

Toward Excitation and Inhibition in Neutrosophic Logic

- A multiagent model based on ying-yang philosophy

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Abstract: Logic should have been defined as the unity of contradiction between logic director and logic implementation. Chinese Daoism asserts that everything is defined in the unity of opposites, namely yin and yang, accordingly yang conducts change and yin brings it up (I-Ching, also known as Book of Changes). In this way logic is redefined in an indeterminate style to facilitate “both A and Anti-A” etc. in neutrosophics of logic. The unity of opposites is also described as neutrality in neutrosophy. An intermediate multi-referential model of excitation and inhibition is developed to derive a multiagent architecture of logic, based on Chinese yin-yang philosophy. This methodology of excitation/inhibition suggests a rhymed way of logic, leading to a dynamic methodology of weight strategy that links logic with neural network approach. It also confirms the crucial role of indeterminacy in logic as a fatal criticism to classical mathematics and current basis of science.

Keywords: Neutrosophy, contradiction, logic implementation, priornatal aspect, five elements, dynamic weight strategy.

2000 Mathematics Subject Classification: 03B42, 03B60, 03A05, 03H05

1. Background

What fatal defect do we find in the conventional definition of logic? Although logic plays an important role in science and technology, some fatal flaws negate its validity and applicability:

Lack of insight in the essence of logic that should lie in the contradiction between conceptualization and implementation. Even logics of the highest validity can contradict their applicability, as illustrated in the logic “I’ll visit him if it doesn’t rain and he is in” [1].

The lack of identity between opposites. Do truthness and falseness always antagonize each other? No, there is neutrality or agreement between them, which combines them into a unity, as illustrated in neutrosophy.

Assuming that for incomplete knowledge system as in ordinary human, there is no absolute truthness and falseness in reality (as shown in neutrosophy), therefore even the most complete logic system is by no means complete, or, the most complete is the most incomplete.

Example 1: The sun turns around the earth.

<A>

The sun turns around
the earth.

<Anti-A>

The earth turns around
the sun.

Δ

balancing point:

This is a relative concept.

Example 2: I’ll visit him if it doesn’t rain and he is in.

<A>

It doesn’t rain
and he is in.

<Anti-A>

When I become confident
of it, it is too late to go.

Δ

balancing point:

I should try my luck or make an engagement.

In which aspect do we differ in the definition?

Logic in essence is rather a dynamic balancing act than the static truth-false concepts.

This behavior can be represented in neutrosophy as “both <A> and <Anti-A>” promising a unification in the balancing.

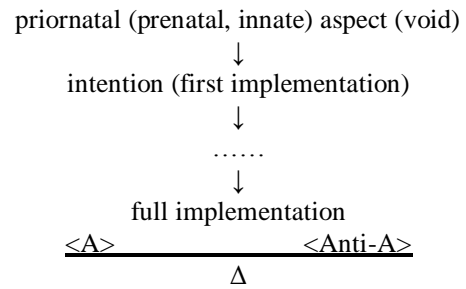
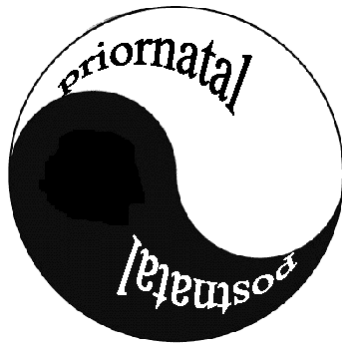
Values in percentage are inefficient to characterize the unification in the tradeoff.

Logic in its social aspect is an integration of distributed actions (conceptualization and implementation), rather than rules or fuzzy rules only. Logic is derived when people neutralize opinions among countless versions of implementations and applications, in contrast to the absolute accuracy and completeness in conventional mathematization – how can we measure unintentionality with intentionality? For this reason, I will write in the non-mathematical pattern, as against the “mathematical” pattern, for what is called mathematical is no longer mathematical at all in the views of neutrosophy and Chinese classic philosophies: things will develop in the opposite direction when they become extreme, or “wujibifan” in Chinese.

The logic “both A and anti-A” can be invalid in conventional logics, but valid in an excitation/inhibition rhythm, at least they imply each other and live in one family.

