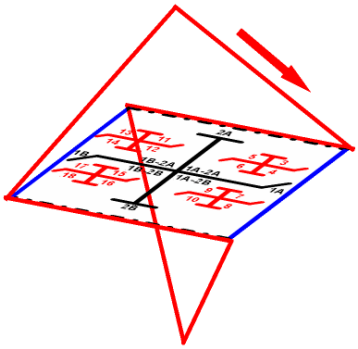
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

(13) *If the concept of Ontologic Nature is invalid, there can be no application of the concept "Self" to Negation.*

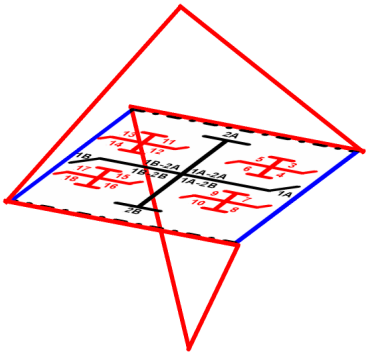
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

(14) *We have then a circuit wherein philosophy declares certain thoughts improper, illegal. This illegality is found in the treatment of Negation as a form of Self. This circuit might be represented as:*

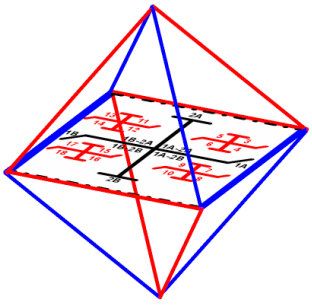
ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

(15) *Joining the positive (blue) and negative (red) circuits of philosophy together we have the following*:

ONTOLOGIC NATURE



EPISTEMOLOGIC UNDERSTANDING

OPPOSITIONAL ANALYSIS

PART FOUR

15. Merger of the Poles of the Image Axis in Reflective Capacity

Any consideration of the term "consciousness" as used herein must bear in mind that consciousness is a structure, a form for understanding something. To "see" the workings of an economy or the organization of the Periodic Table of Chemical Elements means to "understand" these workings and organizations; it does not mean to "see" them in some physical sense.

The concepts of ontology and epistemology as used herein associate a level of "conscious" behavior with the international economy, the history of Europe, the economic development of the United States and the functioning of the judicial branch of the United States. These levels of "consciousness" build upon the game-playing psychology of Gin Rummy and they repeat the underlying structure which was discovered in this simple two-handed card game. By expanding the search for "consciousness" to these broader levels, a scheme for consciousness at all possible levels is presented. This structure is found in the non-living as well as living levels of the reality around us.

In order to develop this understanding of consciousness, the underlying concepts of "ontology" and "epistemology" must be expanded to include levels of consciousness which are not solely connected to the solitary human perception.

Our Third Axiom, the *Principle of Consciousness*, states: "Consciousness is always Consciousness OF something." This Axiom has been personified by the introduction of an "Image Axis." This Axis represents the opposition between the nature of the thing as it exists (ontologic nature), and the understanding of that thing (epistemologic understanding).

Prior to the introduction of the Principle of Consciousness, two other axes already existed in this system. The First Axiom, the *Principle of Non-Contradiction* states: "A thing can not be and not-be at the same time in the same way." The Second Axiom, the *Principle of Contradiction* states: "A thing which exists must have an opposite which also exists")

Unlike these first two axioms, the *Principle of Consciousness* does not separate reality into irresolvable halves or oppositions. Rather, it forces a joinder, an inviolable unity, between "Consciousness" and the "Something" of which consciousness is conscious.

This understanding of ontology and epistemology is perhaps a bit different. As I tried to describe these ideas to a friend of mine, Thad Suits, the following conversation was helpful.

> Thad: I don't understand how the epistemologic existence of something has anything to do with the ontologic reality of that thing. Just because I know that there is a quasar out there doesn't affect the quasar.
>
> Scott: Assume for the moment that you don't know that the quasar is there. Is it a quasar?
>
> Thad: Sure.
>
> Scott: Now, assume that you just got word that the quasar exists. Is it the same quasar?

Thad: Sure!

Scott: How can it be? Before it was an *un*known quasar. Now, it's a *known* quasar. Those are two different things, ontologically speaking.

Thad: That's absurd! The ontologic existence of the quasar hasn't changed at all! My perception of the quasar has perhaps changed. My understanding of the quasar has perhaps changed. But the ontologic existence of the quasar itself has not changed a bit.

Scott: If the quasar is now known to you, when before it was not known to you at all, then it seems to me that this single change has affected the ontologic existence of the quasar. It is not the same quasar as before.

Thad: I guess I just don't buy that.

Scott: Let's imagine the continent of South America before the voyages of Columbus. Prior to the discovery of South America stemming from Columbus' voyages, South America was unknown to Europeans. After the first European sets foot on South America, is it the same South America? Is the South America, post-European invasion, the same South America pre-European invasion?

Thad: No, of course not. These are different South Americas. But the difference stems from a whole invasion of the continent, not from the knowledge of a single person.

Scott: But that invasion would not have been possible without the first discovery of a single European who goes back to Europe and starts the invasion. Therefore, once the epistemologic understanding of a single person has changed, the ontologic reality of the thing changes with it.

Thad: That seems just too far out to me. It seems too extreme.

Scott: Well, let's try another example. Right now we are sitting in the Morning Light Café in Great Falls, Montana. I am sitting on a typical restaurant chair. I can't actually see this chair without moving around to look at it, but I assume that this chair is exactly like the chair that is next to me on my right facing you. I also assume that you are sitting on a similar chair and that this chair looks exactly like the chair next to you on your left. So far so good?

Thad: OK, sure.

Scott: Now from where I am sitting there is a chair possibly behind you, facing the table behind you, but I can't tell. Your torso is blocking my view of that chair, so I don't really know if there is a chair behind you or not, and without turning around you can't see the chair either. But really, just given the position of our bodies in the room, there might not be a chair behind you at all. Still ok?

Thad: I can buy this so far.

Scott: Now right now we are in a ground breaking philosophic discussion about the relationship between ontology and epistemology. And we are discussing a chair which may be, but we don't know, directly behind you. In other words, if there is a chair behind you, then it has a particular ontology. On the other hand, if there is no chair behind you, then it can not have an ontology at all, because it doesn't exist. So far, so good?

Thad: I guess.

Scott: Now let's imagine that there *is* a chair behind you, and sure enough, that is THE CHAIR which Thad Suits and Scott Albers were referring to in this ground-breaking discussion of the relationship between ontology and epistemology. That is THE CHAIR. THE FAMOUS CHAIR. For the next one thousand years people will want to see that chair, visit the museum which houses that chair, etc. etc. That chair will be as famous as anything that Plato ever mentioned or that Descartes ever thought about. If, of course, it actually does exist. At the present time, I don't even know if there is a chair there or not, because you are blocking my view. And you can't tell me without turning around, which you are not doing yet.

That: Go on.

Scott: Think of it. If there actually is a chair there, we could take that chair, initial it, send it to Sotheby's for auction and we'd both be rich! We could get a million dollars for that chair because that is THE CHAIR!

Thad: OK.

Scott: If there is a chair there, would our knowledge of the existence of that chair change the chair? Would our epistemologic awareness of that chair change the ontology of the chair itself?

Thad: I'm not sure.

Scott: Think of it. Right now we don't even know that there's a chair behind you. So just knowing that the chair exists gives us the beginnings of an epistemology of the chair. Once we go beyond the simple existence of the chair to our mutual knowledge of the chair, we now have a million dollar museum piece which we can both cash in on.

Thad: If there is a chair there at all.

Scott: Right. We could both take magic markers, sign the chair, and then send it to Sotheby's for auction. Before it was just a regular old chair. Now it is THE CHAIR, THE CHAIR THAT ACTUALLY EXISTED. If, of course, there is a chair there in the first place.

Thad: So our knowledge of the chair would change the chair itself.

Scott: That's my point. The ontologic existence of something is changed by an epistemologic awareness of the thing, and this change in the ontology of the thing is subject to further changes in epistemology. In essence, the relationship between ontology and epistemology is a circuit. The Image Axis is the foundation of that circuit.

Thad: I can see your point, but I think you need to cover it in an additional essay.

Waitress: You're going to have to move now. I'm cleaning up the room. Please take your things to the next room.

Scott, Thad: Sure, no problem.

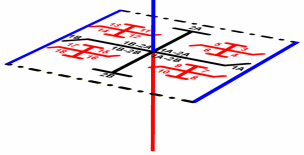
(As Thad and Scott change tables)

Thad: There IS a chair there! The chair actually DOES exist!

In this essay, the possibility of a connection or harmony between mind and matter has been made through a "Circuit of Being" and an equally necessary "Circuit of Non-Being." These circuits arise from the basic terms of any level of reality studied.

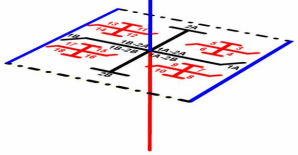
As a "Circuit of Being" and "Circuit of Non-Being" join the elements necessary to sustain the ontologic nature and epistemologic understanding of any self, a mirror reflection is created wherein *the ontologic reality of the object* contrasts directly with *the epistemologic reality of that object*. If the unit "1" represents the "Ontologic Nature" of any self, we have:

1



Let us oppose the "Ontologic Nature" of any object with the "Epistemologic Understanding" of that same object. Because these two concepts of "Ontology" and "Epistemology" are intended to mirror one another – i.e. "object" and "understanding of that object" - we may give a second unit "1" to represent the Epistemologic Understanding of that object. (I use capitals to emphasize the formal placement of these ideas in the Image Axis.)

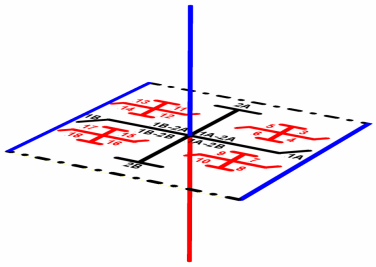
1



1

The "Image Axis," standing as a vertical line above the standard cross, represents an absolute equivalence between the object which "IS" (ontologic nature) and the object which "IS IN MY MIND" (epistemologic understanding). However, once an object is "known," the object itself becomes – no longer simply "an object," but rather – "a *known* object." This addition of an Epistemologic Understanding of an underlying Ontologic Nature may be represented as the addition of both the "ontologic 1" and the "epistemologic 1" in a new ontologic unity, 1 + 1 = 2, i.e. "a *known* object."

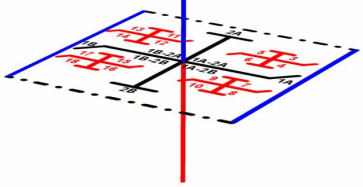
1 + 1 = 2



1

On the other hand, once the Ontologic Nature of an object has had added to it an Epistemologic Understanding of that object, a *new* understanding of the now "*known* object" must occur as well. This might be represented as "2 + 1 = 3" where the "2" represents a "*known* object" and the "1" represents the prior Epistemologic Understanding of the object which has now changed. This process begins an infinite progression as these opposites reflect one another.

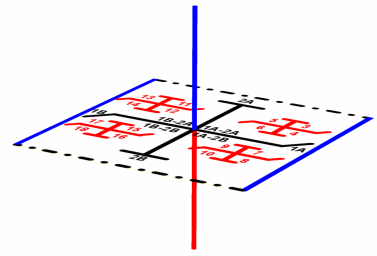
2



2 + 1 = 3

Once this new Epistemologic Understanding has been achieved, the object is now "known" *in a new and more complete manner*, which again changes its Ontologic Nature. This new Ontologic Nature might be represented as the equation "2 + 3 = 5" where the "2" represents the former Ontologic Nature, the "3" represents the new Epistemologic Understanding of that object, for a new Ontologic Nature of "5." This process may continue infinitely. At every new addition, the Ontologic Nature of a thing is reflected by a new Epistemologic Understanding, which in turn alters the Ontologic Nature of the thing, which again forces a revision of our Epistemologic Understanding of the same thing, etc. etc.

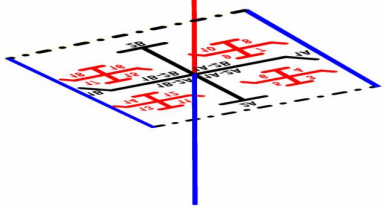
2 + 3 = 5



3

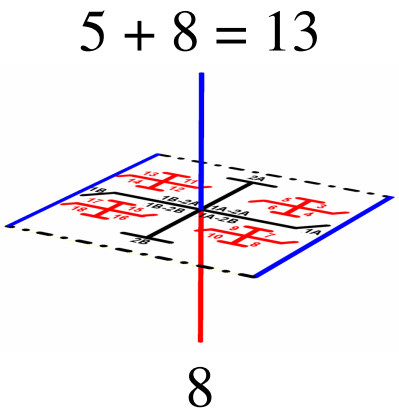
If a new Ontologic Nature of an object is given as a "5", then this must have a bearing on the Epistemologic Understanding of the same object. If this previous Epistemologic Understanding of the set was given as "3", and if added to this is the new Ontologic Nature of "5," a new Epistemologic Understanding is stated, "8". This new Epistemologic Understanding can be represented by the equation "3 + 5 = 8."

5



3 + 5 = 8

This new Epistemologic Understanding of the object ("8") again changes the Ontologic Nature of the object ("5") for a new Ontologic Nature ("13"). This change is stated by the equation "5 + 8 = 13."



This presentation of the Fibonacci Series is central to the possibility of a merger of Ontologic Nature and Epistemologic Understanding. After my conversation with Thad I was pleased that a way had been developed to convey this possibility. My son was not impressed.

Andrew: But how do you get the Fibonacci Series out of this?

Scott: Well, we have a chair to start with, right?

Andrew: OK.

Scott: Well, let's arbitrarily give the number "1" to the ontologic existence of THE CHAIR.

Ontology	Chair	1				
Epistemol.						

Scott: And then let's make a mirror image of that chair with our mind, and call this the epistemologic understanding of THE CHAIR, and as such, simply assign it as the number one also.

Ontology	Chair	1				
Epistemol.	Knowledge of Chair	"1"				

Andrew: Why another number one?

Scott: Because the purpose of the number is simply to provide a mirror image of the chair itself. Nothing more, nothing less.

Andrew: So how does this turn into the Fibonacci Series?

Scott: Once it's conceded that the ontologic existence of something changes with an epistemologic awareness of that thing, we can combine the ontologic and epistemologic "1"s into a single phrase. In other words, once we know about the chair, it is no longer simply a chair. Now it is a Known Chair. This is a different form of ontology, and we can use the phrase "Known Chair" to be the same as "1 + 1".

Ontology	Chair	1	Known Chair	1 + "1"		
Epistemol.	Knowledge of Chair	"1"				

Andrew: But how does this equal the Fibonacci Series?

Scott: Once we have a new ontology, a "Known Chair," our epistemology of that "Known Chair" also has to change. We now have not only a "Known Chair." We also know that we have a "Known Chair."

Andrew: But that's not the Fibonacci Series.

Scott: But once again, once we have a new epistemology, we have changed the ontology of the chair itself.

Andrew: And so on?

Scott: Yes. Every time there is a change in the ontology, the epistemology must change as well. And every time there is a new epistemology, the ontology is forced to change in turn.

Ontology	Chair	1	Known Chair	1 + "1"	A "Known Chair" Which Is Known To Be A "Known Chair"	(1 + "1") + "1" + (1 + "1")
Epistemol.	Knowledge of Chair	"1"	Know We Have A "Known Chair"	"1" + (1 + "1")	Know We Have A "Known Chair" Which Is A Known Chair Known To Be A "Known Chair"	"1" + (1 + "1") + (1 + "1") + "1" + (1 + "1")

Scott: If we replace these relationships with the whole numbers which are implied, we have the Fibonacci Series.

Ontology	Chair	1	=1	Known Chair	1 + "1"	=2	A "Known Chair" Which Is Known To Be A "Known Chair"	(1 + "1") + "1" + (1 + "1") =5
Epistemol.	Knowledge of Chair	"1"	=1	Know We Have A "Known Chair"	"1" + (1 + "1")	=3	Know We Have A "Known Chair" Which Is A Known Chair Known To Be A "Known Chair"	"1" + (1 + "1") + (1 + "1") + "1" + (1 + "1") =8

By condensing this series of sums into a pattern we have the Fibonacci series, to wit:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, etc.

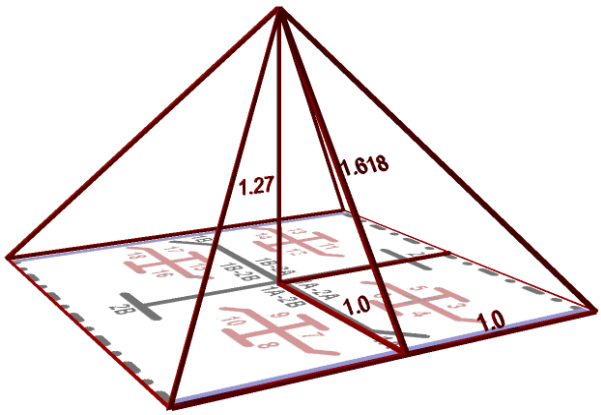
Joining these numbers into fractions in an effort to determining a common ratio, we have:

$$\frac{1}{1} \quad \frac{2}{1} \quad \frac{3}{2} \quad \frac{5}{3} \quad \frac{8}{5} \quad \frac{13}{8} \quad \frac{21}{13} \quad \frac{34}{21} \quad \frac{55}{34} \quad \frac{89}{55} \quad \ldots$$

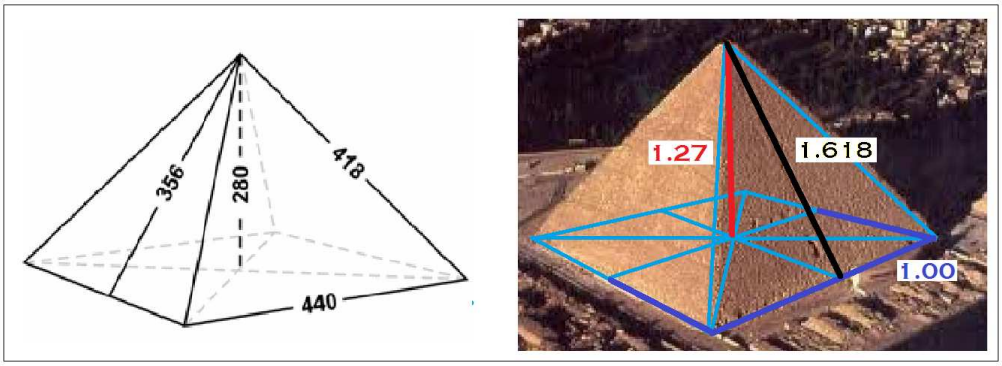
This continuing series renders the constant phi = 1.6180...[13]

[13] For a collection of various comments on the importance of this mathematical series, see the Appendix.

Let the number 1.6180… stand for the relationship between the "Being," "Non-Being," "Existence," "Opposing Existence" as associated with the merged "Ontological/Epistemological" end points of the "Image Axis." This merger states the Third Axiom, the Principle of Consciousness ("Consciousness is always consciousness OF something"). We have then the following construction.[14]



[14] These are the approximate proportions of the Great Pyramid of Giza, as displayed below. At left are the measurements of the Great Pyramid in cubits, and to the right are the proportions suggested by these lengths.



The extent to which the Great Pyramid fulfills the dictates of this philosophy depends upon one's view of the mathematic structure of the Great Pyramid itself. As to the incorporation of pi into the design see Tompkins (1971:70) "Taylor then discovered that if he divided the perimeter of the Pyramid by twice its height, it gave him a quotient of 3.144, remarkably close to the value of pi, which is computed as 3.14159+. In other words, the height of the Pyramid appeared to be in relation to the perimeter of its base as the radius of a circle is to its circumference." In accord see DeSalvo (2008:72-73), Skinner (2006:116-119), (Dunn, 1998:59).

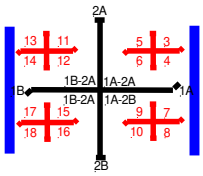
As to phi see Tompkins (1971:190) "(T)he Pyramid was designed to incorporate not only the pi proportion by another and even more useful constant proportion, known in the Renaissance as the Golden Section, designated in modern times by the Greek letter φ (pronounced phi) or 1.618. (If the 356 cubits of the Pyramid's apothem are divided by half the base of 220 cubits, the result is 89/55, or 1.618.)" In accord see Skinner (2006: 119-121), Hemenway (2005:68).

In opposition to both see Livio, (2002:53-61). Calculating a difference from phi at "less than 0.1%" (at 56) and "differing (from pi) only by about 0.05%" (at 58), he argues that these proportions are not those of an original design by the builder of the Great Pyramid. "(I)t is highly unlikely that either the ancient Babylonians or the ancient Egyptians discovered the Golden Ratio and its properties; this task was left for the Greek mathematicians." (at 61)

CONCLUSION TO PART FOUR

We have now discussed four levels of Oppositional Analysis, to wit:

1



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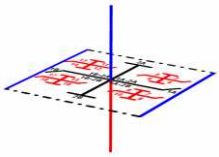

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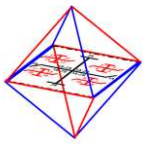

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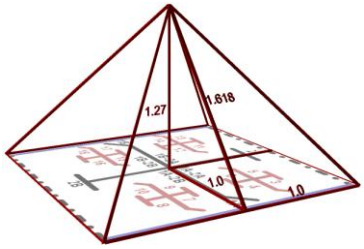
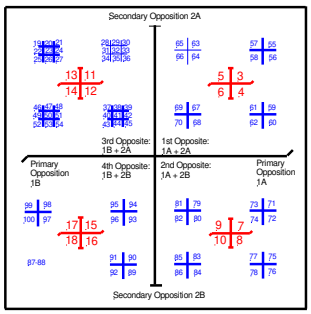


We move now to the next stage of Oppositional Analysis, the consideration of the resolution of the Image Axis into a Plane of Conclusion.

5



OPPOSITIONAL ANALYSIS
PART FIVE

20. The Plane of Conclusion

At the conclusion to Part I a plane of definition and a plane of relationship had been considered in connection to the four basic terms of Oppositional Analysis: self, opposite, negation and context. We may treat the concept of "defining" in philosophy, and of interpreting "relationships" between defined entities, as two separate aspects which "control" our "conclusion" to any philosophical question.

For example, we might define a "good" as something worthy of respect, and "evil" as that which is not worthy of respect. Under this definition, if we ask whether something is good, we simply ask whether it is worthy of respect. One may agree or disagree about whether an object is good, but under the *definition* given, if it is not worthy of respect, it can not be good.

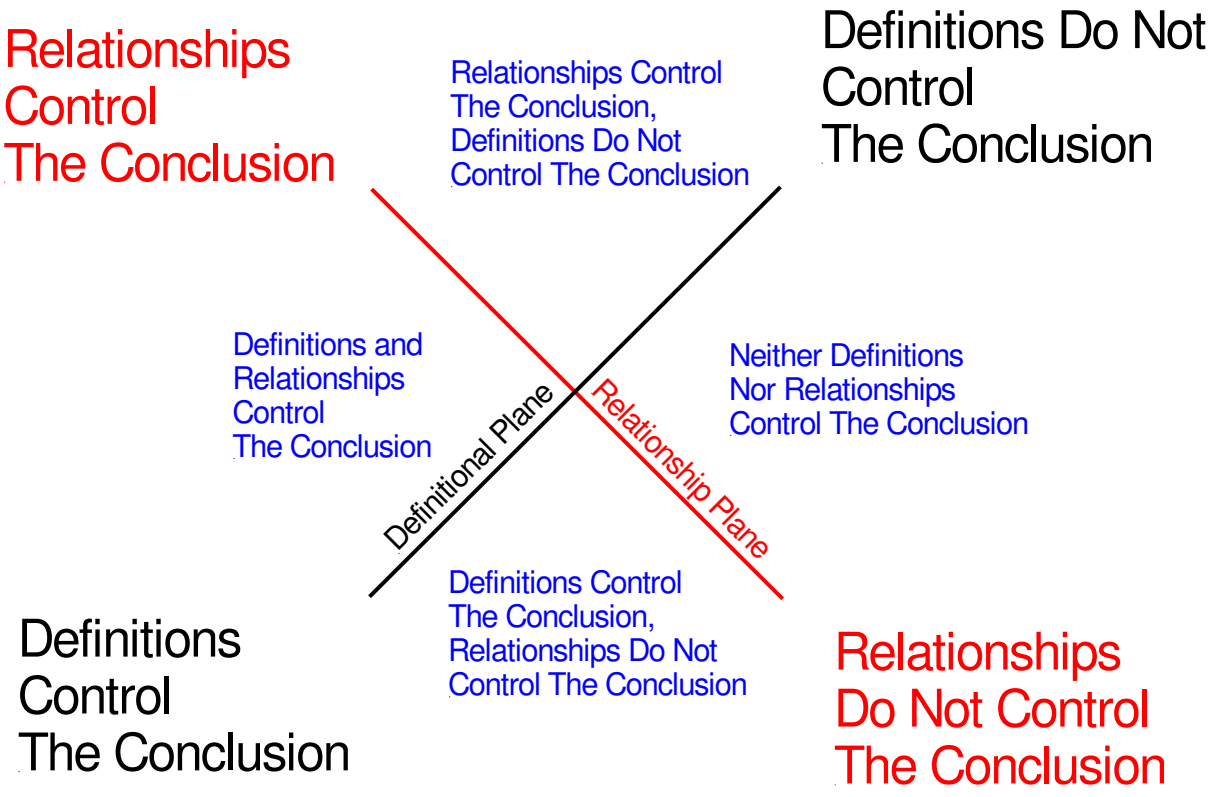
If we ask whether a particular action is better than another, we are asked to make a choice which largely must be based upon the relationships – the circumstances, the consequences, the motives, etc. – underlying each of the alternative actions. Although definitions may play a part in setting up the examples used, it is the *relationships* between defined categories which will determine the outcome of the question as to which of the alternatives is best.

If we ask whether a possible action is good or evil, that determination might depend upon circumstances which lay outside the action itself. For example it may be admirable and worthy of respect to always tell the truth. However if something is told in a fashion which, albeit accurate, nevertheless is unnecessarily harmful and cruel, it may not be good and may in fact be evil to tell the truth at that particular time or in that particular manner. In this case the respect or lack of respect to be given to an action is defined, *both by the definition of good and evil, and upon a full understanding of the consequences of – the relationships engendered by - a particular act.*

If we ask whether the element Hydrogen is "good" or "evil," we ask something which can not be subject to the definition given, because a chemical element – albeit a necessary part of Nature – is not a moral actor and therefore can neither be subject to respect or disrespect. *Neither the definitions proposed, nor the relationships contemplated, permit us to answer this question.*

The Plane of Definition and the Plane of Relationship are two fundamental forces controlling the development of philosophy. These planes are stuff upon which the previous dichotomies of "Being" and "Not-Being" are written, and they have their own oppositions. These oppositions concern the extent to which either "Definition" or "Relationship" control the final conclusion to any question posed.

A consistent philosophy is expected to come to conclusions regarding the interplay between the *definitions* proposed and the *relationships* inherent in the definitions proposed. We may treat the concept of "defining" in philosophy, and of interpreting "relationships" between defined entities, as two separate aspects which "control" our answer to any question. As this pertains to any branch of philosophy, we would then have the following "conclusion" plane:



A fundamental expectation of every consistent form of philosophy is that one of these quadrants will render an appropriate answer.

16.a. Conclusions Regarding "Negation"

If we ask whether the Negation of "a" can ever "BE" we find ourselves facing a difficult question.

First, if we say that Negation IS, it contradicts the concept of "Non-Being" itself. Something which is, by definition, part of Non-Being, can not BE.

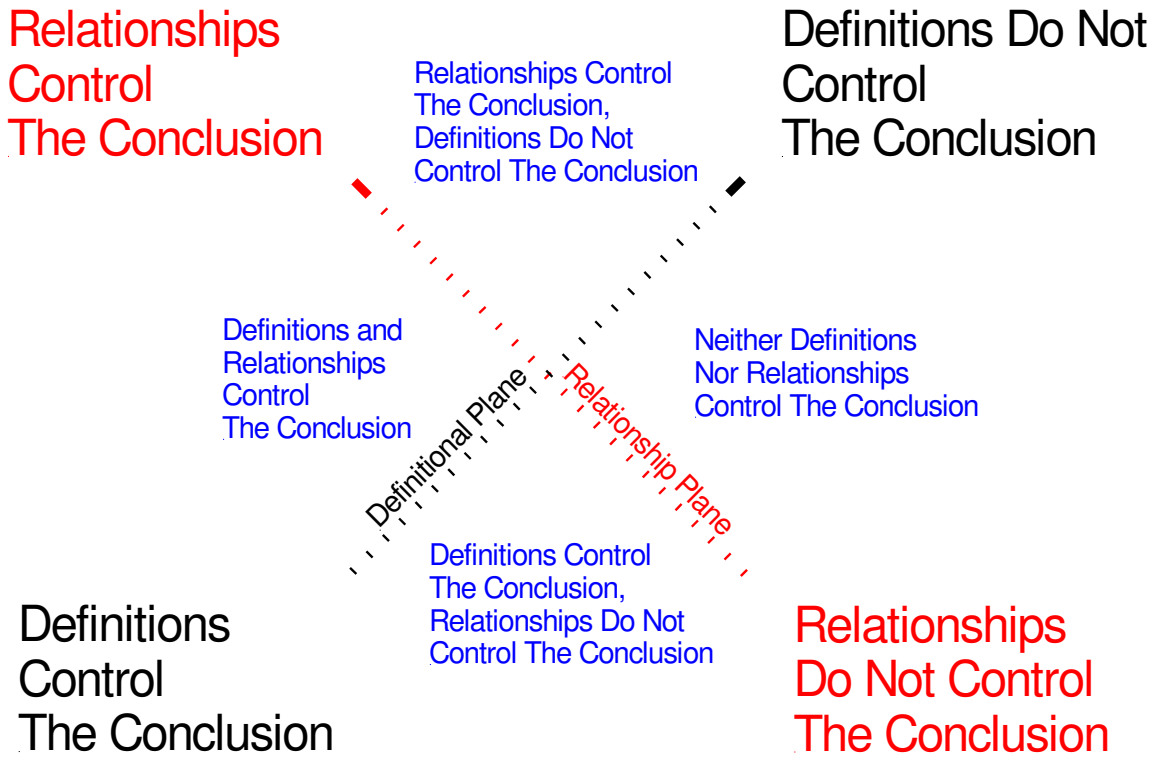
On the other hand, if we say that it IS NOT, then it can not BE, which makes the existence of both "a" itself, as well as Negation itself, impossible.

To take a specific example, attempting to understand the top left quadrant –

"all things not-white"

- we might inquire whether it is possible to understand something defined by solely its negative characteristics. To say simply that something "is not" something else does not tell us what it "is." We understand that "my right hand" is distinguished from all other things in which have being or existence. But can we truly understand the concept "all things not-my-right-hand" as implied solely upon a set of negative characteristics, i.e.. "not-my-right-hand"?

Here we are placed in the quandary of attempting to understand the relationship between our definitions, the relationships drawn, and conclusions sought. In the case of "Negation" we are uncertain about the Definitions, and the Relationships, which control the answer to the entity discussed.



The checkerboard of possibilities below represents the uncertainty inherent in the contradictions found in attempting to understand, or draw conclusions regarding, the Negation of anything. The attempt to determine what a Negation "IS" brings us to face nine separate possibilities.

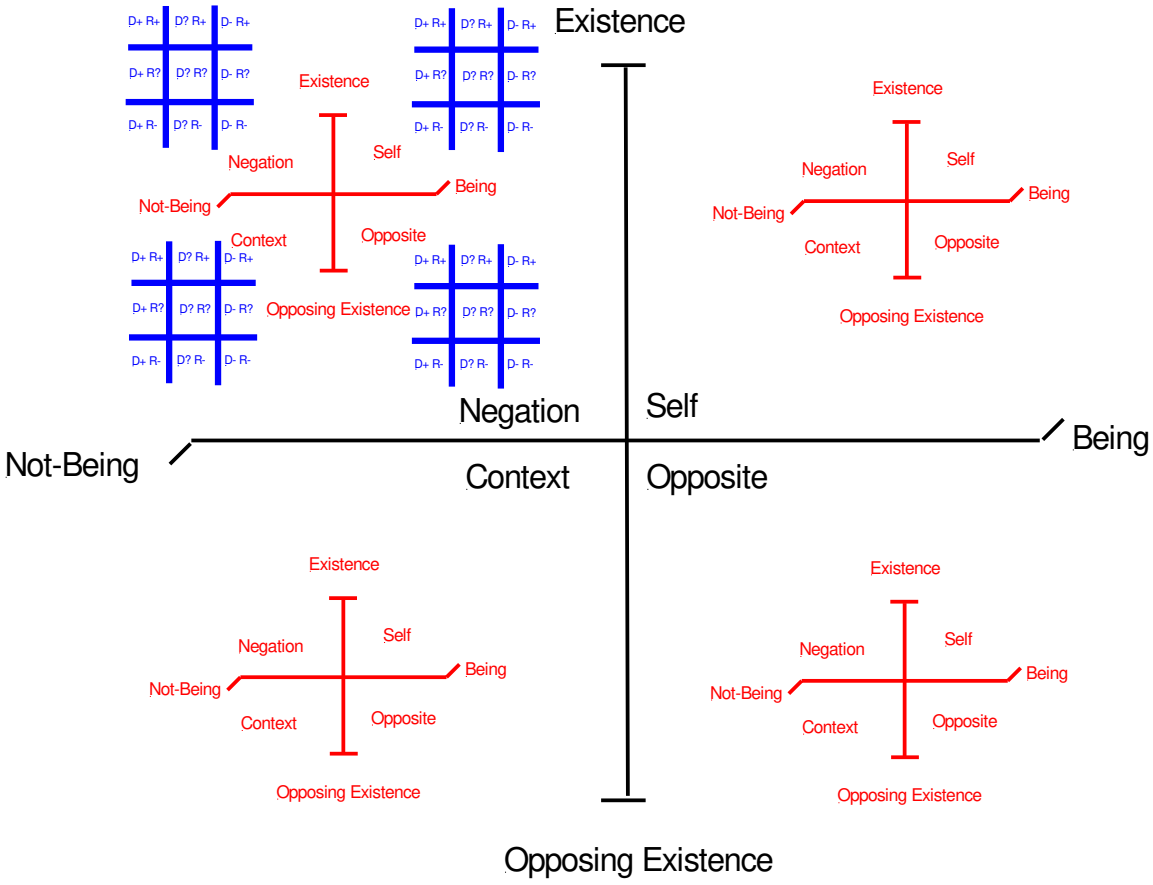
This "negation" quadrant is thus facing ambiguities of a fundamental nature. Because the definitions and relationships do not control entirely the understanding of the negation of a topic, we must acknowledge our uncertainty in describing its relationship to itself. That is to say, in attempting to align the concepts of definition and relationship in answering whether a Negation can "BE," we have nine possible answers, none of which takes precedence over the others.

W may place this blue "Conclusion Plane" within the Relationships of the Negation *to Itself*. That is, when attempting to draw conclusions regarding the relationship which the Negation has to itself, whether it can itself be a form of Self, we may not define or understand the topic which we are discussing without some ambiguity and even contradiction.

Similarly, when attempting to draw conclusions regarding the relationship which the Negation of the Self as *to the Self* as such, the relationship which the Negation has with the Self which has made such a negation necessary, it is impossible to know clearly the relationship which such a negation has with this "self." That is, when I discuss the relationship which "all things not my right hand" has with "my right hand" the nine possible categories reassert themselves. When we attempt to understand the relationship which the negation of a thing has with the *Opposite* of the "self" which defines the negation, we again are faced with the need to take into account the uncertainty inherent in our understanding of the "negation" of the self.

Finally, how may something which is ambiguous in nature have a comprehensible relationship with the *Context* of the self? Again the nine possible conclusions indicated before may be written as follows.

The inherent uncertainty created by the negative - "all things not ‘white’ ” - is found in the relationship of this negative to itself as well as to each of the other aspects of our analysis.



16.b. Conclusions Regarding "The Self" and "Opposite"

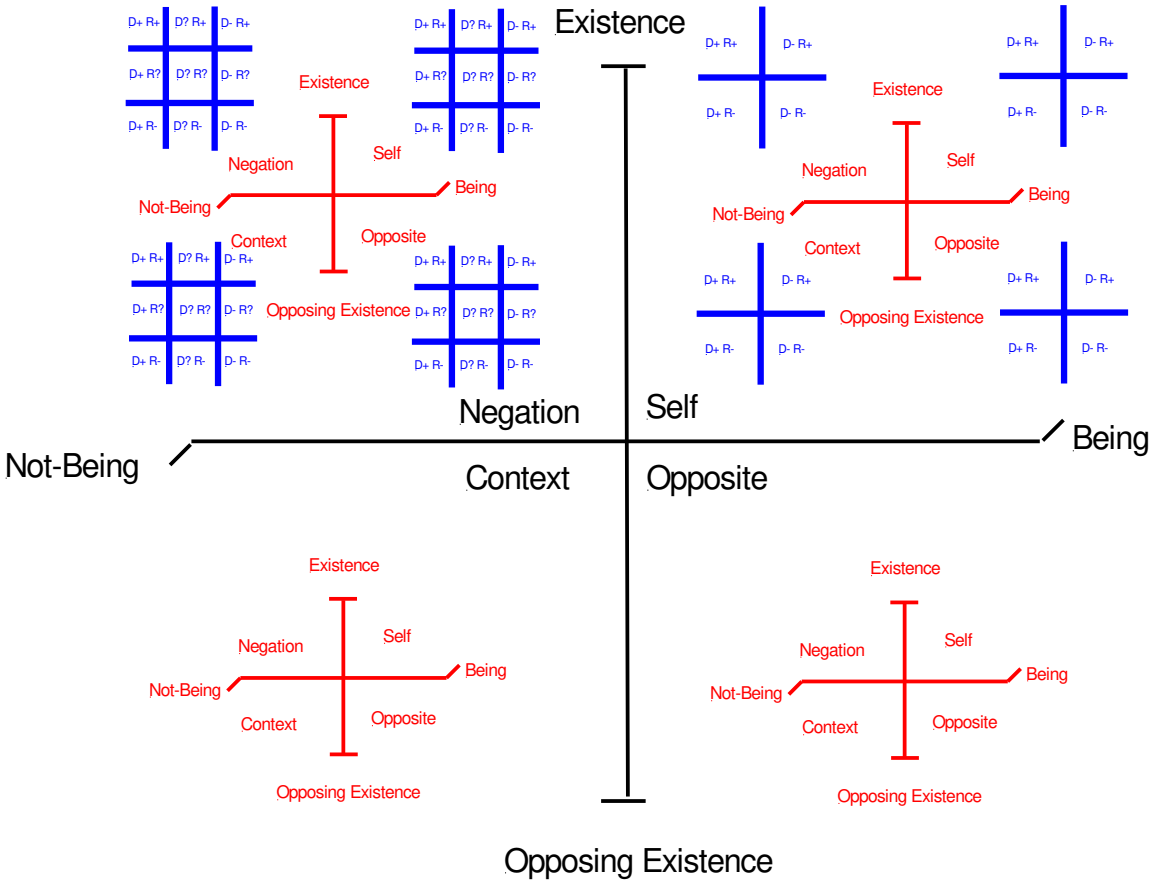
It may be feared that the ambiguity which exists when we seek to understand a Negation may infect the entire philosophical process. However, when we deal with objects having some objective being we are free to define them clearly. Both the relationships and definitions have clear control over the situation. Through this clarity we assert our knowledge of the thing discussed. That is, we might attempt to understand the relationship which the Self has with Itself. In so far as we are able to discuss the thing, we must have in mind some parameters set. There is nothing inherently ambiguous or uncertain about the existence of a thing capable of meeting the principles given.

That is, when attempting to define a thing that "is" we simply point it out and describe it. "It" may be a concept, a physical object or an emotion. But in the context in which the "it" - the "*Self*" - manifests itself, the "Self" must define by its relationships and definitions its existence and being. *There is no inherent ambiguity in the existence or being of any "Self" which is not defined exclusively by Negation*. Hence our conclusion "cross" does not reflect such ambiguity, unlike the previous "negation" quadrant.

When the "Self" defines itself by way of its *Opposite*, the Opposite becomes increasingly clear as well. There is nothing inherently ambiguous or uncertain about the relationship of "white" and "gray" for example. The definition and relationship which a "Self" has with its Opposite is clear and unambiguous. Thus there is no inherent uncertainty is in the definitions or relationships between these two concepts in this quadrant.

Similarly as the Self defines itself, it must create a form of *Negation to itself* in order to satisfy our first principle. The clarity of the Self's relationship to its Negation is one which it defines, just as "all things not my right hand" are defined by the concept of "my right hand." From the point of view of the Self, its Negation is an unambiguous concept.

Finally, when the Self creates a relationship between Itself and its *Context*, the relationship must be clear and unambiguous. If it is not, the "Self" may not exist as a knowable entity. Conclusions regarding this relationship are not inherently ambiguous and may be written as:

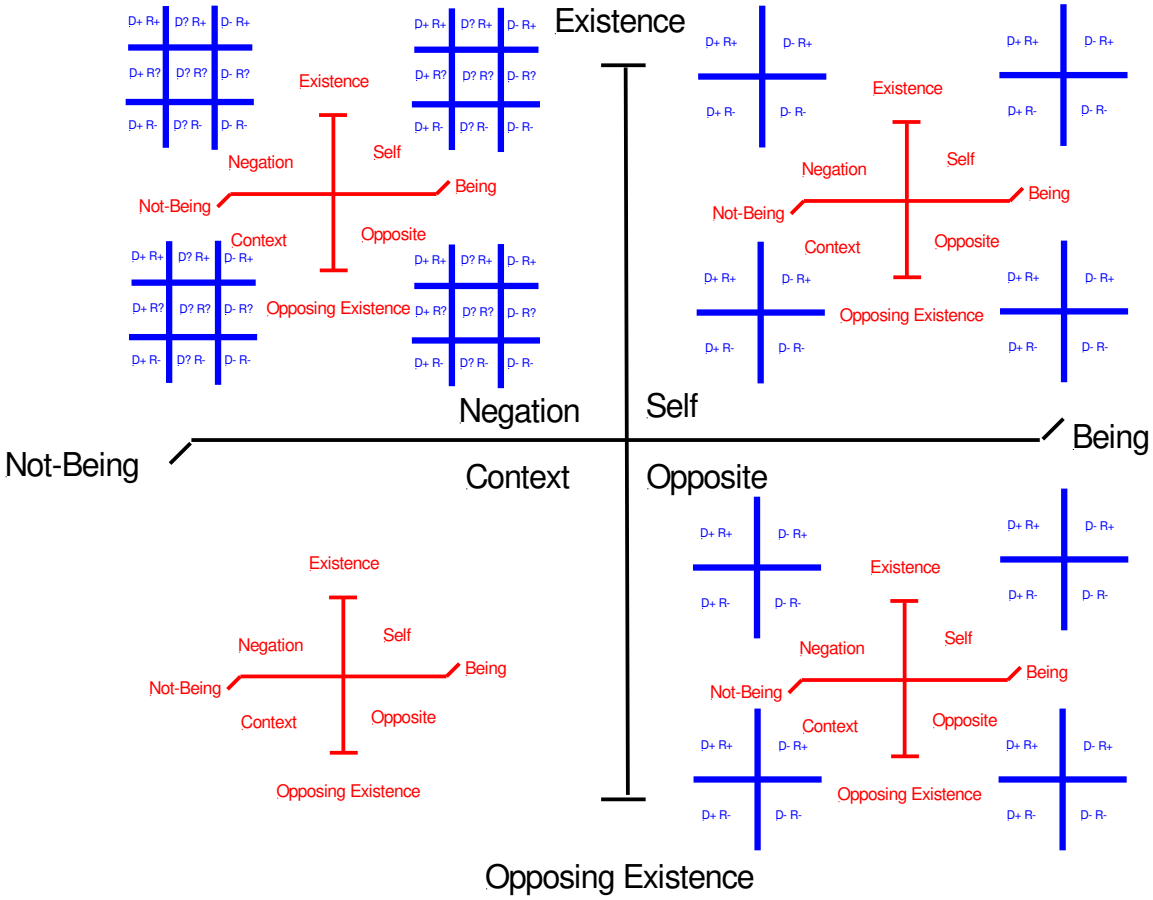


The Opposite of the Self, "gray" for example, is in exactly the same position as the Self itself. In order to form an effective Opposite to the Self, its relationship *with Itself* and its definition possesses no ambiguity. If it does the Self can not effectively use it as an Opposite.

