In October of 1927, Born, Dirac, Heisenberg, Pauli, and Bohr came together and expounded as well as accepted "an" interpretation of the new quantum world that was reeling in the aftermath of Schrodinger's Wave Collapse experiments. They called it the Copenhagen Interpretation.

With the collapse of the wave wherein the countless possibilities and probabilities could be brought into physical reality, a Finite world was seen to be born out of Infinity! The foundational question was, therefore, posed to the scientists — how could Infinity give rise to the Finite? A question that was hitherto the headache of only the mystics.

Interpretations of the Quantum
The world of possibilities that were available to the particle, collapsed with its measurement, bringing down the calculated abstractions to a hard stop reality! How was the particle capable of being a wave and the particle at different point of its journey?

The Copenhagen Interpretation:

In Bohr's words, the wave and particle pictures, or the visual and causal representations, are **"complementary" to each other. That is, they are mutually exclusive, yet jointly essential for a complete description of quantum events.** Obviously in an experiment in the everyday world an object cannot be both a wave and a particle at the same time; it must be either one or the other, depending upon the situation. In later refinements of this interpretation the wave function of the unobserved object is a mixture of both the wave and particle pictures until the experimenter chooses what to observe in a given experiment.

By choosing either the wave or the particle picture, the experimenter disturbs untouched nature. Such favoritism unleashes a limitation in what one can learn about nature "as it really is." This limitation is expressed by Heisenberg's uncertainty relations, which, for Bohr, were related to what he was now calling **"complementarity**." Complementarity, uncertainty, and the statistical interpretation of Schrödinger's wave function were all related. Together they formed a logical interpretation of the physical meaning of quantum mechanics known as the "Copenhagen interpretation."

Now, the observer was not merely a witness — but creator of the reality as well. There were a few other interpretations of the Quantum Mechanics world, the next most prominent being the "Many-worlds Interpretation":
The Many-Worlds Interpretation (MWI) is an approach to quantum mechanics according to which, in addition to the world we are aware of directly, there are many other similar worlds which exist in parallel at the same space and time. The existence of the other worlds makes it possible to remove randomness and action at a distance from quantum theory and thus from all physics.
Einstein came up with his interpretation — the "Hidden Variables" — since his God did not throw dice - basically saying that some hidden variables explain the probabilities of the wave function and determine "a" unique possibility so that it was not as indeterminate as the Copenhagen gang made it out to be. His hidden variables were never to be found however.

The basic issue, again, was — how was an unknown Infinity manifesting itself as the finitely known? A question that had haunted many philosophers and Vedic scholars had the best Quantum minds thinking now. The three main possibilities they put forward as explained above were also not new:

1. Truth cannot be known and the observer creates reality *(Copenhagen Interpretation)*
2. Truth resides is multi-dimensional and cannot be explained in our present known dimensions. *(Many-worlds Interpretation)*
3. Under the hood of the Unknown Infinity is a certainity of an "Intelligence" that creates "method to this madness". *(Hidden Variables Interpretation)*

These theories were well known to the Vedantists long before Planck had inadvertantly come out with his *quanta* to shake the deterministic world of Newtonian Duality of matter and wave!

Birth of Consciousness
Inherent in the Copenhagen Interpretation was the assumption that finite or physical reality was based on two things: the ability or the action of querying the world or nature, and the act of "recording" or receiving the answer from nature. If the question was never asked, the probabilities would have remained probabilities. That the recorder showed an "intention" to know the position of the particle, the nature provided him with "a" result in the collapse of the wave into a point in time and space!

So the process then has to consist of **first**, a world full of probabilities; **second** an observer who queries this probabilistic world; and **third,** the ability of the world to provide "a" reply within the confines of space and time!

Well, if the observed particle was indeterminate as a wave function - which came into "physical reality" on observation, then what about the Observer himself? Is not the brain of the observer composed of the same waves? How and who (or what) decides what will "manifest" from the waves in that brain? The "questioning" of the probabilistic world has to be preceded by the manifestation of the "question" in the first place! This question is as much of a collapse of the various probabilities that are in wave form into ONE point called thought!

