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Florentin Smarandache

*University of New Mexico*, smarand@unm.edu

Victor Christianto

victorchristianto@gmail.com

Robert Neil Boyd

rnboydphd@comcast.net

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## How to Balance Intuitive and Analytical Functions of Brain: A Neutrosophic Way of Scientific Discovery Process

V Christianto<sup>1\*</sup>, RN Boyd<sup>2</sup> and F Smarandache<sup>3</sup>

<sup>1</sup>Satyabhakti Advanced School of Theology - Jakarta Chapter, Indonesia

<sup>2</sup>Consulting Physicist for Princeton Biotechnology Corporation, Department Information Physics Research, USA

<sup>3</sup>Department of Mathematical Sciences, University of New Mexico, Gallup, USA

**\*Corresponding Author:** V Christianto, Satyabhakti Advanced School of Theology - Jakarta Chapter, Indonesia.

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### Introduction

Initially this article stems from our discussion on math and mysticism, inspired by an article by Ralph Abraham [1]. But it becomes a discussion on the role of intuition and inspiration in scientific discovery process.

Hopefully this article will help anyone who aspires to be good scientists or engineers.

### Logic and experience

Logic and mystical experiences are exclusive domains that cross over into one another, on occasion, just as everything else does as participants in Experiences of the Wholeness, Harmony, Balance, Caring, and Oneness of the Alive Aware Intelligent Conscious Universe. All of this partly constitutes the *Mind of God*, which is vaster and more complex than most human beings are able to even vaguely comprehend.

For example, from the basis of Bhutatmas, the tiny Consciousness-experiencing creatures that have vast experiential memories, that Everything, all fields, all forces, all matter, all life, and the entire of the Infinite Cosmos, results from the activities and agglomerations of Bhutatmas, in an Infinite Universe constructed and operated by Intelligent Design.

According to the Vedic literature on this topic, Divinity resides in the Actually Infinitely Small, which is everywhere and nowhere, at the same time. Thus, it can and does act on everything that is and everything that happens. But Divinity has set things up so that Everything has Free Will and individual volition. A factor that has been left out of the Vedic literature on the topic of Bhutatmas, is that every Bhutatma is Unique, with a unique set of memories of experiences, regarding multiple Realities (not just this one). So, Uniqueness is an absolute in all the realms, and all the Realities.

Logic and Experience are mutually exclusive. If you are involved in logic, you are not able to have full and deep experiences of the senses and sensitivities, at the same time.

So, there is the Nature World operating in Divine Harmony, and the "people world", which made from analytical thought. Analytical thought separates the human being from being able to directly Experience the Cosmic Harmony, personally. However, Nature is constructed, and operates such that human beings can go beyond thought and into Direct Experience of the Cosmic Harmony and the Natural Harmony.

We hope that by now, the readers have arrived at some cognizant awareness of the differences between analytic thought and experiential thought; between the Nature and Divine Ways, and foolish people ways which are based in behavioral ignorance of the All and constrained by thought-originated pains and struggles, which result from the "ego", which is a product of analytical thought.

### Direct experience, inner vision and experiencing God

More “right brain” activity, based on direct experiences, leads to direct experiences of the Divine. Your “inner vision” (the “mind’s eye”) can help readers in this, and in many other ways.

The inner vision is also the seat of many of the intuitive faculties, which are experientable facts, not imaginings. That means the information obtained by the intuitive faculty is verifiable and reproducibly observable.

In order to do that, the *Balanced Brain* is the most efficacious way to function, as well as the most efficient, and the most comfortable.

To obtain the Balanced Brain, the person usually needs to spend a great deal of their spare time being receptive, being the “receiver”, being accepting and exploring, and not using the analytical intellect, but instead, spending time in the Now and in the Senses and Sensitivities. This is best enjoyed in Natural settings.

For instance, one of us (RNB) spent one to three hours each day in the Forest in the Experiential State, exploring how Nature works, every day for 17 years. Somewhere in those years, he arrived into Transcendent States and Natural Awarenesses.

Not many people know what the Natural Man is like, because they’ve never experienced it. And they’ve never seen one. The Natural Man is removed from all varieties of intellectual indoctrinations and pain-producing ego-based behaviors.

Lao Tzu calls this condition “An uncarved section of wood”, partly because it is an arrival at the Original State. (How we were when we first came here, before all the indoctrinations and traumas started removing us from being who we were when we first came here).

In relation with discovery process, one of us (RNB) distinguishes discovery, soft vision from merging vision. Those three types of vision are based on Native American Spiritual Practice. For more explanation on these, see RNB’s article on penetrating insight [8].

### The role of intuition and logic in scientific discovery process

Logical analysis is best used when following after an intuition or an “instinct”. An instinct is almost infallible. And once you have trained your mind to be attentive to their experience and sense, and they keep an open mind, then many ways of innovations will open their own ways to their mind.

All people got a lot of natural ability and learned skills, so it should be fairly easy for them to start tracking things down.

This is just the same thing, only better, because it’s about Discovering things and being Creative.

So, now we come to this conclusion: intuition leads to insights and this is actually the source of true discovery like Tesla etc. Logical analytic can pursue where the intuition leads them, but not the other way around.

In this train of thought, we can also learn from Neutrosophic Logic as discovered by one of us (FS), which emphasizes that there are middle ways, or dynamics of opposites and neutralities in everything we observe [9]. Similarly, in order to condense our discussion on the role of intuition and analysis in scientific discovery, let us emphasize that intuition and insight should come first then logical analysis can follow through to see what can be done with that intuition. We prefer to call it “*intuilytics*” process. That is: analytic work inspired by intuitions. Although, at first glance it looks difficult, it would be more smooth if we follow this path, not the other way around (intuition follows logical-analysis).