Similarly the relationship which the Opposite has *with the "Self"* must be clear. That is if "white" uses "gray" to define its existence, "gray" must likewise use "white" to establish its own existence. The amount of clarity needed is equal to the Self's relationship with the Opposite.

Just as the Self "white" must have a clear relationship *with "all things not white",* so must the Opposite "gray" have a clear relationship with "all things not white." If we define the reality in which these two things "exist" as containing only the Negation of these two things, then the relationship which gray (Opposite) has with this reality (Negation) is equivalent to that of "white" itself. Again there is no ambiguity in defining the relationship which "gray" must have with this Negation "all things not white."

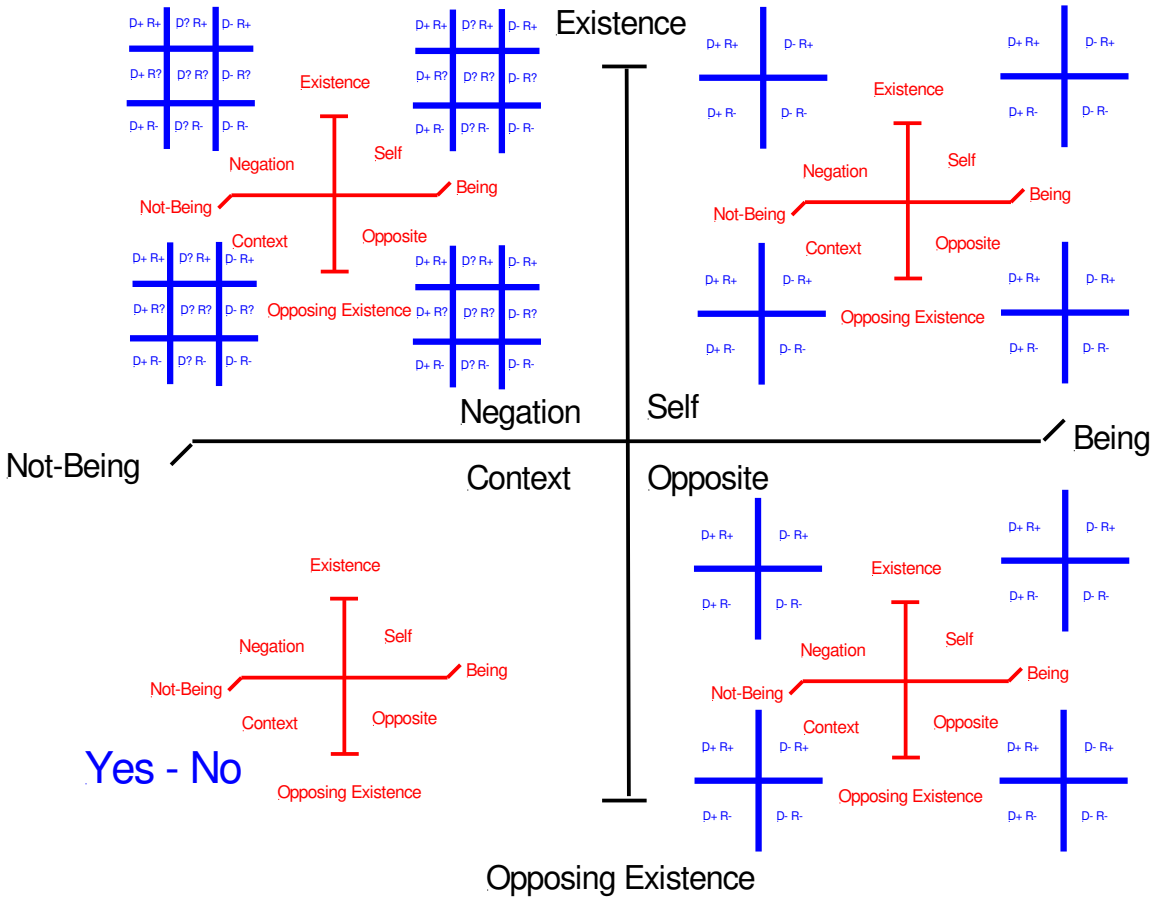
In the relationship which the Opposite must have *with the Context*, it must be the same Context in which the Opposite is itself understood. There is no inherent uncertainty in either the definitions or relationships in this quadrant of "Opposite." Again we might write this lack of inherent uncertainty as:



This pattern above is requisite to the understanding of any existent being. It attempts to provide a clear and definite juxtaposition between Being and Non-Being such that any "Self" might be understood clearly. In this pattern the understanding of any Self and Its Opposite (right-had quadrants) is contradicted by the inherent uncertainty present when the same Self considers its own negation (top left-hand quadrants).

16.c. Conclusions Regarding "Context"

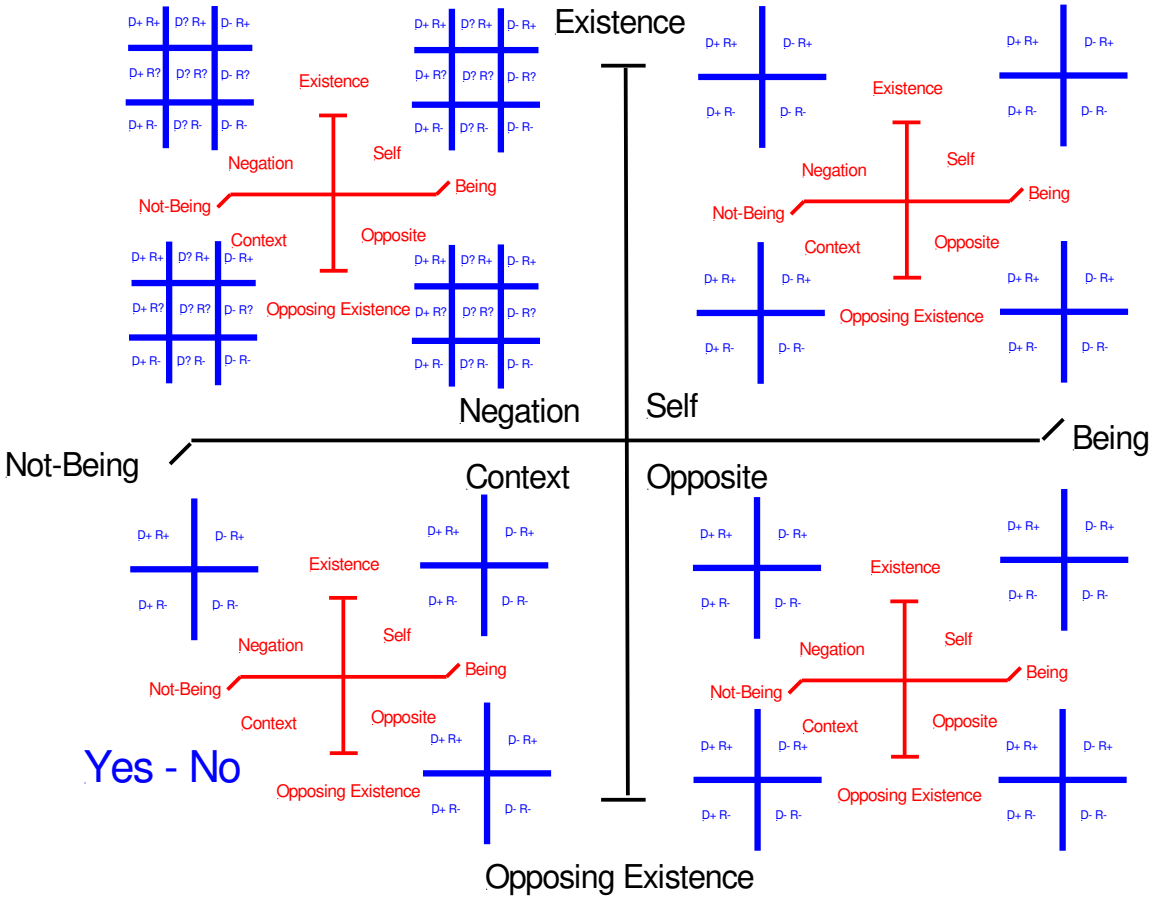
What of the relationship which Context has with Itself? This must be considered a "yes-no" form of dichotomy. That is, if we say that the concept "white" is to be considered in the context of "color" we exclude arbitrarily all other Contexts. If we use the Context "race" we again exclude all other Contexts. There is nothing in any "self" which requires its use in a particular Context. Just as the word "rose" may in one Context represents a flower, another Context a color, and in another Context a pattern, so does the Context shift arbitrarily. It is a simple matter of choosing or rejecting the Context proposed.



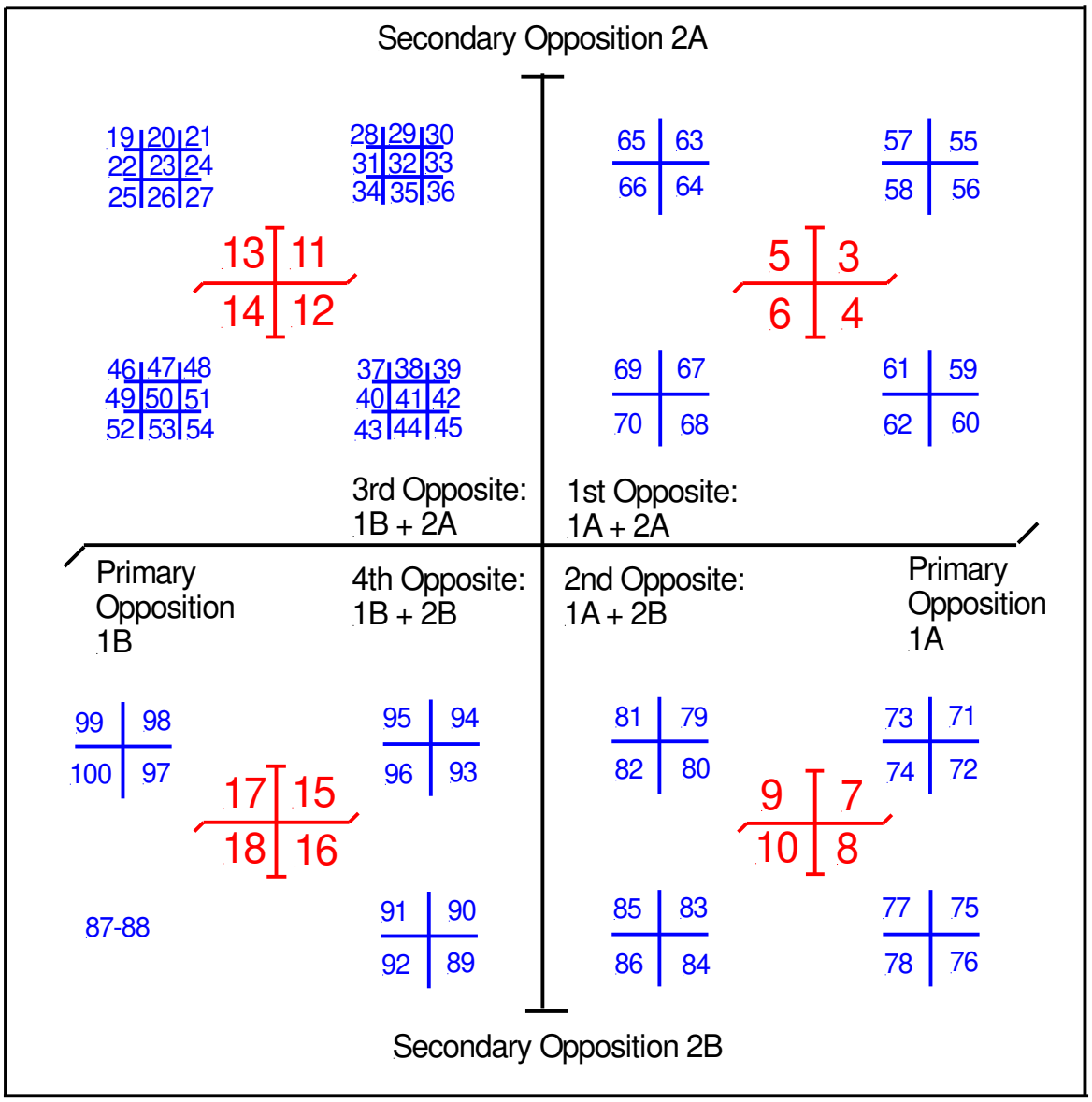
As we apply a particular Context to the Opposite we understand *the Opposite* in the Context given. Once the Context has been understood, the rest of the dichotomies fall into place without ambiguity.

Similarly as *the Self* relates with a particular Context it will generate a clear and unambiguous relationship with this Context. There is no uncertainty inherent in this relationship. One can not imagine a particular Context without a particular Self. There is no inherent uncertainty in the definitions or relationships therein once the particular Context is chosen.

Finally the relationship which the Context has with the *Negation* of the Self is without inherent uncertainty once the Context itself is chosen.



This philosophic “alphabet” of 100 units, as tracked from “A” through “Z,” is proposed as a "System Of Movement," i.e. a method wherein any “Self” must find expression. This expression is based upon the three mental planes of Definition, Relationship and Conclusion.

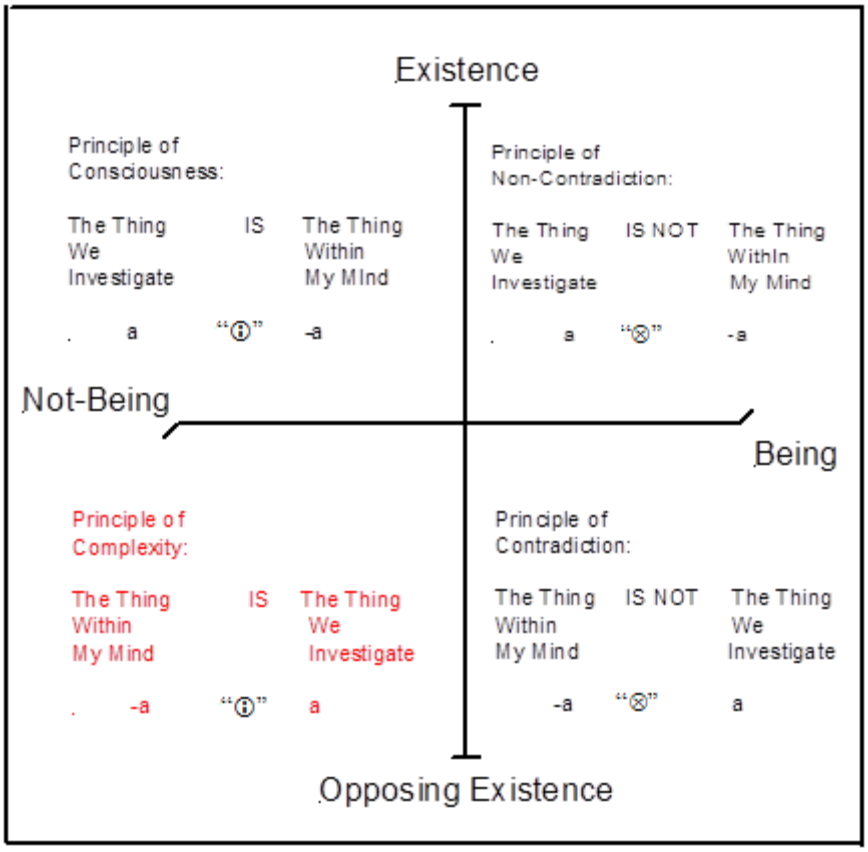


But how does this pattern duplicate itself throughout reality? For this let us turn to the next section of this essay.

PART SIX

20. "The Principle of Complexity"

We have introduced an "Image Axis" to accommodate *The Principle of Consciousness*. This *Principle* was obtained by applying *The Standard Cross* to *The Principle of Non-Contradiction* and *The Principle of Contradiction*. However if this exercise is undertaken, a fourth quadrant remains to be considered. Representing the fourth quadrant we are compelled to propose *the opposite* of "a ⓘ -a" or "-a ⓘ a."



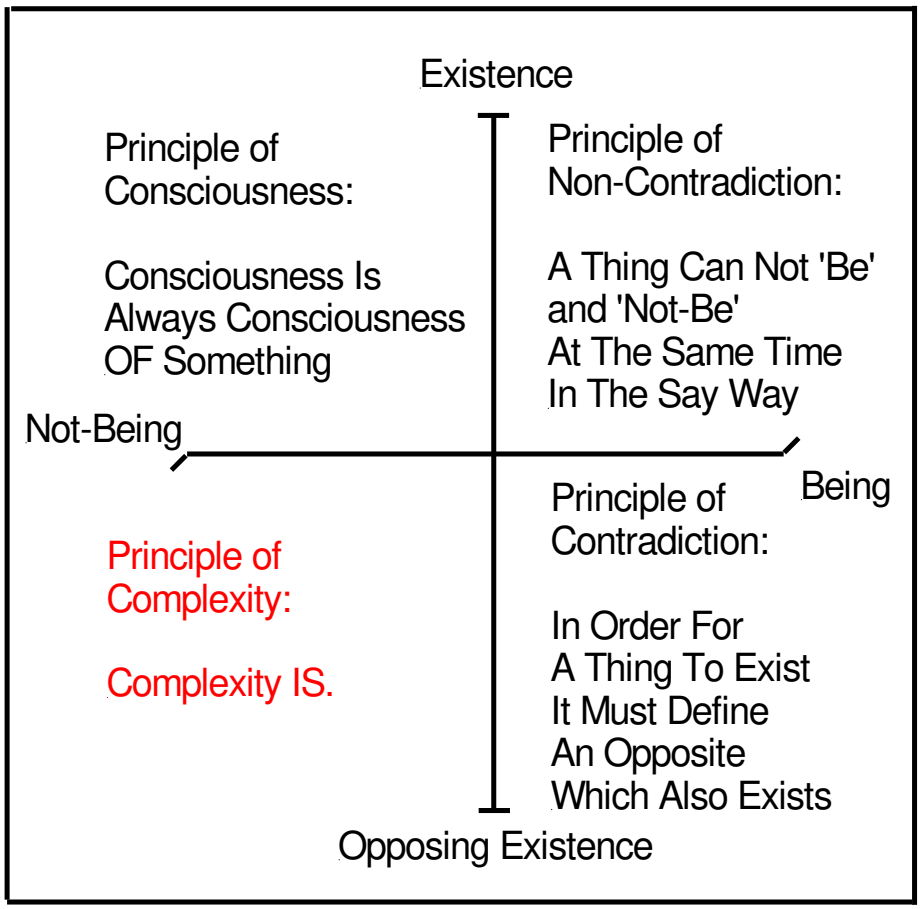
The opposite of *The Principle of Consciousness*, (a ⓘ -a), in the form of a new *Principle*, "-a ⓘ a," represents the notion that "The Thing Within My Mind IS The Thing We Investigate." This would suggest that the principles of mental organization (The Thing Within My Mind) ARE the principles of ALL organization (IS The Thing We Investigate).

In this manner a Fourth Principle emerges, proposed as "-a ⓘ a." *The Principle of Complexity* is the opposite of *The Principle of Consciousness*, for it states that the reality of anything is the reality which My Mind imposes upon it, or broadly, the reality which the Universal Mind imposes upon it:

"The Thing WITHIN My Mind IS The Thing We Investigate."

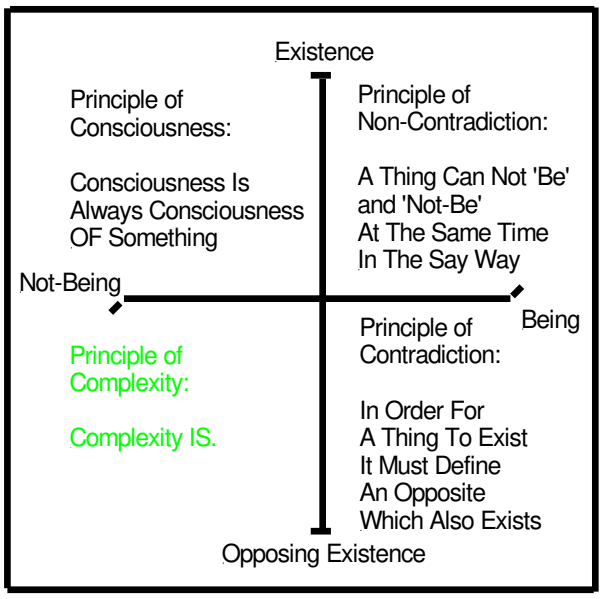
Axiom IV: The Principle of Complexity

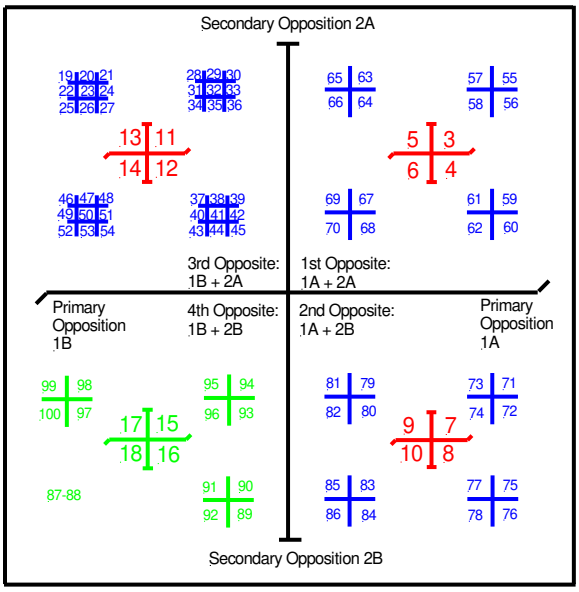
Complexity IS.



By “Complexity” I mean the repeating patterns described as governing core aspects of the reality around us, the mental construct of reality itself.

We consider this forth Axiom, The Principle of Complexity, “Complexity IS,” in the context quadrant, as follows;





One can easily anticipate an arbitrary element to this understanding of reality, a Yes-No characteristic, exactly as in the “context” quadrant.

The idea conveyed may be best summed up as an “Attitude” of Complexity, an aesthetic “Yes-No” choice, something not necessarily “prove-able” in some sort of deterministic way, but nevertheless fundamental and basic to an understanding of the entire system, a “Seeing is Believing” characteristic.

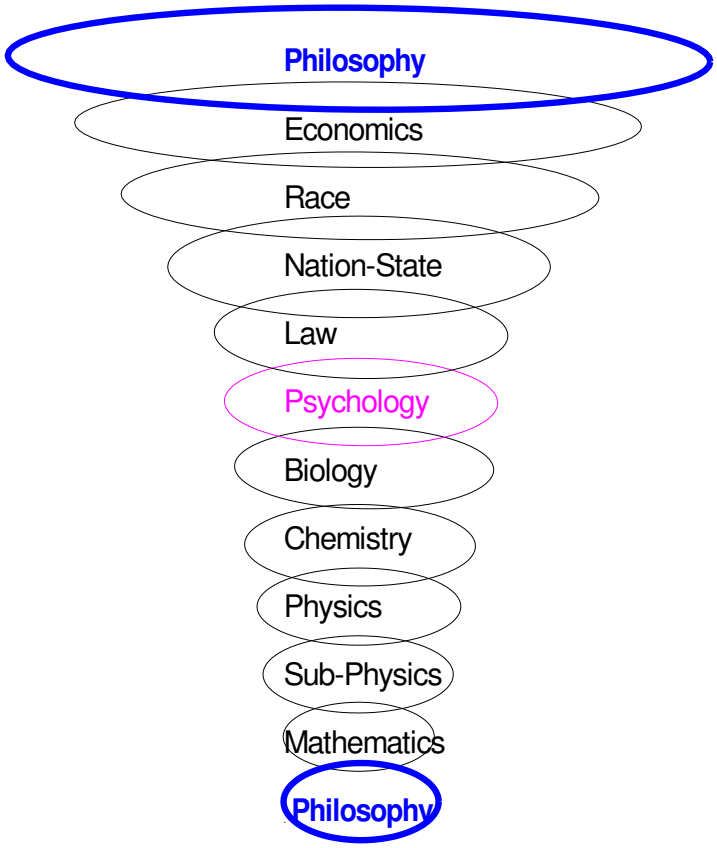
To introduce this idea of the “Complexity” of nature, the middle ages assumed that the earth was the center of the Universe, and that *perfect spheres* controlled the movement of planets around us. The discovery of additional facts led to deviations from this perfect sphere model, which in turn led Copernicus to construct a new “*perfect circles*” model with the sun as the center of a solar system, a heliocentric system, rather than the earth. Additional facts accumulated by Tycho Brahe led Kepler to elaborate on the heliocentric system as a set of ellipses, rather than spheres, held together by geometric constructs of cubes, dodecahedrons, etc. In this way, God’s perfection was not slighted by the absence of spheres or circles, because a *perfect geometric figures* continued to operate divinely and to place man in his proper place within the universe.

The perfection sought by scientists in exemplification of the work of God underwent another reduction when the perfection and simplicity of Newton’s *Laws* replaced the perfect geometric shapes idea. Gone were the perfect cubes, dodecahedrons, etc. which held together the ellipses of Kepler. In their place came rules governing force, acceleration, mass, etc. The perfection and simplicity of these laws, rather than the geometric simplicity of the results, became the hallmark of divine perfection.

Today, in turn, our sense of aesthetically based certitude has been reduced to Einstein’s

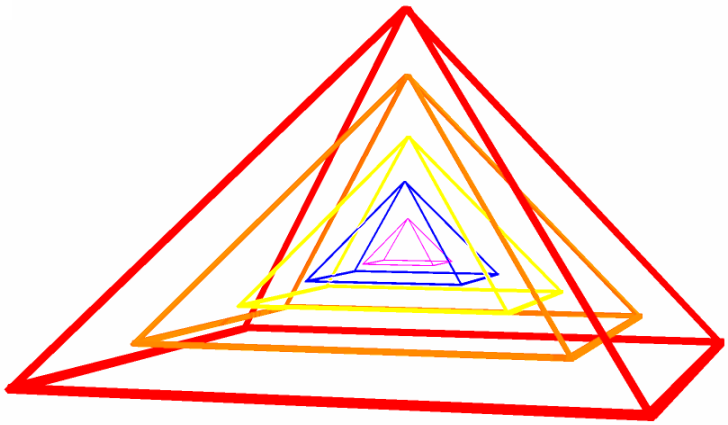
Theories of Special and General Relativity, which provide for us the result that $E = mc^2$. In turn the simplicity of this equation, which mimics the $A = \pi r^2$ for the area of a circle, have given place to the *Principle* of Electron Uncertainty. So we have gone from God's perfect spheres, to God's perfect ellipses arranged by perfect geometric shapes, to Laws, to Theories, to Principles.

This collection of essays is entitled "An *Attitude* of Complexity" because under the approach considered here the concept of perfection which has characterized the scientific pursuits of the past must undergo another transformation. The science of Complexity is, and always will be, a choice of aesthetics, a Yes-No conclusion. The only way in which to prove their truth is to see them operate: Does it work? In order to evaluate this question, we must consider the concept of reality from a completely different point of view.



Mathematics has been suggested as the basis for the physical world with mathematical principles extending upwards to increasingly social levels. Conversely, taken from another point of view, from the top down, beginning with philosophy, states its principles which move down in possibly more observable patterns, the principles discovered at the upper reaches of our understanding should have a direct applicability for the lower levels, if in fact, our reality is a complex one.

If we were to draw a fourth "Axis" of complexity, one emphasizing a merger of Mind with Matter, we have the following:



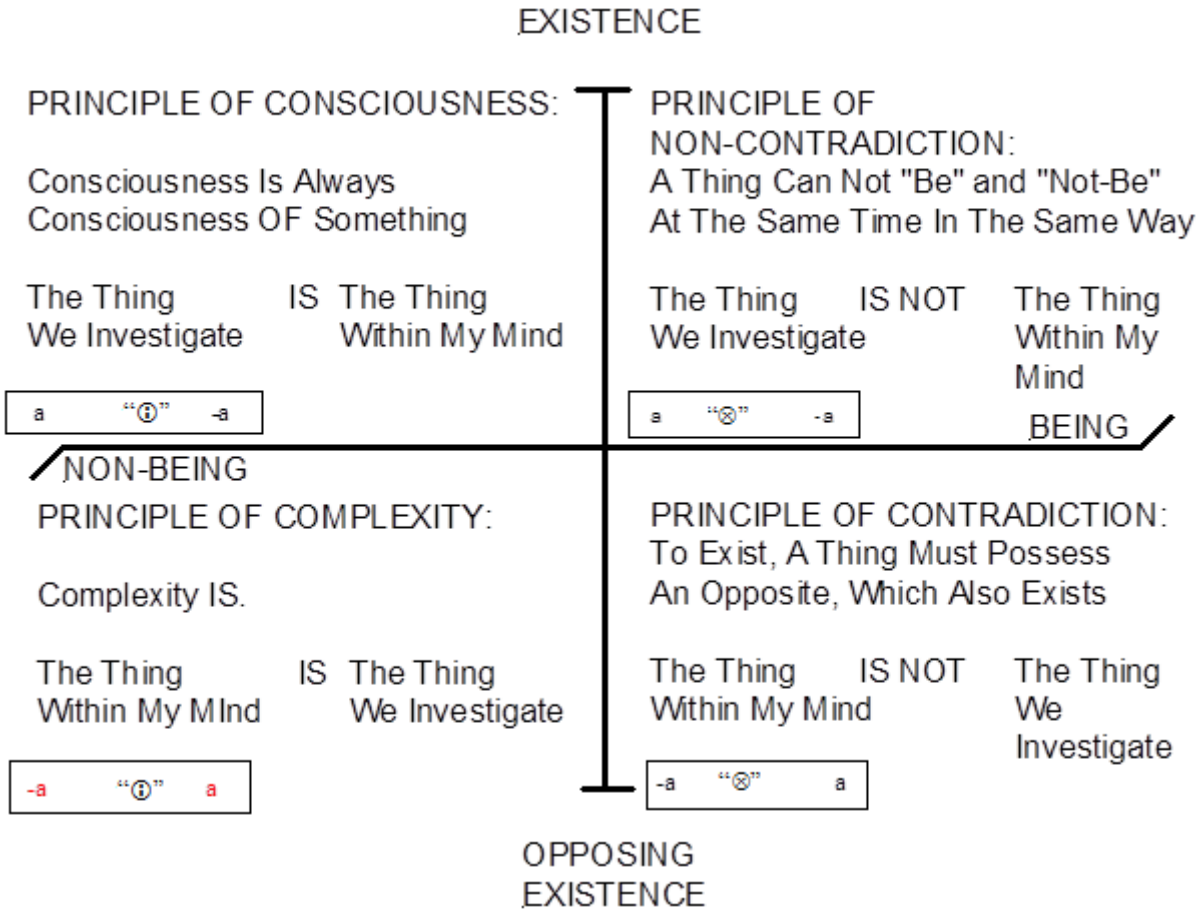
An "Attitude of Complexity" considers reality and the laws governing various levels of reality as "fractals" based upon one another. If we attempt to imagine an "Axis of Complexity" to correspond to the Image Axis and the inclusion of the Principle of Consciousness, we can simply imagine a set of concentric pyramids, each one dedicated to the development of the same principles at a separate stage, in effect an equation: (A1 through Z1) + (A2 through Z2) + (A3 through Z3) + etc.

The pyramid governing mathematics (purple) is within that of physics (blue), which is within chemistry (yellow), which is within biology (orange), which is within psychology (red), which is within law, which is within the development of a nation state, which is within racial history, which is within economics, which is within philosophy itself. These latter are not pictured in the pyramid above but they may be easily imagined. This "fractal" of governing principles resonate through the universe, and the appearance of this pyramid on each level leads to a deeper understanding of the rest. This is not stated as a new letter, but constitutes the "context" of the entire alphabet here-to-fore provided.

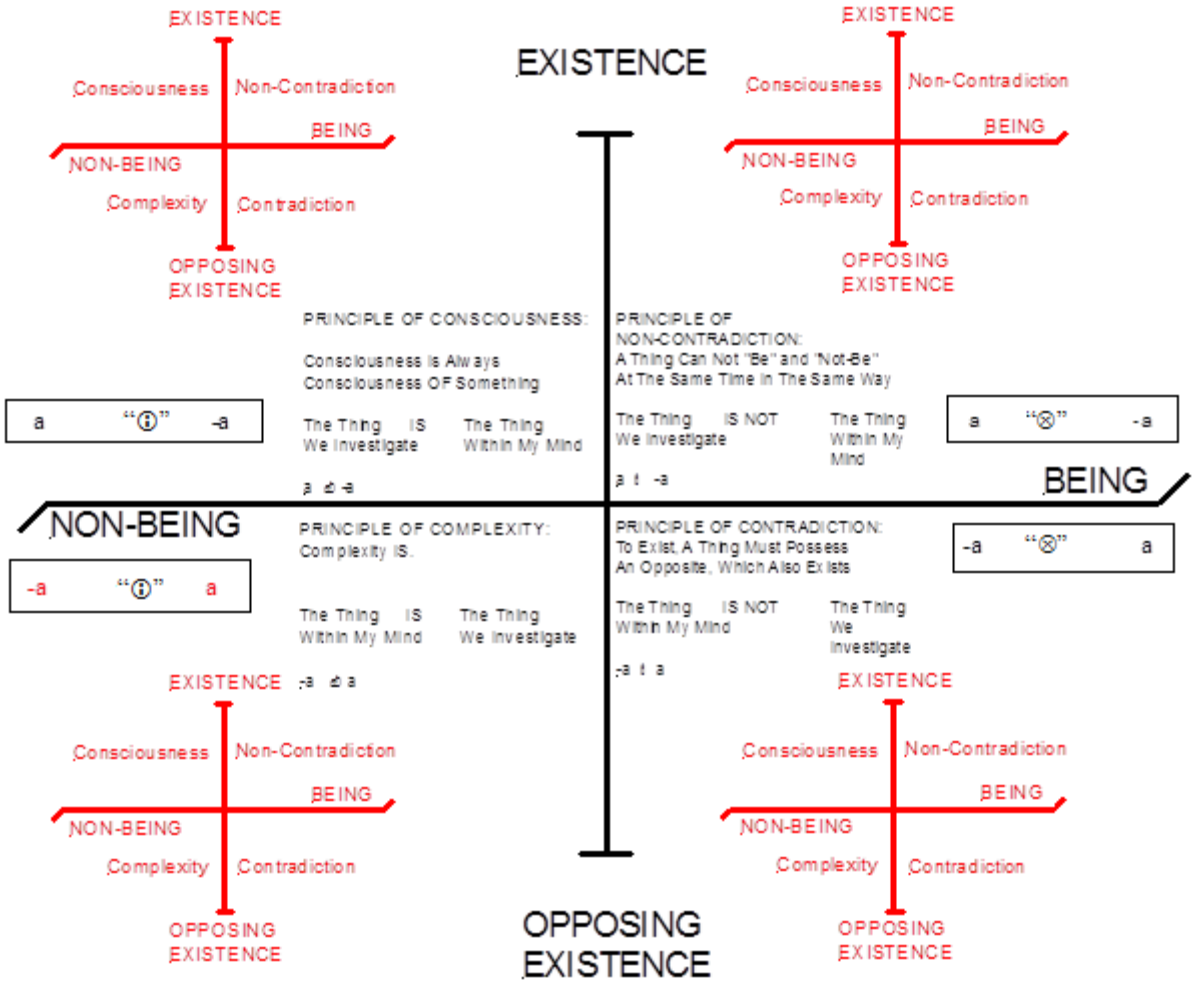
PART SEVEN

22. The Construction of Reality

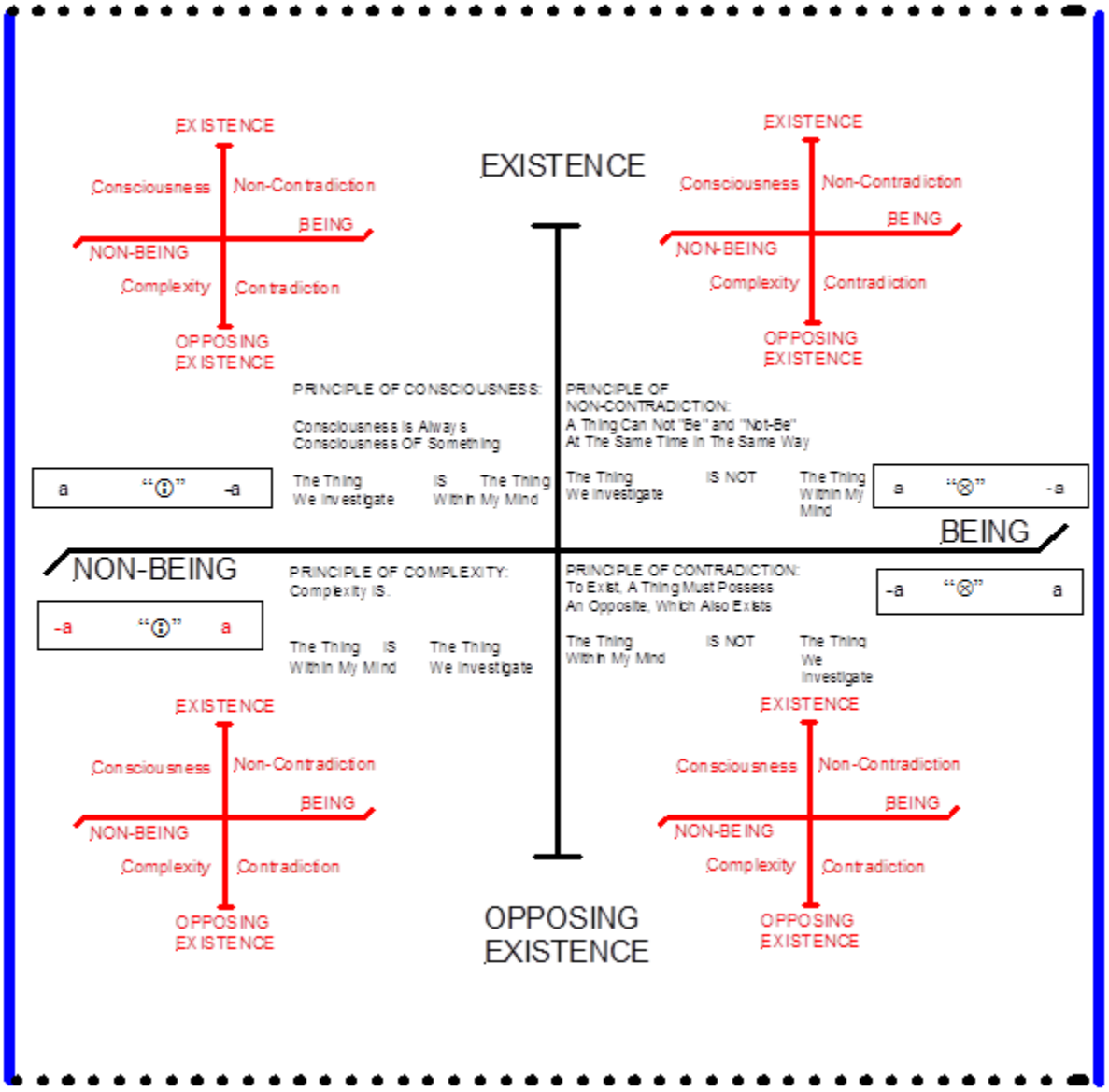
The foregoing permits us to speculate how reality is constructed. If we consider the four elements given, we may apply the principles of *Non-Contradiction* and *Contradiction* to themselves and obtain a set of four principles: these two, plus the *Principle of Consciousness* and the *Principle of Complexity*.



The definitional plane given must rise to a plane of relationship, one wherein we simply extend the Standard Cross and apply the necessary relationships.



Next, if we note that the Principle of Non-Contradiction and the Principle of Contradiction define for us the "real-ness" of what we see around us, and that the Principle of Consciousness and the Principle of Complexity define for us our mental image of that reality, we can draw the tensions which much exist under this scheme as follows.

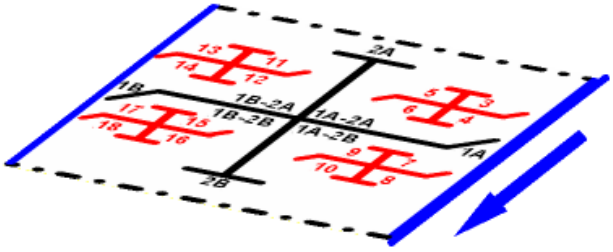


These are unified in circuits of Being and Non-Being as follows:

23. Circuits of Being and Non-Being

(1) *Every Self must have an Opposite in order to exist.*

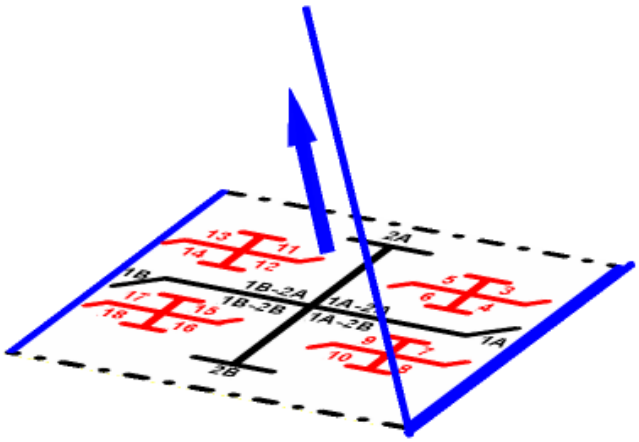
In this context the Principle of Non-Contradiction is directly dependent upon the Principle of Contradiction. These two principles work together to create the "real world" around us.



(2) *Once this "Opposite" has been declared, an Ontological entity exists. This does not mean that the Entity is known; it merely means that it Exists as an independent thing in reality.*

The *Principle of Non-Contradiction* and the *Principle of Contradiction* work to create "Real" things, things which can be known, but which are not *necessarily* known. The ontological existence of anything depends upon the simultaneous application of the *Principles of Non-Contradiction* and *Contradiction*.

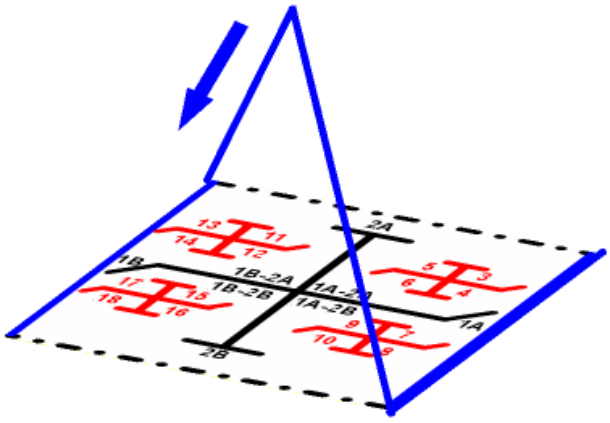
ONTOLOGIC NATURE OF
REALITY



(3) *Status as an Ontological Entity permits the Self to differentiate itself from every other thing in the Universe. This status permits the Self to have a Negation, i.e. "Everything which the Self is Not." In this manner, the Self is empowered to maintain its integrity under the Primary Opposition, the statement that "A thing can not 'Be' and 'Not-Be' simultaneously and in the same way."*

The *Negation* of the Principle of Non-Contradiction requires that a separate principle merge that which IS and IS NOT simultaneously. The only thing that answers this is the *Principle of Consciousness* itself.

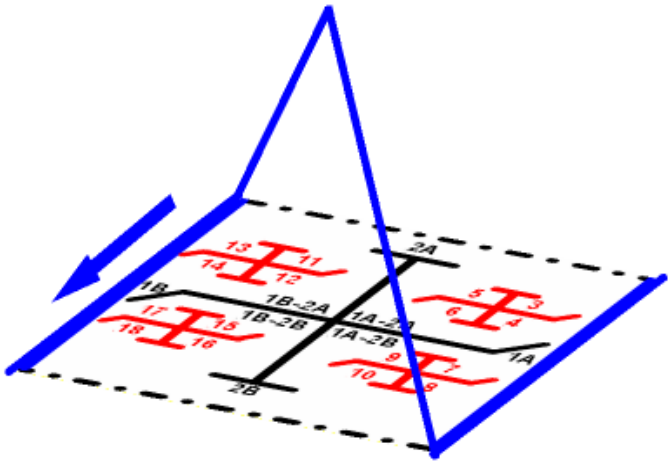
ONTOLOGIC NATURE OF
REALITY



(4) *This Negation gives rise to a positive statement of the Self, a Context, in order to distinguish what the Self truly IS.*

In the case of these initial principles, the *Principle of Complexity* provides a Context for the display of each of the preceding Principles: *Non-Contradiction*, *Contradiction* and *Consciousness*. The workings of the Mind, functioning at various levels and as a unified whole, ARE the Principles which organize the reality around us, and this states the *Principle of Complexity*.