Whose observation manifests as this thought in the worldly observer then? Vasistha — a rishi in ancient India explains it to his disciple Ram in Vasistha's Yoga:

"Even as empty, inert nothingness is known as space, mind is empty nothingness. Whether the mind is real or unreal, it is that which is apprehended in objects of perception. Rama, thought is mind; there is no distinction between the two. The self that is clothed in the spiritual body is known as mind; it is that which brings the material or physical body into existence. Ignorance, samsara, mind-stuff, bondage, darkness and inertia are all synonyms. Experience alone is the mind, it is none other than the perceived.

This entire universe is forever non-different from the consciousness that dwells in every atom, even as an ornament potentially exists in gold, the object exists in the subject. But when this

notion of the object is firmly rejected and removed from the subject, then consciousness alone exists without an apparent or potential objectivity. when this is realised, evils like attraction and repulsion, love and hate, cease in one's heart, as also the false notion of the world, you, I etc. Even the tendency to objectify ceases; this is freedom."The Quantum scientists in the Copenhagen Intrepretation and all others were concerned about the interpretation of their objects conveniently planting themselves as the "subjects", little realizing that their own "nature" and "existence" was nothing more than an act of Eternal Observation - collapse of wave in someone else's observation!

In "Total Freedom", J Krishnamurthi explains this interplay:

" The whole struggle is between the result of the environment, with which mind identifies itself and becomes the "I", between that and environment. After all, the "I", the consciousness with which the mind identifies itself, is the result of the environment.

Over the history of Western Human thought with regards to "God" and Nature the eras could be defined as below:

1. **Pre-Renaissance Era:** Ignorant, other-wordly interpretation of Gods, Demons, Satans, Good and Evil. This era is marked by beliefs in miracles and attributing of the phenomenon not understood to imaginary entities. It also accompanied positing of opposing belief systems like what is Good and what is Evil in that the Good was sanctioned by God "Himself" and the Evil had its source in "Satan" or Devil.

2. **Science (Deterministic) Era:** Man and Nature were physical or chemical interactions and this era can be marked by two main thought leaders — Newton and Darwin. Between them, they created the bedrock of Deterministic Science where the scope of "an" entity making the Determinations was nipped off through theoretical disbelief as opposed to observational evidence.

3. **Quantum Mechanics (Indeterministic):** This era of science in its philosophical "avatar" acknowledged the indeterminate and the lack of wherewithal with the human mind to "know" the T Given the environment in which the Deterministic Era began, it is no surprise therefore, that Modern (Western) Science at the beginning of its journey started with a basic presumption that Science was an anti-thesis to "God". The God at the cusp of Modern Science and pre-Renaissance was a projection of human emotions that were born out of ignorance as opposed to reasoned logic!

Given the environment in which the Deterministic Era began, it is no surprise therefore, that Modern (Western) Science at the beginning of its journey started with a basic presumption that Science was an anti-thesis to "God". The God at the cusp of Modern Science and pre-Renaissance was a projection of human emotions that were born out of ignorance as opposed to reasoned logic!

Vedantic thought, however, which not only discussed the interplay of Illusions (Maya) credibly but also in many ways affected the shaping of Quantum Mechanics itself, was at the other extreme of Science-God interface. Vedics, made an inherent assumption that if we were content to understand Nature and Human interplay in a logical and exploratory manner then it could be possible to "get to God" Itself! God, to the Vedic scientists was not "Outside" the human experience but the cause of it! In a certain sense, Vedanta Philosophers, became the only bridge between the three eras in a unique way! They could explain the link between the idols of the pagans with the Indeterminate with as much ease as they could explain the nature of atom and how it led to a world full of "Higher Consciousness"!

