Greatest ever inventions of vedas and anciant indian science with A relavance to the modern physical science

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Vedic Science is the earliest science which has significant implications in our understanding early civilizations and history of ideas. Veda means knowledge, since we call our earliest period as vedic, that is suggestive of the importance of the knowledge. Vedic knowledge embraced Physics (Vaisheshika), Cosmology (Sankya), logic (Nyaya), Psychology (Yoga), reality (Vedantha), language (Mimamsa), Mathematics, Astronomy and other disciplines. The reconstruction of our earlier science is based not only on Vedas but also on their appendices called vedangas. The six vedangas are

Kalpa	:	Performance of ritual with its basis of geometry, mathematics and calendrics
Shiksha	:	Phonetics
Chhandas	:	Metrical structures
Nirukta	:	Etymology
Vyakarana	:	Grammar and
Yyotisha	:	Astronomy and other cylindrical phenomena

The Vedic texts present a tripartite and recursive world view. The universe viewed as three regions of earth, space and sky with corresponding entities of Agni, Indra and Vishve Devah counting separately, the joining regions leads to a total five categories, Earth, Water, Fire, Air, and Ether. The Vedic ritual was a symbolic retelling of this world view.

Physics is the subject of study of this mater which exists in several forms, solid state, liquid state, gaseous state and plasmas state. Several scientists have explored the possibility of a connection between Physics and transcendence. Ancient Indian Literature is full of Scientific Innovations and some of them related to physical sciences are presented below with relevance to Vedic period.

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Vedas and ancient Indian science theories are often considered as the most advanced works in the world from their era. There are scientists, who are fascinated by the knowledge of the ancient Indian scholars and dedicated their life researching on the ancient Indian Science. The list here presents some of the greatest ever inventions of ancient Indian science.

I. The existence of solar system long before.

Rig Veda 1.35.9-"The sun moves in its own orbit but holding earth and other heavenly bodies in a manner that they do not collide with each other through force of attraction".

II. The Theory gravity way before the western world.

The verse 10.22.14 of Rig Veda says *"This earth is devoid of hands and legs, yet it moves ahead. All the objects over the earth also move with it. It moves around the sun".*

III. The speed of light way before the rest of the world knew it.

A Vedic scholar by the name of Sayana discovered the speed of light back in the 14th century AD.

His quote which translates to *"With deep respect, I bow to the sun, who travels 2,202 yojanas in half a nimesha."*

A yojana is approximately 9 miles~ a nimesha is 16/75 of a second.

So, 2,202 yojanas x 9 miles x 75/8 nimeshas = 185,794 miles per second

which is remarkably equal to the actual value of 186 282.397 miles per second.

IV. The scien.ce behind eclipses when the rest of the world was scared thinking eclipses are caused by some sort of black magic.

Rig Veda 5.40.5 has a phrase which translates to- *"O Sun! When you are blocked by the one whom you gifted your own light (moon), then earth will be surprised by the sudden darkness."*

This is a remarkably accurate description of a solar eclipse. The Vedas' detailed descriptions of the universe, planets, and other phenomena demonstrates the vast knowledge of the people of those times far before modern civilization even started to exist.

V. The accurately prediction of the distance between Sun and Earth.

"Yug sahasra yojana par bhanu,
leelyo taahi madhura phal jaanu"- Hanuman Chalisa

The above verse written by Tulasidas in Hanuman chalisa translates to how "The Surya, situated thousands of *Yojanas*(a unit of distance) away was swallowed by Hanuman thinking it to be a fruit"

Here 1 Yuga = 12000 years

1 Sahsra Yuga = 12000000 years.

Also, 1 Yojan = 8 miles

So, Yug Sahsra Yojan(the first three words) would mean

12000*12000000*8 = 96000000 miles.

Converting it to kilometers, 96000000 X 1.6 = 153,600,000 kms

Actual distance from earth to sun = 152,000,000 kms (error of around 1%)

How cool is that??

VI. The circumference of the Earth.

Brahmagupta in the 7th century CE proposed that the circumference of the Earth to be 36,000 km, which is close to the actual figure of 40,075 km, with an error margin of 1%.