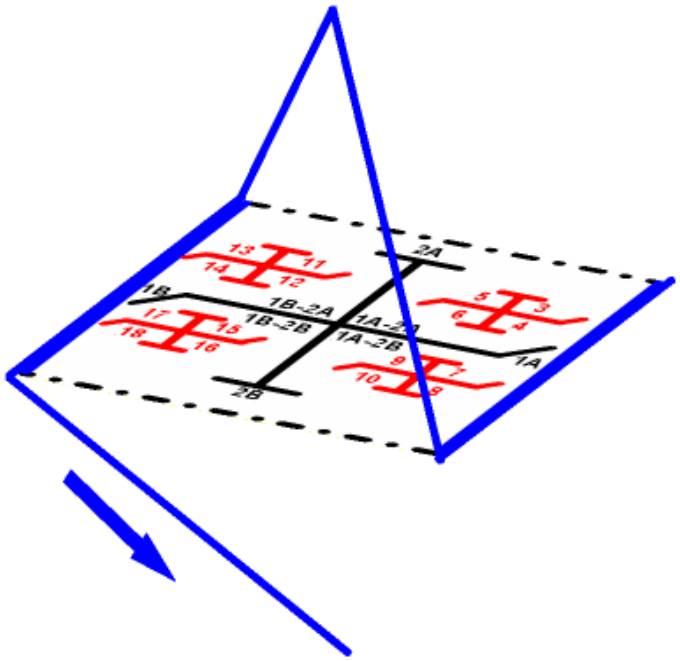
ONTOLOGIC NATURE OF
REALITY



(5) *Upon satisfactorily identifying the Self and its Opposite, as well as its Negation and Context, an Epistemological understanding of the Self has been reached.*

In the context of these four principles – *Non-Contradiction*, *Contradiction*, *Consciousness* and *Complexity* – an understanding may be reached of any phenomenon through the use of analogy between the level studies and other levels of reality already considered or understood.

ONTOLOGIC NATURE OF
REALITY

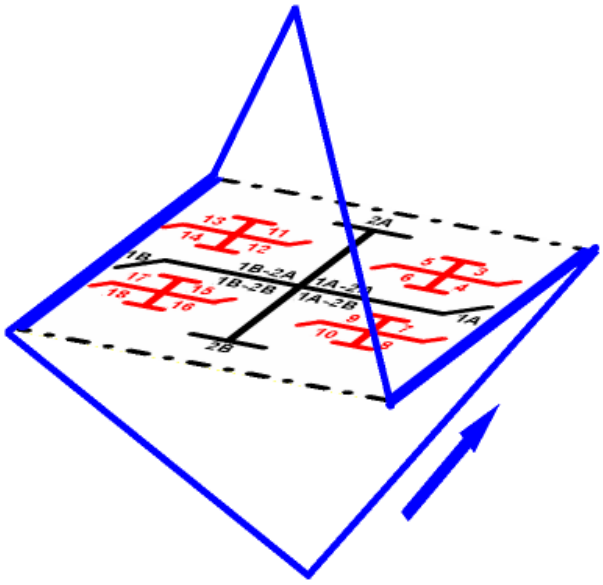


EPISTEMOLOGIC NATURE OF
REALITY

(6) *The Epistemological Understanding of a Self has a direct bearing on the Self. Once the Self is known, it has become a "Known" Self rather than an "Unknown Self."*

In the case of the inter-working of these four principles, as soon as an understanding of the complexity of any level is obtained, a new understanding of the *Principle of Non-Contradiction* is arrived at, and this changes everything.

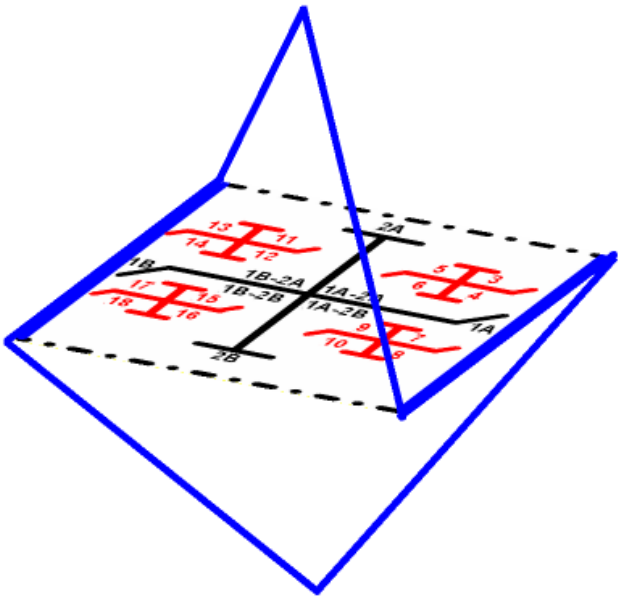
ONTOLOGIC NATURE OF
REALITY



EPISTEMOLOGIC NATURE OF
REALITY

(7) *This circuit of considerations might be represented by the following figures, in which each line is of equal length.*

ONTOLOGIC NATURE OF
REALITY

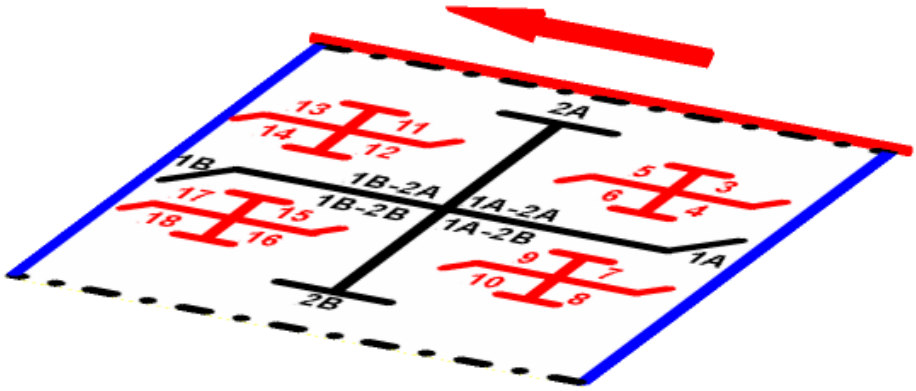


EPISTEMOLOGIC NATURE OF
REALITY

(8) *One prohibition exists upon the use of these concepts: The Concept of "Negation" must itself have something upon which to work, i.e. it represents everything that a particular Self IS NOT.*

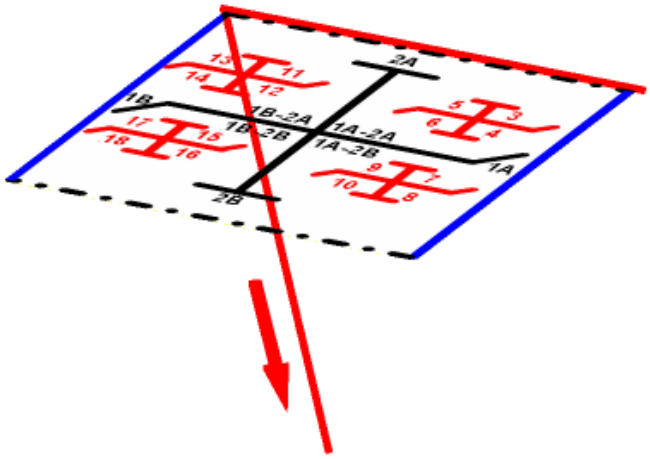
In the case of the inter-working of these four principles, if Science, using the *Principle of Non-Contradiction* attempts to study the workings of *Consciousness* directly, it attempts something wholly illogical, because *Consciousness* is the Negation of the *Principle of Non-Contradiction*.

If the Concept of Self is applied to Negation



(9) *an immediate Epistemological Difficulty arises*.

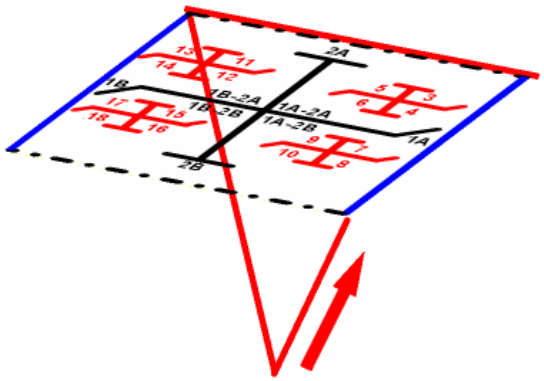
In the case of these four principles, as soon as science attempts to do the impossible – i.e. use the *Principle of Non-Contradiction* to study *Consciousness* - a complete breakdown by what meant as science and "non-contradiction" itself must take place.



EPISTEMOLOGIC NATURE OF
REALITY

(10) *No Opposite can be found for Negation treated as a Self. The Concept of Negation, treated as "Self," simply means "everything" and its Opposite would be "Nothing." (Moreover, how can Negate have a "Negation"?) This would give the absurd conclusion that (1) that "Negation" (treated as "Self") is "Everything", and (2) the opposite of the "Negation" is "Nothing", a double negative.*

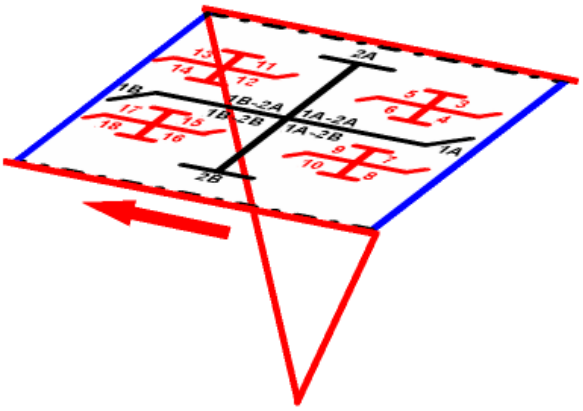
In the case of the working of these four principles: Consciousness is always Consciousness OF Something. It relates to something which pre-exists itself. Treated as a "Self" there is nothing which it can be conscious OF, and thereby contradicts itself. If Science approaches Consciousness as a matter of direct inquiry using the *Principles of Non-Contradiction*, the *Principle of Contradiction* is immediately under attack. One simply can not distinguish what is meant by the Objective and Subjective, between that which IS and that which is KNOWN.



EPISTEMOLOGIC NATURE OF
REALITY

(11) *Moreover, no Context for such an entity can exist, because neither an Opposite nor a Negation for "Negation" can exist*.

In relation to the inter-working of these four principles, If there is no ability to distinguish what IS from what IS KNOWN, complexity itself is under attack; it would be as if a single, undifferentiated blob of the universe had descended upon the study of anything, rendering all studies both formless and meaningless.

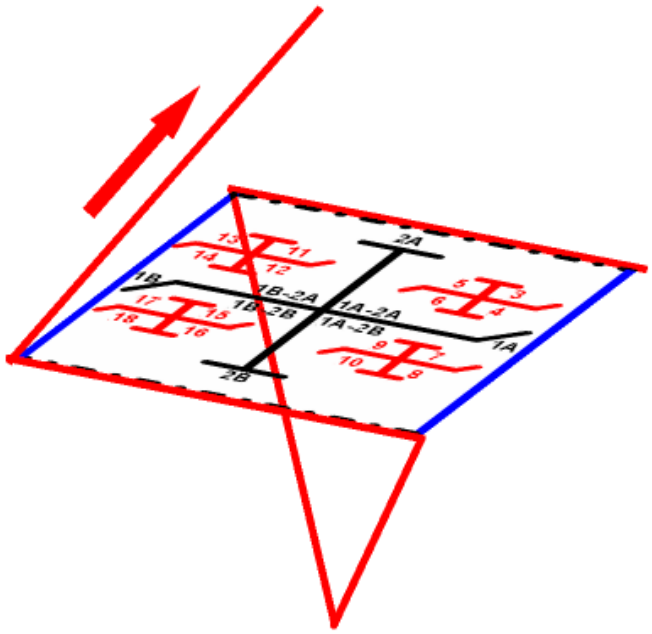


EPISTEMOLOGIC NATURE OF
REALITY

(12) *The very idea that Negation might be treated as a "Self" constitutes an attack on the concept of "Ontological Existence."*

In the context of these principles, Once the complexity of the relationships of the various levels of the Universe have been destroyed, the ontological basis for identifying anything has gone with it. One can not tell the difference between the ontological existence of snail from the existence of the United States.

ONTOLOGIC NATURE OF
REALITY

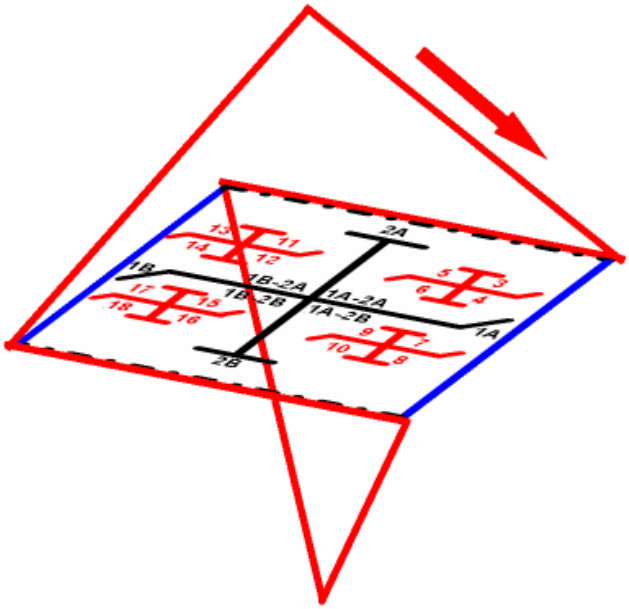


EPISTEMOLOGIC NATURE OF
REALITY

(13) *If the concept of Ontological Existence is invalid, there can be no application of the concept "Self" to Negation.*

Once the very concept of Ontological Existence is done away with, there is only the attack on the *Principle of Non-Contradiction* itself, and the whole of Science falls into a form of dishonesty.

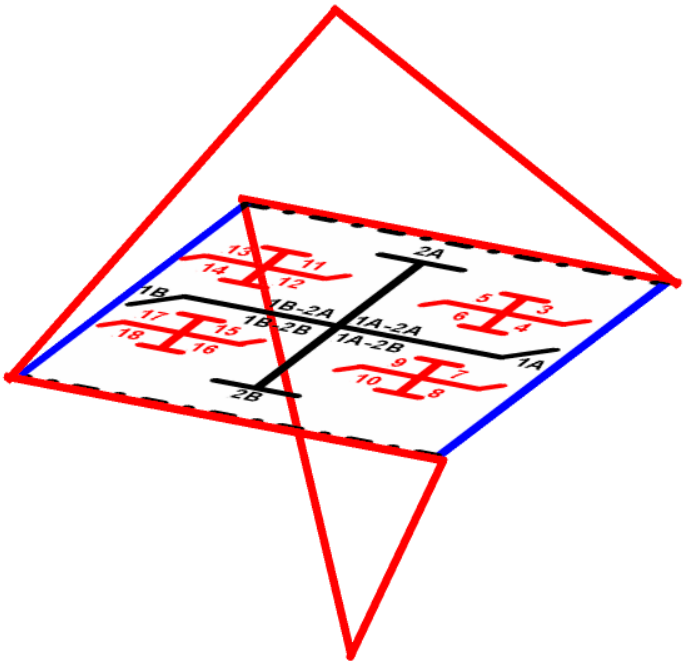
ONTOLOGIC NATURE OF
REALITY



EPISTEMOLOGIC NATURE OF
REALITY

(14) *We have then a circuit wherein philosophy declares certain thoughts improper, illegal. This illegality is found in the treatment of Negation as a form of Self. This circuit might be represented as*:

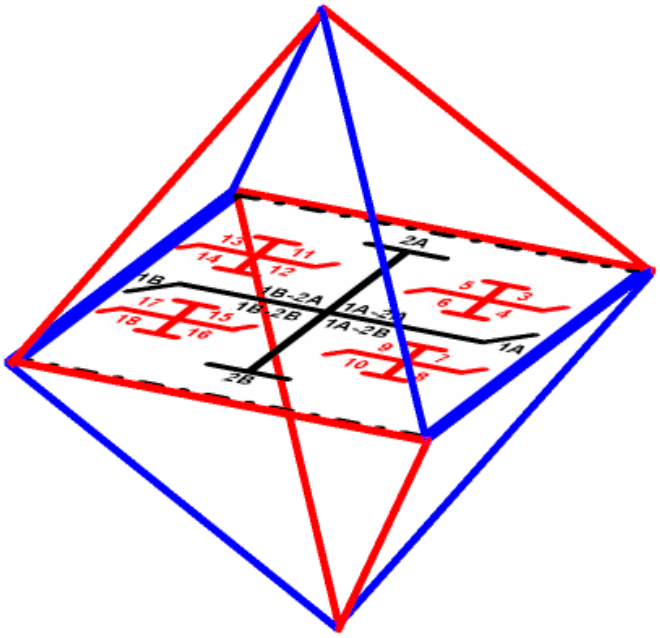
ONTOLOGIC NATURE OF
REALITY



EPISTEMOLOGIC NATURE OF
REALITY

(15) *Joining the productive (blue) and destructive (red) circuits of philosophy together, we have the following*:

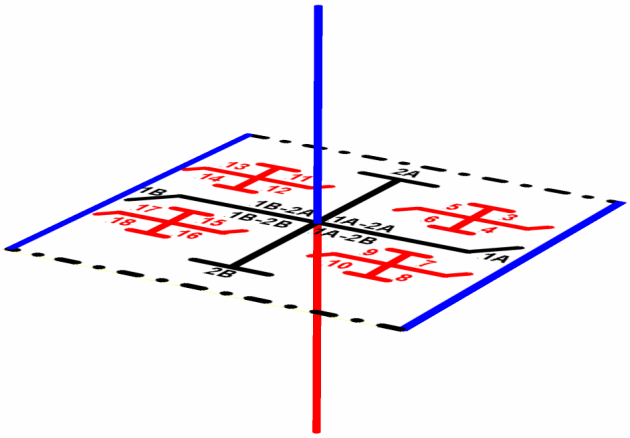
ONTOLOGIC NATURE OF
REALITY



EPISTEMOLOGIC NATURE OF
REALITY

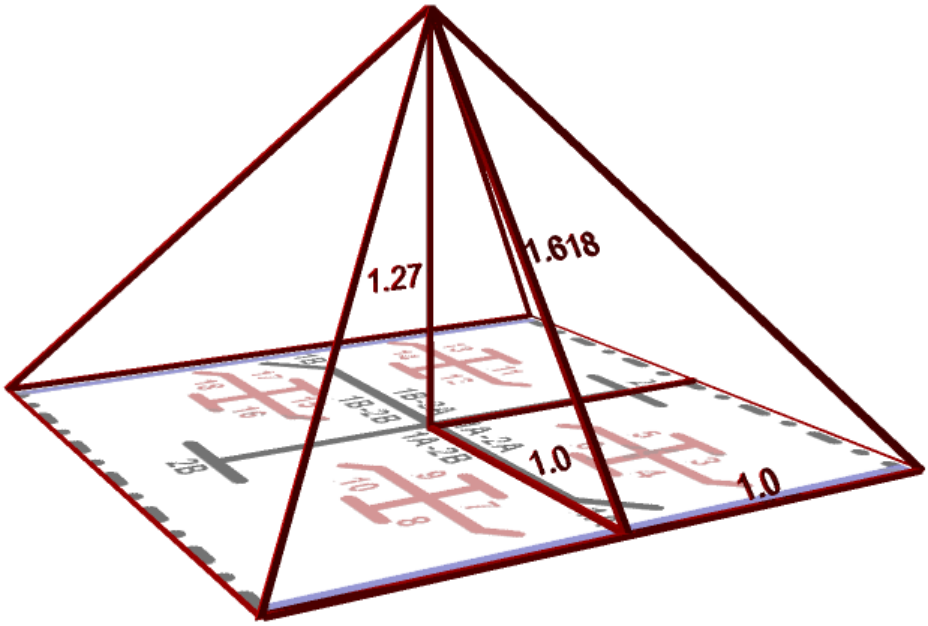
We have previously set these two equal to “one” as an initial point of departure, and then used the circuit of being concept to generate the following sequence.

1, 1+1=2, 2+3=5, 5+8=13 …

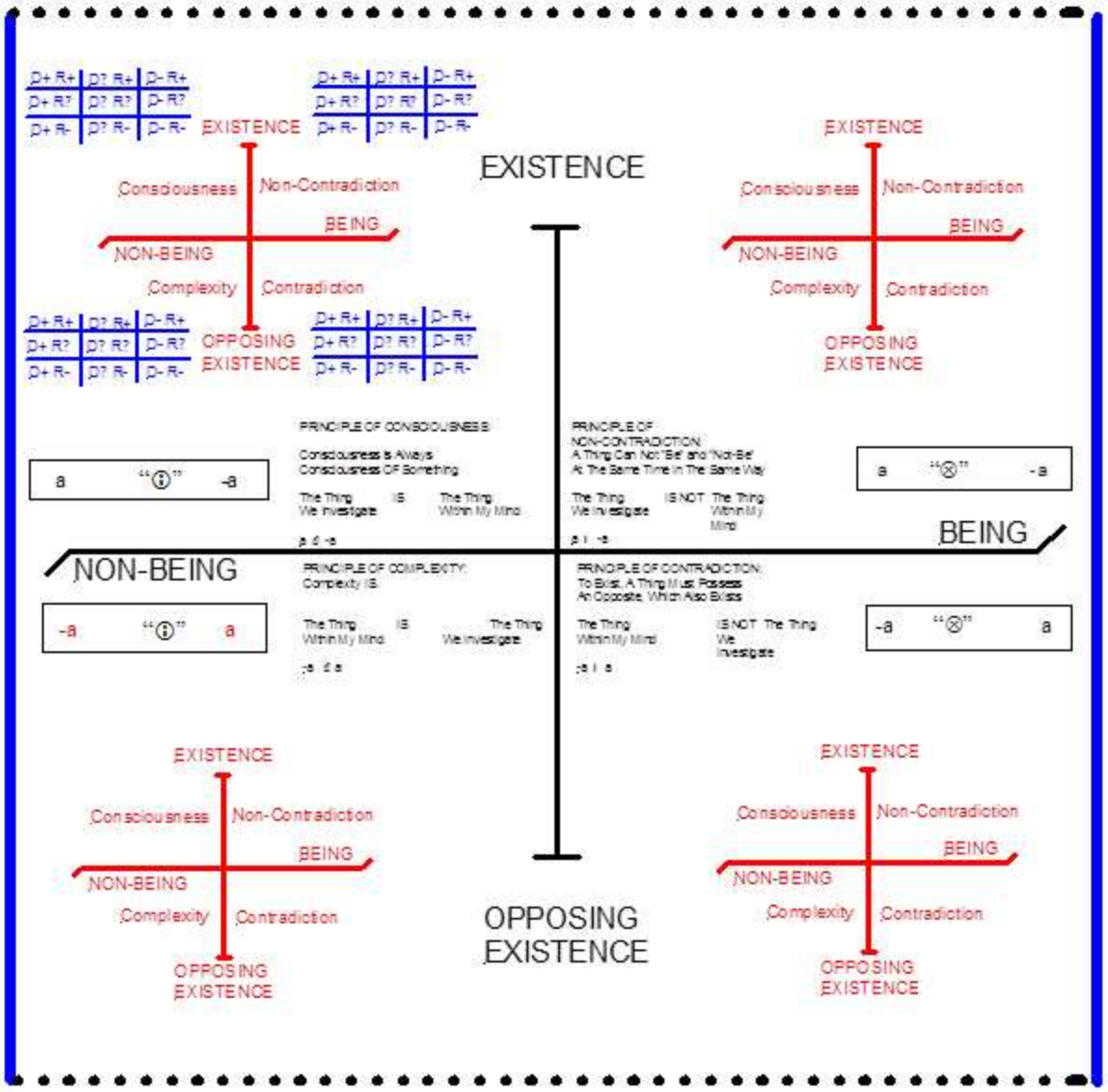


1, 1+2=3, 3+5=8 …

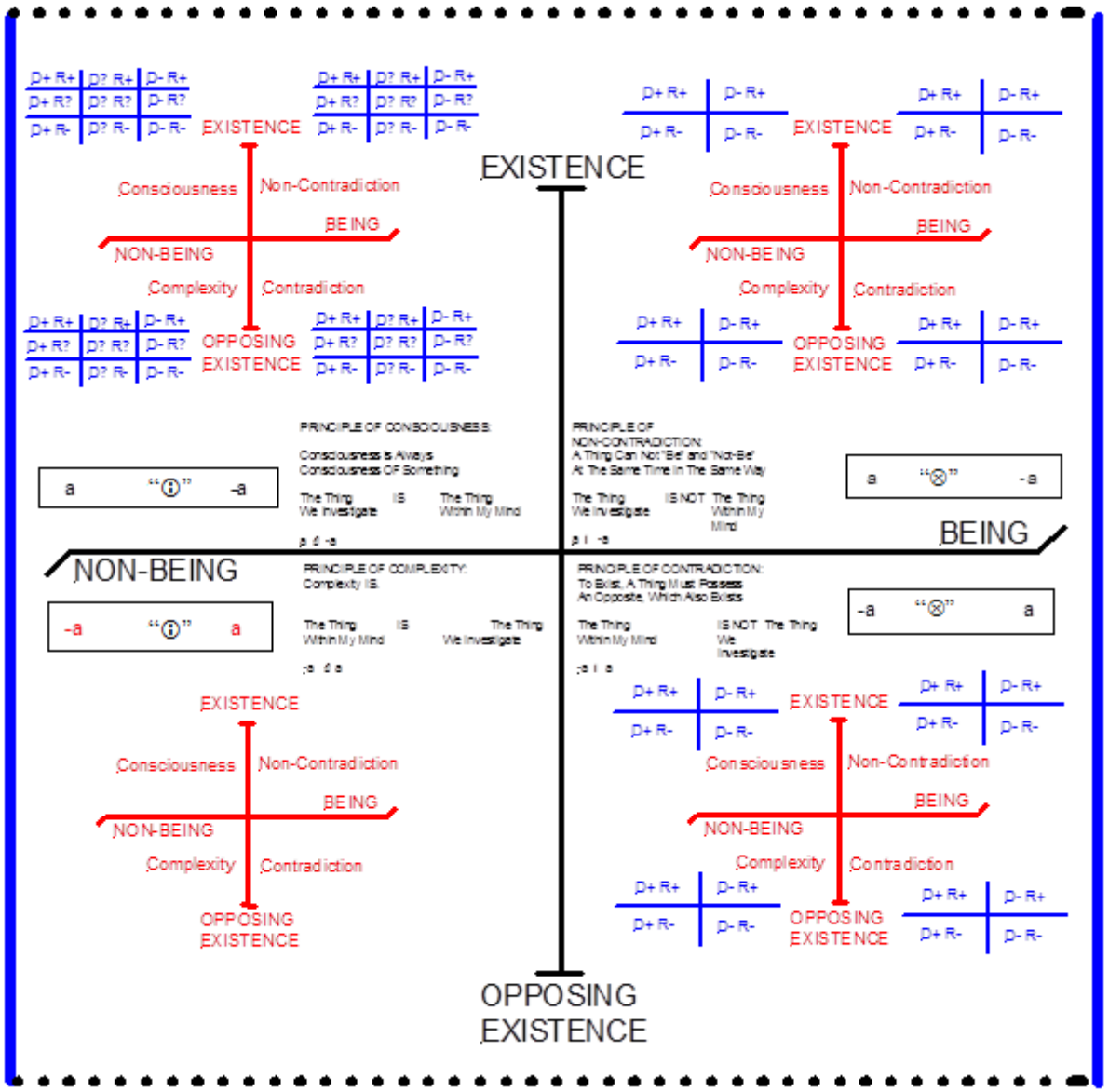
We could view the development of these four principles - *Non-Contradiction*, *Contradiction*, *Consciousness*, *Complexity* - as subject matter themselves, with the following patterns developing as an ontological/epistemological axis is imposed upon them.



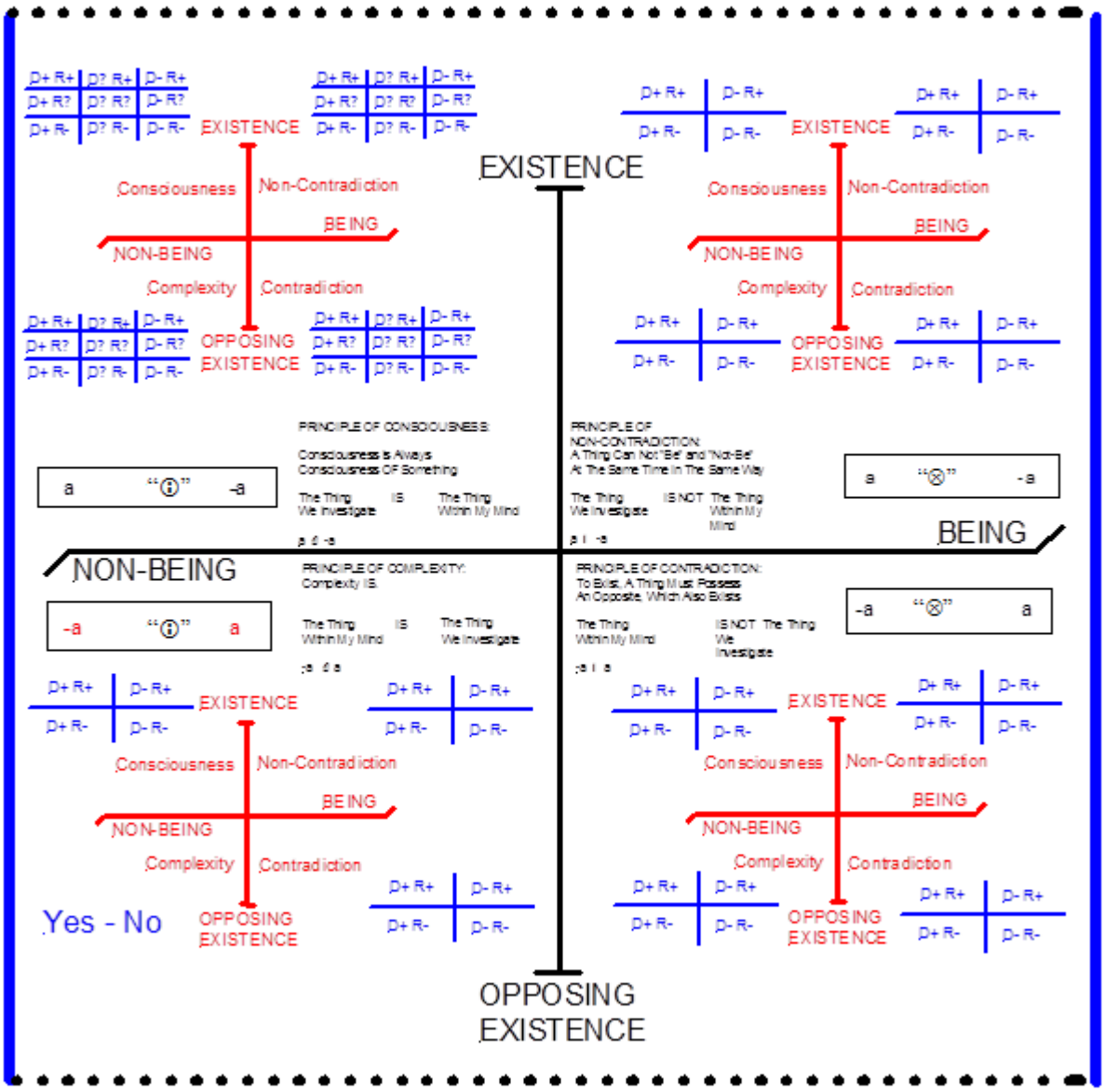
And from there we can figure the areas of unavoidable uncertainty, first beginning with the impossibility of establishing Negation (Consciousness) as it relates to itself, or as the subject of inquiry by the *Principle of Non-Contradiction*. From there we view the uncertainty generated as Negation (Consciousness) relates to either Opposite (*Contradiction*) or Context (*Complexity*).



Next the lack of inherent uncertainty as related to the Self (*Principle of Non-Contradiction*) and Opposite (*Principle of Contradiction*) on the Being side of the equation:



And finally as to the arbitrary-ness of Complexity itself. Either you see it, or you don't.



And so we have Complexity as an Attitude, nothing more. Something from which other things stem, making possible a study of levels of consciousness, but never broaching the heart or uncertainty of the matter of consciousness viewing itself. This matter must be inherently uncertain for all time, it can not be understood through science, but it may be understood through analogy.

To make more simple and direct the creation of these analogies, we turn to the simplest analogy yet invented whereby these methods may be utilized, i.e. that of music.

Essay Five:
Piano Performance

I tell my piano the things I used to tell you.

Frederic Chopin

ABSTRACT

Aims: To introduce the basic ideas underlying five essays on a testable theory of reality.

Study design: Description of Piano Performance according to the graphic explored in the previous ten essays.

Place and Duration of Study: Library research.

Methodology: In this essay we propose a model of the interaction of the physical with the conscious act of making something physical, i.e. musical performance. By describing the act of playing the piano in the simplest possible terms, we lay a foundation for a further description of reality as the creation of physical by way of consciousness itself.

Conclusions: This model is a simple example of the more elaborate philosophy which follows from it.

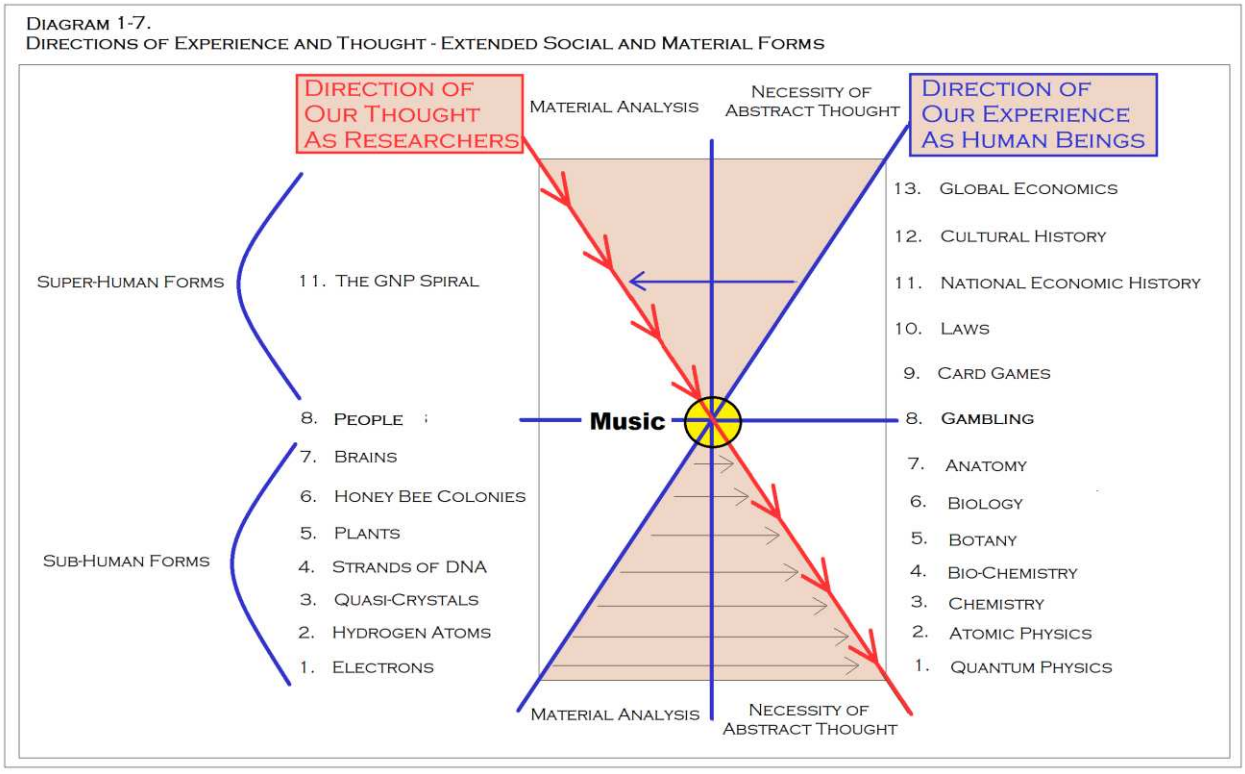
1. The Merger of Life and Non-Life

In the previous eleven essays we have explored the possibility that a single pattern may unify each of at least ten different levels of reality. Through an understanding of this pattern we are able to organize simply (1) the normal psychological interaction between people in a game of gin rummy, (2) the Prohibition Against Hearsay, one of the chief features of the law of evidence in the United States, (3) the final number of chemical elements which make up the world around us, (4) Russell's Paradox and its relationship to the (5) economic and social history of the United Wtates, and (6) the pattern of revolutions which characterizes European cultural development.

We have premised this effort on the possibility that such a pattern exists and that it can be useful. But a central and perhaps chief reason for objection to this scheme is that it would appear to confuse the living with the dead. There is no demonstrable evidence that the Periodic Table of Chemical Elements is alive, and it is hard to imagine that something completely without life should have a structure in any fashion similar to that of the history of Europe.

The point which we must reach in this is to combine life and non-life in a single place. I propose that we consider the possibility that animal life as a strictly biologic occurrence takes a significant step when animals develop art. By this I do not mean merely the accumulation of tools or the ability to copy tool making behaviors. Rather I suggest that animals become men when art becomes a part of their life.

Therefore I place the study of music squarely in the center of the intersection of our understanding of consciousness, both as a pre-human and a super-human construct, not as a level in itself as a joinder of two entirely separate worlds into one, i.e. the common vibration of a string which of its own accord signifies nothing, as conjoined with a multitude of strings in musical performance which in their merger attempts to mean a great deal.



In other words at some point in the spectrum of reality, between the non-living mathematic-chemical levels and the living psychologic-cultural levels, there must be a joinder, a merger, of the living and non-living realms in which we live. A study of the merger of these two is found in the science of biology, the "study of life." The simplest way to move into a discussion of the realm of law, philosophy, economics, national economic history, and physics is to begin first with a discussion of the interaction of life with non-life.

If we seek a parable for the combination of life and non-life at the biologic level, we may find it in the world of art. In art, the artist combines something which is entirely non-living – the vibration of strings, the color of paint, the dimensions of stone or metal – with the living inspiration of the artist. If we acknowledge that in the art of music life and non-life combine we have the beginning of such an approach.

Imagine then a great pianist sitting at the piano in a great hall playing for an audience. The piano, a large musical instrument made of wood, metal and felt, is non-living. The sounds created by vibrations of inanimate strings emanating from the piano are also non-living. But the human performer which causes these vibrations and these sounds to occur is a living force, something completely above and beyond the material, physical musical instrument. The music created is intended to appeal to other living things, and the beauty of the performance – or the lack thereof – is judged by other living human beings. These judgments are not material, and the purpose of the performance is not physical.

In some way similar to this, the living spirit of the individual enters into a cooperation with the physical, chemical and structural mechanism of the human body. The human mechanism is "played" by this spirit, as a musician plays a musical instrument. The consciousness of this physical body rests upon the physical mechanisms of the body much as a pianist's hands rest upon the piano keyboard. The "music" which biology studies is life itself.

Life rests upon the physical structures of nerve, heart, lung, liver, DNA etc. But "life" as such may no more be equated with these structures than the Moonlight Sonata equated with a piano. In other words, there is no difference between the DNA of Horowitz living and Horowitz dead. But there is a great difference between Horowitz living and Horowitz dead if one considers his approach to the nuances of a Chopin Prelude.

Obviously there are thousands of other interests to the field of biology. But if we concern ourselves solely with the manner in which non-life and life interact, the simple act of playing the piano has its advantages.

Every art has this combination of living and non-living elements. Every art seeks to appeal to the imagination and spiritual depth of the member of the audience by way of an arrangement of things which are, in themselves, generally non-living. The arts of gardening, landscaping and dance may be examples of arts wherein living things, rather than non-living things, are the focus of the artist. But it is not incorrect to note that the arts of painting, sculpture, architecture and music deal with media which are non-living and material as constructed and arranged by human forces which are in themselves both living and non-material.

Comparing the graphic arts to music, one can easily observe that the pianist strives to construct the "consciousness" of a piece of music - the emotional connection, the human understanding - using nothing but the sound of vibrating strings and the force of his or her own character. In this sense music is even more elemental and abstract than painting. Whereas the arts of painting and sculpture frequently refer to some existing physical object – a face, a view of mountains, the human form, a table with flowers, etc. – musical works generally defy an objective physical comparison. Although one might hear music which sounds like chicks

pecking their way out of egg shells, or water in a lagoon at night, these associations are not made with the same facility in music as in the graphic arts.

Consequently the simplicity of music is useful in describing all artistic effort. Regarding piano performance, Charles Rosen writes:

> There are indeed different kinds of tonal beauty in piano sound, and each pianist can develop a personal sonority that makes his or her work recognizable, but it does not come from the way any individual note is produced. A "singing" sound on the piano is not given by the instrument but by the way it is exploited with a specific musical phrase, and this exploitation is not mechanical and not a simple matter of technique: *it requires at every moment a sense of the music*. Beautiful tone production does not exist on the piano apart from the music. A single note on the violin can be beautiful because it can be controlled and made vibrant as it continues to be sustained: a single note on the piano is just a single note. It will appear more agreeable in isolation if it is not too loud and if the pianist does not appear to be thumping it awkwardly. *In performing a work on the piano, a beautiful quality of tone is achieved by shaping the melody and molding the harmony and the counterpoint. When that is done right – when the harmonies vibrate and the melody has a unified and convincing contour – the sound is beautiful.* In fact, that is how one can produce a beautiful sound even on a piano which may seem at first to give a sonority that is intractably ugly.[15]

Let us begin here, in the world of piano performance, to commence an analysis of the merger of the non-living and living realms of the reality around us.

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[15] Charles Rosen, *Piano Notes; The World Of The Pianist*, The Free Press, New York, New York, 2002. Page 24-25.

2. The Action And The Strings

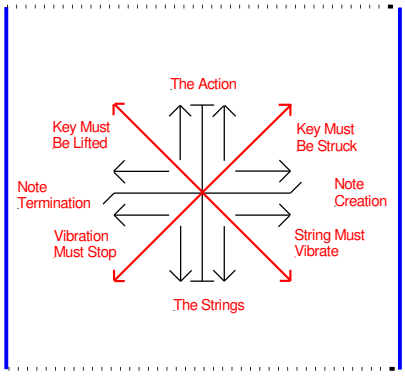
To create a circuit whereby musical artistry can take place, pianos are constructed of two basic parts: “The Action,” and “The Strings.”

“The Action” refers to (1) a set of keys, hammers and levers which strike the strings, and opposing these (2) a companion set of mechanisms - “dampers” - to stop the strings from vibrating at the will of the performer. The creation and the termination of the sound are of equal importance to the performer, for without both the music created would be a blur, an indistinguishable mass of strings vibrating. With the termination of the sound the distinctions between a whole note, a half note, a quarter note, an eighth note, etc. are created.

The most visible parts of The Action are the black and white piano keys held toward and beneath the performer’s hands. These keys are struck by the performer at varying levels of speed, force and held down for varying lengths of time. These set in motion a simultaneous striking of the strings. Ultimately, the key is lifted, the dampers fall in place, the string’s vibration is ended, the sound stopped, and the note both terminates and becomes recognizable as a timed pulse.

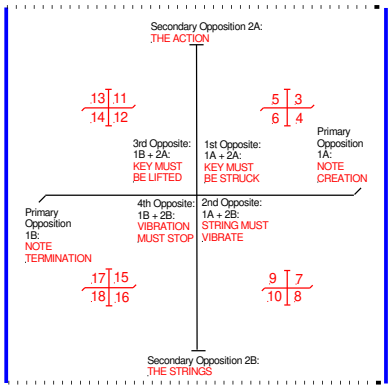
“The Strings” are strands of wire, constructed at different lengths, thicknesses and at different tensions, all tuned to complete a recognizable scale of musical relationships and harmonies. These vibrations create the sound which serves as the basis of all piano music.

There are then four essential aspects of playing a musical note on the piano. 1. The key must be struck. 2. The string must vibrate. 3. The key must be lifted. 4. The string’s vibration must stop. The formulation of these four points is presented as follows, and the central terms of the figure perhaps can be anticipated by the reader.



These four quadrants are stated by the mechanisms of the piano, provided by The Instrument itself. They exist whether the piano is played by a pianist or simply banged on by a child for joy of making racket. The physical instrument of the piano forms The Plane of Definition for piano performance.