What about the Collapse of the Brain-wave?
John von Neumann did get to that subsequently when he brought not only the quantum system that was measured but the measuring system itself within the confines of the larger system! He heard Heisenberg lecture on his Uncertainty principle and got fascinated:

Fascinated, von Neumann began work in quantum theory. This led to his Mathematische Grundlagen der Quantenmechanik (1932), in which he discussed the much-debated question of indeterminism in quantum theory. Until then, indeterminism was thought to be the result of hidden parameters which need only be identified to restore determinism. Von Neumann "concluded that no introduction of 'hidden parameters' could keep the basic structure of quantum theory and restore 'causality.'" He argued that the indeterminism was inherent in quantum theory because of the interaction of the observer and the observed.

In other words in its overall sense, the "Truth" is an unknown. When the collapse occurs in the brain it opens upto the experience of the observation caused by another collapse of the observed! Knowledge is the accumulation of that experience. If the collapse in the brain was a "spontaneous" and one-time act, then "who" or "what" is the accumulator of this experience (collapse-borne) database?

The experiences marked by the collapses in the brain — which maybe nothing but an observation of the cosmic creator or "Intelligence" — thus points to that an Eternal or "Greater" observer whose "thought" is responsible for our experiences! This was the beginning of interest amongst the scientists in "Consciousness". Physical world was, therefore, an interplay of collapses initiated by a larger Consciousness - whose exact nature was not known but characteristics were the only guide. And these characteristics still pointed to more questions. Questions, that were themselves Illusions because they were created out of collapses in our brains itself!

Knowledge and the Predictability of Future Collapses
How is Knowledge — which is really an imprint of the collapse of the wave at the brain level of the observer — carried on and what role does it play?

If knowledge of a past observation of the collapse in one's observation was to carry on in his experiential database, then it would stand to reason that it will direct his subsequent "queries" of the nature and therefore the "answers" (in terms of the choice amongst the probabilities of the particle before it is observed) making them slave of the past knowledge!

When we approach any event with the baggage of the past knowledge, the meaning and "actual" unfolding of that event takes on a predictable turn. This is not just a theoretically derived conjecture but experiential as well.

Awareness of the Illusions and not the Knowledge of an event should then be the closest it comes to recognising the "Truth"!

After these tectonic shifts in the landscape of Physics, weren't the scientists more involved in "Knowledge" as an "Estimation of the Truth" as opposed to the "truth" itself? Those who pioneered the Quantum Physics acknowledged it (source: *The Mind & The Brain*):

- **Heisenberg** wrote in an article sometime in 1958, that "laws of nature which we formulate mathematically in quantum theory deal no longer with the particles themselves but with our knowledge of the elementary particles"

- **Bohr** also said "It is wrong to think that the task of Physics is to find out how nature is. Physics concerns what we can say about nature."

Science's endeavor was thus more about the Knowledge — which was, in itself, an estimation as opposed to the search and enunciation of the truth. For Truth was not available in our current paradigm. This new paradigm brought more questions than answers — questions that go to the very heart of our existence — daily, indeed momentary, existence!

Falsehood (or Illusion) — collapse of the brain-wave or mind-stuff as Vasistha was fond of calling it — meets falsehood (another Illusion), the collapse of the observed's wave. How does the mind escape this interplay when it is the originator and the affected? Was this then the cause-and-effect Maya that Vedantists kept referring to all the time?

So, who am I then? A Collapse? An Illusion? A thought of the Cosmic Creator? Or more appropriately, an Illusion in the "Mind-stuff" of the Cosmic Creator "Himself"?

Vasistha tries to help again:

"... distinction between ignorance and knowledge is unreal and verbal. There is neither ignorance nor even knowledge! When you cease to see knowledge and ignorance as two distinct entities, what exists, alone exists. The reflection of vidya (knowledge) itself is considered avidya (ignorance). When these two notions are abandoned what remains is the truth: it may be something or it may be nothing! It is omnipotent, it is more empty than space and yet it is not empty because it is full of consciousness."

Knowledge, therefore, is itself Ignorance and the distinction is non-existent for both are collapse events and thus illusions. Amazingly, and ironically, the Vedantists found the answer to infinity interacting with infinity in ONE non-dual Consciousness!