

## **Mathematics, Logic and Intelligence**

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[home@wbabin.net](mailto:home@wbabin.net)

### **Mathematics**

The prevailing view is that physics is a mathematical science. While the abstractions of mathematical physics are no doubt impressive, they are often based on woefully inadequate, simplistic and contradictory theories. This lack is nowhere more evident than in the fundamental logical principles of mathematics itself.

Consider the principle of non-contradiction, "A thing cannot both be and not be" which unfortunately, is contradicted in the roots of every quadratic equation. This is followed by the syllogistic tautology of the principle of excluded middle. While it can be excused in language where subjects and objects are understood to bear resemblances and dissimilarities, it appears rather distressing in a discipline noted for its precision to state that [a] is somewhat like [b] which bears a resemblance to [c], et cetera. Let us also not forget that a subject that is overwhelmingly quantitative does not in its principles admit to quantity! Nor is it implied.

While these considerations are not particularly important to its practitioners, they are very significant in any subject whose title bears the word "theoretical". To remedy this lack, I would like to propose a new set of principles for mathematics and for logic in general.

The first is the **Principle of Duality**. This states that a thing may both be and not be. By this act we legitimize one half of mathematics. The ancient Aristotelian question of, "How do you create something from nothing", is answered in the statement, "by creating its antithesis, the absence of something."

The second is the **Principle of Multiplicity**. We posit an infinity of undifferentiated units (like Leibnitz's monads) and consistent with the first principle, the **absence** of units. This is the fundamental basis of numbers, the decimal system and mathematics in general.

The third is the **Principle of Progression**. This includes all sequences and methods of projection. Implicit in this principle, is a fundamental truth; that no logical statement can exceed its initial premise. This seemingly innocuous principle is the most powerful intellectual tool imaginable. It is the fundamental test for logical consistency and specifically identifies the **premise** to be equal to all that emanates from it, just as Newton's three laws contain all of mechanics or a seed contains its progeny. The progression is twofold: from simple to complex and its reverse.

A rigorous analysis will convince you that the three principles contain everything necessary for the generation of all of mathematics. Furthermore, a generalization of both mathematics and mechanical logic (input, operation, output) may now be effected. Also note the relationship to Hegel's "logic",

(thesis, antithesis, synthesis).

## Intelligence and Philosophy

Returning to the pre-eminence of mathematical physics, this prejudice may have been tacitly introduced with the assumption that intellect is synonymous with intelligence. While intelligence is an attribute that is widely referenced and even claimed to be measured, there is no indication that anyone knows what it is. Since it bears on the subject, I would like to offer a definition. It should be noted that we are dealing with vast archetypal systems whose functions have many names, none of which fully identifies the content. One should not be misled by the apparent simplicity.

We begin with the fundamental dichotomy between the quantitative and the qualitative (male-female principles). They are then bisected.

The first is **Intellect**: This deals exclusively with quantities and their relationships and is expressed philosophically in Aristotle, Spinoza and Kant. It is the logic function and is *a posteriori*. It includes mathematicians and those who deal with patterns and schema.

Second is **Intuition**. This is an encompassing attribute dealing with summation and containment and is *a priori*. Its arena is religion, politics, ontologies. The idealistic, religious philosophies and metaphysics in general contain examples of this mode of thought.

The third is **Practicality**, which bears a relation to intellect as that of the physical realization of a structure to its architectural representation. It finds expression in pragmatism, utilitarianism and existentialism. These are the builders and destroyers.

The fourth is **Emotion**, which deals with modes of expression. Its practitioners are poets, musicians, actors and dancers. It finds philosophical expression in Rousseau and romanticism.

The functions are equal in importance and each bears an exclusive language that is **totally incomprehensible** to the other three. Each has a range from positive to negative, which identifies an eightfold parameter. They have historical antecedents (archetypes) under the esoteric names of fire, air, earth and water.

Each philosophy attempts to identify itself as a universal, but being partial, it eventually gives way to its opposite number. Since none can be refuted, they must be given equal status. A generalization can occur only with the inclusion of each mode of thought.

The functions are present in each of us to varying degrees, and an excessive emphasis or extreme position in one is equivalent to a mechanical imbalance that will inevitably cause fluctuation and breakdown. The height of intelligence is to have all attributes in equal proportion as well as the ability to use them. Creativity naturally follows in imitation of the physical counterpart, as the conjunction of opposites, of male and female principles. Furthermore, it is not difficult to identify the functions with psychological types and individual tendencies towards the four methods of perception.

In summary, I would state that what each function presents is true, but only partially. It is in the equilibrium position that the whole truth is to be found. Here also, you will find the wellspring of creativity.