In the following section, we will discuss two examples of scientific discovery processes, which hopefully will emphasize our points as mentioned above.

### Two examples of scientific discovery process

#### Learning from Henri Vidal

Let us discuss a novel concept in engineering, called: earth stabilization using Reinforced Earth. Sometimes, earth reinforcement is also called mechanically stabilized earth (MSE) [2].

Using straw, sticks, and branches to reinforce adobe bricks and mud dwellings has happened since the earliest part of human history, and around 1960s French engineer Sir Henri Vidal invented the modern form of MSE, he termed *Terre Armee* (reinforced earth). In his submission for his patents he covered every possible reinforcement and facing type. Reinforcing levees with branches has been done in China for at least a thousand years, and other reinforcements have been universally used to prevent soil erosion.

Modern use of soil reinforcing for retaining wall construction was pioneered by French architect and engineer Henri Vidal in the 1960s. The first MSE wall in the United States was built in 1971 on State Route 39 near Los Angeles. It is estimated that since 1997, approximately 23,000 MSE walls have been constructed in the world.

How the idea of Reinforced Earth came? It all began like a game, when Henri Vidal, a French highway engineer and architect, was trying to build a sandcastle on the beach. But the sand kept on falling off and this led to the idea of reinforcing the construction with pine needles. That is how the general principle of Reinforced Earth. From that experience, he went on and wrote his dissertation on *La Terre Armee* [3].

Here we see an example how a direct experience (playing with sand castles) gave an intuition which then leads to a scientific discovery.

Although usually, the materials used in reinforcing earth are metal, plastics or other man-made materials, we can use natural-made materials such as bamboo, which is commonly available in many villages in Asia or other tropical countries.

However, studies on bamboo-earth reinforcement is pretty scarce [4,5].

#### Learning from Monozukuri

Perhaps you've heard of the Japanese word monozukuri (sometimes written as 物作り, but most often written as ものづくり). Literally translated, it means to make (zukuri) things (mono). Yet, there is so much meaning lost in translation. A better translation would be "manufacturing; craftsmanship; or making things by hand". However, this translation also does not give justice to the weight and influence this idea has in Japan.

The word itself is quite old and considered to be an original Japanese (i.e., not Chinese or Western-origin) word. Historically, it was used in connection with an individual artisan and craftsman who took pride in his or her products.

You probably know of famous artists like Shakespeare, Michelangelo, Picasso, Kahlo, and many more. Now do you know a famous potter? No? How about a famous smith? A carpenter? How about a weaver? We'd surprised if you do. We didn't.

Japan also has its share of famous Japanese artists. Many of them are officially recognized as Living National Treasures (人間国宝 Ningen Kokuhō) of Japan. They include performing artists like musicians, dancers, and actors in traditional Japanese arts.

Yet another subtle way in which the Japanese express their value for work is in their greetings. At the end of the workday when the workers leave the factory, office, or general workplace, the custom greeting to the departing colleague is *gokurosama* (ご苦労さま), meaning thank you for your effort.

Yet, digging deeper into the Japanese character, this greeting implies more than just effort, directly connecting to hard and physical labor. The first kanji 苦 stands for pain, trouble, difficulty, hardship; and the second kanji 劳 stands for labor, toil, work, effort. Overall, this common message thanks the departing colleague for his hard and demanding physical work, even if the person is only an office worker. This is another example in how the value of physical work is deeply ingrained into the Japanese society.

A spin-off of monozukuri is *hitozukuri* (人作り, making people) for developing people. This includes the lifelong education, training, and coaching of people, not only in the classroom but especially at work.

At Nissan they are also *kotozukuri* (事作り, making stories) for “brand storytelling,” with the goal of entering into “*dialogue with the customer*.” However, this is little used outside of Nissan.

To summarize, the Monozukuri concept embraces more than the literal meaning. It offers the idea of possessing the “*spirit to produce excellent products and the ability to constantly improve a production system and process*”. The concept carries “overtones of excellence, skill, spirit, zest, and pride in the ability to make things good things very well. Monozukuri is not mindless repetition; it requires creative minds and is often related to craftsmanship which can be earned through lengthy apprenticeship practice rather than the structured course curricula taught at traditional schools.” In that sense, Monozukuri is an art rather than science [7].

Again, you see that deep in Japanese original work ethics they put high value on direct experience in work and arts, in other words “handcrafting” gets a special value in Japanese culture.

That partly explains why Japanese people often came out with new products which were simply designed to accommodate a special niche, such as Walkman by Sony, which was designed for people who like to enjoy music while walking or doing aerobic in the street without having to disturb other people nearby.

Once again, direct experience and hand working can lead to so many types of inventions and also in scientific discoveries.

### Concluding Remarks

What we intend to show in this article is that the distinction between the logic and experience is something related to analytics function of the left brain and intuitive-wholeness function of the right brain. We suppose the healthy way is to optimise both function of left and right brain.

And similarly, in order to experience God, we shall feel Him intuitively not rationally.

So, now we come to this conclusion: intuition leads to insights and this is actually the source of true discovery like Tesla etc. Logical analysis can pursue where the intuition leads them, but not the other way around.

Using Neutrosophic Logic, we propose a new term for this process: *intuilytics*.

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