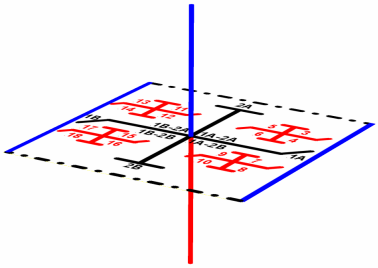
Piano performance requires more than sound from a piano. A piece of music states a set of artistic relationships occurring through time between each of these four quadrants as created by The Performer. The Pianist creates a Plane of Relationship as each of these quadrants is called into play at particular times, indicating particular notes, played in particular ways, each of which is set forth in the written music played by The Performer.



On the right hand we have a vertical blue line representing the tension which exists between the key being struck and the string vibrating. On the left hand we have a vertical blue line representing the tension between a key being lifted and the vibration stopping.

The foregoing model is exactly like those of the preceding three essays. The benefit of the present level lies in the fact that the musician understands and assumes that a physical level of "Sound" is intended to merge with a spiritual or non-material level of understanding, the "Note" of music itself. If an "Image Axis" is added to this model, we have a contrast between the creation of the simple "sound" of vibrating strings, as opposed to the finished "note" of music as terminated by the performer at a particular time.

THE SOUND



THE NOTE

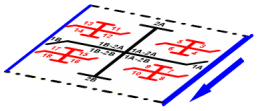
This musical sense of "note" is something more than the simple occurrence of vibrating strings. It is the understanding that the termination of the sound has added, in itself, something of value to the melody, that the termination at a particular time in the piece has permitted a certain "note value" to occur.

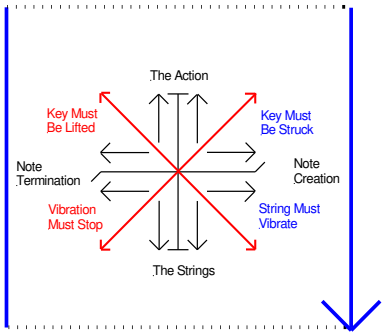
The idea of a note as "sound heard and terminated" is akin to the koan, the mystic riddle, of Taoism: "What is the sound of one hand clapping?" The answer: wave one hand through the air and stop where it might have met the other hand. The relative silence of the one hand clapping is nevertheless a sound, and a fundamental part of the idea of a clapping hand.

In music, one can not consider simply sound alone. One must also consider when the sound is ended, giving way to the next sound, in a motion of sound or melody of music. It is only when the sound is ended that the note has been heard. A similar insight may have been intended by Hegel's famous observation: "The owl of Minerva flies at dusk," or more prosaically, one can not understand something until it is finished.

The above constructed "Image Axis" is connected to the piano through the following "circuit of logical relationships."

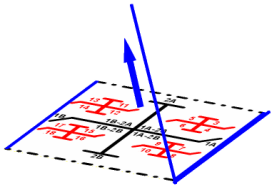
1) The key/hammer strikes the string, which then vibrates.





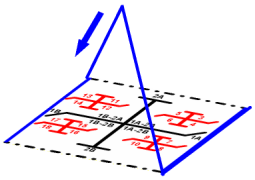
2) This vibration creates the sound of piano performance.

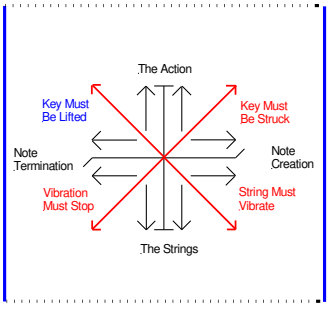
THE SOUND



3) A note - a sound which has ended on time - is created by lifting of the key…

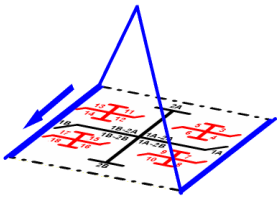
THE SOUND

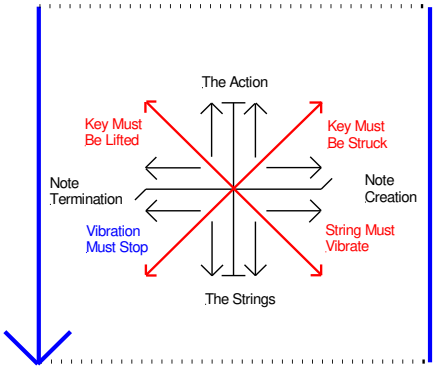




4) … Which permits the damper to fall onto the string, thereby stopping the vibration and the sound at a particular time in the piece of music.

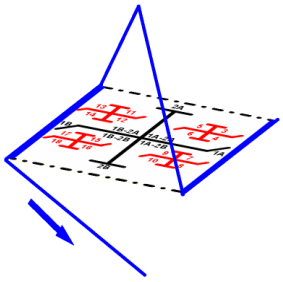
THE SOUND





5) This in turn terminates the duration of the note and provides a basis to understand the relationship of the note to the rest of the piece of music,

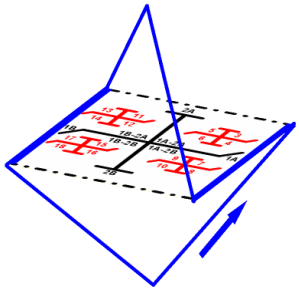
THE SOUND



THE NOTE

6) … Which in turn gives rise to a new understanding of the note, i.e. it is now a *particular* note in the context of the rest of the piece.

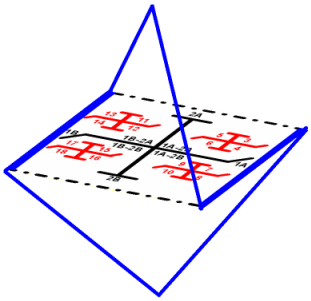
THE SOUND



THE NOTE

7) Each note of music represents a circuit of relationships, as follows.

THE SOUND

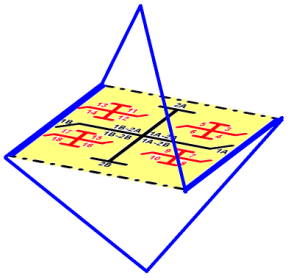


THE NOTE

This model is of three planes:

(1) a plane of dichotomies, one which defines the basic things which must occur if a note of music is to come forth

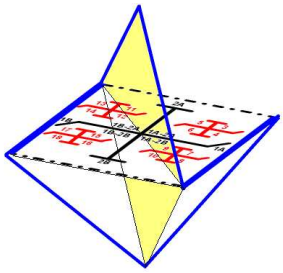
THE SOUND



THE NOTE

2) a plane connecting the creation of the sound to its physical termination, and

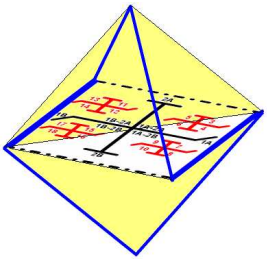
THE SOUND



THE NOTE

3) a plane connecting the termination of one note to the possibility of creating a second.

THE SOUND

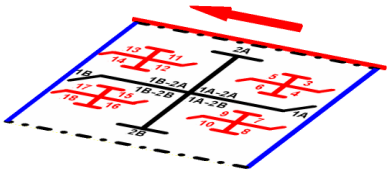


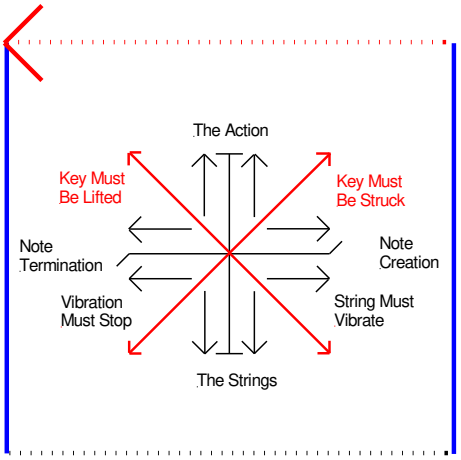
THE NOTE

In the above, a circuit has been designed which incorporates the blue lines by way of their connection to the creation of something.

An *inherent* uncertainty arises if we ask: What occurs if we design a circuit based upon the dotted black lines (Primary Opposition), rather than the blue lines (Secondary Opposition)?

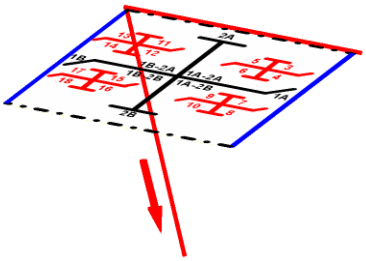
(8) The "Primary Opposition" of Music - "note creation" vs. "note termination" - presents a gulf or logical impasse between simultaneously striking and lifting a key. If the bare striking and lifting of keys in the action is made to be the basis for an understanding of music,





9) a break down or attack is made against the very meaning of music, ...

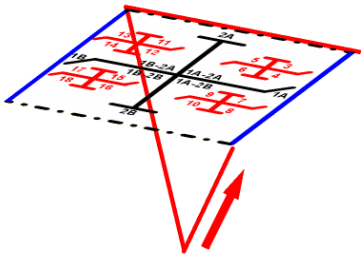
THE SOUND



THE NOTE

(10) in that a sounding of strings …

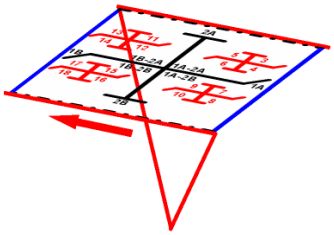
THE SOUND



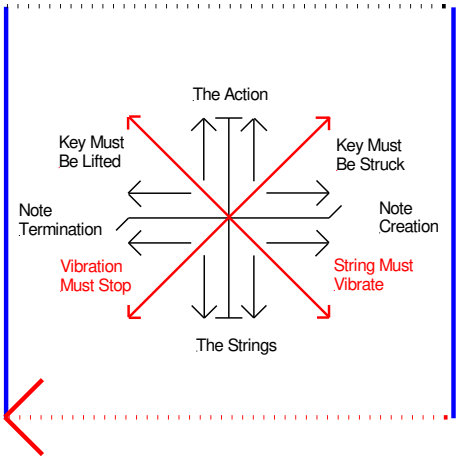
THE NOTE

(11) must be equated – bizarrely - with the termination of that sound.

THE SOUND

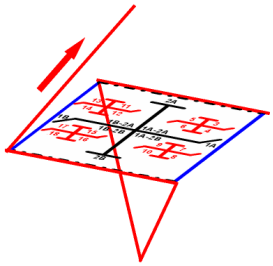


THE NOTE



(12) This leads to an attack on the concept of sound itself, …

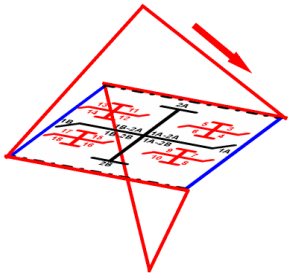
THE SOUND



THE NOTE

(13) and destroys the very idea of a note of music in the context of a larger piece.

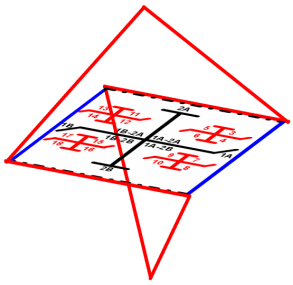
THE SOUND



THE NOTE

(14) This red circuit constitutes a sort of anti-music, a definition of music which is at odds with all musical understanding.

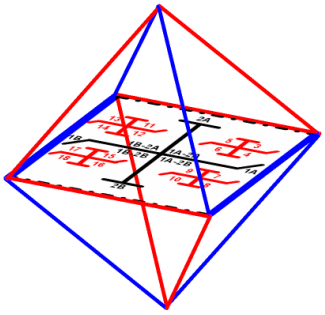
THE SOUND



THE NOTE

(15) Taking the blue circuit which might be defined as "music," and contrasting this with the red circuit which might be defined as a sort of "anti-music," we have the following two circuits simultaneously.

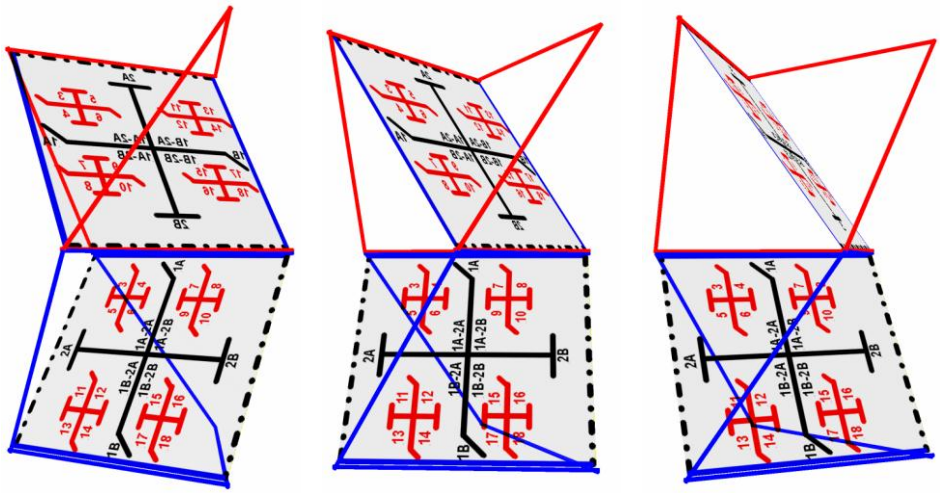
THE SOUND



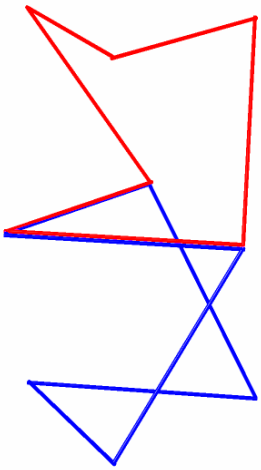
THE NOTE

3. A Sequence Of Notes

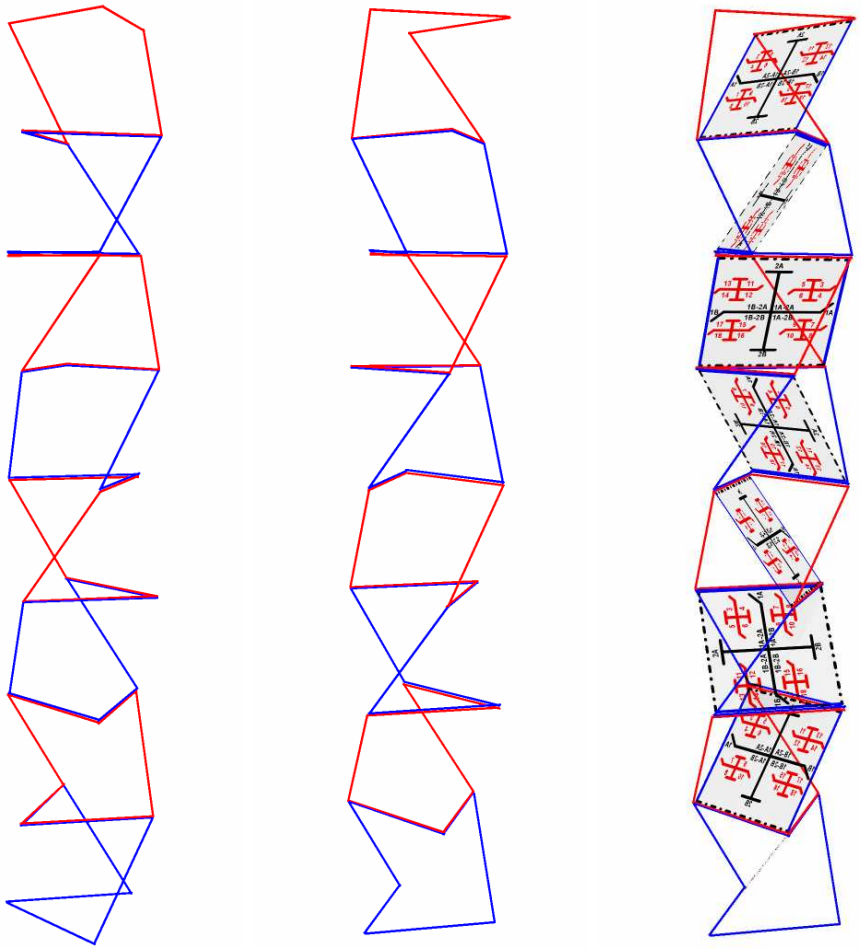
If these circuits are separated from one another, the blue circuit representing "musical performance" and the red circuit representing "anti-music," they may be aligned along a common angle, as follows.



With this alignment in mind, we may represent a single note as of the following form:



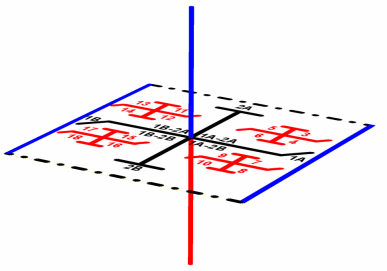
If we further understand that music is composed of many notes played in sequence, we may stack note next to note, as follows:



And so we may think of music as “strands” of separate notes, not unlike a strand of DNA composed of so many separate enzymes. The overall impression given by the piece of music however always revolves around the underlying dichotomy between the material “sound” given by the vibrating string and the non-material “note” understood by the audience in the context of the entire piece. Against these two dichotomies of “sound” and “note” we progress towards a harmonic understanding of the whole piece.

In effect, the separate poles of “The Sound” and “The Note” in music

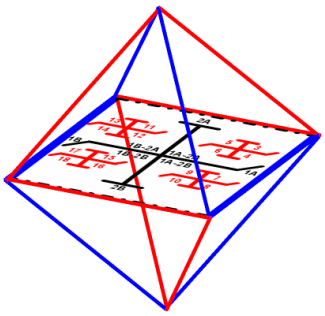
THE SOUND



THE NOTE

… are joined into a single unit by way of these circuits.

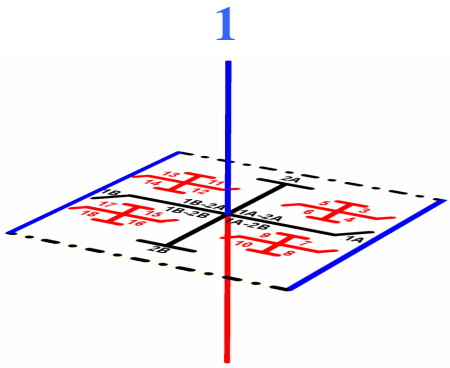
THE SOUND



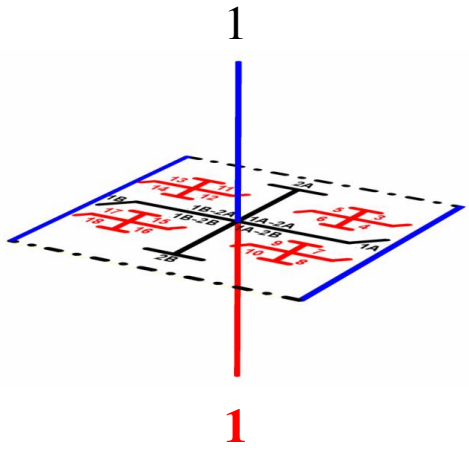
THE NOTE

We may further unify these poles mathematically if we use this "Image Axis" to generate a series of numbers which can be used to join these two poles. For example, if we give the number "one" to the first vibration of the piece

First string vibrates.



… we can see that the "note" itself revolves entirely upon the sense that the sound has ended.

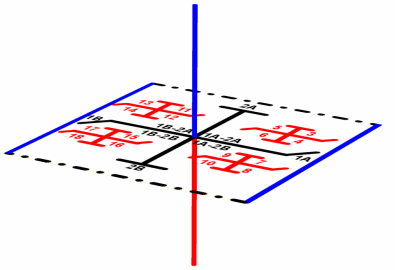


First note is heard.

Once this “note” has ended, a new sound in the melody follows:

Second string vibrates.

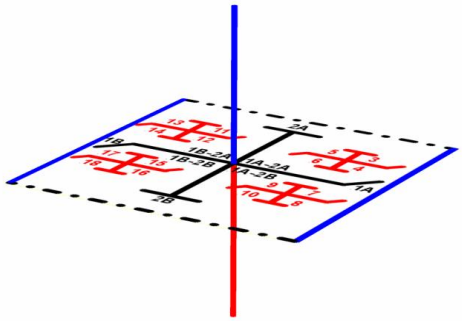
1 + 1 = 2



1

The combination of the second sound with the first note is something other than a simple addition of notes. Once the second sound terminates, it creates a new sense of both notes. It brings about a new understanding of the note previously heard in combination with itself.

2



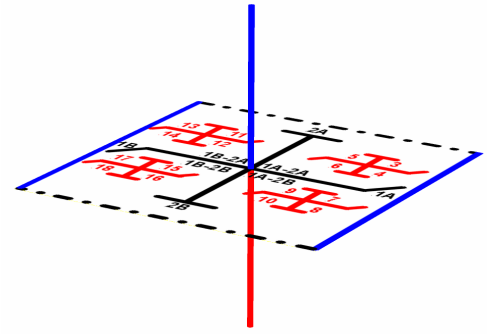
2 + 1 = 3

Second note is heard.

And then a third sound becomes part of the melody,

Third string vibrates.

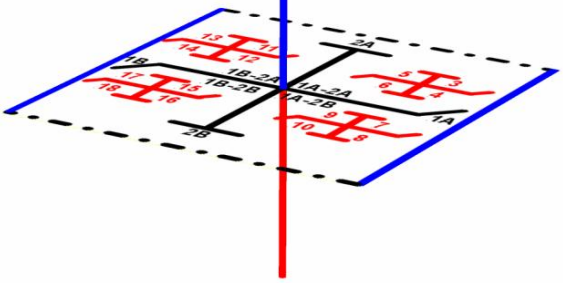
2 + 3 = 5



3

And followed, upon its termination, by the understanding of the three notes collectively:

5

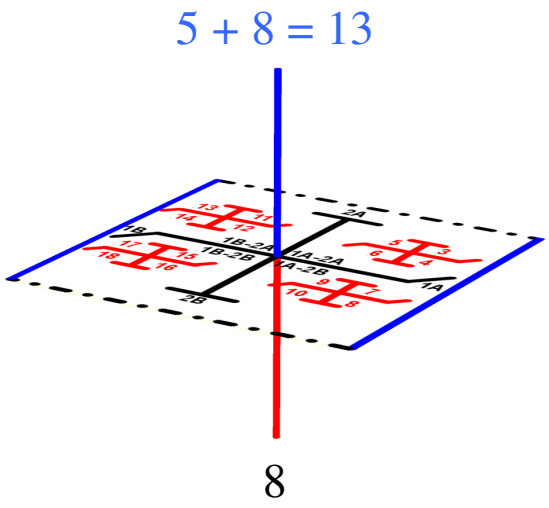


3 + 5 = 8

Third note is heard.

And then a fourth note…

Fourth string vibrates.



By extending this series of sums into a pattern we have the Fibonacci series, to wit:

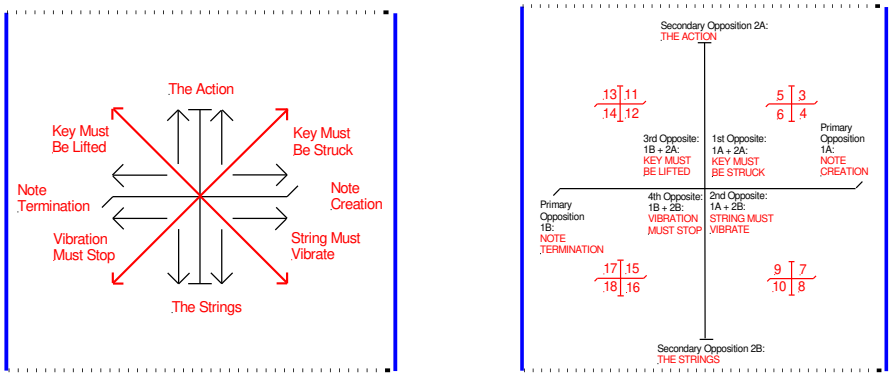
1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, etc.

Joining these numbers into fractions in an effort to determine a common ratio, we have:

$$\frac{1}{1} \quad \frac{2}{1} \quad \frac{3}{2} \quad \frac{5}{3} \quad \frac{8}{5} \quad \frac{13}{8} \quad \frac{21}{13} \quad \frac{34}{21} \quad \frac{55}{34} \quad \frac{89}{55} \quad \ldots$$

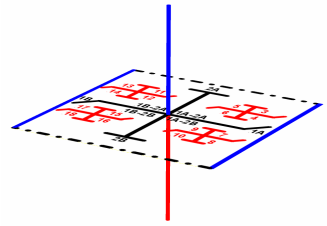
This continuing series renders the constant phi = 1.6180...

Let us consider for the moment the square of tension which we have considered as the basis for piano itself. This was proposed as:



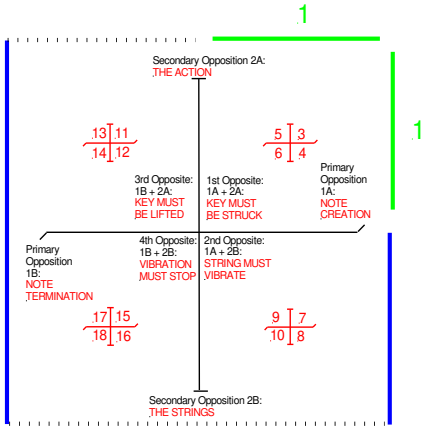
To this model we have added an "Image Axis" representing the "Sound" and the consideration of that sound as terminated in the "Note."

"THE SOUND"

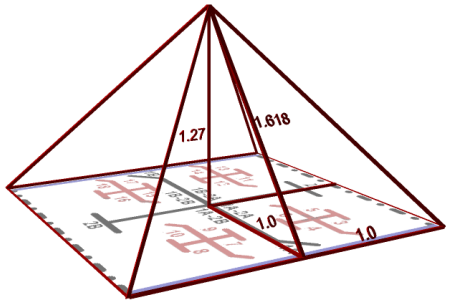


"THE NOTE"

Let us set each of the quadrants of piano performance be given as contained by a square with the dimension of 1 x 1.



Taking this as our measure, let us give the number 1.6180 as the relationship between the poles of (1) "Sound Creation" and "Sound Termination," (2) "The Action," and "The Strings," and (3) the merged end points "Sound" and "Note" of the "Image Axis." Placing the distance 1.618 above the "Sound Creation" ray we have the following figure.



The above figure represents the meaning of the piece of music, as sound combines with note, to join into a finished and understandable whole. But this merger of the two by way of a constant "1.6180…" must finally be resolved by the performance AS SUCH.

In other words, no musician would be content to have music simply as a logical set of static relationships and definitions. Music must actually be played; it must live, it must exist as something heard and enjoyed. The key must actually be struck, the string must actually vibrate, the key must actually be lifted, and the strings actual vibration must cease, one note after the next, in order for music to take place. Charles Rosen writes:

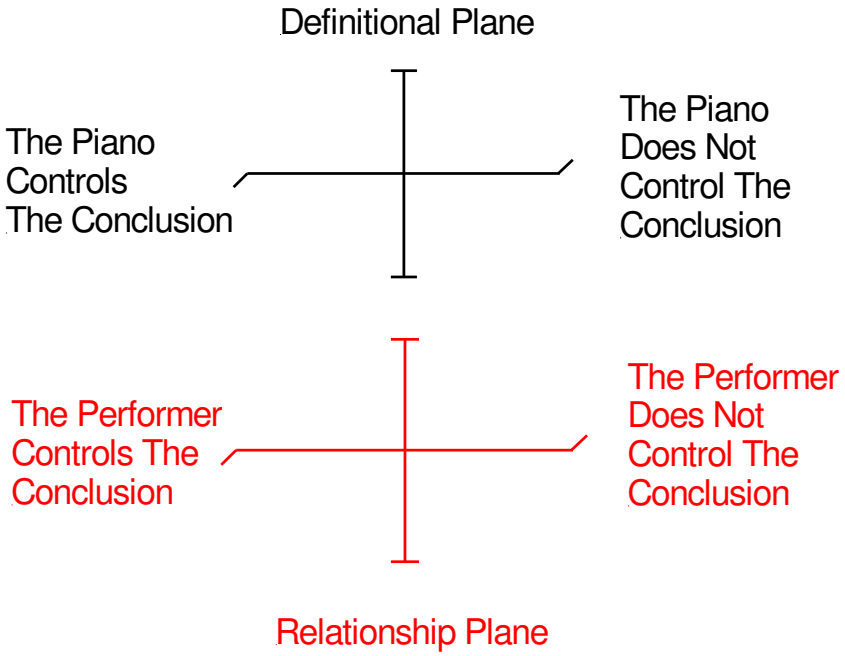
> I do not know if new ways of using the piano will be found in the future. … Music, a basic human need, will of course survive, but whether the piano repertoire in all its variety will go down without interruption to future centuries remains in doubt. ... (T)he survival of the piano repertoire from Bach to Berio will depend essentially not on whether anyone wants to hear it, *but on how many will want to play it and refuse to settle for anything else*. A fervent passion for performing a work of music or on a musical instrument will always find or create an audience. If there are still pianists in the twenty-second century, there will be a public willing to listen to them, but *it is the physical pleasure of playing as well as hearing the piano that holds the key to the future of the music written for it*.[16]

This brings us to the "Conclusion" plane of the above model, actual performance.

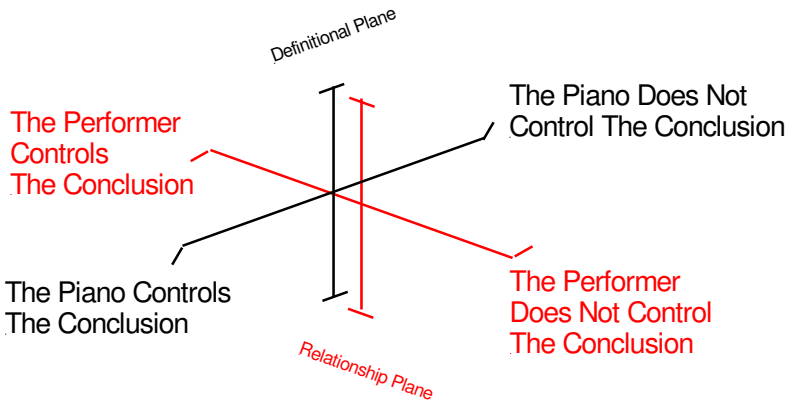
[16] Id., pp. 234-235.

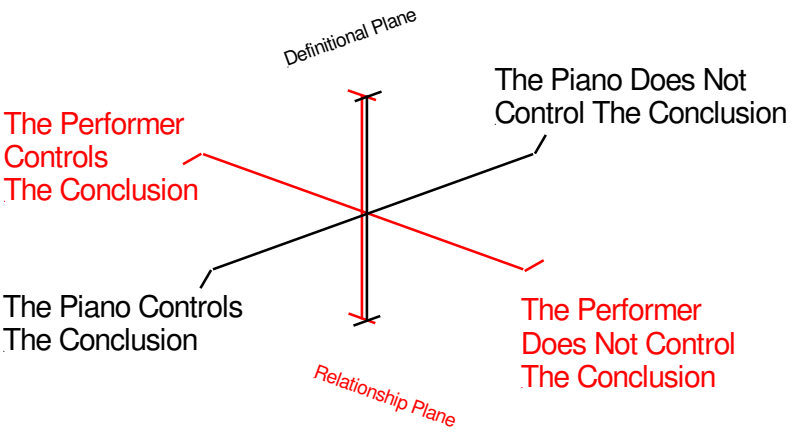
4. Performance

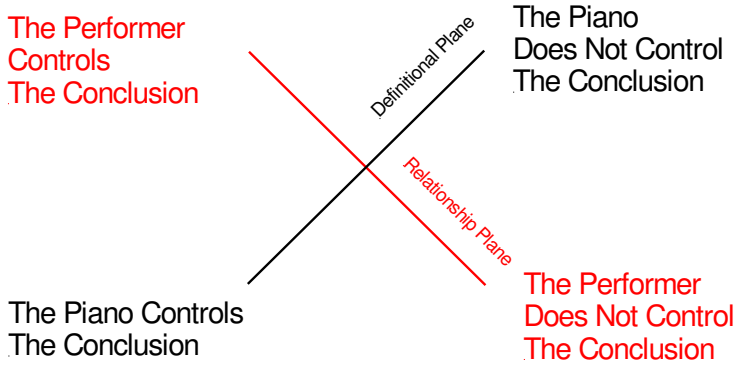
As in the previous essays we combine the "Plane of Definition" with the "Plane of Relationship" along a common axis.



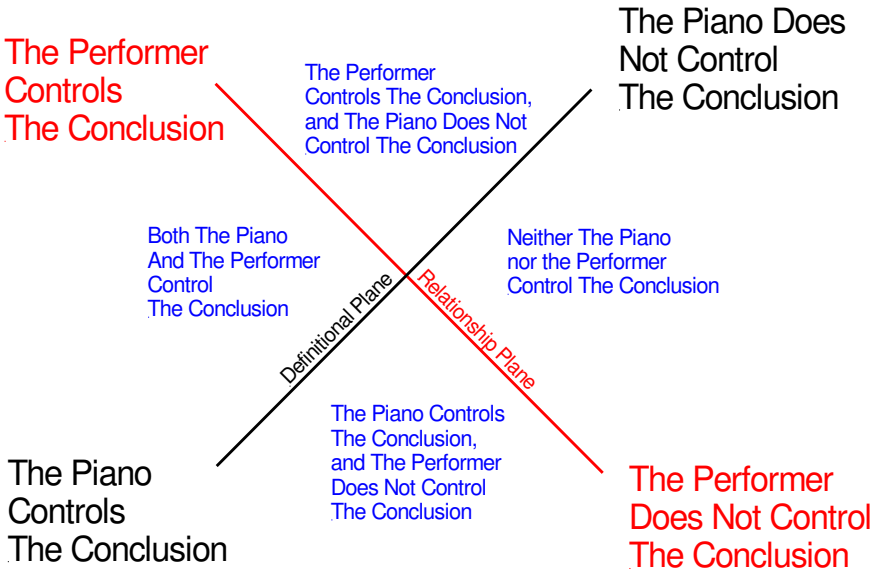
In order actually to play the piano, one assumes that every note played, and every sound heard, in some way are the result of these two planes. The alignment of these concepts can be imagined as follows:







The merger of these two planes is the performance itself, the foundation for the music which is to come forth from the instrument at the hands of the performer.



Every piece of music performed is based upon these four quadrants.

For example, if we ask "Can I play octave glissandi on this piano?" we must consider *both* the technical capabilities of the performer and the piano in question. Charles Rosen writes:

> In the last years of the nineteenth century as pianos were getting bigger and louder, the actions became heavier and stiffer, and pianists had to push the keys down to a greater depth. This demanded more muscle power, as if pianism had not already become sufficiently athletic during the youthful years of Franz Liszt. Nothing reveals the greater stiffness of the modern action more than the octave glissandi written for the piano by Haydn, Beethoven, Weber, and Brahms: easy to execute on the instruments of the period, they now require a special technique and are abnormally difficult on some instruments when the resistance is more than standard. (An octave glissando is played by starting an octave with the sum and fifth finger and then dragging or sliding the hand along the white keys; for practical reasons, right-hand octave glissandi generally go down, left-hand go up.) When my teacher showed me how to do this, he told me to practice it for only ten seconds a day for a week: "more that that," he said, "and you will get a blister on your fifth finger."[17]

[17] Id., p. 81.82.

If we ask, "Why did you choose to perform this piece?" only *the performer* can answer this question.

> Pianists should, in the best of all possible worlds, play only the music they love and – this should carry equal weight – to which they think they can bring an interpretation that is deeply personal. … Choosing repertory because of commercial pressure or intellectual pressure is, in the end, self-defeating. The only true recompense for the awkward living conditions is that you can play the music you love throughout your life and play it at moments as well as you are able.[18]

If we ask, "Is this a good piano?" one may consider the instrument itself solely, and without any reference to a particular performer.

> Today, going from a new piano which is somewhat stiff and often voiced for harsh brilliance to an older piano with a much looser response and a more mellow quality is like changing from a Mack truck to a Ferrari. The advantage of always playing the same instrument cannot be overestimated. A piano on which one has played a dozen times is an old friend, even if that piano has other friends as well: back on the 1960s, a whole generation of American pianists recorded on the same instrument, Steinway No. 199. It was used by Gary Graffman, Jacob Lateiner, Leon Fleisher, and myself. There must have been others as well. It was a beautiful instrument with a long decay of sound, and a sonority that combined warmth and brilliance. When the action finally wore out, the piano was sold, although if the company had really had heart, they would have rebuilt it.[19]

Finally, if we ask, "Will the public like this music?" we have a question that *neither* the piano nor the performer can answer with certainty.

> A first prize is generally accompanied by a guaranteed series of engagements for one year, and some of the prestige will hand on for another year or two. After that, all too often, the prizewinner is left out in the cold, as it if were necessary to start again from scratch. It is at this point that the formation of an image has to occur, an image that will make the individual pianist paper to be a necessary part of the world of music. Even the cleverest publicist can give nothing more than a limited or temporary help, and the pianist has to call now upon all the resources of his experience of music from the earliest years. The conservatory prepared him for the competitions, and the stylistic demands of the competitions have now become irrelevant. Much of what he had to do to gain the diploma and win the prize has ceased to have any interest. The part of his education that is not suited to this personal view of music has to be cast away like a carapace from an earlier stage of life.[20]

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[18] Id., 113-114.
[19] Id., p. 81.
[20] Id., at 115.

Such questions arise constantly in the world of piano performance, as the following example suggests.

> On one occasion, a teacher on the jury (whom we will call Ingrid because that is not her name) had a student in the competition (who will be renamed Igor for convenience). Another pianist had played the *Appassionata*, and afterward Ingrid said to me, "One shouldn't use pedal in the second variation of the slow movement."
>
> "Why ever not?" I asked.
>
> "The score reads *senza pedale*," she replied.
>
> "No, it doesn't," I said; "Schnabel's edition reads *senza pedale*, but the original score has no instructions about the pedal there,."
>
> "Do you think one should use pedal in the second variation?" Ingrid asked me.
>
> "I don't care as long as it is interesting, moving, and keeps my attention."
>
> That evening I had dinner in a Chinese restaurant with a local professor who had Igor in his composition class. "Ingrid has gone off her head," he told me.
>
> "What do you mean?"
>
> "She just Igor's parents and left a message: 'Tell Igor to use pedal in the *Appassionata*.' "[21]

The use of the pedal deserves special mention in the performance of music. Let us begin our understanding of piano performance with this important adjunct to our model.

[21] Id., pp. 110-111.

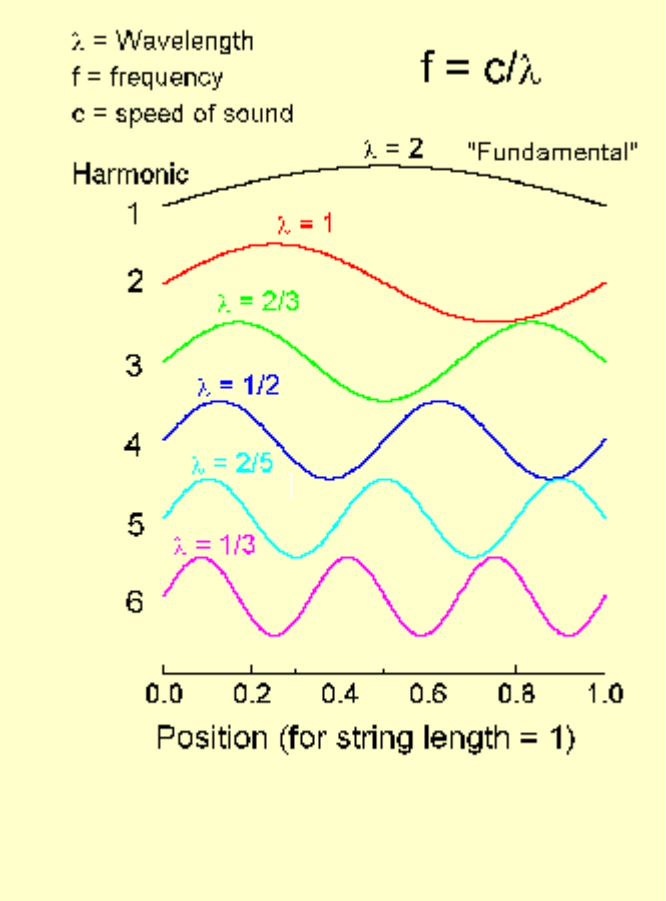
5. Sympathetic Vibration

When a string vibrates, the high point of the vibration stretches the string to a new point of tension, creating two subsequent vibrations of half the original length of the string. Consequently a Middle C will vibrate at not only at the tone of Middle C, but also an octave above Middle C, as well as G, and E, etc. This series of tones is important to understand in any performance of the piano.

Overtone Series

To understand how the scale arises from the overtone series, imagine vibrations on a string of fixed length, which is fixed at both ends (e.g. a piano string). The actual vibration may be very complicated, but can be broken down into basic units called "modes" of oscillation, each of which is a sine wave.

Since the string is fixed at both ends, so too must each of the possible modes. Hence, only sine waves which do not oscillate at the ends of the strings are allowed. The possibilities are shown in the figure below.



The fixed ends of the string will allow only certain wavelength modes to appear. If the wave speed is a constant … and, for the sake of an example, we take the frequency of the fundamental mode to be that of C3 (the C below middle C, 131

Hz), the overtones are harmonically related (they are integer multiples of the fundamental) and are given in the following table.

Harmonic	Freq. Hz	Note	Comments
1	131	C3	Fundamental
2	262	C4	1 Octave Higher
3	393	G4	A Fifth above C4
4	524	C5	2 Octaves above fund. and a fourth above G4
5	655	E5	A Third above C5
6	786	G5	A Fifth above C5 Harms. 4, 5 & 6 form a major chord
7	917	almost B5b	An overtone to avoid

Since notes can be translated by an octave by multiplying or dividing the frequency by 2, these overtones of one fundamental define the notes C, E, and G. If we now make another string with a fundamental frequency corresponding to E3 (655/4 = 163.75 Hz) and look at its overtones, we define the notes B, and Ab. Starting with G3 (196.5 Hz), one gets an overtone defining D. Starting with D, the notes A and F# are overtones. Continuing the process, the notes of the scale are produced.[22]

"Sympathetic vibration" occurs when the vibration of one string sets off a lesser but still very noticeable vibration in a different string.

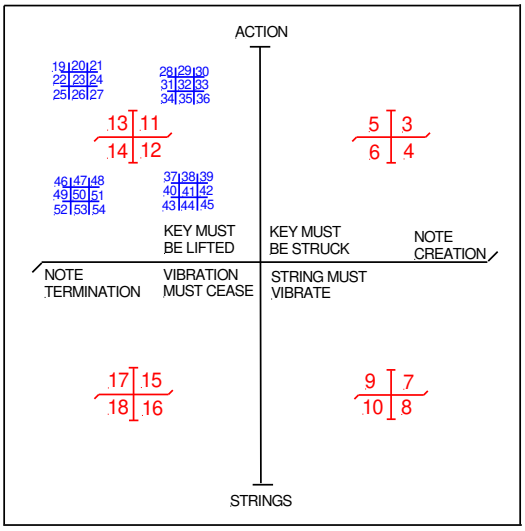
> When a sound wave of one frequency strikes a body that will vibrate naturally at the same frequency, the vibration of the body is called sympathetic vibration. A reinforcement of sound resulting from sympathetic vibration is called resonance. When the vibrations of a sound-producing body cause another body to vibrate in the same frequency, not normally its own, the vibration is known as forced vibration.[23]

[22] http://www.phy.mtu.edu/faculty/info/suits/overtone.html
[23] http://www.factmonster.com/ce6/sci/A0850799.html

The piano takes advantage of this physics. The right-most pedal, the "damper pedal," lifts the dampers off the strings themselves, thereby permitting the sympathetic vibration of the strings to occur over the entire range of the strings.