2. Definition of Neutrosophic Logic – A Novel Version

Is logic a fixed concept or an endless evolution? Let's explore the evolution of logic:



If we regard <A> as the positive attitude and <Anti-A> the negative attitude toward a desire, an intention, inspiration, assumption, etc., <A> and <anti-A> have in this way become logic operators, take “I can speak English” for example:

As positive operator <A>, it doesn't mean he speaks good English at the moment, but the confidence in his success. In this way he acts in the positive manner.

As negative operator <Anti-A>, it doesn't mean he speaks ugly English at the moment, but the lack of confidence in his success. In this way he acts in the negative manner.

In reality logic comes as the balancing between these two actions, as summarized below:

Unity of opposites: both <A> and <Anti-A>

The hidden integral: every mind is gifted with the gene of the universal mind: the integral of our ultimate inner nature which is identical with that of the universe. This is what I call yang in I-Ching (the originator) - it is formless, shameless, timeless ... the completely opposite world from our believed consciousness. So I call it the prior natal aspect, or wuji in the Taiji figure, or possibly Dao in Daoism.

Postnatal aspect: what we see, acquired knowledge, set of rules, etc. regarded as a specific implementation of some source in a specific situation

Priornatal aspect: what is hidden or lies under the phenomena as the origin of logic. <A> and <Anti-A> should be derived from the same source, namely priornatal aspect (can be void in representation, but nothing nihility)

Yinyang perspective: the balancing is based on both priornatal and postnatal aspects. This unity is called a contradiction.

Practical description: intention(priornatal, implemented, indeterminacy), where those implemented have been represented as truth or false, and those not implemented have been attributed to indeterminacy.

Key issue: there remains a gap between these two aspects, and the same source can be carried out in different ways

Simplified description (definition): the unity of contradiction between logic director and its implementation

Why do we need to describe the prior-natal aspect of logic? The ambiguity of logic definition lies in the indistinction between conception and implementation. A concept without substantial implementation is usually abstract or even arcane, because it can never be understood by human (e.g., the primitive intention can be haphazard, underlying or void, i.e. non intention, such as “why was I born?”), therefore it is always void of significance. The implementation, however, can seldom match with exact accuracy with the presumption in concept (as shown in [2] and [3], Logic is always subjective, always partial), there must be inconsistency or even contradiction between them, therefore, we need to examine the relation (we call contradiction) between them to carry out the definition:

Logic is defined as the unity of contradiction between logic director and logic implementation.

The contradiction refers to the unification of divided opposites.

In differential perspective we find such descriptions as truth and false.

In integral perspectives we find: truth in false, false in truth, percentages in truth values, neutrality, indeterminacy, etc, leading to the evolution of logic in such a cycles as “birth – growth – prosperity – wither - death”, in its limitation to the unification with non-logic; the unifying way in its ultimate limit resembles the voidness or emptiness we have called, but of essential difference with those we have imagined.

Should logic be defined on the differential basis or the integral basis of these opposites? Chinese Daoism asserts that everything is defined in the unity of opposites namely yin and yang, where yang conducts change and yin brings it up, so here I assume that yang directs change and yin implements it (a sample model: excitation and inhibition in unity). The unity is also described as neutrality in neutrosophy, but my personal inspiration from Daoism indicates more:

Since ordinary human is very limit in his enlightenment on the nature, i.e., his knowledge appears as incomplete in both time and space domains (space incompleteness means his partiality, and time incompleteness refers to his lack of insight to

the cause-effect, leading to the lack of insight to essence and nature), I should define a priornatal aspect of knowledge (referring to the innate aspect) as contrast to the acquired aspect, because all the acquired one is in fact born, grown and develop from the innate aspect, as if a sophisticated human figure is developed from a single gene. I have to assume this, even if it can be void in form. The priornatal aspect corresponds to yang.

In practice however, the absolute priornatal aspect is intangible, therefore I exploit a relative concept that an implementation (e.g., a complete set of rules) is derived from a relatively “priornatal” intention, which can either be regarded as the absolute priornatal aspect or an intermediate implementation. So I apply (Priornatal, Implemented, Indeterminacy) as its status.

This status representation has suggested a novel strategy toward association, e.g., when the three components are represented as operators, or in sets and in recursive manner.