VII. The estimation of the Length of an Year.

Surya Sidhhanta speaks of 4 ways to measure the length of an year namely "*Nakshatra*", "*Savana*", "*Lunar*" and "*Saura*", of these The *Saura* method accurately estimates the length of year to be *365 days, 6 hours 12 mins and 30 seconds*. If you are still wondering how they could do it go and visit temples at Konark or Humpi where you will find the incredibly complex and technically correct architecture systems of the temples that use the sunlight to measure the length of the day and year.

VIII. The Pi value.

Aryabhata worked on the approximation of value of pi and came to the conclusion that pi is irrational and is approximately 3.1416 in 499 CE when he was 23 years old.

He can be considered as one of the smartest brains of ancient India because the irrationality of pi was proved in Europe only in 1761 by Lambert.

Not to mention, he even derived the values of sine & cos and gave birth to the concept of trigonometry.

IX. The spherical shape of the earth.

The discovery of Earth being round is credited to Greek astronomers. Interestingly, Indian astronomers had already claimed that Sun is a star and that earth is spherical long before the Greeks. It is documented that various attempts had been made to measure the circumference of earth during the Vedic periods. Aryabhatta deduced a formulation which proves that the Earth is rotating on an axis. By estimating the value of pi to be 3.1416 he deduced the circumference of earth to be 39736 Kilometers which is only 100 kilometers below its true value. In fact, in his book Aryabhatiya, he also asserts that the movement of heavenly bodies like the sun, the stars, is all relative and only earth is moving.

"*Just as a passenger in a boat moving downstream sees the stationary (trees on the river banks) as traversing upstream, so does an observer on earth see the fixed stars as moving towards the west at exactly the same speed (at which the earth moves from west to east.*"

Translated from Aryabhatiya Gola 9

X. Nikola tesla took inspiration from Swamy vivenakanda and Indian vedas for his world acclaimed work.

Nikola Tesla studied the concept of Prana and Akasha to work on FORCE and MATTER. He developed a new perspective on the world and started viewing world in terms of frequencies and energy which resulted in him establishing his concepts on energy. We intended to write this article not to take sides or argue against anyone's beliefs but only to give a small idea on the intensity of the knowledge and imagination of our ancestors.

They even had the concept of sustainable energy, projectile science, and many others like Thrust, momentum, Thermodynamics, Astrophysics etc to name a few.

In the field of particle physics, it has been established by many scientific experiments that the universe had a beginning in the remote past and it will have an eventual collapse in some remote future. In this context, the Second Law of Thermodynamics asserts that the processes occur in a certain direction but not in the

reverse direction. A cup of hot coffee left on a table in an office, for example, eventually cools, but a cup of cold coffee on the same table never gets hot by itself, that is, the heat can only flow from hot to cold bodies. The science of thermodynamics deals with "equilibrium states" and it declares that a system, which is in equilibrium, experiences no changes when it is isolated from its surroundings. For example, a system is in thermal equilibrium if the temperature is same throughout the entire system. And in this state there are no unbalanced driving forces within the system. A reservoir that supplies energy in the form of heat is called a source and one that absorbs energy in the form of heat is called a sink. When source and the sink are both at the same temperature, there is no flow of energy and, therefore, there is no movement.

In the same way we find that life is an effort to climb the slope that 'matter' descends. Matter moves increasingly toward a state of disorganization or of increasing randomness, and Consciousness or Life moves towards increasingly complex forms of purposeful organization or decreasing randomness. These are known as what the Bhagavad Gita calls as the two cosmic tides of pravritti and nivritti, symbolically known as the 'path of night' and the 'path of light' or the 'path of action' and the 'path of reflection' respectively. And, according to the Second Law of Thermodynamics, the universe is slowly moving towards a state known as "heat death", that is, a state of existence when all the stars and galaxies will have dissipated their energy in the form of heat and radiation and the whole universe will attain one uniform temperature. This concept of Heat Death is very similar to the Hindu concept of pralaya or dissolution of the universe, and Lincoln Barnett describes it with rare clarity. In this state, the existence of the universe can be described as follows:

"All space will be at the same temperature. No energy can be used because all of it will be uniformly distributed through the cosmos. There will be no light, no life, no warmth nothing but perpetual and irrevocable stagnation. Time itself will come to an end. For entropy is a measure of randomness. When all system and order in the universe have vanished, when randomness is at its maximum, and entropy cannot be increased, where there no longer is any sequence of cause and effecting short, when the universe has run down, there will be no direction to time, there will be no time. And there is no way of avoiding this destiny."