> Much of the tonal beauty of the piano today must be ascribed to the pedal which allows the sympathetic vibrations of the whole instrument to act. Beginning with the 1830s, the almost continuous use of the pedal became the rule in piano playing (although Liszt and his school were more sparing, with a somewhat drier sound). This has had a disastrous effect on the interpretation of Haydn and Beethoven, for whom the pedal was a special effect. Beethoven, in particular, exploited the contrast of a heavily pedaled sonority alternating with dry unpedaled passages.[24]

When the damper pedal is held down, lifting one's finger from the key has no impact at all on the termination of the sound. When the performer's foot is not on the pedal, when the pedal is not held down, the dampers fall into place upon the strings and the vibration ceases upon the lifting of the finger from the key. This "uncertainty" – this disconnect between the lifting of the finger from the key and its effect upon the piece as dependent upon whether the damper pedal used or not used – might be drawn, as in previous essays, as follows:



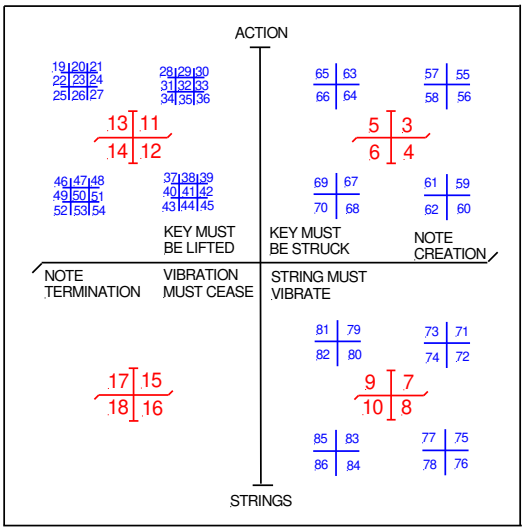
[24] Id., p. 30.

6. The Attack

On the other hand, there is no inherent uncertainty in the act of striking the key and the necessity of string vibrating in turn.

> "(M)usic is not just sound or even significant sound. … *There has to be a genuine love simply of the mechanics and difficulties of playing, a physical need for the contact with the keyboard*, a love and a need which may be connected with a love of music but are not by any means totally coincidental with it. This inexplicable and almost fetishistic need for physical contact with the combination of mental, wood, and ivory (now more often plastic) that make up the dinosaur that the concert piano has become is, indeed, conveyed to the audience and becomes necessarily part of the music, just as the audience imagines that the graceful and passionate gyrations of the conductor are an essential component of musical significance. … *For all of us, music is bodily gesture as well as sound, and its primitive connection with dance is never entirely distilled away*. [25]

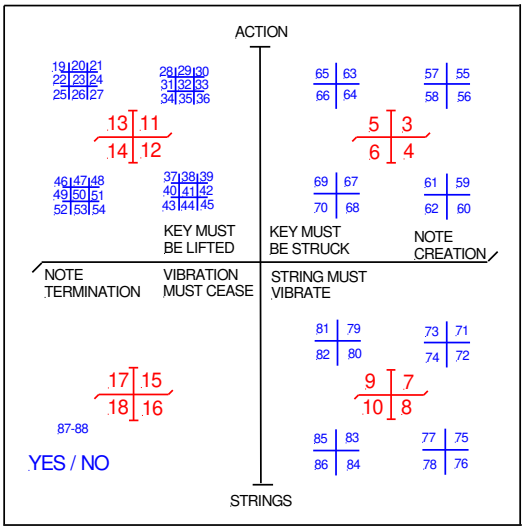
In other words, there is no inherent uncertainty as to when the key is struck and when the string begins its vibration.



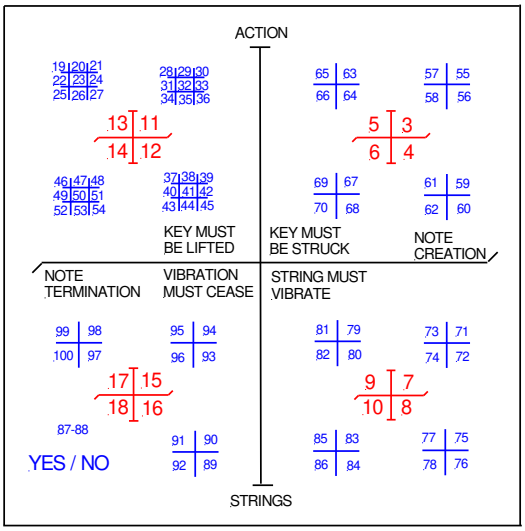
[25] Id., p. 10-11

7. The Decay of Sound

On the other hand, the vibration of the string has a rather arbitrary quality about it. The vibration either IS, or IS NOT, affecting the piece.



As long as the vibration exists, it affects every other aspect of the piece. If the string is not vibrating, its affect on the piece is largely terminated.



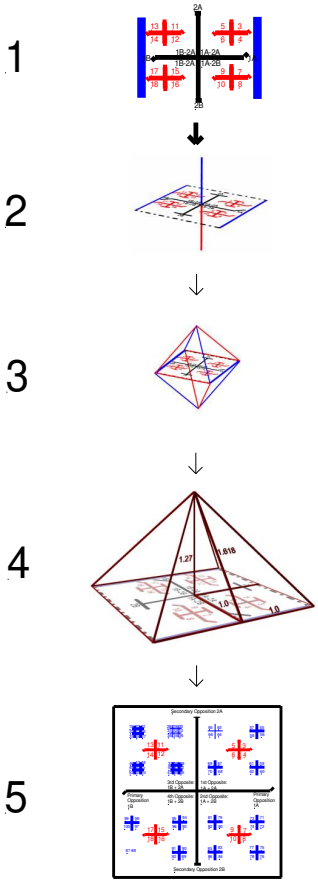
The fullness of the piano and piano performance is always something which merges each of the actions described – the striking of the keys, the string's vibration, the lifting of the key, the termination of the vibration – into a single unified whole. One way to sustain the sound for as long as possible is to permit the interior of the piano capture the resonance of the string even after the vibration has ended.

> Many aspects of the quality of the sound of a piano can be altered. What cannot be changed is the decay of sound: this comes from the sounding-board, and is, to my mind, what defines the intrinsic beauty of an instrument. The initial impact of a note is always strong and slightly percussive, even with a soft note: on a machine that measure decibels, the needle will jump instantly to the right as the note is struck and fall immediately back toward the center of the dial. It will then, if the note is sustained, move slowly and gradually back to zero. It is the second drop that determines the decay of sound: the longer the note can be sustained before it finally disappears, the greater will be the singing capacity of the instrument. The decay on a concert grand tends to be longer than that on the smaller instruments: for this reason the belief that it is possible to play more softly on a smaller instrument is false. Played so softly that the note just sounds or "speaks," a long decay of sound will sustain this minimal sonority with great effect within a soft cantabile melody. With a shorter decay, on the other hand, one must give the note more of a thump to make sure it will carry over and make a sustained melodic line. With the larger instrument, therefore, one can often play more softy: the sound will carry in a very large hall with good acoustics no matter how softly one plays if the piano will sustain a soft sound. [26]

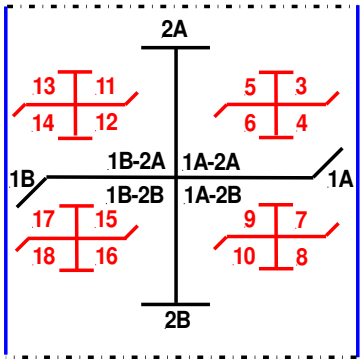
[26] Rosen, pp. 70-71.

CONCLUSION

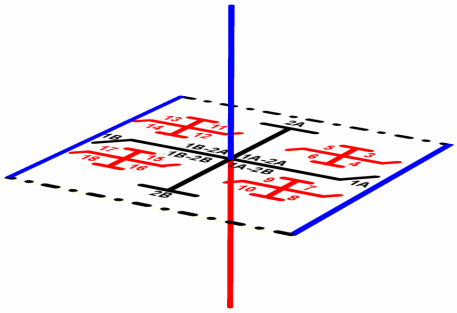
And so we have an analysis for piano performance, to wit:



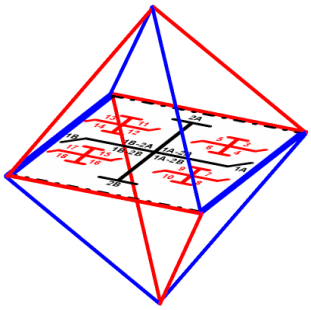
1. The first step identified the central tensions which exist as The Instrument and The Performer meet in the performance. The interactions of these two roles – non-living and living – led to the following diagram of their oppositions.



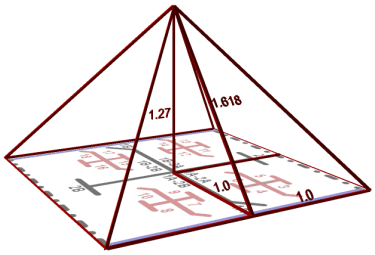
2. The second step described the significance of "Sound" and "Note." This led to the development of an "Image Axis" whereby these two opposing poles could be considered separately.



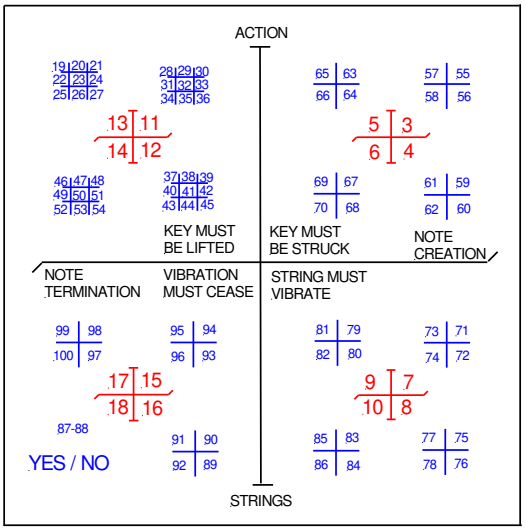
3. The third step identified *a circuit of relationships* which acted to combine "The Sound" with "The Note." This *circuit* permits us to merge, rather than to irrevocably separate, opposites; it describes *a set of fixed relationships* between the on-going "Sound" and the concluded "Note" both of which are central to any understanding of music.



4. The fourth step recognized the importance of the merger of "Sound" and "Note" in a single piece of music, one which anticipates scores of similar "Sounds" and "Notes," each of which continually impact on the harmonic understanding of the piece of music itself. The merger of the Fibonacci series, (1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc.) into a single, unified distance phi = 1.6180… was portrayed visually as a distance taken from the point of this merger between "The Sound" and "The Note" as it related to the piece of music.



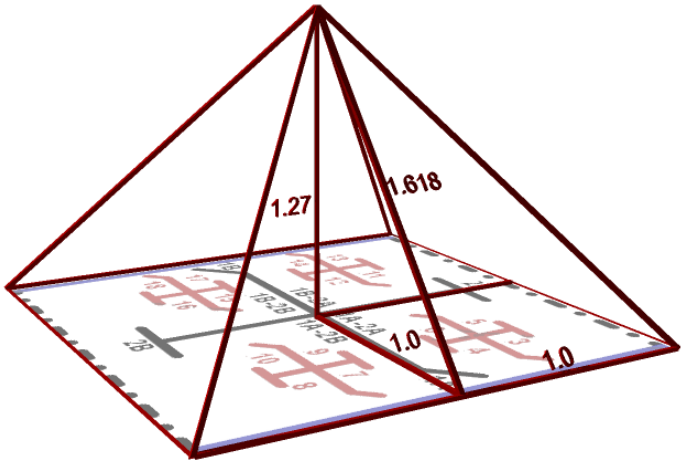
5. The fifth step resolved the dichotomy between “The Sound” and “The Note” in a 100-part “System of Movement representing the performance itself.



The foregoing analysis of piano performance is intended to serve as a parable of biology. Piano performance combines the non-living piano with the living performer in an art form which is meant to be heard and enjoyed.

Biology considers the merger of the non-living chemistry and anatomy of the physical body with the spirit animating this body in a study of the life of the organism.

Taking the physical body of a biologic organism to be “like the piano,” and its life-force to be “like the performer,” we have in a piano performance a simple analogy for the study life as music itself.



Essay Six:
Economics

Peace and not war is the father of all things.

Ludwig von Mises

ABSTRACT

Aims: To demonstrate the efficacy of this model in the realm of calculable quantities, specifically those of macroeconomics.

Study design: Philosophic presentation of the necessary principles underlying economics. .

Place and Duration of Study: Library research.

Methodology: Using the work of Ludwig von Mises we explore the uses of the foregoing patterns and their connections with the first five essays. In oarticular the mathematic constants pi and phi are demonstrated in the context of this discussion

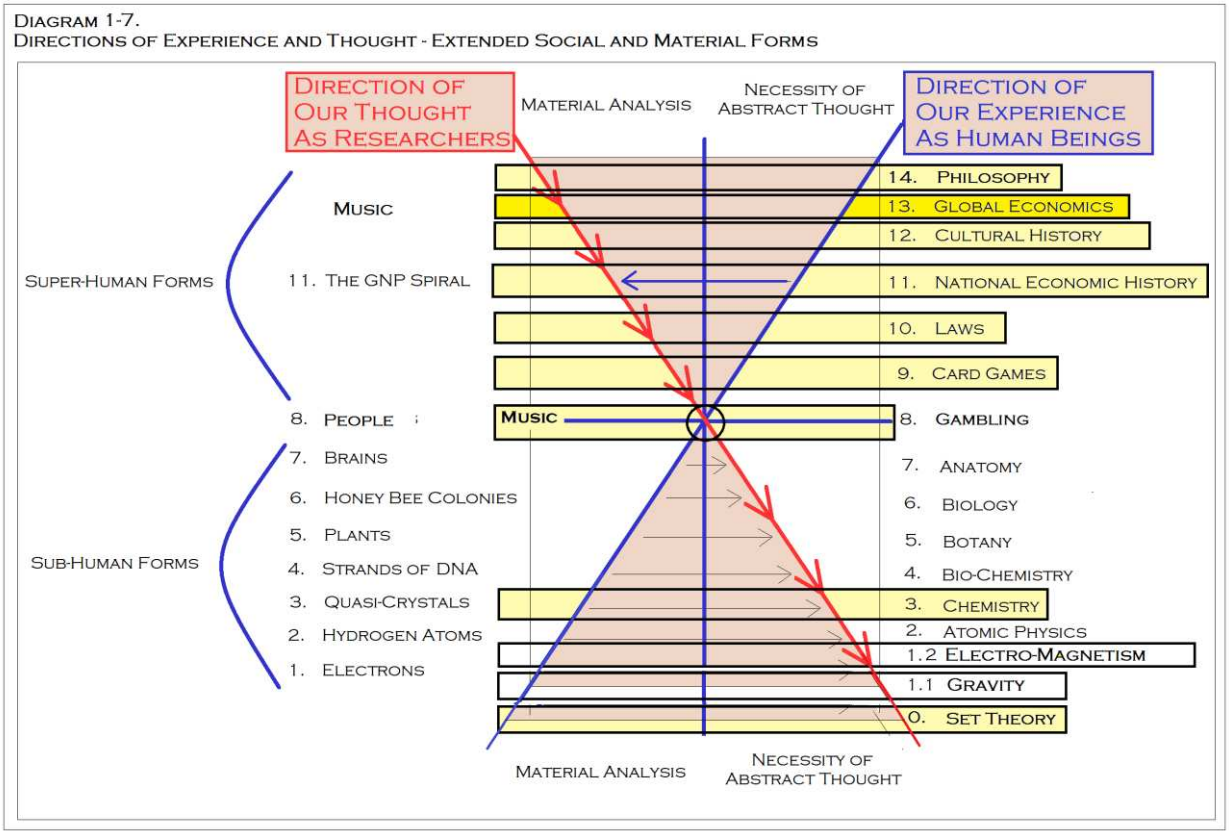
Conclusions: We conclude that the model presented is persuasive in the realm of economics

Introduction.

If the logical distinctions made in the previous essay on Oppositional Analysis actually exist in the world around us, we should be able to notice their operation. In order to demonstrate the efficacy of this approach we turn to the highest level of reality laid out in the Introduction, the world of global economics. In particular we look at the categories, interrelationships and phenomena explored by well-known and competent professional economists as these pertain to a field which engulfs us all, the world of trade.

In short, in this essay we apply the approach of Oppositional Analysis directly towards and understanding of Economics. We do this through an exposition of the chief proponent of the Austrian school of economic thought, Ludwig von Mises and his book *Human Action*.

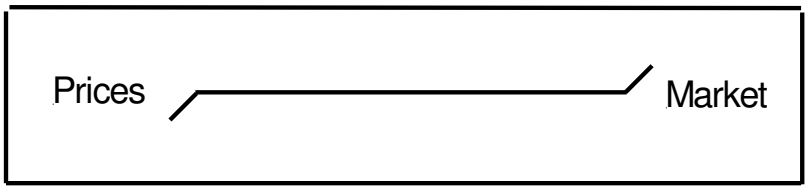
I propose that the System of Movement pattern explored to this point may be understood more thoroughly, and be made more useful, if we approach Economics from the point of view of biologic complexity. My aim in this section is not to endorse any particular economic point of view. I aim solely to take the ideas presented by von Mises and place them in the patterns described in this book. I then demonstrate that the essential ratios which were explored in the first five essays of this collection are entirely consistent with the arguments put forward by von Mises.



1. Ludwig von Mises and Human Action

If we look for texts in economics which might support our approach we might consider the work of Ludwig von Mises. In his book *Human Action: A Treatise on Economic* von Mises presents economics as the outgrowth of inevitable types of human activity.

Von Mises divides economics into two psychologically opposing "orbits." These orbits are (1) the production and distribution of goods and services via a market, and (2) the valuation of these goods and services via money prices. He searches for the laws controlling prices and markets in a general theory of human action or "praxeology." These "orbits" might be viewed as the opposing poles of a Primary Opposition, not unlike the Principle of Non-Contradiction.



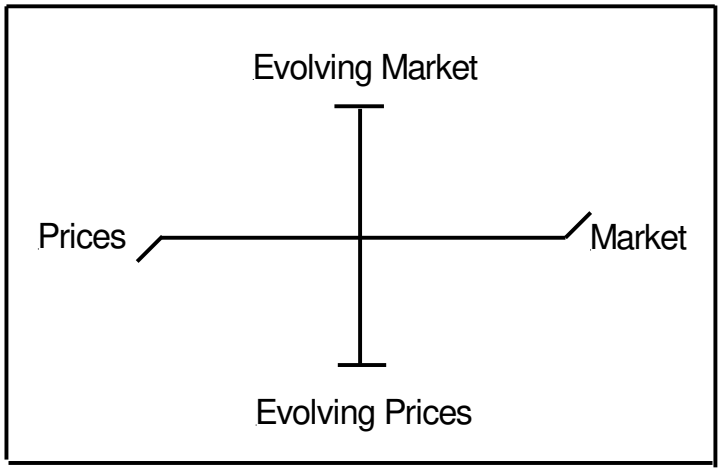
That is, an object can not exist in a market and be priced with certainty simultaneously. Once purchased in a market at a price agreed upon between persons buying and selling the object, the good or service disappears from the market.

So long as the good is purchased at a price set, it is no longer on the market. So long as the good is on the market awaiting purchase, or sought within the market for purchase, its price can not be known with certainty. These two aspects of any economic object are closely related however. Von Mises summarizes the study of economics as follows:

> All that can be contended is this: Economics is mainly concerned with the analysis of the determination of money prices of goods and services exchanged on the market. In order to accomplish this task it must start from a comprehensive theory of human action. Moreover, it must study not only the market phenomena, but no less the hypothetical conduct of an isolated man and of a socialist community. Finally, it must not restrict its investigations to those modes of action which in mundane speech are called "economic" actions, but must deal also with actions which are in a loose manner of speech called "uneconomic."
>
> The scope of praxeology, the general theory of human action, can be precisely defined and circumscribed. The specifically economic problems, the problems of economic action in the narrower sense, can only by and large be disengaged from the comprehensive body of praxeological theory.
>
> ... Market exchange and monetary calculation are inseparably linked together. A market in which there is a direct exchange only is merely an imaginary construction. On the other hand, money and monetary calculation are conditioned by the existence of the market.[27] (p. 234-235)

[27] Id. pp. 234-235.

The demands of consumers for goods and services make themselves felt over time. Likewise over time the prices of various goods and services evolve in the market. This second "time" element creates a second dichotomy, a Secondary Opposition similar to that of the Principle of Contradiction. That is, a basic tension exists between the markets and the price structures of any group or nation as these adjust themselves to one another over time.



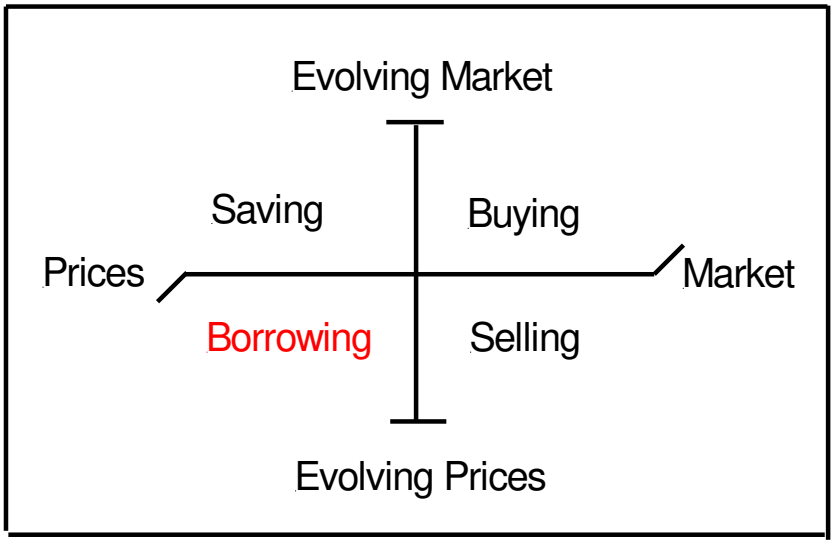
Von Mises writes:

> The economic process is a continuous interplay of production and consumption. Today's activities are linked with those of the past through the technological knowledge at hand, the amount and the quality of the capital goods available, and the distribution of the ownership of these goods among various individuals. They are linked with the future through the very essence of human action; action is always directed toward the improvement of future conditions. In order to see his way in the unknown and uncertain future man has within his reach only two aids: experience of past events and his faculty of understanding. Knowledge about past prices is a part of this experience and at the same time the starting point of understanding the future.[28]

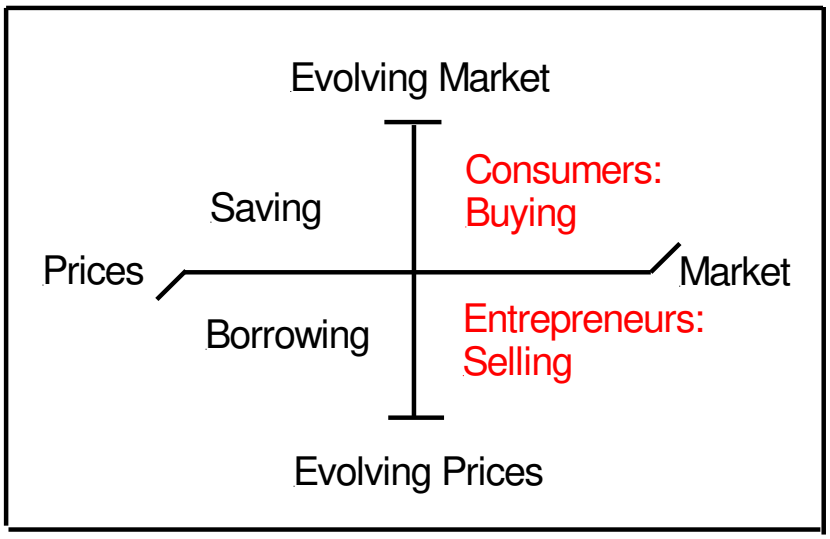
Under the principles discussed in earlier chapters, these basic dichotomies result in the creation of four essential "activities" within the realm of economics. These are the actions of buying, selling, saving and borrowing.

[28] Id. p. 334.

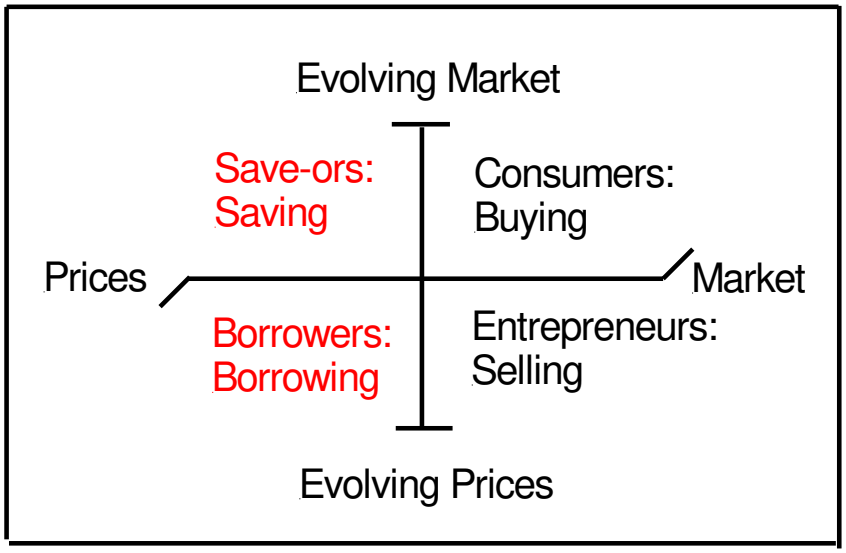
The fundamental drive of any economic system is the desire to buy. The opposite of buying is selling. The negation of buying - "not-buying" - is saving. And the opposite of saving is borrowing.



Von Mises describes these activities using different terminology. He describes these activities as (1) evolving markets seeking to meet the changing demands of *consumers*, and (2) evolving prices demanded by *entrepreneurs* as they seek to meet these demands for production within the framework of costs, liabilities and profit motivations of business.

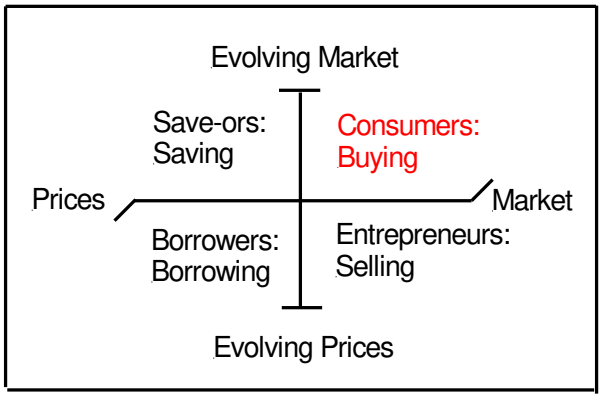


These aspects of the market are contrasted with (3) the desire to save cash (rather than to consume) for extended periods of time, or (4) the need to borrow cash upon credit re-payable over a period of time. These economic activities create the basis for a monetary sector.



Consumers

According to von Mises, the first and foremost group within the economy are the consumers. Professor von Mises refers to this first group as follows:



4. The Sovereignty of the Consumers

The captain (of the market society) is the consumer. Neither the entrepreneurs nor the farmers nor the capitalists determine what has to be produced.

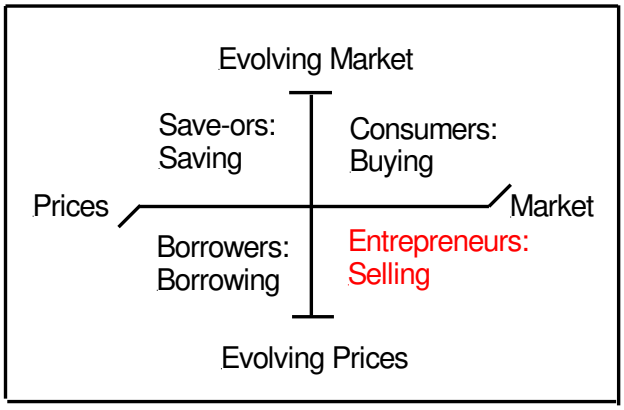
The consumers do that. If a businessman does not strictly obey the orders of the public as they are conveyed to him by the structure of market prices, he suffers losses, he goes bankrupt, and is thus removed from his eminent position at the helm. Other men who did better in satisfying the demand of the consumers replace him.

The consumers patronize those shops in which they can buy what they want at the cheapest price. Their buying and their abstention from buying decides who should own and run the plants and the land. They make poor people rich and rich people poor. They determine precisely what should be produced, in what quality, and in what quantities. They are merciless egoistic bosses, full of whims and fancies, changeable and unpredictable. For them nothing counts other than their own satisfaction. They do not care a whit for past merit and vested interests. If something is offered to them that they like better or that is cheaper, they desert their old purveyors. In their capacity as buyers and consumers they are hard-hearted and callous, without consideration for other people.[29]

[29] Id., p. 270.

Entrepreneurs

Regarding "entrepreneurs" von Mises provides the following description.

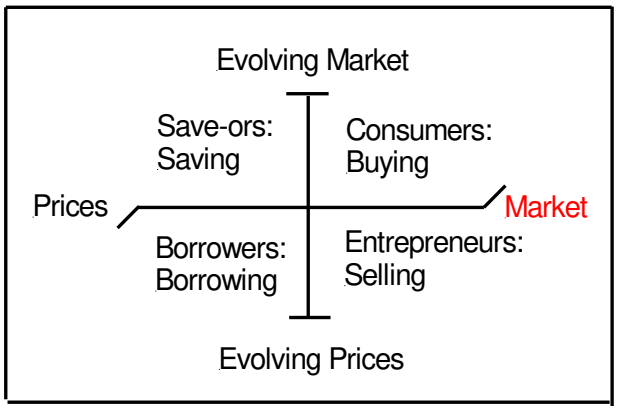


> The direction of all economic affairs is in the market society a task of the entrepreneurs. Theirs is the control of production. They are at the helm and steer the ship. ...
>
> Only the sellers of goods and services of the first order are in direct contact with the consumers and directly depend on their orders.
>
> But they transmit the orders received from the public to all those producing goods and services of the higher orders. For the manufacturers of consumers' goods, the retailers, the service trades, and the professions are forced to acquire what they need for the conduct of their own business from those purveyors who offer them at the cheapest price. If they were not intent upon buying in the cheapest market and arranging their processing of the factors of production so as to fill the demands of the consumers in the best and cheapest way, they would be forced to go out of business. More efficient men who succeeded better in buying and processing the factors of production would supplant them. The consumer is in a position to give free rein to his caprices and fancies. The entrepreneurs, capitalists, and farmers have their hands tied; they are bound to comply in their operations with the orders of the buying public. Every deviation from the lines prescribed by the demand of the consumers debits their account. The slightest deviation, whether willfully brought about or caused by error, bad judgment, or inefficiency, restricts their profits or makes them disappear. A more serious deviation results in losses and thus impairs or entirely absorbs their wealth.
>
> Capitalists, entrepreneurs, and landowners can only preserve and increase their wealth by filling best the orders of the consumers. They are not free to spend money which the consumers are not prepared to refund to them in paying more for the products. In the conduct of their business affairs they must be unfeeling and stonyhearted because the consumers, their bosses, are themselves unfeeling and stonyhearted.[30]

[30] Id., p. 271.

Market

By a "market" Professor von Mises means the creation of a social relationship between consumers and entrepreneurs in which the arbitrary demands for goods and services on the part of consumers are met by the efforts of entrepreneurs to produce these goods for sale. The demands of entrepreneurs for money in return for these goods results in a monetary system of market exchange on the basis of money prices. Conversely the demands of consumers for goods in exchange for money results in the production of these goods.



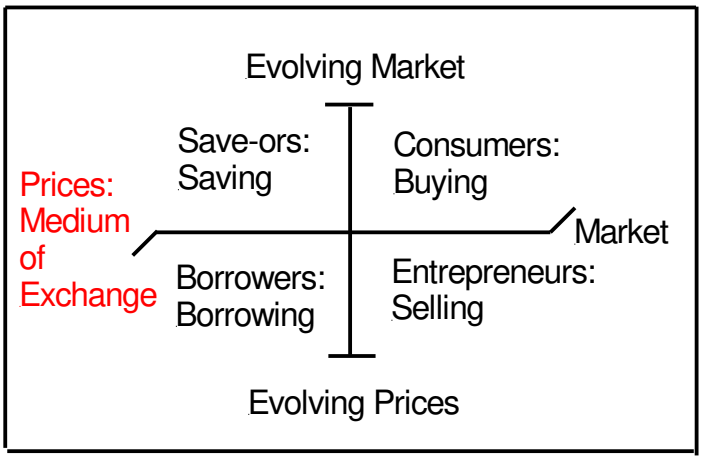
Professor von Mises notes the following:

> The market is a social body; it is the foremost social body. The market phenomena are social phenomena. They are the resultant of each individual's active contribution. But they are different from each such contribution. They appear to the individual as something given which he himself cannot alter. He does not always see that he himself is a part, although a small part, of the complex of elements determining each momentary state of the market. Because he fails to realize this fact he feels himself free, in criticizing the market phenomena, to condemn with regard to his fellow men a mode of conduct which he considers as quite right with regard to himself. He blames the market for its callousness and disregard of persons and asks for social control of the market in order to "humanize" it. He asks on the one hand for measures to protect the consumer against the producers. But on the other hand he insists even more passionately upon the necessity of protecting himself as a producer against the consumers. ...
>
> However, producers and consumers are identical. Production and consumption are different stages in acting. Catallactics (the study of the market) embodies these differences in speaking of producers and consumers. But in reality they are the same people. It is, of course, possible to protect a less efficient producer against the competition of more efficient fellows. Such a privilege conveys to the privileged the benefits which the unhampered market provides only to those who succeed in best filling the wants of the consumers. But it necessarily imparts the satisfaction of the consumers. If only one producer or a small group is privileged, the beneficiaries enjoy an advantage at the expense of the rest of the people. But if all producers are privileged to the same extent,

everybody loses in his capacity as consumer as much as he gains in his capacity as a producer. Moreover all are injured because the supply of products drops if the most efficient men are prevented from employing their skill in that field in which they could render the best services to the consumers.[31]

Prices

Describing the quadrants on the left hand side of our system Professor von Mises beings with the concept of a "medium of exchange," the foundation of any monetary component in a market economy.



A medium of exchange is a good which people acquire neither for their own consumption nor for employment in their own production activities, but with the intention of exchanging it at a later day against those goods which they want to use either for consumption or for production.

Money is a medium of exchange. It is the most marketable good which people acquire because they want to offer it in later acts of interpersonal exchange. Money is the thing which serves as the generally accepted and commonly used medium of exchange. This is its only function. All the other functions which people ascribe to money are merely particular aspects of its primary and sole function, that of a medium of exchange.

Media of exchange or economic goods. They are scarce; there is a demand for them. There are on the market people who desire to acquire them and are ready to exchange goods and services against them. Media of exchange have value in exchange. People make sacrifices for their acquisition; they pay "prices" for them. The peculiarity of these prices lies merely in the fact that they cannot be expressed in terms of money. In reference to the vendible goods and services we speak of prices or of money prices. In reference to money we speak of its purchasing power with regard to vendible goods.[32]

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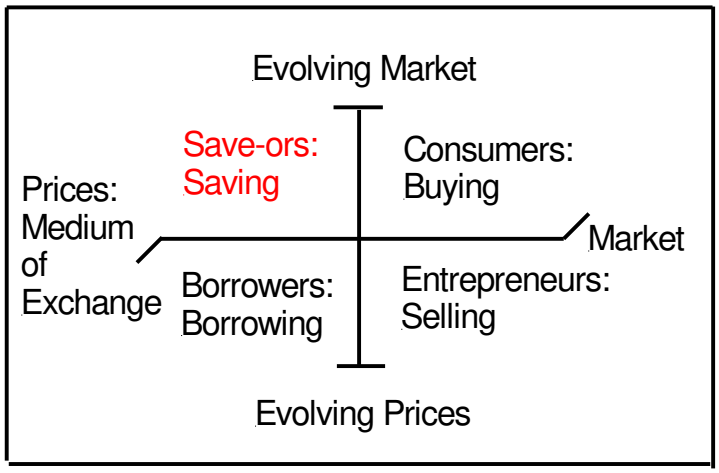
[31] Id., pp. 312.
[32] Id., pp. 398-399.

Save-ors

As the results of a monetary sector, two additional groups emerge. These are persons who abstain from consuming goods and services and thus save their cash assets (save-ors) and those who borrow cash to meet their economic goals or requirements (borrowers).



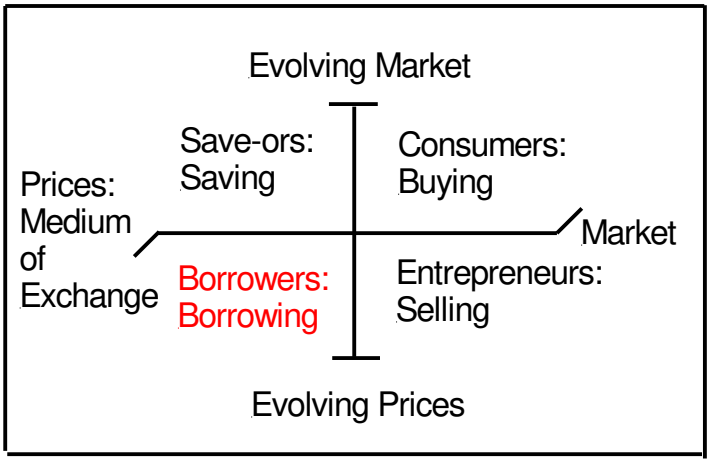
Regarding the creation of cash savings, von Mises notes the following:

> There exists a demand for media of exchange because people want to keep a store of them. Every member of a market society wants to have a definite amount of money in his pocket or box. A cash holding or cash balance of a definite height. Sometimes he wants to keep a larger cash holding, sometimes a smaller; in exceptional cases he may even renounce any cash holding. At any rate, the immense majority of people aim not only to own various vendible goods; they want no less to hold money. Their cash holding is not merely a residuum, an unspent margin of their wealth. It is not an unintentional remainder left over after all intentional acts of buying and selling have been consummated. Its amount is determined by a deliberate demand for cash. And as with all other goods it is the changes in the relations between demand for and supply of money that bring about changes in the exchange ratio between money and the vendible goods. ...
>
> Every piece of money is owned by one of the members of the market economy. The transfer of money from the control of one actor into that of another is temporally immediate and continuous. There is no fraction of time in between in which they money is not a part of an individual's or firm's cash holding, but just in "circulation." It is unsound to distinguish between circulating and idle money.
>
> It is no less fault to distinguish between circulating money and hoarded money. What is called hoarding is a height of cash holding which- according to the personal opinion of an observer- exceeds what is deemed normal and adequate. However, hoarding is cash holding. Hoarded money is still money and it serves in the hoards the same purposes which it serves in cash holdings called normal. He who hoards money believes that some special conditions make it expedient to accumulate a cash holding which exceeds the amount he himself

would keep under different conditions, or other people keep, or an economist censuring his action considers appropriate. That he acts in this way influences the configuration of the demand for money in the same way in which every "normal" demand influences it.[33]

Borrowers

The availability of cash savings for loan to persons willing to pay the price (interest) to obtain the benefits of cash creates a fourth class of actors within the economy, the borrowers. Professor von Mises discusses this group in relation to the interest rate paid, and the credit requirements necessary, to enjoy this privilege.



Thus the incentive of a rate of interest brings into being the desire to amass money in the form of savings available for loan, just as the presence of a wage paid to labor brings into being the goods and services on the market.

16. Interest Rates and the Money Relation

Money plays in credit transactions the same role it plays in all other business transactions. As a rule loans are granted in money, and interest and principal are paid in money. The payments resulting from such dealings influence the size of cash holding only temporarily. The recipients of loans, interest, and principal spend the sums received either for consumption or for investment. They increase their cash holdings only if definite considerations, independent of the inflow of the money received, motivate them to act in this way.

The final state of the market rate of interest is the same for all loans of the same character. Differences in the rate of interest are caused either by differences in the soundness and trustworthiness of the debtor or by differences in the terms of the contract. Differences in interest rates which are not brought about by these differences in conditions tend to disappear. The applicants for credits approach

[33] Id., pp. 399-400.

> the lenders who ask a lower rate of interest. The lenders are eager to cater to people who are ready to pay higher interest rates. Things on the money market are the same as on all other markets.[34]

The comparison between the demand for money and the demand for goods and services is noted by von Mises in the following comment.

> Economists have tried to enumerate the factors which a within the whole economic system may increase or decrease the demand for money. Such factors are: the population figure; the extent to which the individual households provide for their own needs by autarkic production and the extent to which they produce for other people's needs, selling their products and buying for their own consumption on the market; the distribution of business activity and the settlement of payments over the various seasons of the year; institutions for the settlement of claims and counterclaims by mutual cancellation, such as clearinghouses. All these factors indeed influence the demand for money and the height of the various individuals' and firms' cash holding. But they influence them only indirectly by the role they play in the considerations of people concerning the determination of the amount of cash balances they deem appropriate. What decides the matter is always the value judgments of the men concerned. The various actors make up their minds about what they believe the adequate height of their cash holding should be. They carry out their resolution by renouncing the purchase of commodities, securities, and interest-bearing claims and by selling such assets or conversely by increasing their purchases. With money, things are not different from what they are with regard to all other goods and services. The demand for money is determined by the conduct of people intent upon acquiring it for their cash holding.[35]

Regarding the importance of money and the flow of money to an economy von Mises notes the following.

> Money is neither an abstract numeraire nor a standard of value of prices. It is necessarily an economic good and as such it is valued and appraised on its own merits, i.e., the services which a man expects from holding cash. On the market there is always change and movement. Only because there are fluctuations is there money. Money is an element of change not because it "circulates," but because it is kept in cash holdings. Only because people expect changes about the kind and extent of which they have no certain knowledge whatsoever, do they keep money.
>
> While money can be thought of only in a changing economy, it is in itself an element of further changes. Every change in the economic data sets it in motion and makes it the driving force of new changes. Every shift in the mutual relation of the exchange ratios between the various nonmonetary goods not only

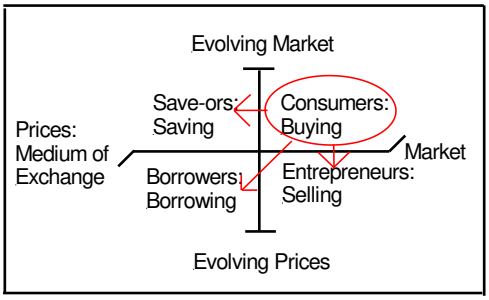
[34] Id., pp. 455-456.
[35] Id., p. 401.

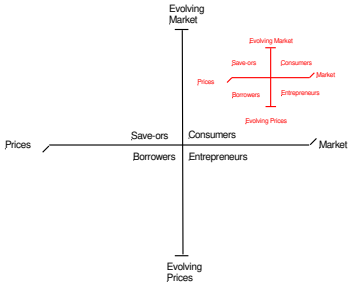
> brings about changes in production and in what is popularly called distribution, but also provides changes in the money relations and thus further changes. Nothing can happen in the orbit of vendible goods without affecting the orbit of money, and all that happens in the orbit of money affects the orbit of commodities.
>
> The notion of neutral money is no less contradictory than that of a money of stable purchasing power. Money without a driving force of its own would not, as people assume, be a perfect money; it would not be money at all.[36]

Von Mises states that "Nothing can happen in the orbit of vendible goods without affecting the orbit of money, and all that happens in the orbit of money affects the orbit of commodities."[37] This interaction between sectors leads us to see the four quadrants given above as reflected upon themselves.

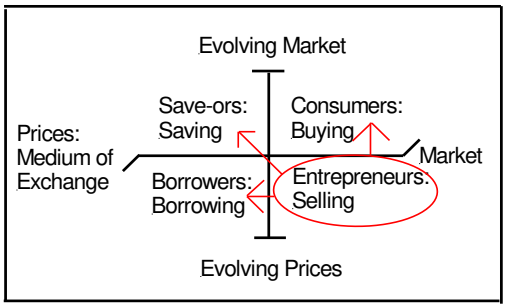
[36] Id., pp. 414-415.
[37] See Footnote 11.