To simplify this discussion, I simply use the contradiction between director (as priornatal aspect) and implementation to illustrate the essence of logic, which reveals the fact that any set of rules is a specific implementation of a priornatal seed under/in specific circumstance, condition or situation.

Is there any significance in such a contradictory way of definition? Let’s see what this definition reveals:

Logic refers to practical or even endless actions rather than dead rules.

There are always a director and an implementer in every action of logic. The former provides new directions (e.g., assumption, idea, assertion) to the action and the later carries it out (provides substantial support, verification, proof or negation).

There is always contradiction (unity of opposites) between them, with the contradiction sometimes appearing identity and sometimes antagonistic.

It is this contradiction that defines the validity of logic: truthness, falseness and indeterminacy.

The contradiction shows much more than values do: it is very likely to signify the trend of further development, and illustrate the status in both quantity and quality.

Neural networking and logic are in fact homogeneous.

So far one may blame for the similarity to conventional logic – an automata that automatically fetches instruction and interprets it, then carries it out automatically. It is true in appearance, but different in the essence that consistency is only achieved through the tradeoff between inconsistencies – to find the identity, or unity of them. We can alternatively regard the contradiction as a rhythmmed change (like a single pendulum with varying amplitude), in positive-negative endless revolutions. Unlike mechanical changes, there is an identity, unity or neutrality underlying in the endless generations of the evolution. This is the point our eastern culture defers from that of the west. Why don’t we regard the opposites as one unity?

As the ultimate limit, when the amplitude of the above pendulum converges to naught, i.e., no longer any distinction between truth and false, logic seems dying out but our intentions, although without reasoning, is getting closer and closer to the reality (one needs to understand the entire ancient Chinese culture to understand this philosophy.).

3. The Excitation/Inhibition Loop

How much have men explored the priornatal aspect of the world? I-Ching (Book of Changes) shows that the everything in the world is made up of two opposite and complementary aspects or attributes (not necessarily priornatal and postnatal, for convenience we take them as hyper-matter, because we normal people are always inhibiting our perceptions with opposite excitements – we emphasize too much on the shaped or developed matter forms than the prior-shaped origin): yin and yang, which in combination produces the five basic hyper-elements (five-phase): wood, fire, earth, metal and water, with each giving rise to another and inhibiting another as well. The significance of this hyper-matter system has long been proved in Chinese history and by Chinese medicine.

Can we initiate the priornatal aspect of a system in this way? Inspired by the trigrams below, I primitively define the mapping (since I am strictly limited in my insight, here I just launch the argument – leave the rest, e.g., to the next generation):

Wood character: to resonate to something as source information, and to perceive it, expand its influence.

Fire character: to generalize perceptions into conceptual pattern as guideline.

Earth character: to substantialize, nurture and bring up the above conceptual pattern in a particular situation.

Metal character: to formalize, to fix into model, to finalize the design.

Water character: to be skillful, artful, toward accumulative flexibility, so as to reach an instinct, in which all concept or logic is hidden or implied.

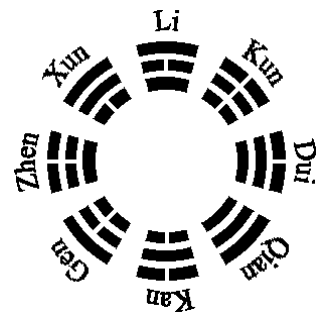
The excitation loop illustrated in I-Ching is:

Wood–yields→*Fire*–yields→*Earth*–yields→*Metal*–yields →*Water*–yields→*Wood*

The inhibition loop:

Wood–inhibits→*Earth*–inhibits→*Water*–inhibits →*Fire*–inhibits→*Metal*–inhibits→*Wood*

Can we implement the above intention? The above loops are better illustrated with my inspiration from the Later Trigrams of King Wen, I map the trigrams to:



Zhen Agent (of character wood): the impression of a seed breaking through its outer shell and germinating, but with logic, I believe, the peaceful mind being stirred by an impulse (like the quiet water being stirred by a falling stone), to resonate to something as source information. As in automata where an instruction is given that issues a process except that this is a kind of stimuli that excites/inhibits another agent. In fact human mind is such an open receiver: it is constantly stirred. Resonance to a good source can plant or promote the growth of a healthy seed rooted in our mind, and that to a pernicious source can spoil or destroy our intelligence. Although a pernicious seed looks favorable at the moment, it promotes our illusions and corrupts our mind through chronic, and eventually through sudden effect. Normally a man is resonating to varying sources in a spectrum, and the center of it depends on his underlying will.