XI. Gravitational force, Apana Vayu in Prasnopanishad

Issac Newton discovered universal gravitation in 16th century when he observed an apple fall from a tree. But Prasnopanishad(6000 BC) described the

force that pulls objects down and keeps us grounded on earth without floating. In Prashnopanishad chapter 3 while describing the panchapranas, the apana vayu is said to be residing in the anus and genitals – *paayoopasthepaanam*. It is responsible for throwing out from the body fasces, urine, semen, menstrual blood and foetus.

Further, the upanishad says :

Prithivyaam yaa devataa saisha purushasya apaanamavashata-bhyaantaraa

The devata that is in earth she supports this apana. She helps apana for throwing out from the body. Space travelers face difficulty in excretion due to absence of gravitational force there. The link between apana and the earth aiding it is quite clear in this upanishad. Further in his commentary to this upanishad, Adi Shankara (8th century AD) says

'tathaa prithivyaam abhimaaninee yaa devataa prasiddhaa saishaa purushasya apaanavrithimavashtabhyaakrishya vasheekrityaadha evapakar-shanenanugraham kurvati vartata ityarthaha. anyathaa hi shareeram gurutvat patetsavakashe vaa udagacheta'.

This devata blesses by supporting apana by pulling in the downward direction. Or else, the body would have floated up.

XII. Quantam Physics is re explained Vedic scriptures

Bohr, Heisenberg and Schrödinger regularly read Vedic texts. Heisenberg stated, "Quantum theory will not look ridiculous to people who have read Vedanta." Vedanta is the conclusion of Vedic thought. Schrodinger wrote in his book Meine Weltansicht". This life of yours which you are living is not merely a piece of this entire existence, but in a certain sense the whole~ only this whole is not so constituted that it can be surveyed in one single glance. This, as we know, is what the Brahmins [wise men or priests in the Vedic tradition] express in that sacred, mystic formula which is yet really so simple and so clear~ tat tvam asi, this is you. Or, again, in such words as "I am in the east and the west, I am above and below, I am this entire world."

XIII. Hymn of Creation

This very phenomenon is explained in the Rig Veda (verse X.129) in a famous hymn known as "Naasdeeya Sooktam" or the Hymn of Creation. This verse in Sanskrit describes the vision of the universe, as it existed before its creation.

The modern day astronomers call this "darkness" as the dark matter and dark energy of the universe, and of which they have very little knowledge. As recently as February 2003, scientists using NASA's Wilkinson Microwave Anisotropy Probe (WMAP), during a sweeping 12 month observation of the entire sky, have captured the new cosmic portrait, capturing the afterglow of the big bang, called cosmic microwave background. The WMAP team found that the universe is 13.7 billion years old and the contents of the universe include 4 percent atoms or the ordinary visible matter, 23 percent of an unknown dark matter and 73 percent of the mysterious dark energy. The measurements even shed light on the nature of the dark energy, which acts as a sort of an antigravity. This is what the Rig Veda means when it says: "The darkness is hidden in Darkness."

Vedanta and Gnosticism are beliefs likely to appeal to a mathematical physicist, a brilliant only child, tempted on occasion by intellectual pride. Such factors may help to explain why Schrödinger became a believer in Vedanta, but they do not detract from the importance of his belief as a foundation for his life and work. It would be simplistic to suggest that there is a direct causal link between his religious beliefs and his discoveries in theoretical physics, yet the unity and continuity of Vedanta are reflected in the unity and continuity of wave mechanics In 1925, the world view of physics was a model of the universe as a great machine composed of separable interacting material particles. Schrödinger and Heisenberg and their followers created a universe based on superimposed inseparable waves of probability amplitudes. This new view would be entirely consistent with the vedantic concept of the All in One."

In Schrödinger's famous essay on determinism and free will, he expressed very clearly the sense that consciousness is a unity, arguing that this "insight is not new…From the early great Upanishads the recognition Atman = Brahman (the personal self equals the omnipresent, all comprehending eternal self) was in Indian thought considered, far from being blasphemous.

Conclusions:- Vedic knowledge is like an uncut diamond and the modern scientist is the polisher to bring out the luster of science hidden in it. The Vedas and science should work as inter disciplinary subjects and should strive to reduce the gap between the modern scientific purpots and that of Vedas. The interventions claimed by the Vedic Scholar should be explored in depth and needs ratification by a modern scientist for their effective utilization in developing and understanding the novel concepts of present day technology.

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