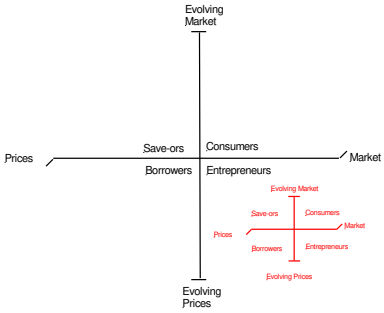
Thus consumers have a relationship to other consumers, to entrepreneurs, to save-ors and to borrowers…



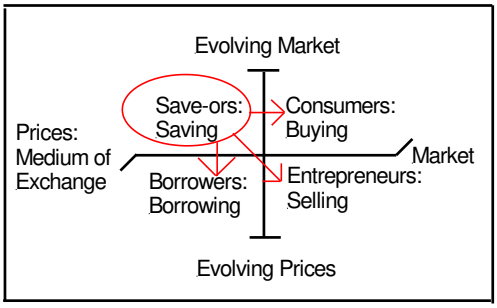


Entrepreneurs have a different set of relationships to themselves (other entrepreneurs), to consumers, to save-ors, and to borrowers …





The same holds true for save-ors …



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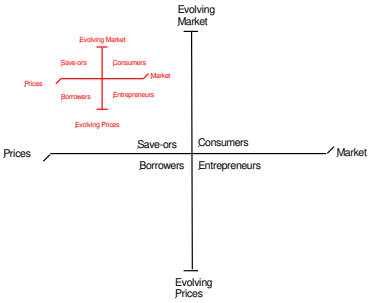
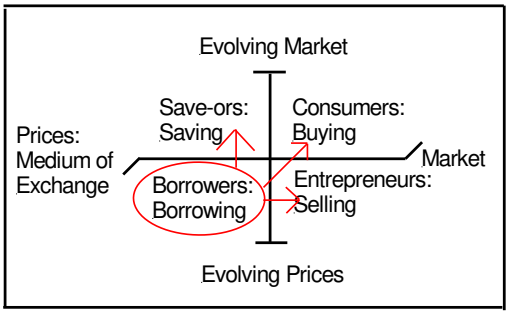
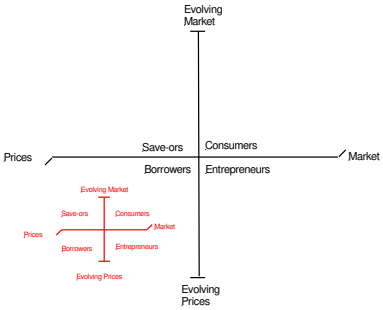
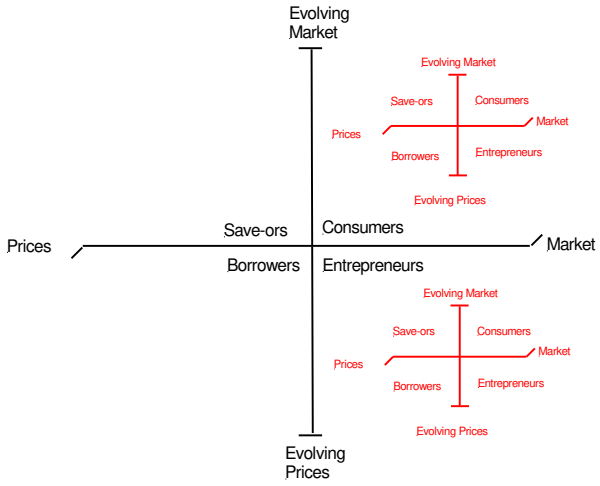


The same is true of borrowers…

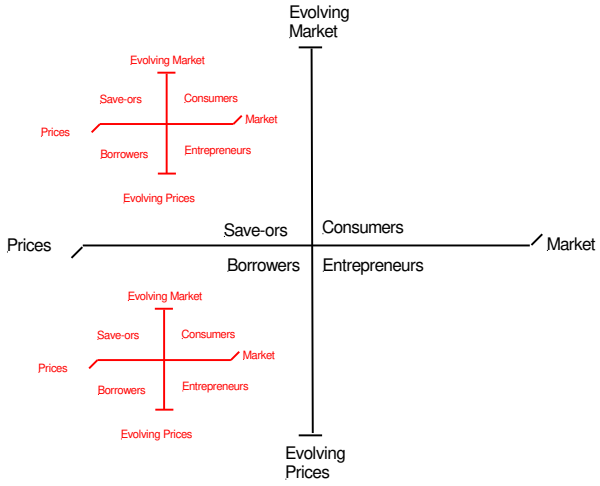




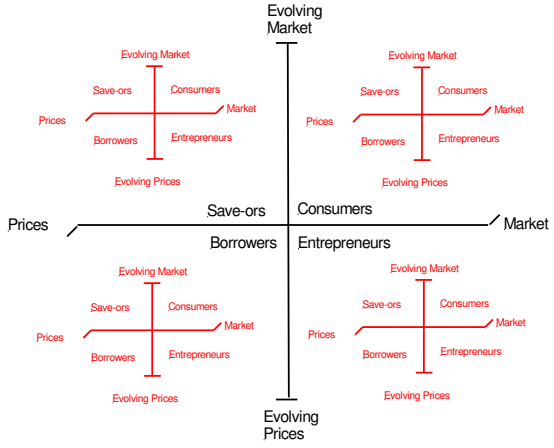
Regarding the relationships which go into a market, we have:



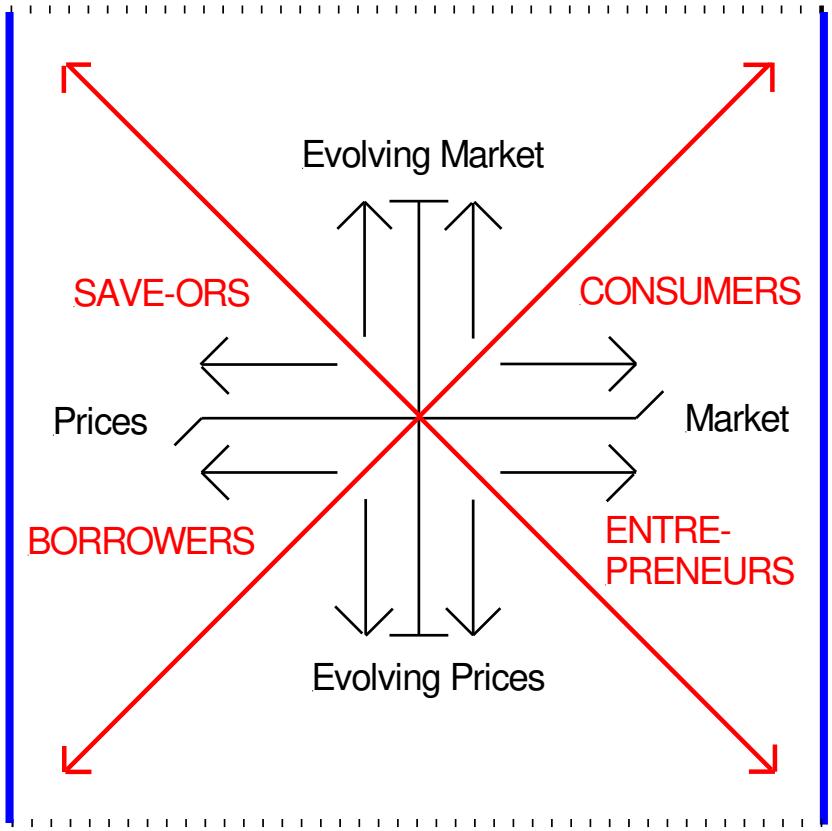
and those which create a monetary sector:



The full set of relationships which make up the economy are:



The creation of these categories renders the following economic forces upon any economy:

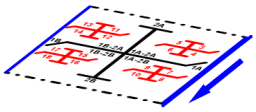


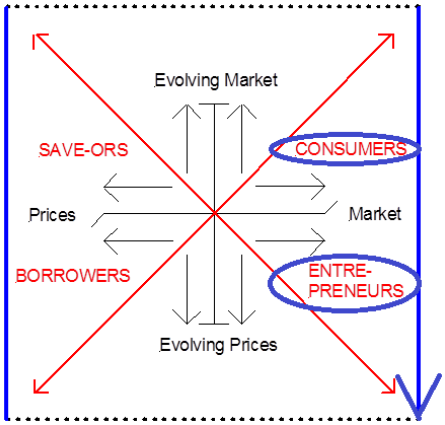
As we consider the possibility of an image axis which might be found in economics, we are presented with the simple fact that the only tools which are at our disposal are the above dichotomies.

These dichotomies may be fashioned into a circuit through which we can explore the way in which the ontological and the epistemological aspects of the economy evolve over time.

The "Primary Opposition" of economics – the struggle between consumers and entrepreneurs – is that struggle which creates a market. An "Image Axis" may be found within the economy through the following "circuit of logical relationships."

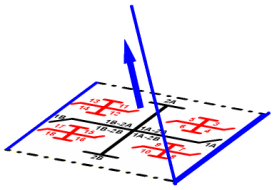
1) The demands of the Consumers imposes upon Entrepreneurs a set of expectations and choices which in turn lead to the creation of sales of goods. In aggregate these state the GNP of the society…





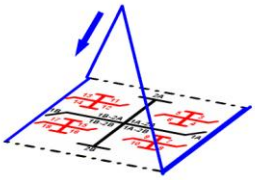
2) …which forms the ontologic basis for the economy itself. .

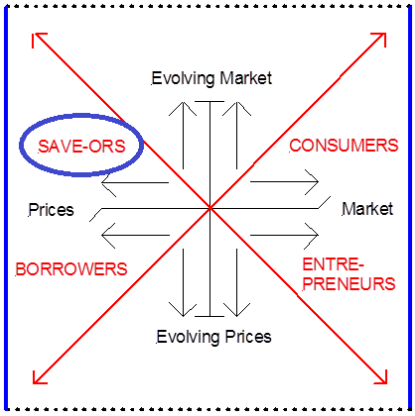
THE ONTOLOGIC BASIS OF THE ECONOMY



3) The epistemologic basis for the economy, the manner in which it is known, is brought about by the fact that Savers in the economy evaluate the economy…

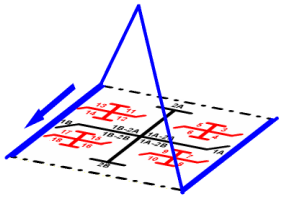
THE ONTOLOGIC
BASIS OF THE ECONOMY

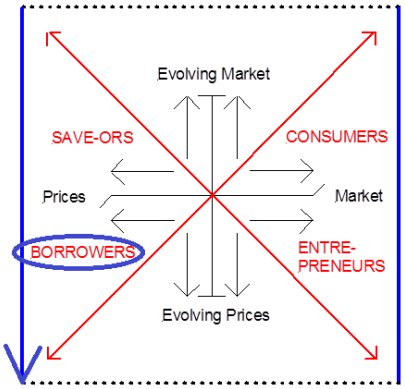




4) … and thereby state the terms under which the Borrowers of the economy will obtain loans.

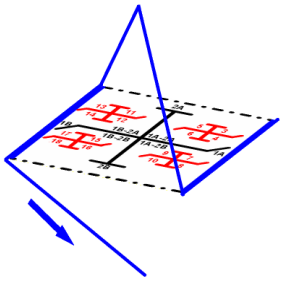
THE ONTOLOGIC
BASIS OF THE ECONOMY





5) This in turn places limits upon the extent to which Consumers may impose their choices upon the economy because their understanding of the economy constrains them, their choices and the uses which might be made of the things purchased.

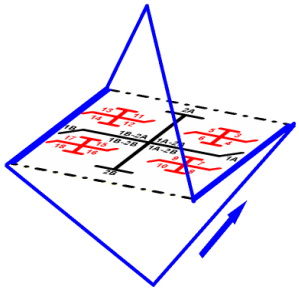
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

6) These considerations – the understanding of the economy itself – in turn gives rise to demands which are upon Consumers as they play their part in the economy. .

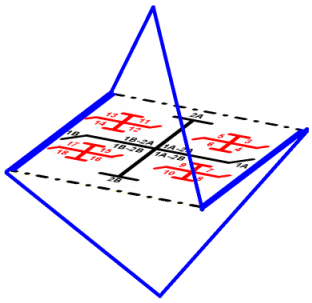
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

7) Each part of this dynamic represents a circuit of relationships, as follows.

THE ONTOLOGIC BASIS FOR THE ECONOMY

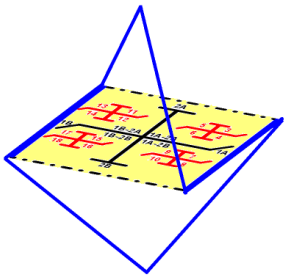


THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

This model is of three planes:

(1) a plane of dichotomies, one which defines the basic things which must occur if any form of economic activity is to take place,

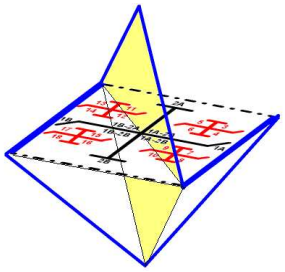
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

2) a plane connecting the creation of the entrepreneur to those who are saving their money, and

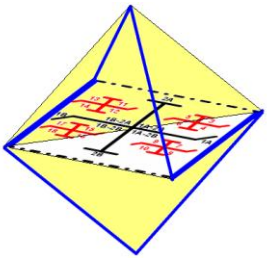
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

3) a plane connecting the borrowers of the economy to those who consume.

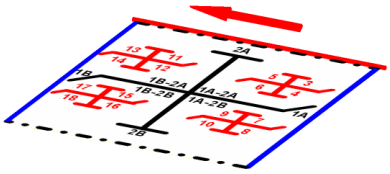
THE ONTOLOGIC BASIS FOR THE ECONOMY

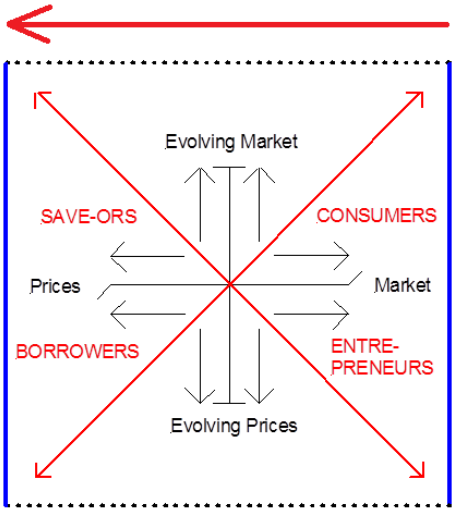


THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

In the above, a circuit has been designed based upon the tension which arises between "consumers vs entrepreneurs" and "savers vs. borrowers" as described previously by Von Mises. which incorporates the blue lines by way of their connection to the creation of something.

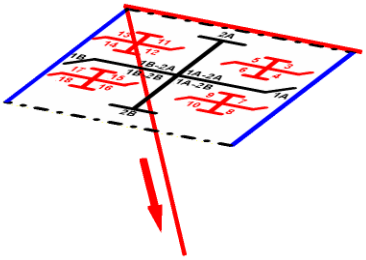
But a different set of tensions is found in the distinction between the choice between choosing to buy something, or on the other hand, to forego a purchase, save the money and move on to different opportunities. This tension is that of the Primary Opposition which decrees that one can not spend money and save money simultaneously. The distinction between those goods which encourage people to buy vs. people to save their economic resources and do not buy …





9) lays the basis for the understanding of the economic decisions which are made throughout the economy, ...

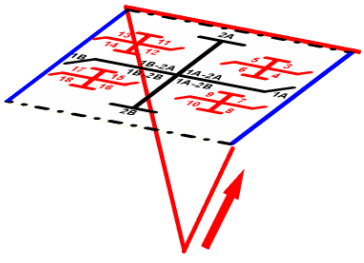
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

(10) thereby indicating to entrepreneurs that which is desired in the economy and that which is not desired (and therefor not sold) in the economy.

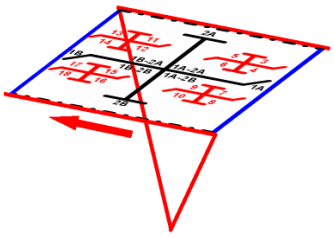
THE ONTOLOGIC BASIS FOR THE ECONOMY

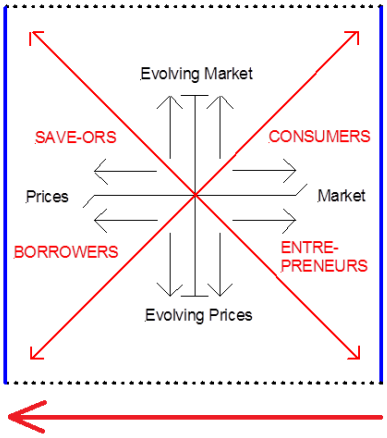


THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

(11) In turn, a second tension arises between those who sell things (entrepreneuers) and those who buy things on credie (borrowers) in that the willingness to purchase over time may indeed affect the sale of the entrepreneur dramatically.

THE ONTOLOGIC BASIS
FOR THE ECONOMY

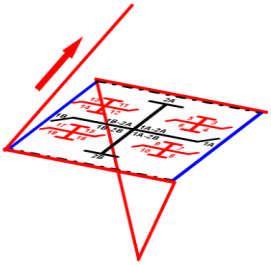




THE EPISTEMOLOGIC
UNDERSTANDING OF THE ECONOMY

(12) The encouragement of entrepreneurs to borrowers to purchase goods over time and thereby go into debt provides a second basis for understanding the ontological nature of the economy ...

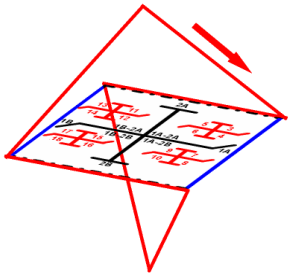
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

(13) and has a dramatic effect upon the nature of consumers as they make decisions to buy or to save.

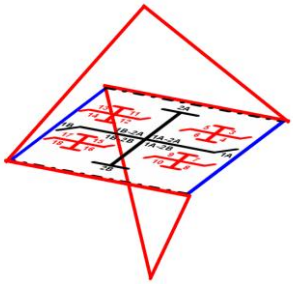
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

(14) This red circuit constitutes a sort of "other method" of economic growth, one wherein the notion of borrowing directly effects the behavior of consumers.

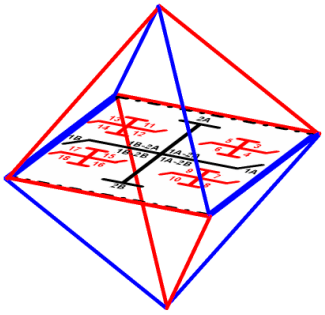
THE ONTOLOGIC BASIS FOR THE ECONOMY



THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

(15) Taking the blue circuit which might be defined as "consumers vs. entrepreneurs, savers vs. borrowers," and contrasting this with the red circuit which might be defined as a sort of "consuming vs. saving, selling vs. borrowing," we have the following two circuits simultaneously.

THE ONTOLOGIC BASIS FOR THE ECONOMY

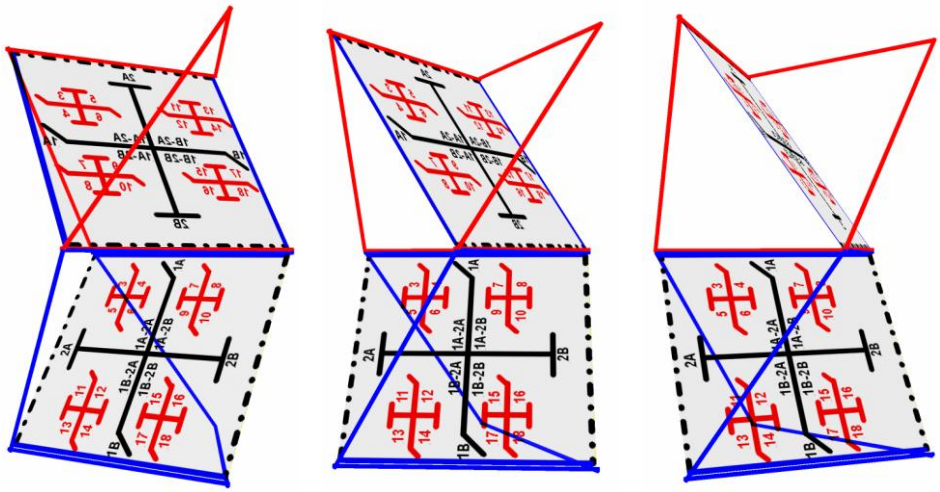


THE EPISTEMOLOGIC UNDERSTANDING OF THE ECONOMY

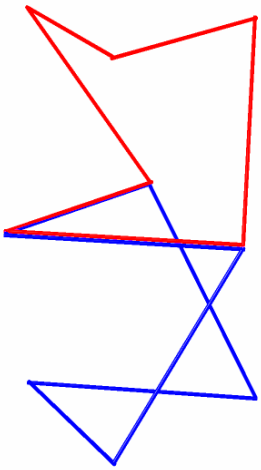
3. A Sequence Of Notes

If these circuits are separated from one another, the blue circuit representing the first set of oppositions “consumers vs. entrepreneurs, savers vs. borrowers”

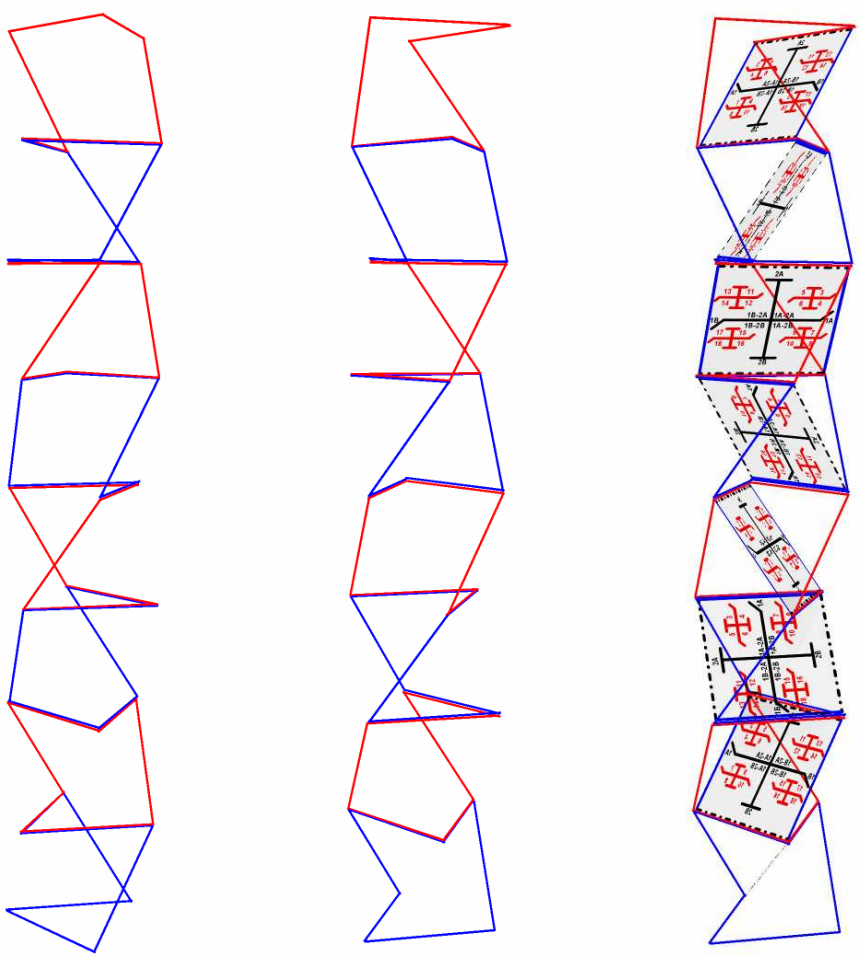
and the red circuit representing the second set of oppositions “consuming vs. saving, selling vs. borrowing” may be aligned along a common angle, as follows.



With this alignment in mind, we may represent an economic decision in the following form:



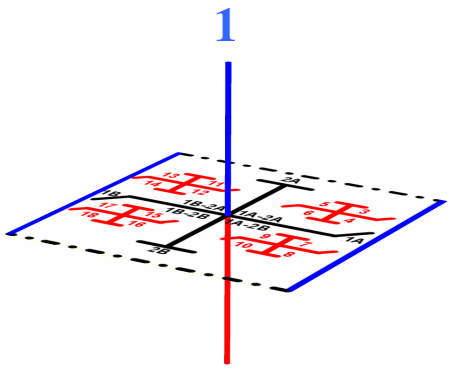
If we further understand that the economy is composed of millions of such decisions linked together, we may order them chronologically as follows:



And so we may think of the economy as a strand of separate decisions, not unlike a strand of DNA composed of so many separate enzymes.

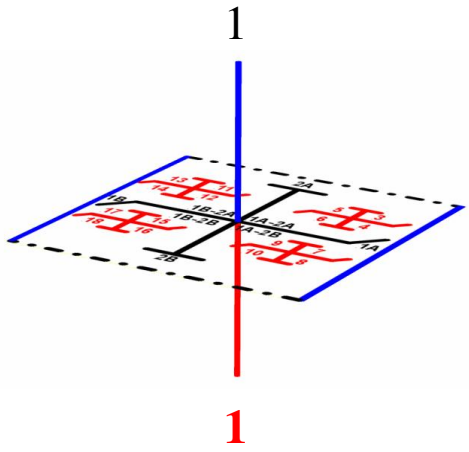
We may further unify these poles mathematically if we use this "Image Axis" to generate a series of numbers which can be used to join these two poles. For example, if we give the number "one" to the first "Ontologic Existence" of the economy, the first economic decision,

Ontologic Existence of the Economy



… we can see that the decision vibrates upon itself beginning with the sense that the economic decision has been understood.

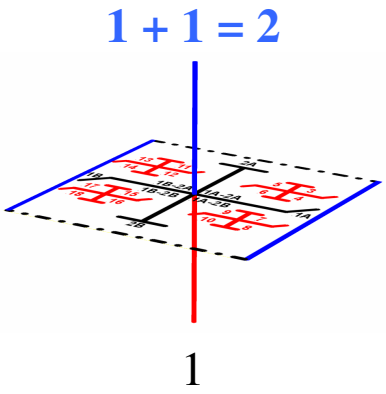
Ontologic Existence of the Economy



Epistemologic Understanding of the Economy

This understanding in turn impacts upon the actual existence of the economic decision itself.

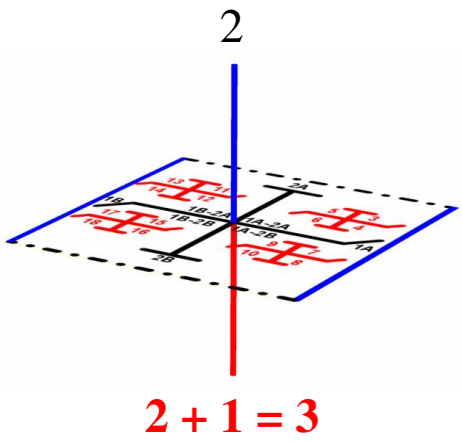
Ontologic Existence Changed with the Understanding of that Decision



Epistemologic Understanding of the Economy

The combination of the ontological change with a new epistemology is something beyond the simple addition of these various poles.

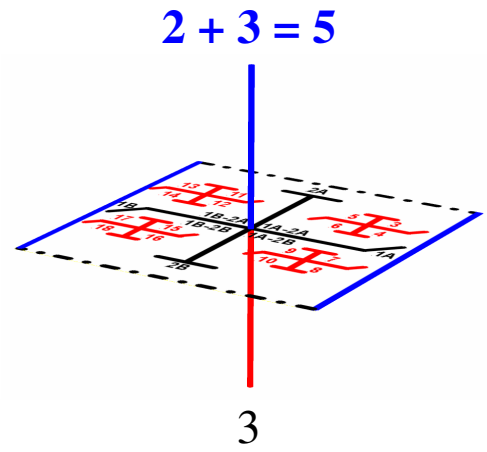
Ontologic Existence Changed with the Understanding of that Decision



Epistemologic Understanding Changed with the Change in the Ontology

The ramifications of each decision upon the entirety of the economy has an impace upon them all.

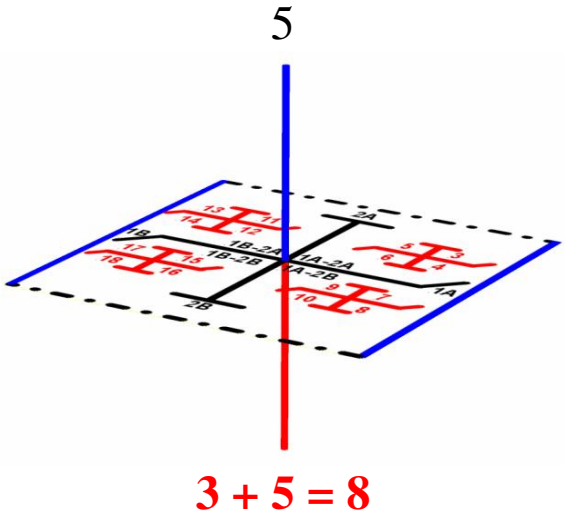
Ontologic Existence Changed with the Understanding of that Decision



Epistemologic Understanding Changed with the Change in the Ontology

And also upon the understanding of them all.

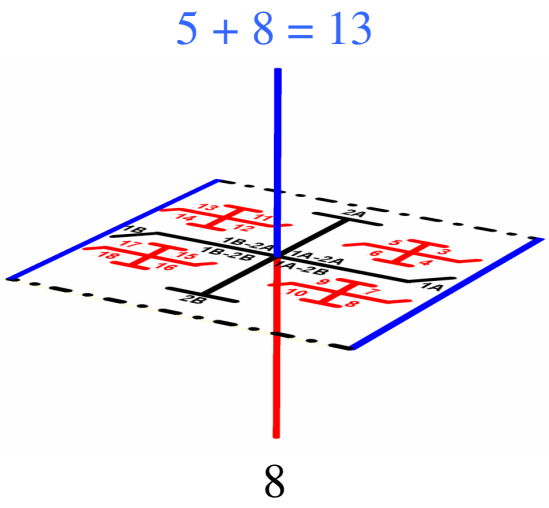
Ontologic Existence Changed with the Understanding of that Decision



Epistemologic Understanding Changed with the Change in the Ontology

And so forth…

Ontologic Existence Changed with the Understanding of that Decision



Epistemologic Understanding Changed with the Change in the Ontology

By extending this series of sums into a pattern we have the Fibonacci series, to wit:

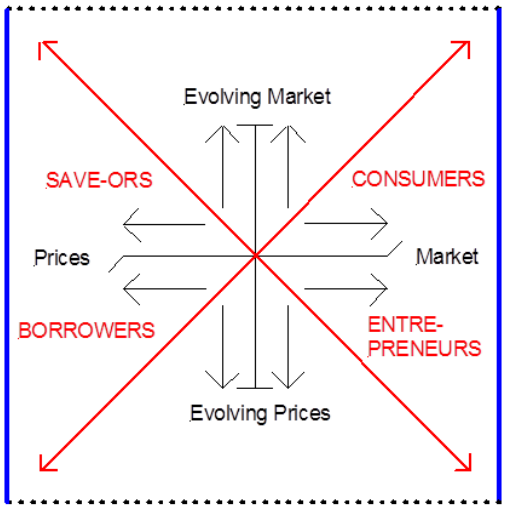
1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, etc.

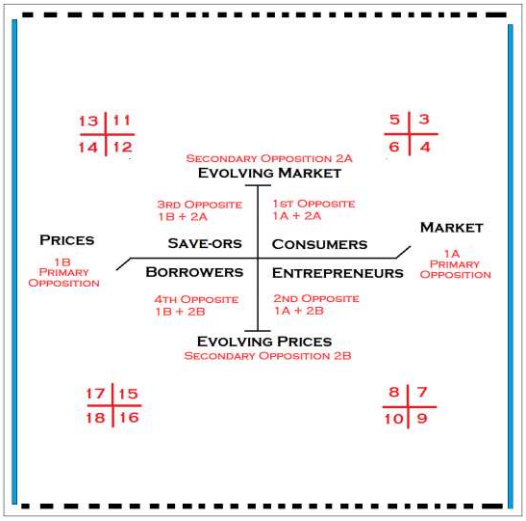
Joining these numbers into fractions in an effort to determine a common ratio, we have:

$$\frac{1}{1} \quad \frac{2}{1} \quad \frac{3}{2} \quad \frac{5}{3} \quad \frac{8}{5} \quad \frac{13}{8} \quad \frac{21}{13} \quad \frac{34}{21} \quad \frac{55}{34} \quad \frac{89}{55} \quad \ldots$$

This continuing series renders the constant phi = 1.6180...

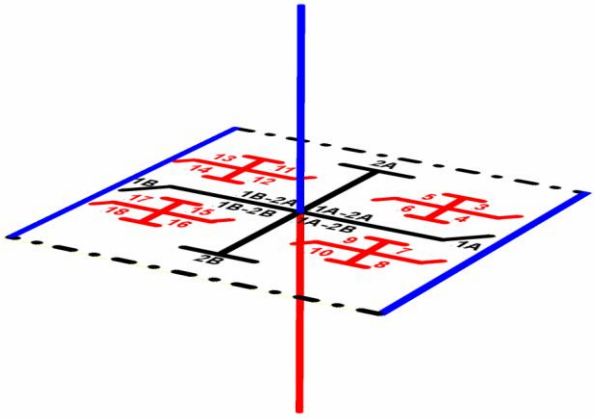
Let us consider for the moment the square of tension which we have considered as the basis for economy itself. This was proposed as:





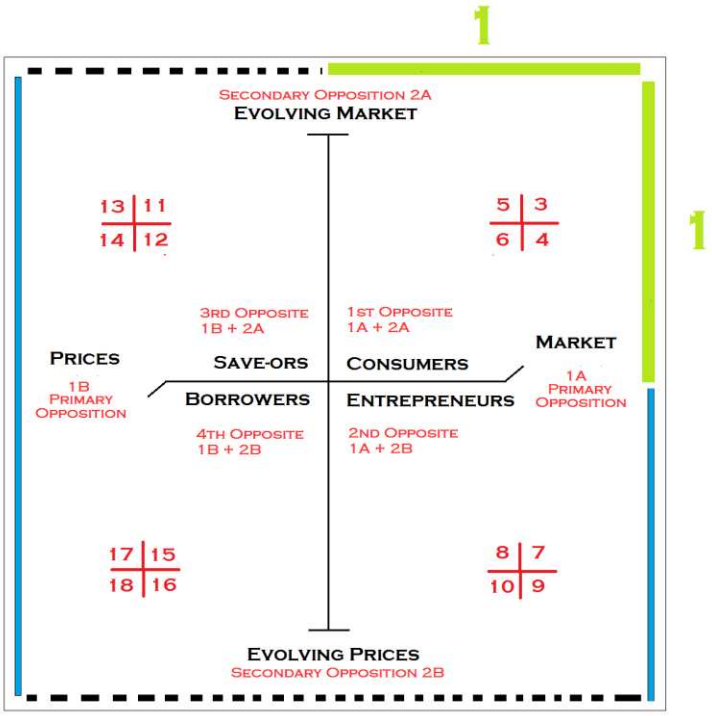
To this model we have added an "Image Axis" representing the "Ontologic Existence" and the "Epistemologic Understanding" of that existence as related to economic matters.

Ontologic Existence Changed with the Understanding of that Decision

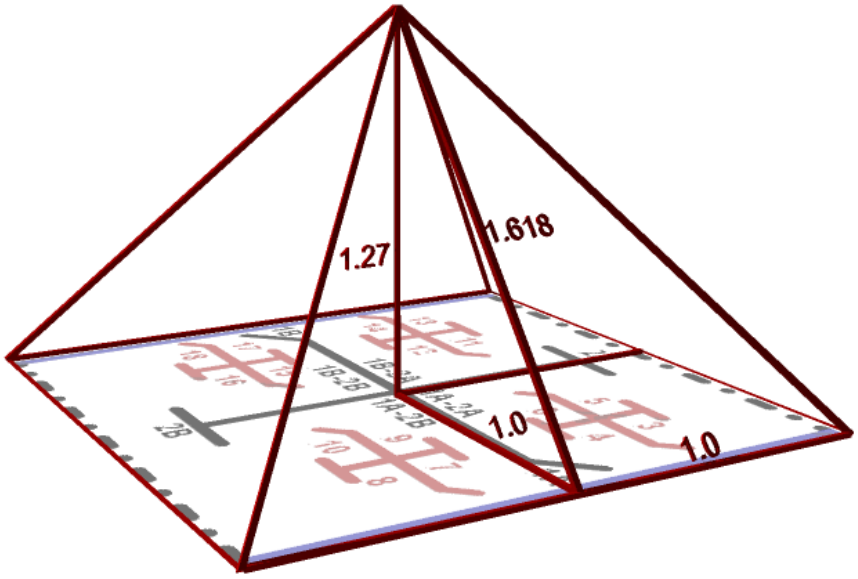


Epistemologic Understanding Changed with the Change in the Ontology

If we consider the tensions of these economic oppositions as equivalent, we may place geometric lengths within this model to thereby determine the interrelationships at world. Let us set each of the quadrants of "Consumers" to be contained by a square with the dimension of 1 x 1.



Taking this as our measure, let us give the number 1.6180 as the relationship between the poles of (1) Market and Prices (2) Evolving Market and Evolving Prices and (3) the merged end points The Ontologic Existence of the Economy and the Epistemologic Understanding of the Economy. Placing the distance 1.618 above the "Market" we have the following figure.



The Image Axis of Economics

2. The Uncertainty of Savings

Note that unlike "production," in which actual goods are placed upon the market for sale, the "monetary" sector is controlled through the ability to create "money" or some other medium of exchange. The power of governments to "roll the printing presses" and thereby create large amounts of cash for distribution affects dramatically the resulting purchasing power of "savings." As a result, the concept of "safety" when discussing cash savings becomes a very uncertain affair.

Professor von Mises discusses the difficulty in establishing the safety of pure cash savings in "Interest, Credit Expansion and the Trade Cycle," Chapter 20.

> It is in influencing this primordial function of the rate of interest that the driving force of money can become operative in a particular way. Cash-induced changes in the money relation can under certain circumstances affect the loan market before they affect the prices of commodities and of labor. The increase or decrease in the supply of money (in the broader sense) can increase or decrease the supply of money offered on the loan market and thereby lower or raise the gross market rate of interest although no change in the rate of original interest has taken place. If this happens, the market rate deviates from the height which the state of originary interest and the supply of capital goods available for production would require. Then the market rate of interest fails to fulfill the function it plays in guiding entrepreneurial decisions. It frustrates the entrepreneur's calculation and diverts his actions from those lines in which they would in the best possible way satisfy the most urgent needs of consumers.
>
> Then there is a second important fact to realize. If, other things being equal, the supply of money (in the broader sense) increases or decreases and thus brings about a general tendency for prices to rise or to drop, a positive or negative price premium would have to appear to raise or lower the gross rate of market interest. But if such changes in the money relation affect first the loan market, they bring about just the opposite changes in the configuration of the gross market rates of interest. While a positive or negative price premium would be required to adjust the market rates of interest to the changes in the money relation, gross interest rates are in fact dropping or rising. This is the second reason why the instrumentality of the price premium cannot entirely eliminate the repercussions of cash-induced changes in the money relation upon the content of contracts concerning deferred payments. Its operation begins too late, it lags being the changes in purchasing power, as has been shown above. Now we see that under certain circumstances the forces that push in the opposite direction manifest themselves sooner on the market than the price premium.[38]

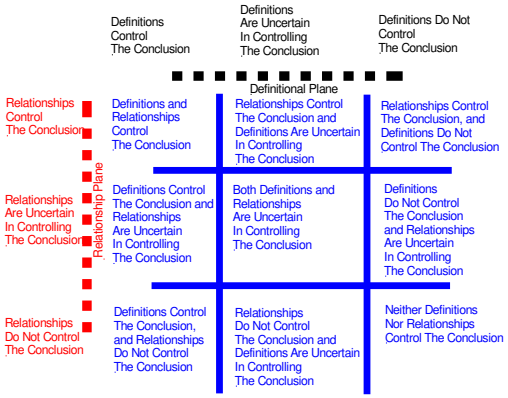
[38] Id., at 544-545.

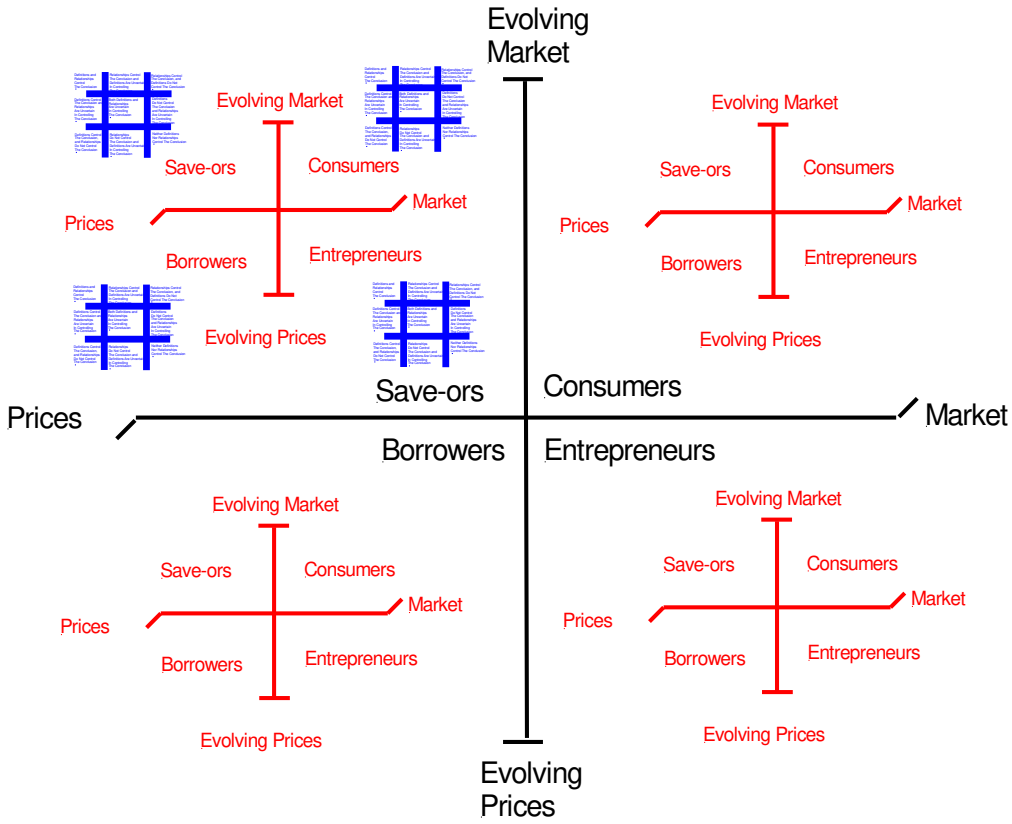
Professor von Mises notes periods of history in significant and arbitrary increases in the supply of money through government action have dramatically affected the entire structure of an economy.

> Public opinion has definite ideas about a "normal" rate (of interest), something between 3 and 5 per cent. When the market rate rises about this height or when the market rates- without regard to their arithmetical ratio- are rising about their previous height, people believe that they are right in speaking of high or rising interest rates. As against these errors, it is necessary to emphasize that under the conditions of a general rise in prices (drop in the monetary unit's purchasing power) the gross market rate of interest can be considered as unchanged with regard to conditions or a period of a by and large unchanging purchasing power only if it includes a by and large adequate positive price premium. In this sense, the German Reichsbank's discount rate of 90 per cent was, in the fall of 1923, a low rate - indeed a ridiculously low rate - as it considerably lagged behind the price premium and did not leave anything for the other components of the gross market rate of interest. Essentially the same phenomenon manifests itself in every instance of a prolonged credit expansion. Gross market rates of interest rise in the further course of every expansion, but they are nonetheless low as they do not correspond to the height required by the expected further general rise in prices.[39]

[39] Id., at 549.

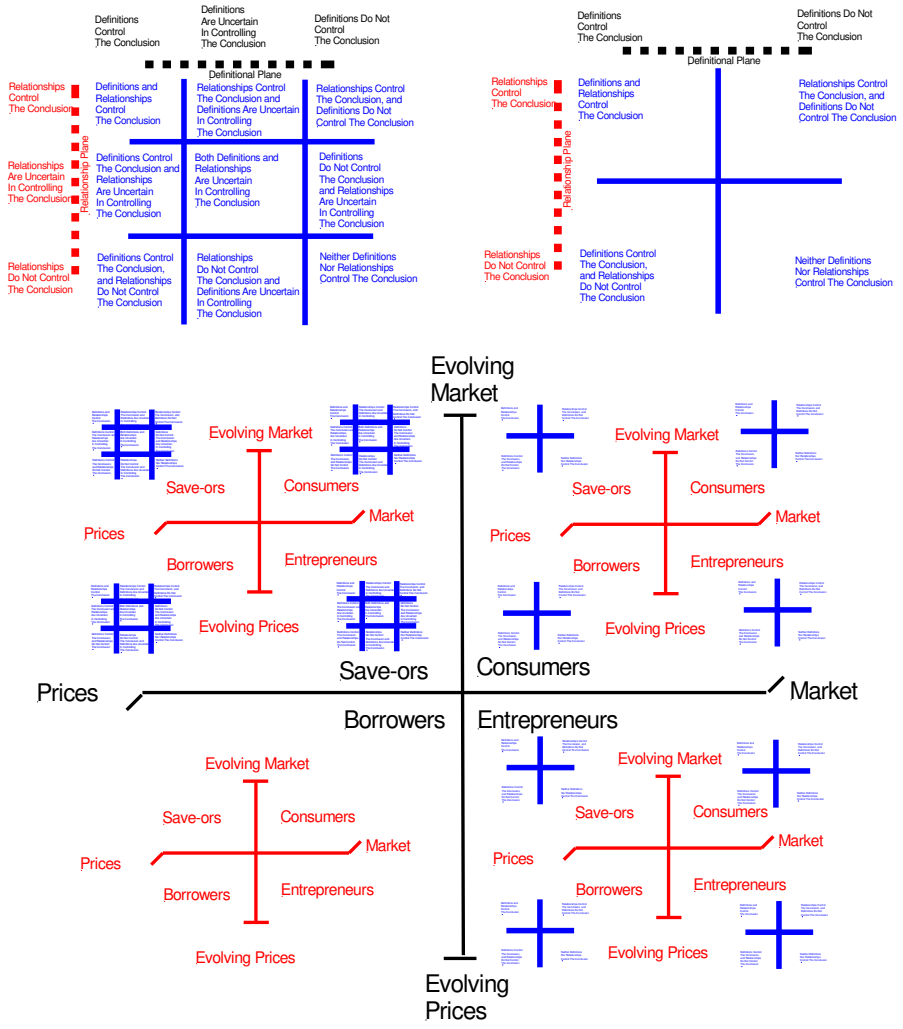
The notion that "a drop in the monetary unit's purchasing power" might be occasioned by a rise in prices brought on by a government-induced credit expansion considerably undermines the security of assets held entirely within the framework of that monetary unit, i.e. cash. In seeking to understand the controls necessary to ensure the security of savings we again have conclusions which repeat the uncertainty mentioned in the previous essays.