Xun Agent (wood): to spread (broadcast) the influence of the above resonance to different senses (or referential frames), heterogeneous and even opposite, contradictory, for them to feel, percept (interpret):

$$d(interp.) = \sum_{i=1}^{\infty} \frac{\partial(interp.)}{\partial(rfi)} d(rfi)$$

where *Interp.* denotes the interpretation, *rfi* the reference frame *i* and *Imp.* the impulse. The action resembles compiler except on the multiagent based contradiction compatible multi-referential background. A resolved man can manually inhibits the pernicious spread of unhealthy influence, and thus kill the virus seeds rooted in his mind. In this way he can change his destiny with this persisting reform. So is a society – it can definitely step into chaos, disorder and trouble if enhances the free spread of all kinds of media as in networks. If so, not only should we see the retrogression of mankind, but the pernicious disaster as well. To a common man, his ideology depends heavily on the sources he resonates to, and the public ideology resonates exactly to the media, not the real truth. In this way the society is killed by the media rather than nuclear weapons, so is mankind.

Li Agent (fire): to assemble the above interpretations into an integral pattern, as a concept, a hypothesis, proposal or myth serving as a guideline:

$$guideline = \int d(interp.) = \sum_{i=1}^{\infty} \int \frac{\partial(interp.)}{\partial(rfi)} d(rfi)$$

The action resembles convention concept tree except that it functions as a concept (or logic) director, conductor or guide, of even inconsistent components, in a indeterminate manner, like an adviser that helps figure out the general situation, plan, etc. which need to be developed and implemented in the future or future generations. A good pattern is not necessarily recognized by all, due to the diverse seeds active in different people, and different referential manners. Whenever one chooses a good pattern, it is only through practice to build up his confidence and trust, not merely imaginations. So a pattern is true only when testified and proved in practice, not in superstitious manner. Still, only in practice, can one complete and implement the pattern. This is the significance of a truth.

Kun Agent (Earth): to substantialize, nurture and bring up the above pattern based on current situation (condition, environment, constraint, etc). It implies the balance with reality (as defined in [3], logic in essence is a kind of balance), i.e., a tradeoff between motivation and reality. It is usually in this action that a balancing point can be found, and the above beliefs (I have assumed that human is incomplete in his knowledge, in this case truth is only relative, or combined with subjective beliefs) is verified, modified (through feedbacks to earlier actions), and proved for validity. The action resembles conventional logical proof except that it works in the indeterminate mode. The action seems to be an obedient verification (obedient implementation). Even a true pattern serves only as a guideline, not the implemental instructions. Among the heterogeneous minds, there does not exist an exact protocol of regulation, nor an absolute fare law. Laws vary among situations, and lawyers seldom apply them as doctrines. For example, there are different understandings toward human right issues. To a superman species should share the same respect as human's, but to a mean, others, other groups (as rivals) or other nations (as in the third world) would be less respected in heart as himself/itself. So the same guideline can be applied in either unselfish way or in self-centered manner, thus the same truth can remain treasure to some, and pernicious and evil to others, like a seed prospering in some area or situation, and withering and dying in others.

Dui Agent (metal): to fix into model, to formalize the implementation. The action resembles conventional knowledge representation except in the form of agent based active network with all the weight patterns of excitation and inhibition featuring the balances in all the contradictions. The validity of a good pattern is void without implemental instructions, and universal truth is arcane without substantial facts or materials supporting it. A college graduate without experience is nothing more than a bookworm. A real model cannot exist without practical experience. A good philosophy doesn't mean anything

without specific implementations. This is the significance of a real model. However, since every specific model grows up in a specific environment, it is normally absurd to directly copy existing models than to re-cultivate one's own realistic models.

Qian Agent (metal): to take the principal role by fighting against the old. This is a necessary step in metabolism, and through this action the developed model above is finalized. The action resembles knowledge update, but it needs time in a dynamic neural network to resist the old and build up a new belief (in a new weight pattern). A model can be temporarily or locally successful, but still hard to change the whole mind and the universal belief, because of the old propensity and inertia, such a great impetus as to kill the novelty. A man can be inspired at some spot, and carry out a model in a favorable situation, but the heaven would not always keep sunny and mild, there are storms and heavy winds ahead. To stand against the unfavorable circumstances especially the dreadful environments, one needs to persist in his reform to get rid of the resistance in his mind, and so to a universal extension. Everyone can play an instant role of the god but only sages have the perfect play in his daily life, whether in favorable or harsh situations.

Kan Agent (water): to be skillful, artful, into accumulative flexibility, as to reach an instinct in which all concept, logic, after a long conception process, turn onto something hidden or implied. Logic in conventional sense is born as a sort of rule or concept until it is digested into a kind of instinct, which gives rise to the flexibility in application, or in the end, it is used unconsciously – without realizing its existence. The previous concepts become hidden in deeper memory. The consequence of activating the model in endless repetition (bringing about the short cut in thresholds, and the expansion of this micro-society of activated neurons) has led to an extremity of expertise. On the other hand, adherence to rules or concepts can eventually trap one into partiality [3], loosing the integrity, therefore, “we should have a rest in Kan”. Any method reveals its theoretical and academic characteristics in application, until one day theory and practice melt into one, a unity, and melt into practical environments so that the original fixture blurs, liquidized (loosing its rigid shape), sublimated and distilled into an underlying philosophy, even shapeless. In this way the original fixture diminishes and vanishes in shape. But to those adherent to its outer shape, they would be inadvertently trapped in subjectivity – the reverse effect at the extremity.

Gen Agent (earth): the end of logic. Since everything is done unconsciously with great flexibility, even without the consciousness or concept of doing or not doing something, i.e., no distinction between action and inaction, unaware of following rules any more, therefore, the original issue becomes naturally obsolete and transformed into a form seemingly void, we can regard it as gene, but actually far more than it, like something seemingly nothing, as no action, or not-doing, even he is actually doing, or in action in other eyes. In this way the concept of action dies. At the highest stage, our mental creativity stops, because we don't need to add anything redundant to our instinct. At this level our minds stop at rest, as if we no longer care how to walk for which we struggled at infant age. But there are adverse circumstances when we add additional desires that trouble our minds. However, science in its evolution would follow the same style, and one day when we see through our illusionary desires, we will readily stop our imaginations. This evolution (contrary to that of Darwin) goes on and on in the limitless birth and death revolution, until one day we really see through all: what constantly born and die are merely in our minds, the universe remains exactly the same – past, present and future originally unified, no need to split it up (with so called creativity).

Can we see excitation or inhibition in this system? The excitation cycle goes clockwise in the figure. How water triggers wood in the next cycle? There are new problems in the in new generation of development, as old problems are “settled” (balanced). Let's now see the inhibition diametrically:

Dui inhibits Zhen: A built-up model can definitely inhibit our creativity, or unintentional exploration, because of the restriction with the known model, or loose of curiosity. The resonance to a fixed feature can definitely inhibits us to other or even hidden features, especially the heterogeneous and contradictory ones. As illustrated in [2], unintentionality contributes greatly to human creativity.

Qian inhibits Xun: having taken the principal role, the developed knowledge would inhibit the growth and expansion of previous unfavorable referential sources.

Kan inhibits Li: since the expertise is hidden in the instinct, is there any need to explore the concept or the philosophy? No one may ask why he is human instead of a duck, because there seems no problem at this stage – he is using his instinct, while the conception is at rest.

Other inhibitions (to my knowledge so far, I cannot specify the diagrams):

Wood inhibits Earth: in order to develop new ideas, one has to contradict with previous knowledge substantially, i.e., curiosity inhibits obedience. For example, when one resounds to a new source as new concept, he would keep critical to the old; When one refresh his mind in religious way, to keep the new and faint resonance on and on, he has to fight against his previous sins, i.e., stop obedient to his old propensity.