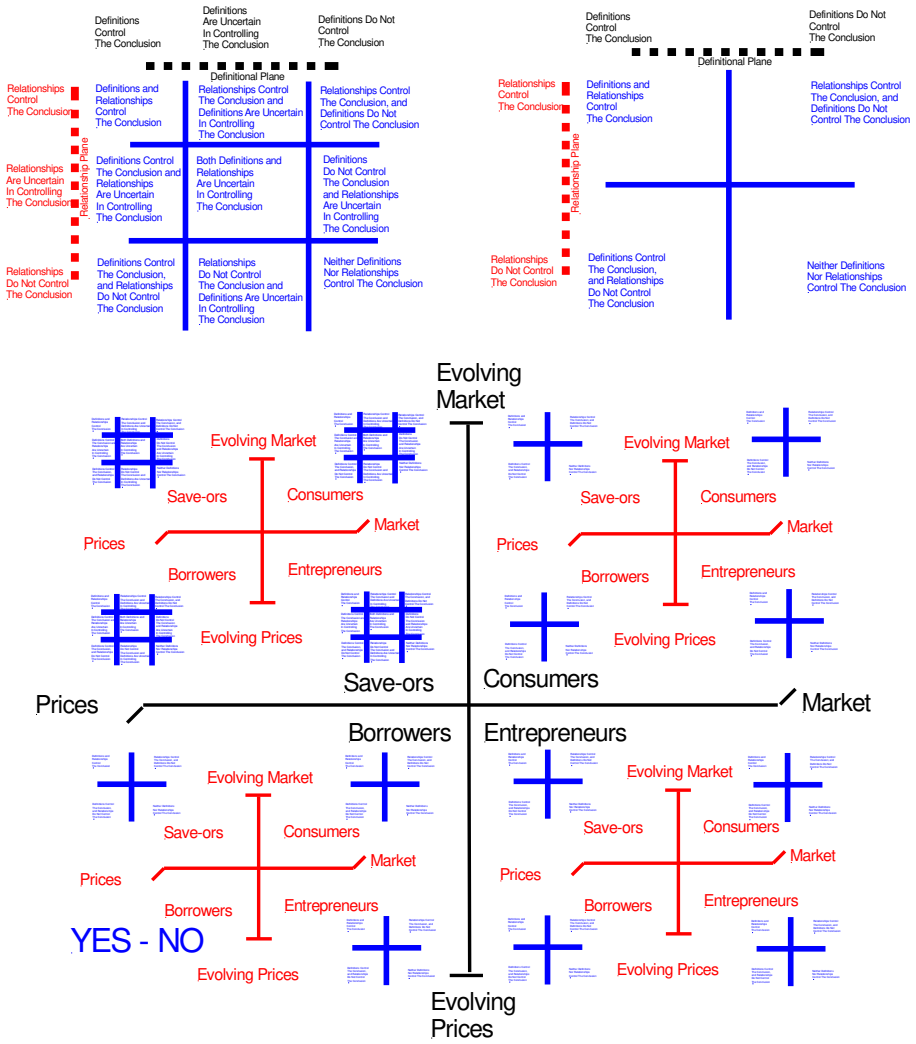


The relationship between consumer demand and entrepreneurial effort is a rather straightforward affair and may be summed up in two words: “Profit” and “Loss.”

> The entrepreneurial function, the striving of entrepreneurs after profits, is the driving power in the market economy. Profit and loss are the devices by means of which the consumers exercise their supremacy on the market. The behavior of the consumers makes profits and losses appear and thereby shifts ownership of the means of production from the hands of the less efficient into those of the more efficient. It makes a man the more influential in the direction of the business activities the better he succeeds in serving the consumers. In the absence of profit and loss the entrepreneurs would not know what the most urgent needs of the consumers are. If some entrepreneurs were to guess it, they would lack the means to adjust production accordingly. (p. 297)

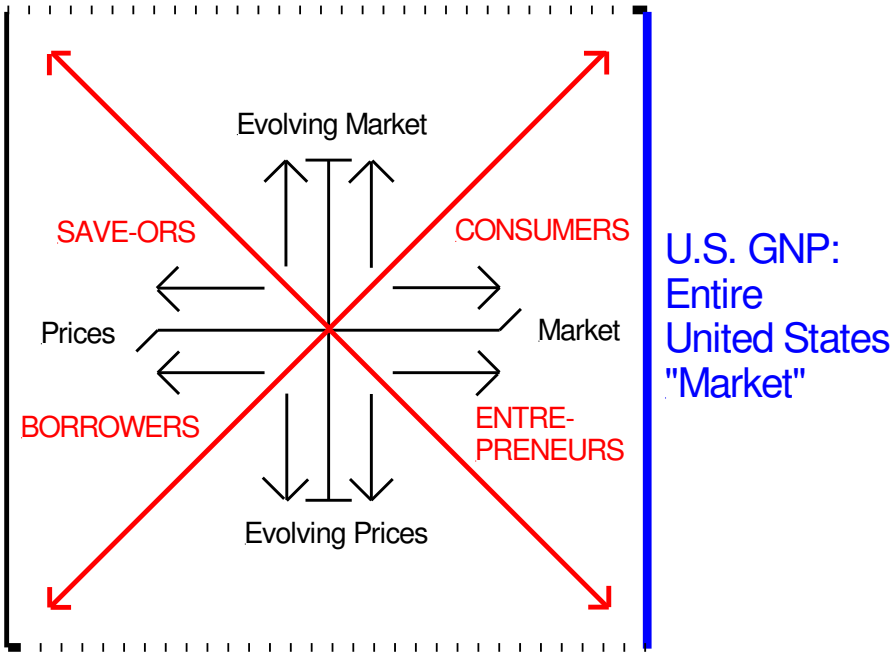


Regarding the concept of "borrowers" however note that the relationship of borrowers to consumers, to entrepreneurs and to save-ors is rather well defined. On the other hand the existence of credit differs from almost every other form of good in that it is available only upon approval of the borrower's trust-worthiness in repaying the principal with interest. This creates a separate "yes-no" relationship as the availability of credit is directed towards a particular case. Once this decision has been reached, the rest of the relationships fall into place without inherent ambiguity.

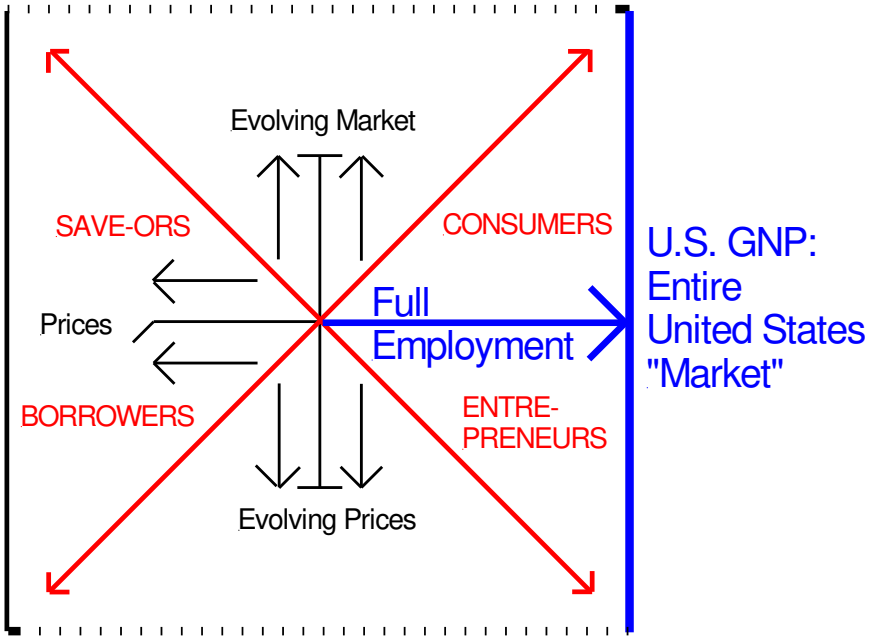


4. Okun's Law and the LM Curve in Economics

To consider the above pattern as it generates economic behavior, Let the Market side of the square of tension represent the GNP of the United States for any given year.



… and then Let the horizontal line on the right, represent a full employment of the people in the United States bringing into being this market.



Von Mises notes the following regarding the Labor component of the economy.

8. Wage Rates as Affect by the Vicissitudes of the Market

Labor is a factor of production. The price which the seller of labor can obtain on the market depends on the data of the market. The quantity and the quality of labor which an individual is fitted to deliver is determined by his innate and acquired characteristics. The innate abilities cannot be altered by any purposeful conduct. They are the individual's heritage with which his ancestors have endowed him on the day of his birth. He can bestow care upon these gifts and cultivate his talents, he can keep them from prematurely withering away; but he can never cross the boundaries which nature has drawn to his forces and abilities. He can display more or less skill in his endeavors to sell his capacity to work at the highest price which is obtainable on the market under prevailing conditions; but he cannot change his nature in order to adjust it better to the state of the market data. It is good luck for him if market conditions are such that a kind of labor which he is able to perform is lavishly remunerated; it is chance, not personal merit if his innate talents are highly appreciated by his fellow men. Miss Greta Garbo, if she had lived a hundred years earlier, would probably have earned much less than she did in this age of moving pictures. As far as her innate talents are concerned, she is in a position similar to that of a farmer whose farm can be sold at a high price because the expansion of a neighboring city converted it into urban soil.

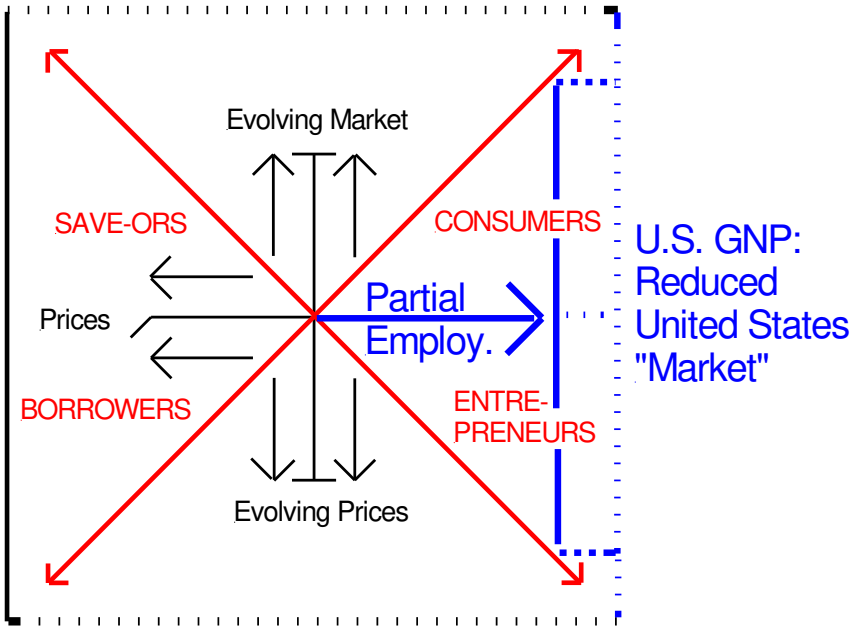
Within the rigid limits drawn by his innate abilities, a man's capacity to work can be perfected by training for the accomplishment of definite tasks. The individual- or his parents- incurs expenses for a training the fruit of which consists in the acquisition of the ability to perform certain kinds of work. Such schooling and training intensify a man's one-sidedness; they make him a specialist. Every special training enhances the specific character of a man's capacity to work. The toil and trouble, the disutility of the efforts to which an individual must submit in order to acquire these special abilities, the loss of potential earnings during the training period, and the money expenditure required are laid out in the expectation that the later increment in earnings will compensate for them. These expenses are an investment and as such speculative. It depends on the future state of the market whether or not they will pay. In training himself the worker becomes a speculator and entrepreneur. The future state of the market will determine whether profit or loss results from his investment.

Thus the wage earner has vested interest in a twofold sense as a man with definite innate qualities and as a man who has acquired definite special skills.[40]

[40] Id., pp. 619-620.

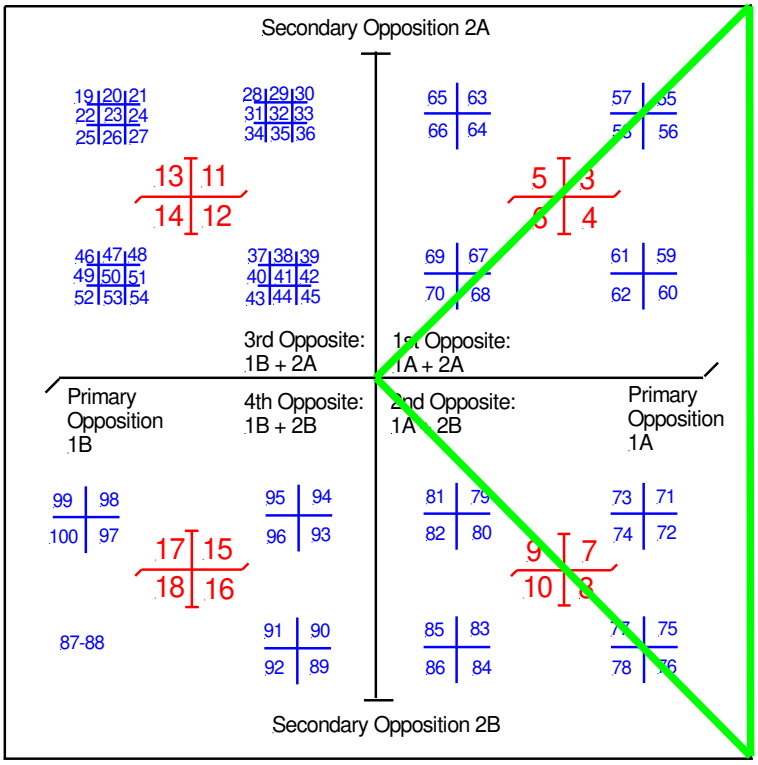
The prime position of labor in the production process creates a direct relationship between the level of employment of labor with the amount of goods and services available on the market. The greater the number of people efficiently employed, the greater the number of services and goods upon the market for sale to the consumer and at the disposition of the entrepreneur.

This relationship might be imagined by imagining that “Full Employment” “brings into being” the broadest possible United States GNP. It would follow then, from the above diagram, that a decline of x% in the employment rate would lead to a 2x% decline in the GNP.



This 2:1 ratio between changes in the GNP and Employment is referred to as Okun's Law. The predictability of this relationship makes it one of the earliest and most important mathematic relationships in a market economy.

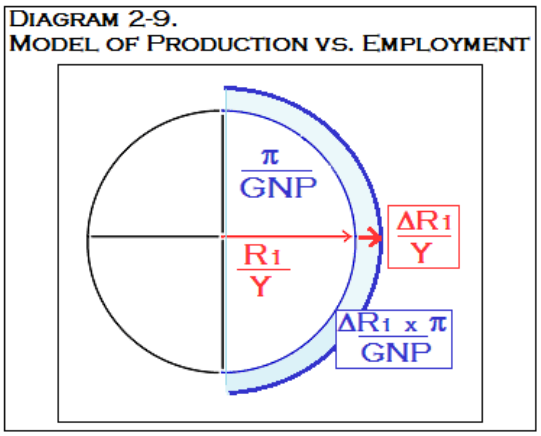
It is important to note that there is no uncertainty on this side of our model, and this predictability is to be expected. This is wholly unlike the monetary sector where the uncertainty of savings, and the arbitrary availability of credit, inject an entirely different set of concerns into the opposite side of the model.

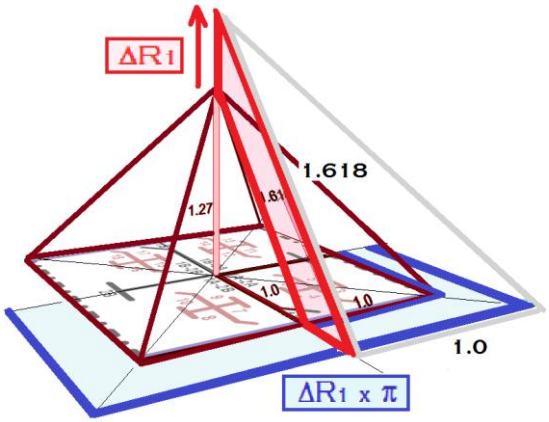


We may use the model presented in Oppositional Analysis to analyze the mathematic trends which must emerge from these relationshiops.

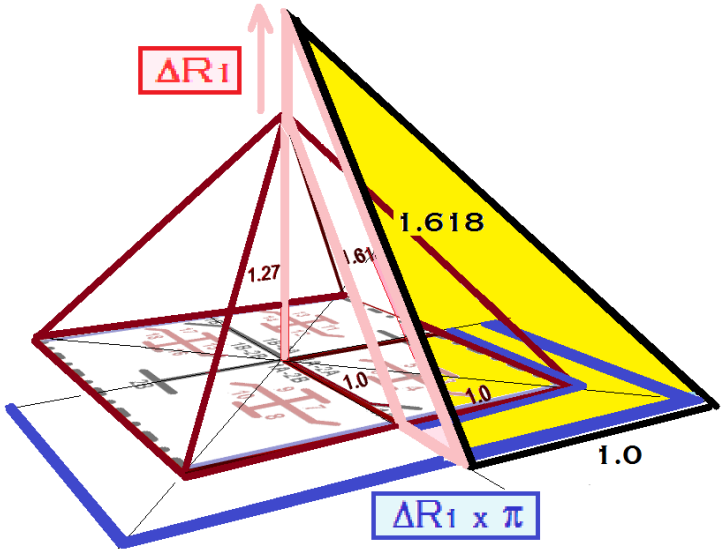
The height of the pyramid is the square root of 1.618… = 1.27… The unit 1.0 has been given as 1/8th the circumference of the base square. If we divide 8 by the height of the pyramid, we have 8 / 1.27 = 6.2992… Dividing this by 2, we have 6.2992 / 2 = 3.1496, a rough approximation of π.

In this fashion, the entire circumference of the base square approximates the circumference of a circle (2 π). The increase in the height of the pyramid may be compared with an increase in the radius of the circle. As the height / radius increases by one unit, half the circumference of the circle and half the length of the base square of the pyramid increase by π units, approximately. We may compare this mathematic arrangement to the discussion of Okun's Law presented in Essay Two.





The ratio of one eighth the base to the relative length of the slope of the pyramid, its apothem, remains in a 1:φ relationship throughout these alterations of height. Identical proportions were given in the first five essays for the relationship in the economy of the United States between change in unemployment and growth, both annually and over time.



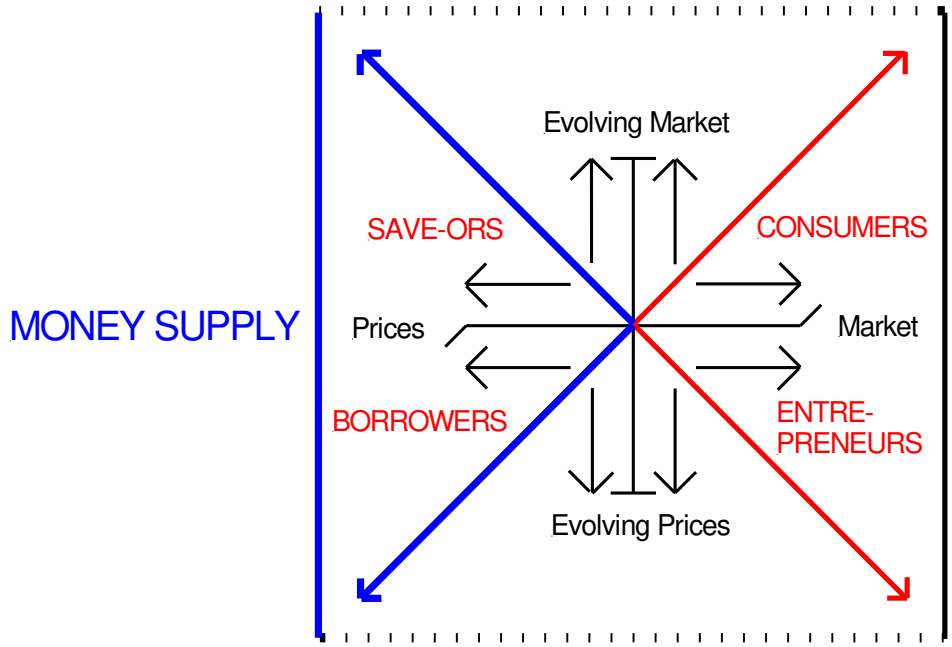
5. The LM curve

What of the monetary side of our analysis?

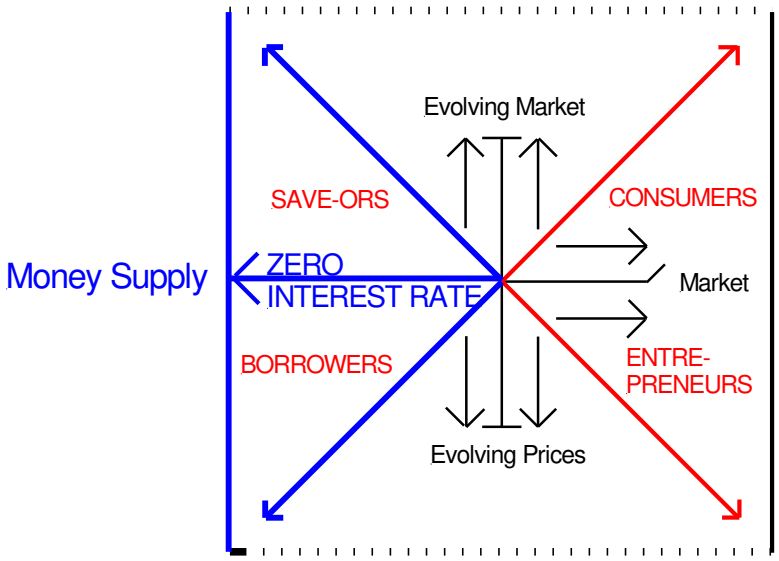
The motivating force for any buyer to save is that of the return upon invested capital in the money markets, i.e. the interest rate. We would see then that the interest paid upon invested capital serves a function analogous to that of labor in that it "brings into being" a central quadrant of the modern economy, i.e. the savings of a society.

Let us imagine the willingness of savers to save stationed upon a 45 degree angle cutting the difference between the evolving production of an economy and the attractions of purely monetary holdings. Conversely let us imagine the willingness of borrowers to borrow as a similar 45 degree angle between the evolving monetary demands upon them and the prevailing monetary conditions of the day.

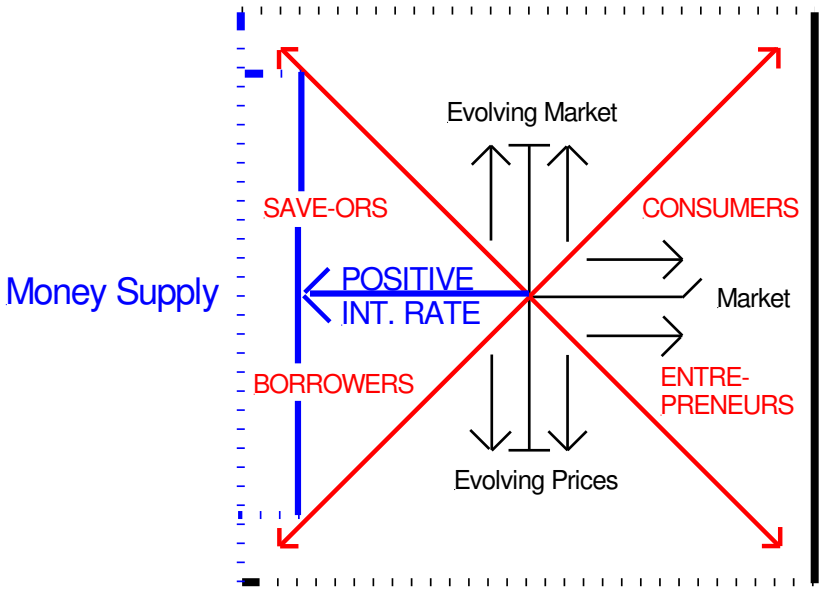
We have then:



Next, we should see that when the Interest rate is zero, save-ors have no reason to keep their money in the bank, and borrowers have no trouble spending the money available to them. Under this assumption, we would have the largest money supply possible, as well as the most rampant, largest, highest prices in proportion to the vertical Money Supply.

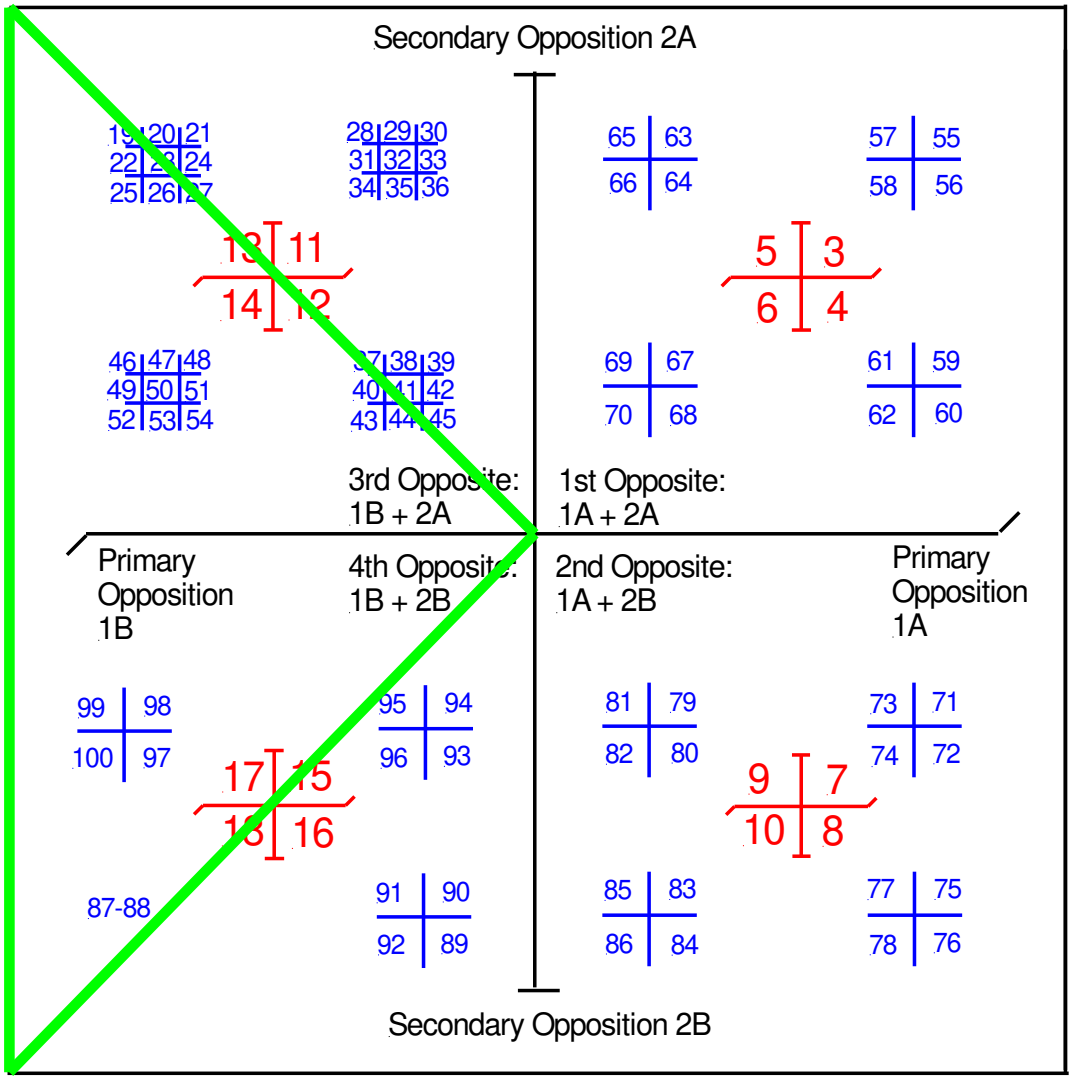


On the other hand, if the amount borrowed must be paid back with interest, we have a contraction of the money supply as save-ors bring their money to the bank for a return on investment, and as borrowers become less inclined to borrow. We would then expect a contract in the money supply, and in prices as well.

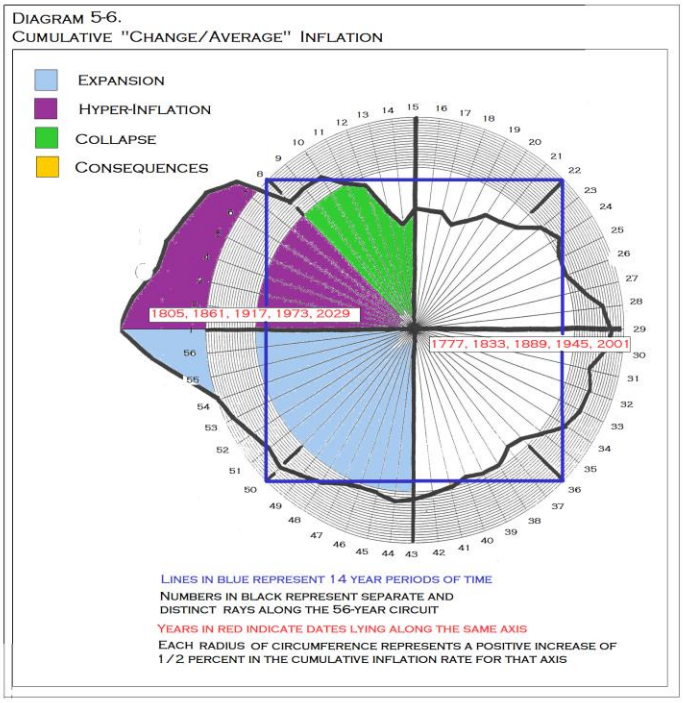


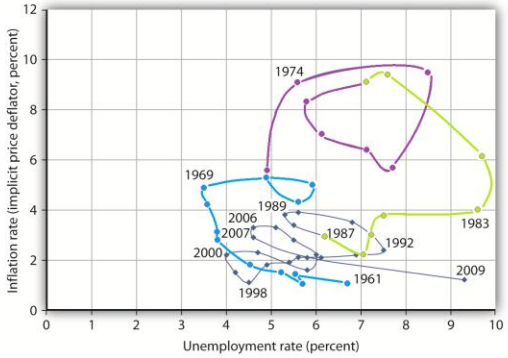
We would see in this increase in the interest rate a proportionate fall in the money supply. The decrease in the money supply will be in direct proportion to the amount of the increase in the interest rate: the greater the increase, the more dramatic effect upon the supply of money available to the economy.

This relationship is known as the LM curve, the effect of an increase in the interest rate tending to decrease the amount of money within the system. It is not an easy graph to chart, because it deals with the left-hand side of our model, a place where both uncertainty and arbitrariness are found.

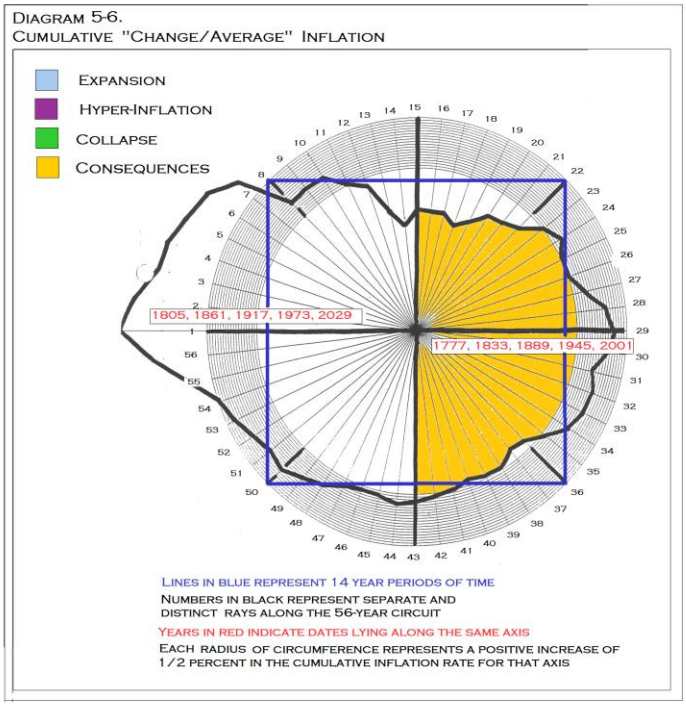


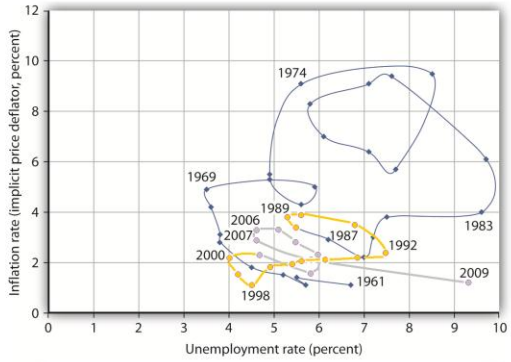
On the other hand, if we consider the extent to which inflation dominates the historic period, we may chart the Phillips curve wherein inflation and unemployment are juxtaposed. Placing these figures in the same color coding used previously to differentiate the logical divisions of the Political Economy Curve, we have the following:

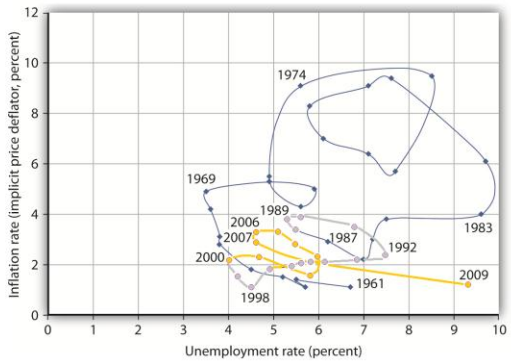




Or in contrast the years of consolidation and their effect upon the rate of inflation and the unemployment rate.







6. Von Mises' Philosophy

Von Mises presents his views on economics as a subset of the study of "praxeology," the study of human action as such, using economic insights to peer into the underlying basis of human action, human consciousness. He writes:

> The discovery of the inescapable interdependence of market phenomena overthrew (previous economic) opinion. Bewildered, people had to face a new view of society. They learned with stupefaction that there is another aspect from which human action might be viewed other than that of good and bad, of fair and unfair, of just and unjust. In the court of social events there prevails a regularity of phenomena to which man must adjust his action if he wishes to succeed. It is futile to approach social facts with the attitude of a censor who approves or disapproves from the point of view of quite arbitrary standards and subjective judgments of value. One must study the laws of human action and social cooperation as the physicist studies the laws of nature. Human action and social cooperation seen as the object of a science of given relations, no longer as a normative discipline of things that ought to be- this was a revolution of tremendous consequences for knowledge and philosophy as well as for social action.[41]

Webster's dictionary defines "praxeology" as "the study of human action." We find in von Mises' "praxeology" a study of human consciousness as applied to the broadest concepts of economics.

> Praxeology is a theoretical and systematic, not historical, science. Its scope is human action AS SUCH (emphasis supplied), irrespective of all environmental, accidental, and individual circumstances of the concrete acts. Its cognition is purely formal and general without reference to the material content and the particular features of the actual case. It aims at knowledge valid for all instances in which the conditions exactly correspond to those implied in its assumptions and inferences. Its statements and propositions are not derived from experience. They are, like those of logic and mathematics, *a priori*. They are not subject to verification or falsification on the ground of experience and facts. They are both logically and temporally antecedent to any comprehension of historical facts. They are a necessary requirement of any intellectual grasp of historical events. Without them we should not be able to see in the course of events anything else than kaleidoscopic change and chaotic muddle.[42]

[41] Id., p. 2
[42] Id., p. 32.

Von Mises believes that the definitions, relationships and conclusions of "praxeology" are not found within a mindless universe, but rather are basic to the actions of human beings themselves by way of the human consciousness underlying and motivating human actions.

> The fundamental logical relations are not subject to proof or dis-proof. Every attempt to prove them must presuppose their validity. It is impossible to explain them to a being who would not possess them on his own account. Efforts to define them according to the rules of definition must fail. They are primary propositions antecedent to any nominal or real definition. They are ultimate unanalyzable categories. The human mind is utterly incapable of imagining logical categories at variance with them. No matter how they may appear to superhuman beings, they are for man inescapable and absolutely necessary. They are the indispensable prerequisite of perception, apperception and experience.[43]

Von Mises' believes human beings operate - in aggregate and as individuals - within the parameters of fixed, unalterable and eternal categories. These categories are as valid for the study of economics today as for the economics of the Roman Empire. He makes this point with particular reference to the universal notion of a form of money or medium of exchange. His point is that any society set up by the human mind must evolve categories (for example, some medium of exchange) which will be analogous to every other category or medium of exchange evolved throughout the world – or the universe - *due to the inherent nature of the human mind itself.*

> The starting point of praxeology is not a choice of axioms and a decision about methods of procedure, but reflection about the essence of action. There is no action in which the praxeological categories do not appear fully and perfectly. There is no mode of action thinkable in which means and ends or costs and proceeds cannot be clearly distinguished and precisely separated. There is nothing which only approximately or incompletely fits the economic category of an exchange. There are only exchange and nonexchange; and with regard to any exchange all the general theorems concerning exchanges are valid in their full rigidity and with all their implications. There are not transitions from exchange to nonexchange or from direct exchange to indirect exchange. No experience can ever be had which would contradict these statements.
>
> Such an experience would be impossible in the first place for the reason that all experience concerning human action is conditioned by the praxeological categories and becomes possible only through their application. If we had not in our mind the schemes provided by praxeological reasoning, we should never be in a position to discern and to grasp any action. We would perceive motions, but neither buying nor selling, nor prices, wage rates, interest rates, and so on. It is only through the utilization of the praxeological scheme that we become able to have an experience concerning an act of buying and selling, but then independently of the fact of whether or not our sense concomitantly perceive any motions of men and of nonhuman elements of the external world.

[43] Id., p. 34.

> Unaided by praxeological knowledge we would never learn anything about media of exchange. If we approach coins without such preexisting knowledge, we would see in them only round plates of metal, nothing more. Experience concerning money requires familiarity with the praxeological category MEDIUM OF EXCHANGE.
>
> Experience concerning human action differs from that concerning natural phenomena in that it requires and presupposes praxeological knowledge. This is why the methods of the natural sciences are inappropriate for the study of praxeology, economics and history.[44]

The reader might distinguish the effort of building economics upon a mind-less "classical" physics (referred to in the following quote), and the effort herein to build physics and indeed all reality upon the patterns inherent in consciousness itself.

> (T)he sciences of human action differ radically from the natural sciences. All authors eager to construct an epistemological system of the science of human action according to the pattern of the natural sciences err lamentably.
>
> The real thing which is the subject matter of praxeology, human action, stems from the same source as human reasoning. Action and reason are congeneric and homogeneous; they may even be called two different aspects of the same thing. That reason has the power to make clear through pure ratiocination the essential features of action is a consequence of the fact that action is an offshoot of reason. The theorems attained by correct praxeological reasoning are not only perfectly certain and incontestable, like the correct mathematical theorems. They refer, moreover with the full rigidity of their apodictic certainty and incontestability to the reality of action as it appears in life and history. Praxeology conveys exact and precise knowledge of real things.[45]

Von Mises undertakes to describe the "praxelogical" relationships of economics. Von Mises does not endorse the view that classical physics is to be taken as the paradigm for economics. He does endorse however the idea that economics should strive for the same objectivity found in physics.

> The first task of every scientific inquiry is the exhaustive description and definition of all conditions and assumptions under which its various statements claim validity. It is a mistake to set up physics as a model and pattern for economic research.... The main question that economics is bound to answer is what the relations of its statements is to the reality of human action whose mental grasp is the objective of economic studies.[46]

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[44] Id., pp. 38 - 40.
[45] Id., p. 39.
[46] Id., p. 6.

There are hints within *Human Action* of a link or at least a similarity between modern economics and modern "quantum" physics.

> The *a priori* sciences- logic, mathematics, and praxeology- aim at a knowledge unconditionally valid for all beings endowed with the logical structure of the human mind. The natural sciences aim at a cognition valid for all those beings which are not only endowed with the faculty of human reason but with human senses. The uniformity of human logic and sensation bestows upon these branches of knowledge the character of universal validity. Such at least is the principle guiding the study of the physicists. *Only in recent years have they begun to see the limits of their endeavors and, abandoning the excessive pretensions of older physicists, discovered the "uncertainty principle." They realize today that there are unobservables whose unobservability is a matter of epistemological principle.*[47]

The fundamental advantage obtained by a consideration of economic behavior lies in the association of social ideas, groups, functions etc. with specific numbers, numbers which might prove or disprove the model itself. Whether these numbers relate to employment figures, inflation rates, dollars in circulation, prices, total output, etc. these numbers present a picture of the working of an economy, an economy which is itself controlled by the principles presented in this model. As we ourselves are a part – a very small part – of economic behavior, so are we able to view this model's working "from the inside," from the viewpoint of a player within the phenomenon, as a part of the whole, a part of the system under investigation.

This is contrasted with the behavior analyzed by the physical sciences. As we investigate the physical sciences, we, ourselves, are located "outside" the topic investigated, and therefore outside the model itself. In considering the physical sciences, the scientist is not a part of the topic considered; therefore the scientist of physical phenomena may find it more difficult to accept the principles of this model.

[47]Id., p. 57, in turn citing A. Eddington, *The Philosophy of Physical Science*, New York, 1939, pp. 28-48.

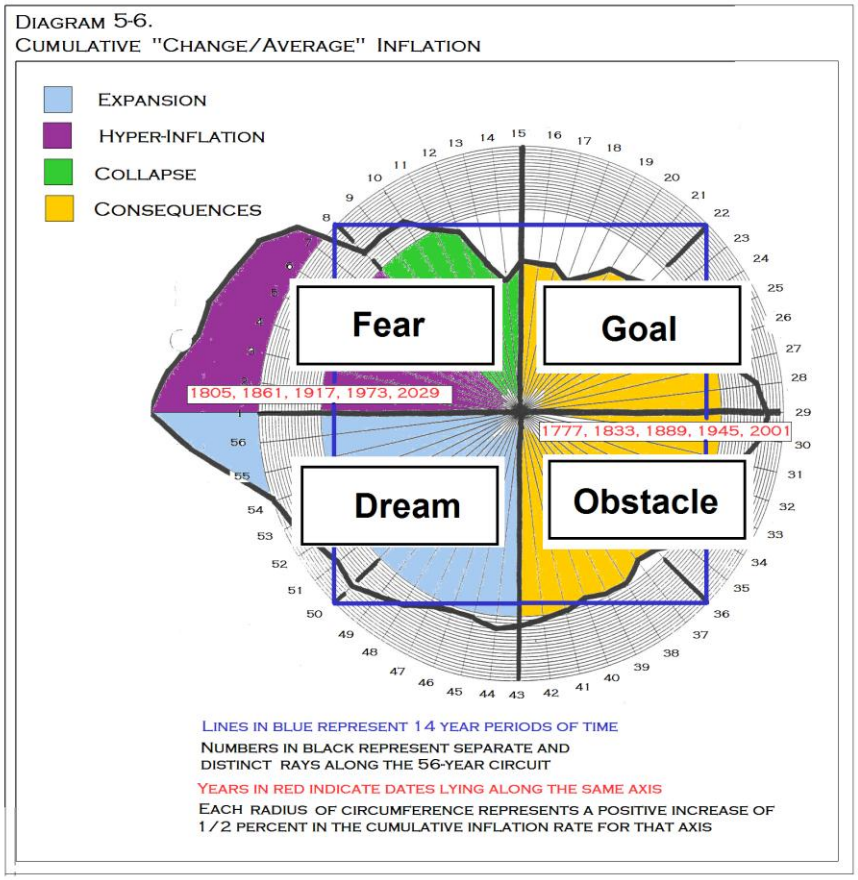
CONCLUSION

Under our analysis we would expect to discover the constant phi = 1.6180... as the relationship between the "image" of the economy, its productive capacity and its price structure. We would further expect to see the constant pi = 3.14159... as an integral part of the economy.

Moreover, assuming that the reader is satisfied that the foregoing essays have provided an insight into the social world which operates as fractals to one another in clear and predictable ways, it might serve as well to follow up on von Mises' suggestion that the principle of electron uncertainty bears a striking resemblance to his notions of economics.

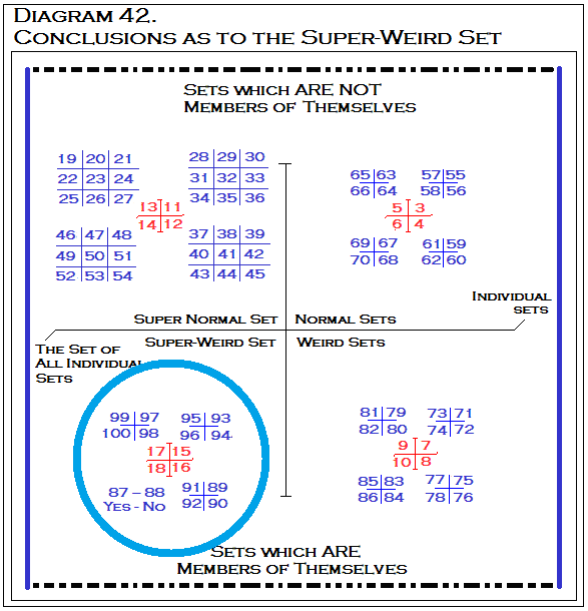
Oppositional Analysis, as applied to the political economy of the United States, suggests that we find in the upper-right period of history – the top right quadrant – a "self." After considering the various historical events of these periods, I suggest that upper right quadrant portion of time during American economy history is one during which certain "Goals" are fashioned.

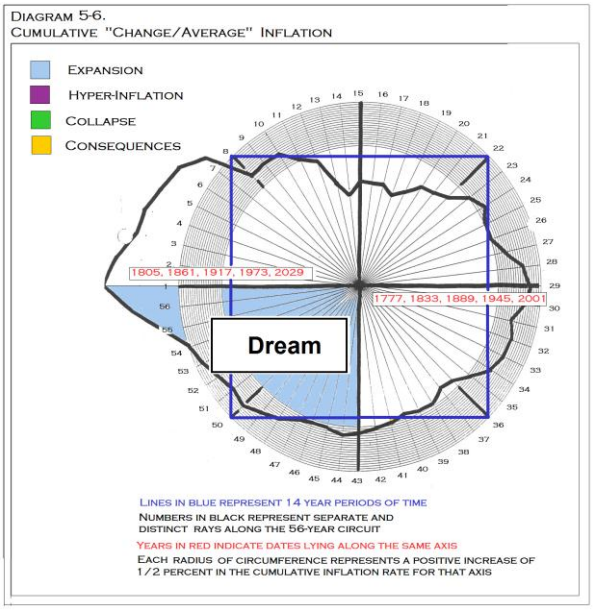
The opposite of a Goal is an "Obstacle"; the negation of a Goal is a "Fear"; and the Negation of a Fear is a "Dream".

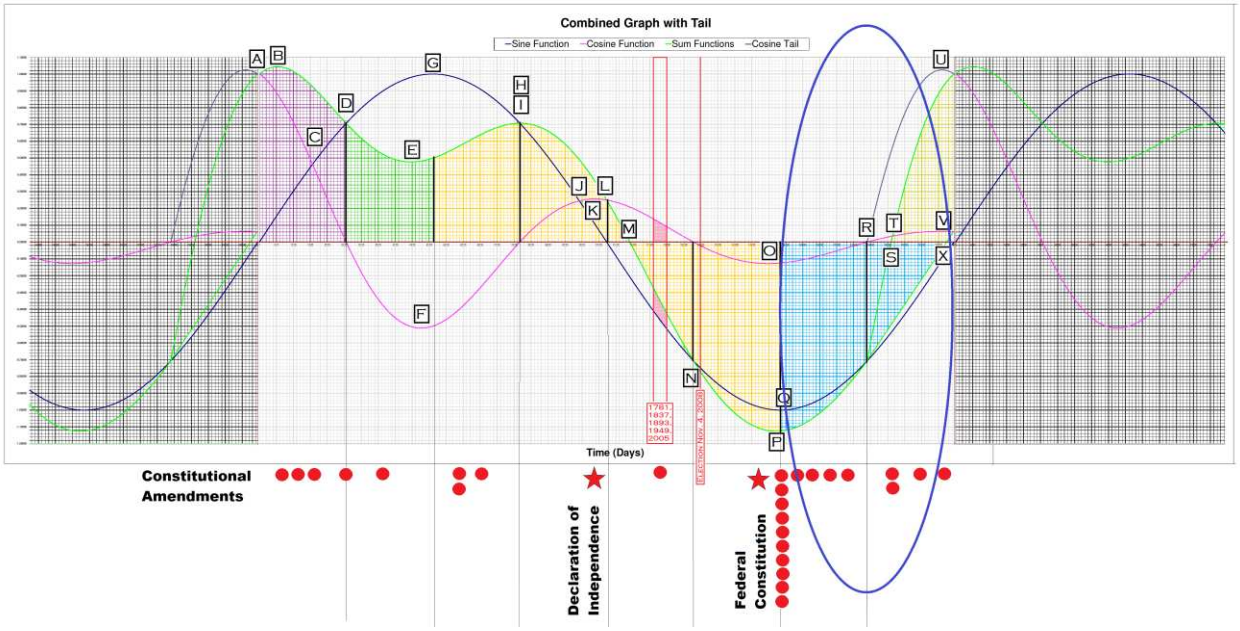


These psychologic impulses which are well known to citizens are expressed over time in the public activity of the United States.

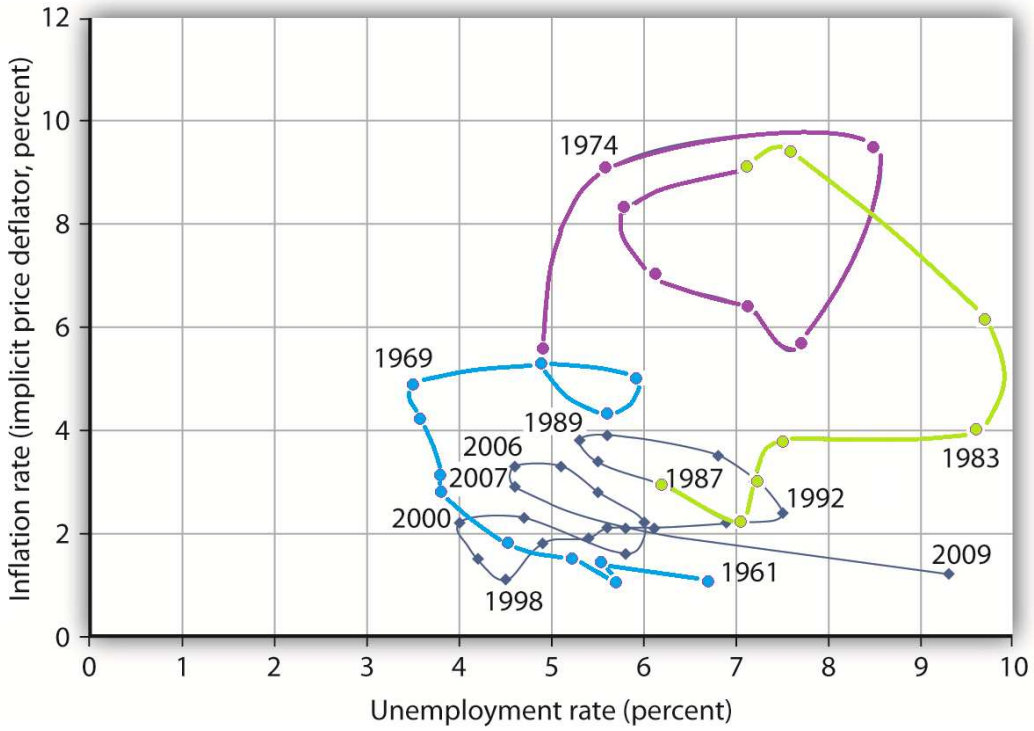
As these periods of time are associated with the patterns presented in Oppositional Analysis we can see that these various psychologic points of view are connected to various ways of thinking through problems. Note most recently the 1966 speech by Martin Luther King Jr. the most memorable phrase of which is "I have a dream." This occurs during an historic period of time wherein the "Yes-No" characteristic of the lower-left quadrant would be typical.



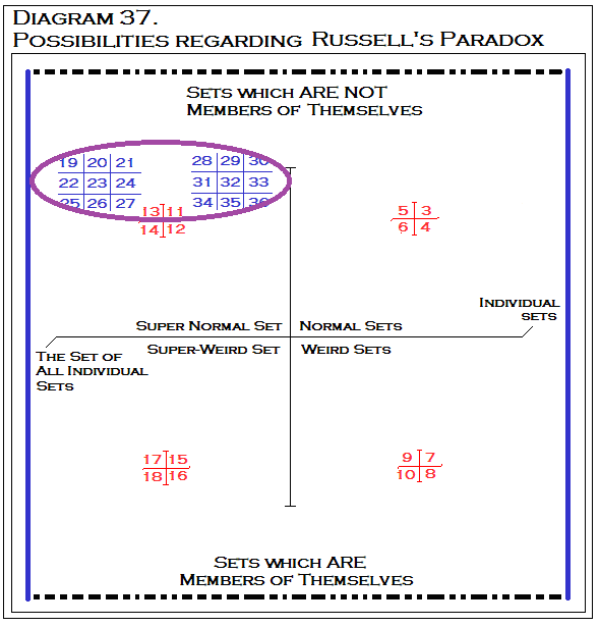


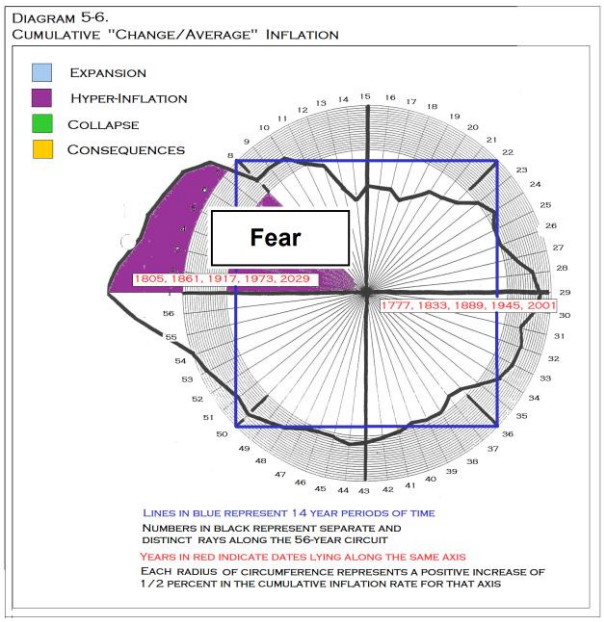


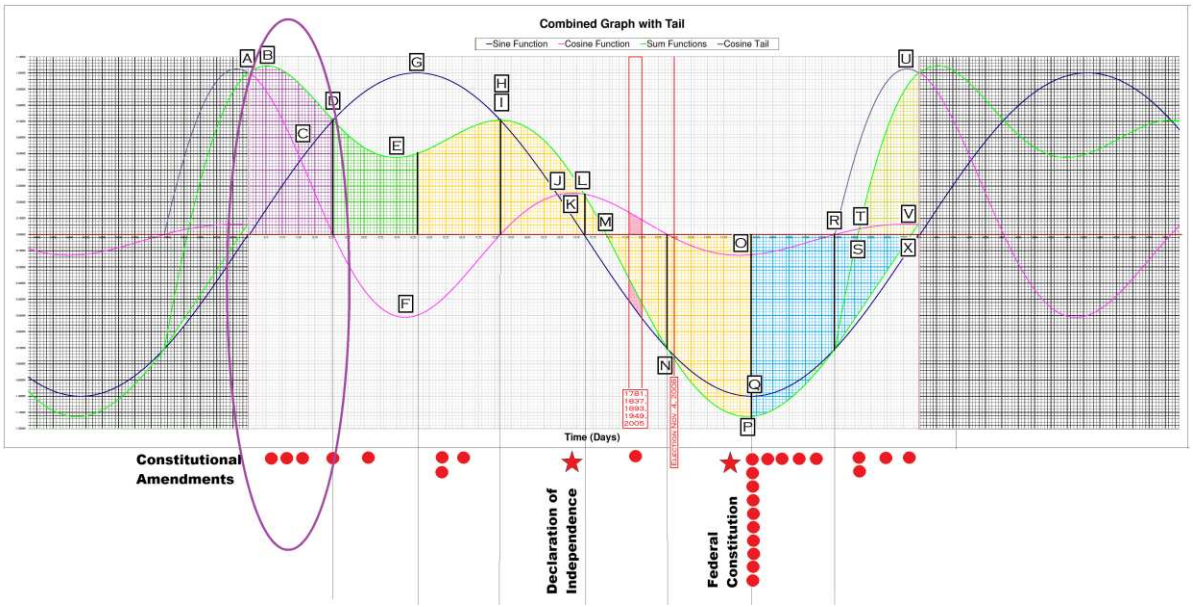
Typical of this period is a steady increase in the inflation rate which is consistent with a citizenry which is ever more involved with the determination and active change in its circumstances. During this period the largest number of constitutional amendments have been ratified, and also during this period a general upswing in radical activity takes place.



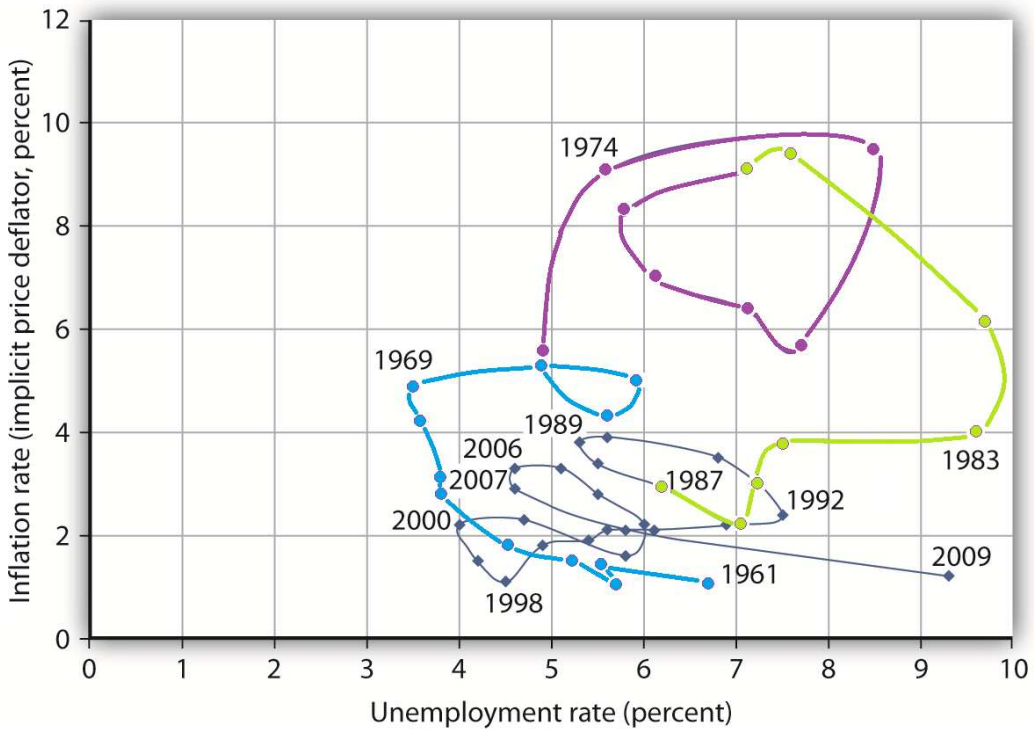
The most recent fear found within the upper left had quadrant appears to be connected to the statements of President Richard Nixon as to the Watergate Scandal and the role his office played in illegal wire-tapping. Prior periods of time correlate with the American Civil War and the entry of the United States into World War I.



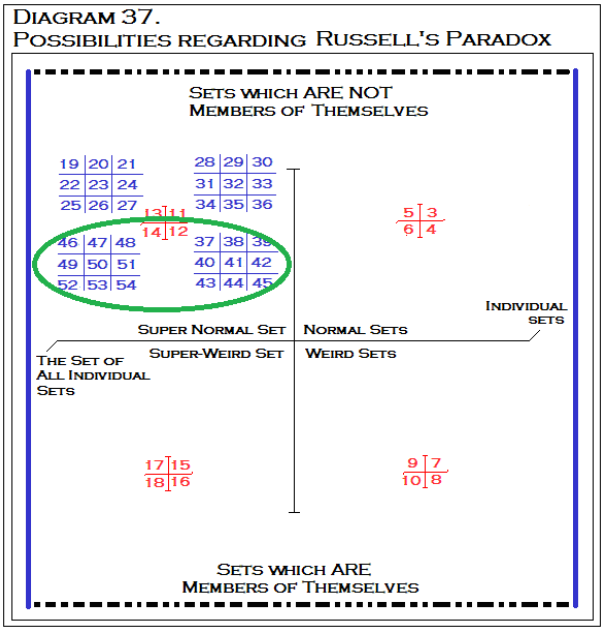


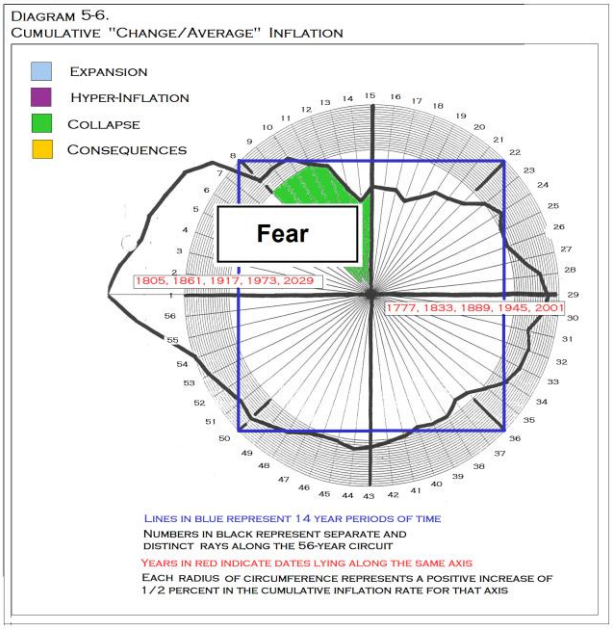


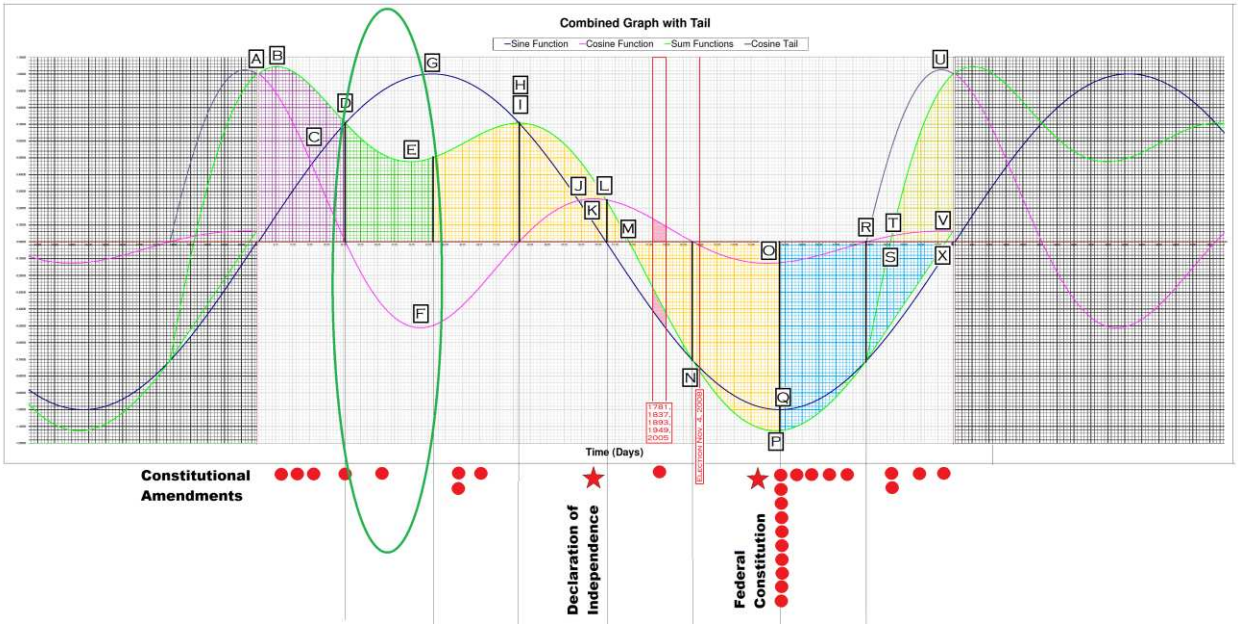
The uncertainty of this period is markedly different from the previous period. During this section of American economic history a distinctly different tone sets in, one drives the economy to new heights of inflation.

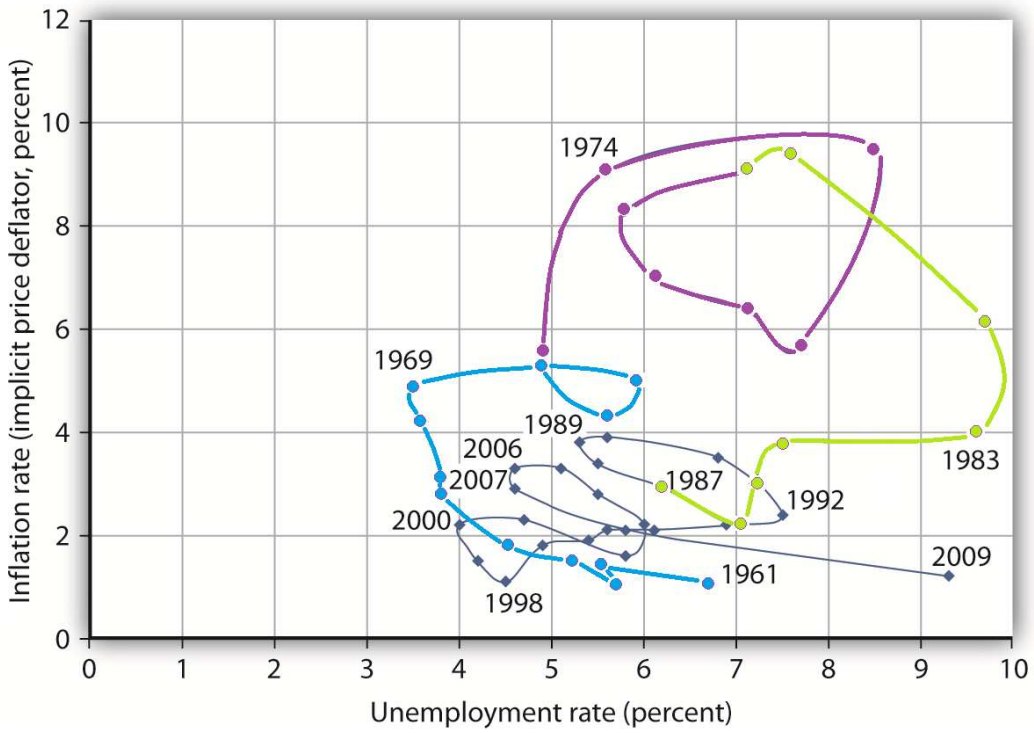


The second-half of this quadrant represents an uncertainty wherein the collapse of the economy begins to occur. Most recently this has taken place with the rise of Ronald Reagan and the Republican war on organized labor, a traditional voting block of the Democratic Party.

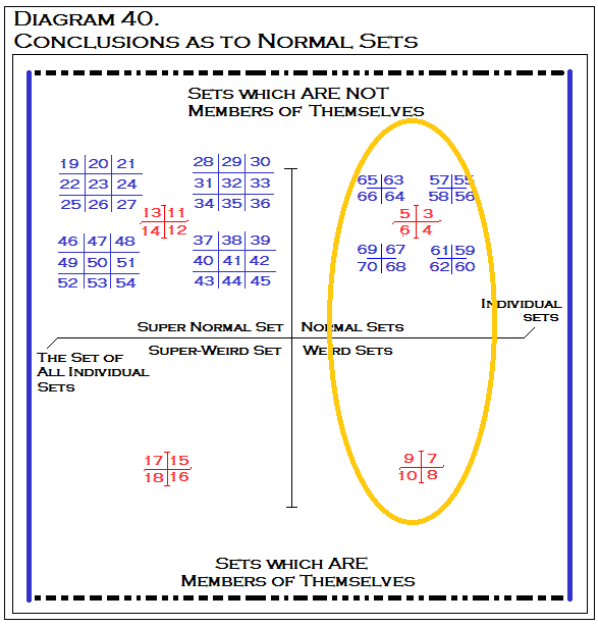


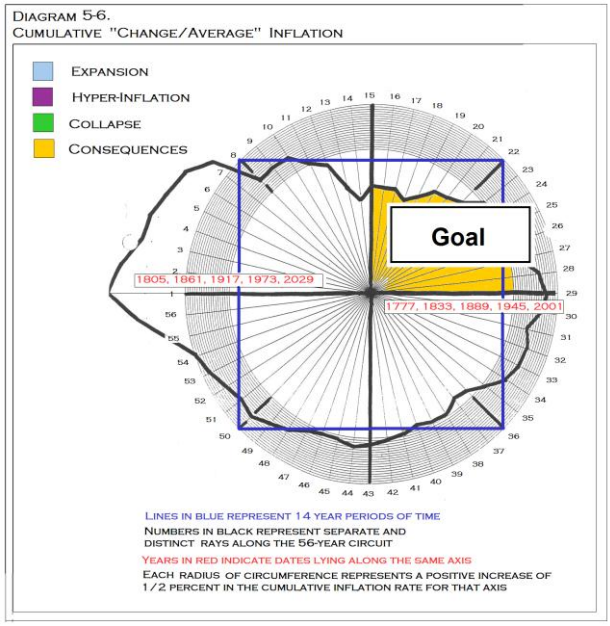


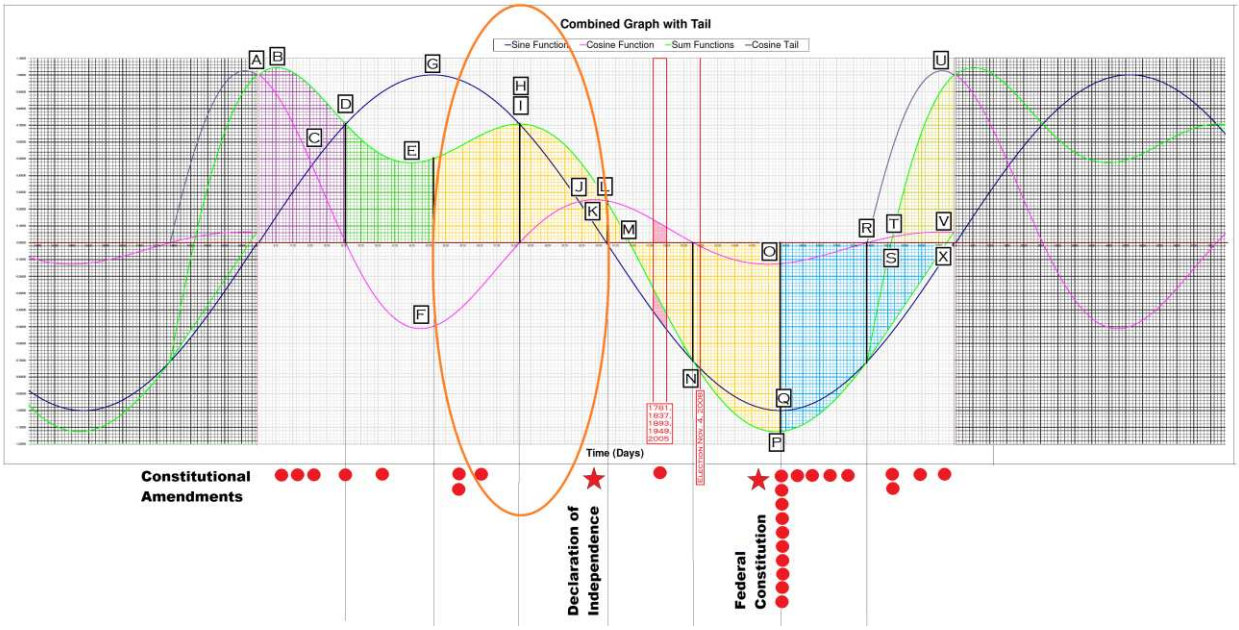


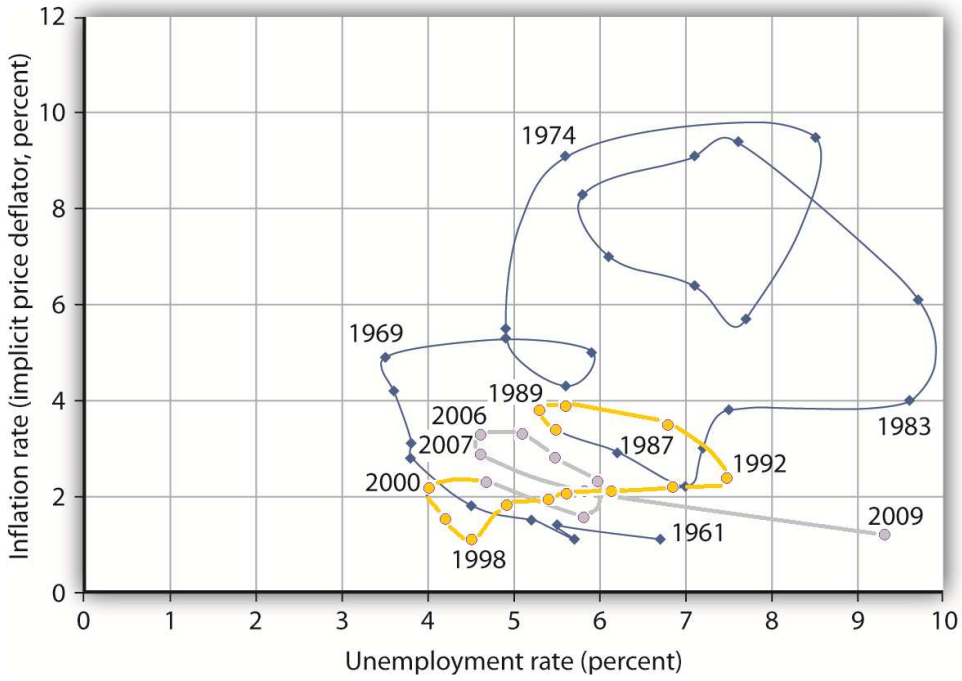


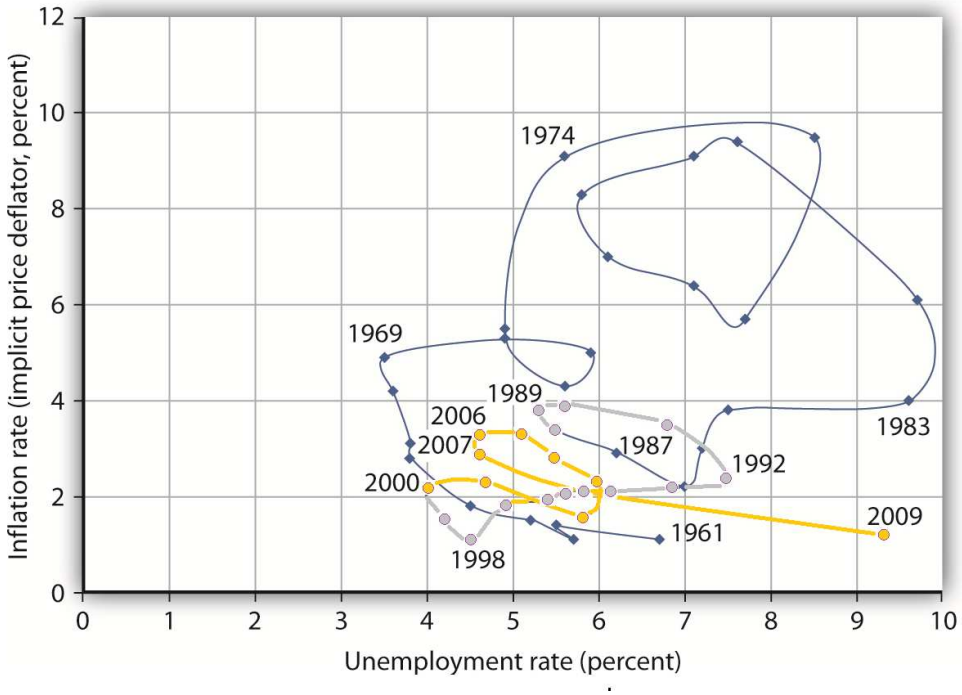
The most recent goal of American seems is found in the Republican "Contract With America" of 1994. The pyschologic state of the United States during this period of time has not been charachterized by the inherent uncertainty of the preceding period. Consequently the inflation rate has receded and the unemployment rate stabilized.



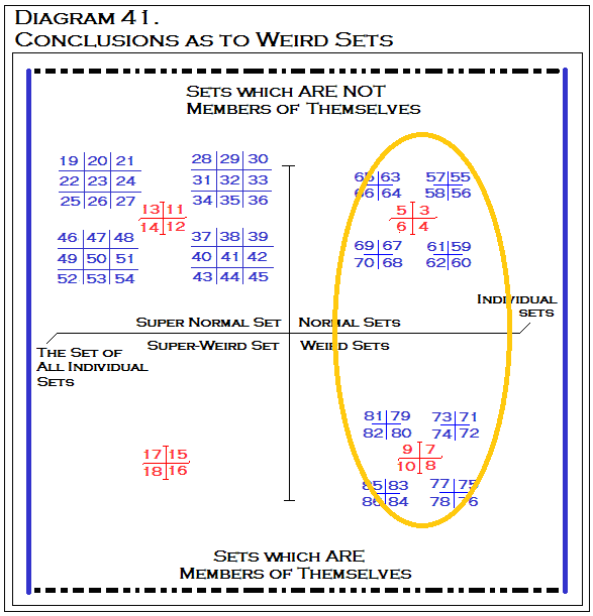


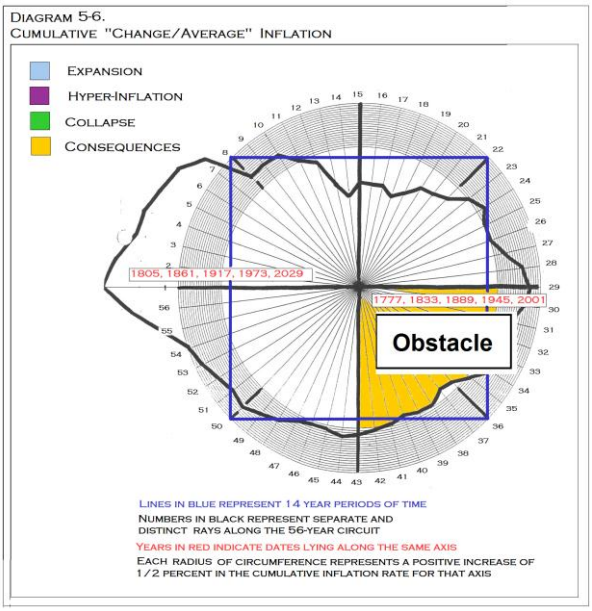


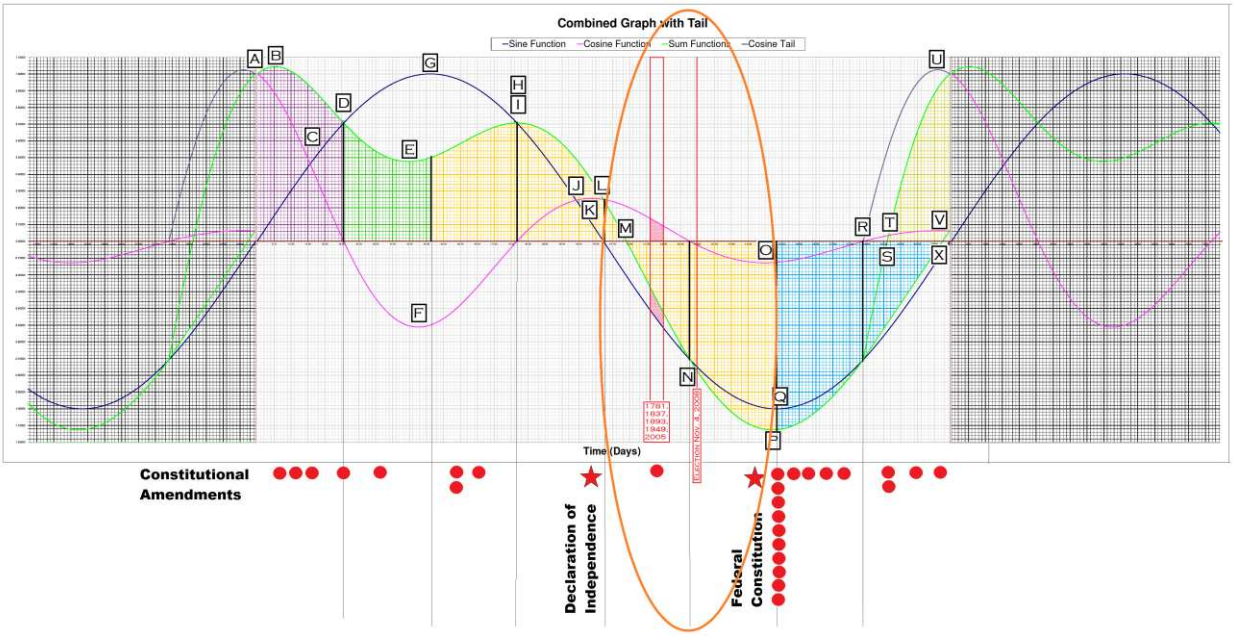


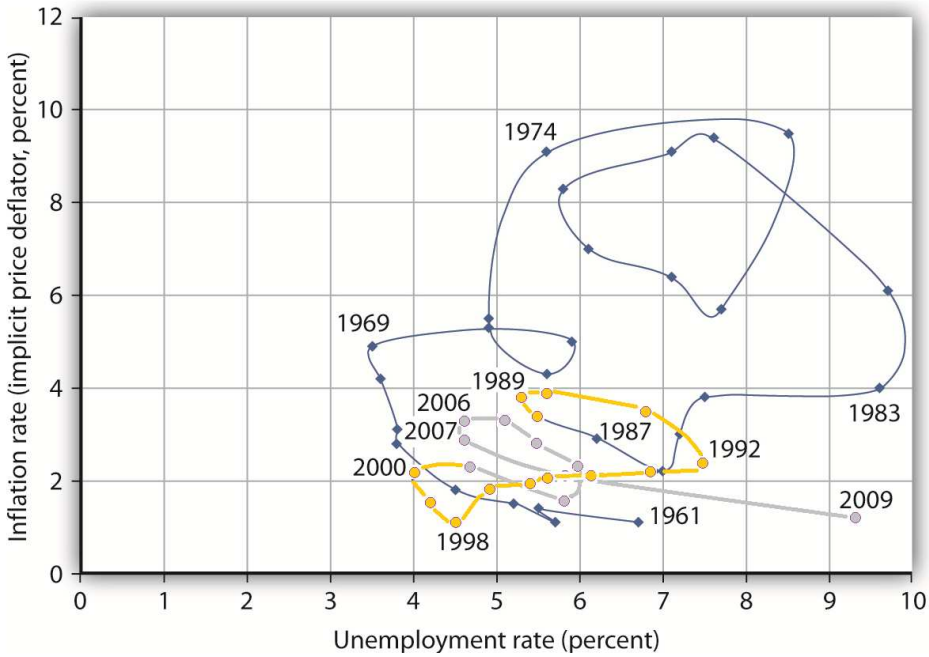


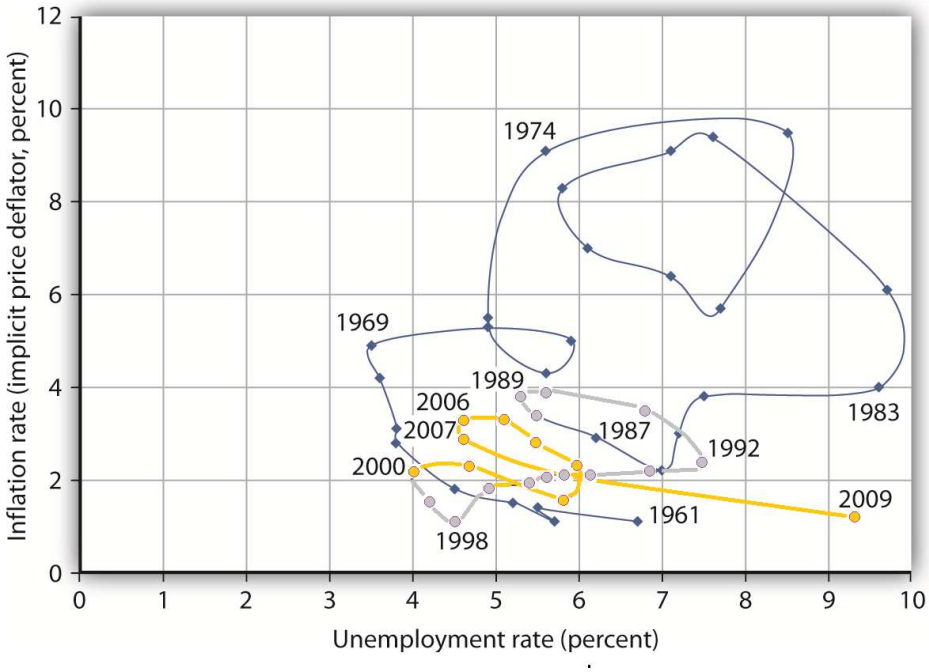
Following a period of setting goals the United States historically has entered into an aggressive and expansive posture. Formerly the periods of post-World War II and the tenure of G. W. Bush have been associated with a dominant American presence in the world acting without the need for consultation with others. The most pressing obstacle facing these goals is the financial meltdown of 2008 and its aftermath.



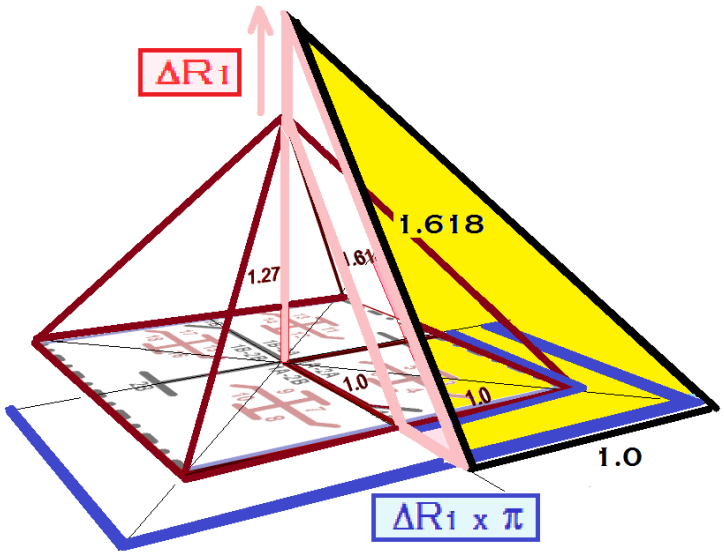








These models propose that a fifth dimension within the economy of the United States balances the political, economic and social fabric of American Society such that the ratios of 1: π and 1:φ take place over the long term.



The presence of this fifth dimension within the context of the economic and social history of the United States provides a basis for investigating a number of physical phenomena presently unexplored by science.

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