Fire inhibits Metal: as we know in philosophy (especially neutrosophy and Chinese class philosophies), the most general or integral pattern of knowledge (as many people described as the absolute truth) is usually intangible: too abstract, too arcane and abstruse, unable to be represented or fixed in a definite form, or, completeness (complete in both positive and

negative perspectives, as in neutrosophy: both A and non-A, both A and anti-A) inhibits accuracy (the exact representation). *Conventional mathematics is inhibiting itself.*

Earth inhibits Water: Earth as the implementer is characterized with obedience, opposing flexibility (in reality yin does not constitute a body or entity without yang, but we are talking about yin aspect).

Are logic and neural approaches contradictory and inconsistent? This methodology of excitation/inhibition suggests a rhymed resolution to the integral of opposing logics (see [3]), leading to a dynamic weight strategy to be neutralized with that from neural network approach. And in this novel definition of logic, the two distinct and disjunct approaches come into one family, and we can predict their real unification theoretically.

4. Neutrosophic Analysis

This hyper-system seems in Chinese manner, is it related with neutrosophy? Logic has never found out where true and false values are born. In fact, they are born from each other – each from human distinction of the other, and more we care them, more we adhere to a logic, and thus spoiling our prior intention (a live one rather than a dead one), therefore logic itself undergoes an endless evolution, leading to non-logic.

Therefore, logic is merely an instant image of reasoning: the first attempt comes out of indeterminacy (e.g., to be engaged in a study), then the theoretical approach, which when fully developed, is fixed into such a logical model as concept, model or science. The science, however, will face its final stop when people all adhere to it, and yields uncertainty when men all take it as absolute certainty (e.g., Newton's classical physics), due to the incompleteness, or absolute incompleteness of any fixed model.

First let's assume the three aspects of referential systems in knowledge base: truthness, falseness and indeterminate, which lead to: valid information, false information and neutral (balanced) information, as the result of Xun action. Then in Li action there is confusion in the integral operation: how to combine positive, negative and indeterminate attributes, and in what form is the result? I am afraid it is also in the three T,I,F aspects:

T: a positive conception

F: a negative conception

I: indeterminate conception, including both currently balanced conception and incompleteness in the conception.

i.e., an integration of T,I,F, three in one, where the pure T or F being a special instance (extremity) already solved by conventional means. This is as far as pure conception goes – to plant a seed of concept that is subject to dynamic change. Since we cannot foresee the result in implemented detail, we have to wait until the seed becomes mature, and this is the significance of Kun action: to bring up the seed.

Even when mature, there are still three aspects of the grown up model:

The positive aspect,

The negative aspect,

The indeterminate aspect in both senses: balanced and incomplete.

Is it a valid model? Sure, since great deal of experience is gathered through Kun step. As we know every system has its advantage, weakness and indeterminacy, like every single mathematics. The point is to make the best use of it, i.e., to know how to apply the knowledge to a specific situation – to substantialize it. In fact, one can never find an absolutely complete model in our real world.

The developed knowledge may go through extremities: too positives (seldom contradictory, as in the classical logic), then we should take a rest, because of the “wujibifan” effect (reverse effect) indicated in Kan Action, to avoid being trapped in partiality.

Now every agent works in contradictions of excitation and inhibition, positive and negative... in dynamic balance. When does it stop? Never, since human is an open system. But to the extremity, when man no longer adds anything to his concept that has diminished into such an infinitesimal (ignorance and knowledge in unity, because one can see through the concept), there would be neither beginning nor stop, because in this case, positive and negative are united, asexual or neutral (or void, because of 1 as being against 0 as non-being).

There are similar approaches from neurology-I-Ching background, see [4] which summarized some of the related dialectical models and approaches including logics similar to Neutrosophy. But I cannot assure its conformity with the Chinese Classics (seemingly a combined philosophy). My work is complete independent from any other approach.

5. Concluding Remarks

Although men is constantly achieving in science, but from some quantum mechanics scientist's saying, we might have moved no further (In his dream he saw the speedy moving bicycle advanced no further. But when he stepped into this world in his dream, he felt he was moving fast).

Can one explain many of the unexplainable concepts in neutrosophy, with this methodology presented above? Sure, a problem of the implemented and the unimplemented, but the former is relative to some background or axiom – a supposition or a belief, and thus every logic in this way exists in a default background. This limitation (delicately pre-designed axiom)

must be abandoned before one can explore anything further.

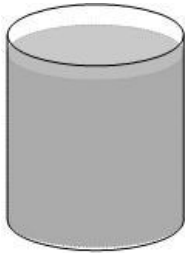
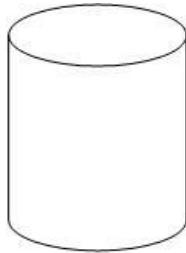
Logic is in constant evolution, from birth, growth to prosperity, wither and death, but there must lie something underneath this change. So we pay more attention to the seed of logic while we regard logic only as an instant image.

One can plant either positive or negative seed, due to his confusion with the situation, i.e., a seed illustrated in the agent model may yield either good (although unfavorable at the point) or bad (even favorable at the point) fruit.

If one studies the amplitude of this oscillation between true and false, it undergoes a periodical wave from infinitesimal to maximal and then back to infinitesimal, reflecting both subjectivity and dynamic environment.

If the above amplitude keeps zero, i.e., no longer any distinction between truth and false, one may reach a practical mind: a natural mind, in unity with the objectivity, but note the multi-fold implication:

1. A casual or instant balance of the opposites can be temporarily reached but soon broken down when one still has his private desires. A casual or instant unification of the opposites can be temporarily reached but prone to be disturbed if he has not reached the complete natural way.
2. An idiot can be blind to any truth and false, but he can never reach this unification as long as he suffers.
3. A stone heart (deprived of consciousness, e.g., an absolutely void consciousness) does not live in the unification, but just the opposite: permanent apart of yin-yang.
4. It is the most sophisticated and difficult thing in the world to understand this point (so I am unqualified to mention). People would sacrifice all their own to follow a correct education. For short let's see a metaphor (I add the latter two items):

How much can your mind contain?		
for a full cup: 	for an empty cup: 	For the no cup:
No more, because it is fully occupied.	One cup.	It can contain the universe, because it is not confined to any form, shape or boundary.

Fuzzy logic is not at all a matter of percentage of beliefs between truthness and falseness as widely applied in conventional mathematics, but a dynamic balance between $\langle A \rangle$ and $\langle \text{Non-}A \rangle$, or $\langle A \rangle$ and $\langle \text{Anti-}A \rangle$, with the balancing point and incompleteness found in $\langle \text{Neut-}A \rangle$.

Since it is not clear enough to represent this balance in percentages, we need to exploit dynamic weight methodology in neural approach – allocating weights to each of $\langle A \rangle$, $\langle \text{Non-}A \rangle$, $\langle \text{Neut-}A \rangle$, etc.

Intentionality and unintentionality [2] coexist when both action and non-action are excited (in deferential point of view, they are alternately fired). It may be hard to believe that opposites can co-exist, but it can be implemented in reality.

Both $\langle A \rangle$ and $\langle \text{Anti-}A \rangle$ co-exist also in the way that they are alternately excited/inhibited, or one of them is implemented in such a balance that partially supports both.

$\langle A \rangle$ yields $\langle \text{Anti-}A \rangle$ when $\langle A \rangle$ is implemented into a contradiction that negates $\langle A \rangle$.

$\langle A \rangle$ yields $\langle \text{Neut-}A \rangle$ when $\langle A \rangle$ has been implemented into a balance between $\langle A \rangle$ and $\langle \text{anti-}A \rangle$.

Absolute accuracy inhibits comprehension, and conception inhibits accuracy – conventional mathematics is self contradictory. Hence the need to develop indeterminate mathematical patterns like neutrosophy.

Things shown in diversity in different perspectives come out of the same root, but the difference of different selves and different manners of reflection. To explore information fusion, one needs to cultivate the deeper backgrounds or hidden layers, and eventually, to the common basis shared by all. In fact, we all stem out of the same root (the deepest layer commonly owned by all), so do men and nature.

Why do our logics yield contradictions? Because we are so superficial as to take instant images real, see another paper unpublished: *Truth and Absolute Truth in Neutrosophic Logic*. But EVERYONE CAN EXTRICATE HIMSELF OUT OF THE MAZE OF ILLUSION as long as he is resolved to reform – ignoring or abandoning his previous ideology of this bewildering world and persistent in the greatest teachings.

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