VIMS-10

VEDIC SCIENCE – APPROPRIATE TECHNOLOGY

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DID THE ANCIENT VEDIC INDIANS LAY THE FOUNDATIONS OF MATHEMATICAL AND SCIENTIFIC KNOWLEDGE AND MEASURE BOTH TIME AND SPACE, ANALYSE THE CONSTITUTION OF MATTER AND UNDERSTAND THE NATURE OF THE SPIRIT, CONCEIVE AND DEVELOPE THE SCIENCE OF LOGIC AND GRAMMER AND MAKE GREAT ADVANCES IN FIELDS AS DIVERGENT AS ANATOMY AND ASTRONOMY, PHILOSOPHY AND METAPHYSICS? DID THEIR KNOWLEDGE REPRESENT THE GLIMMERINGS OF AN EARLY TECHNOLOGICAL CIVILIZATION PRESENT IN ANTIQUITY?

India, as one of the oldest Civilizations, had to its credit many scientific contributions. It is said that Greek thought from Pythagoras to Plato was influenced by its parallel developments in India. Indian treatises on astronomy, mathematics and medicine found their way to medieval Europe via Persia. Aryabhatta's discovery that earth rotates around its own axis is a vital factor in the development of Indian Science.

Harsha patronized the famous Nalanda University attended by 10,000 Scholars from distant parts of the world including Mongolia and China. Medical men like Dhanvantari, Bharadwaja, Atreya, Patanjali, Susruta; Astronomers like Garga, Aryabhatta, Bhaskara; Alchemists like Nagarjuna; Philosopher-Scientists like Kanda, Kapila and others like Chandrappala, Jinamitra and Silabhadre were among the distinguished scholars teaching Vedas, Logic, Grammar, Medicine, Yoga and other sciences at different periods of time in India.

Due to ravages and convulsions during centuries: old preponderant hegemony of the Muslims, Mughals and Britishers, native Science was relegated to the background. Instances point that some people of know-how and expertise were amputated or physically disabled. Oriental people and their texts were labeled as the most degenerate and decadent, full of superstitions and often dismissed as hoaxes.

This gross misconception about Orientals was brought about by colonial powers in pursuit of their political objectives, A History of Science and Technology, which truly reflects the intellectual endeavors of mankind irrespective of geographical areas and nations, must get rid itself of its European bias and of ideas evolved to serve the political objectives of the former, colonial powers. These ideas were developed and promoted by European powers as part of their colonization effort in Asia, Africa and the Americas. Despite our debt to European Renaissance, Modern Science in Europe owes its birth to the Arabs (earlier a part of it was borrowed from India). The accumulated knowledge of Science and Technology of medieval and ancient Asia and Africa was acquired by European scholars, but was later denigrated... while the myth that Indians, in fact all Asians were incapable of being accurate, consistent and logical, was actively propagated. Side by side the mythological and mystical philosophies and di-

mensions of Indian thought, (divorced from their historical and social context were being overemphasized and projected as the core of Indian Tradition)...for spreading obscurantisms, irrationalism, and superstition, to keep Indians backward and delink their culture from their Scientific and Technological Tradition.

Edward Said, author of the book 'Orientalism' died recently. Orientalism is one of the few academic books to become a public best seller. It provocatively argues that all descriptions of "The Orient" by the western scholars are distorted and racist that every western observer throughout history has sought to construct "East" as an abnormal irrational "Other", the polar opposite of the normal, rational "West".

'Orientalism' established Said as that entity often described as a "public intellectual", that is, an independent scholar or thinker who does not restrict his learning to a small upper caste of snobby academics, but instead educates and stimulates a general audience.

So, where is the Indian intellectual? Why is it that given the wealth of social science expertise here, no Indian has yet written a popular book like Orientalism or coined defining terms like "The Clash Of Civilizations" or ' the End Of History '?

Disputing the Aryan invasion theory, noted archaeologist N S Rajaram said the Western theory of Aryan invasion had no backing. " It was Indians who had widely traveled across the world and established their culture," Rajaram said, "There is evidence from artifacts in Denmark."

Amartya Sen, Nobel prize winner and Economist, said on the occasion of the largest meeting of the Indian diaspora [the Pravasi Bharatiya Divas] "We have a long tradition of being globally interactive and enjoying it. Our ability to be simultaneously receptive and creative is, of course well illustrated by recent achievements in, say, science and technology, in world literature, in global business. Indians have been able to give even as they have received. What needs emphasis today is that this give and take is not new." "The seventh-century Chinese scholar I-tsing learned his Sanskrit in Java [in the city of Shri Vijaya} on his way from China to India. The influence of interactions is reflected in languages and vocabularies throughout Asia from Thailand and Malaysia to Indo-China, Indonesia, the Philippines, Korea and Japan, and in China too."

Amartya Sen, continues, "The first printed book in the world was the Chinese translation by Kumarajiva {a half Indian, half Turkish scholar} of a Buddhist Sanskrit text, Vajracchedikaprajnaparamita. "For example, the Sanskrit astronomical work Paulisa Siddhanta focused its attention on longitudes at three places in the world: Ujjain, Benaras and Alexandria. Not only were there interactions between Chinese and Indian astronomers in the seventh and eighth centuries, but also an Indian astronomer, Gautama, became president of the Chinese board of astronomy, and produced the great Chinese compendium of astronomy called Khai-Yuan Chan Ching. There are reasons for us to take pride in India's role not as an imaginary culture in static isolation, but as a dynamic civilization interacting vigorously with the world."

EXPERIMENTATION AND QUANTIFICATION IN VEDIC INDIA

Through a somewhat distorted study of History, we tend to understand the introduction of the 'Scientific Method' in India with the advent of the British Rule. In fact, the existence of quite a developed scientific and technological knowledge in India goes back to the earliest records of history. A little investigation into the history of pre-colonial science in India would reveal that there was no dearth of reliance on experimentation and quantification in science. Aryabhatta, Bhaskara, Charaka, all used sophisticated techniques of mathematical and experimental procedures in the fields of investigation.

Mahamahopadyaya P.V.Kane, who seldom takes an extreme position and is invariably guarded in his observation, says: 'At present such nations as England, France, Germany, the USSR and the USA are the foremost nations in Science and Technology and Industry, but they clung to the 1400 years to the Almagest of Ptolemy as the astronomical bible, were ignorant to the decimal place value system and the use of sign for zero till the so-called 'Arabic Numerals' [originated from India] were introduced into Europe'.

INDIAN SCIENTIFIC AND TECHNOLOGICAL TRADITION

In ancient times, it was well known that in the land of Vedic India, the sources of hidden knowledge are to be sought after and it also has long been claimed that the Vedas and the other scriptures of the east are not only a storehouse of spiritual wisdom, but also a veritable treasure of scientific knowledge. While the claim regarding the former is admitted, that regarding the latter has been only recently been considered seriously.

How many of us know that inoculation against smallpox was a widely prevalent practice in India before the British banned it on the grounds of 'Humanity' in 1802-1803? There is a very interesting paper on inoculation against smallpox written by Holwell, who himself was a medical man and was a Governor of Bengal for a short period. He described in great detail the practice of the Indian method of inoculation in Bengal and other areas.

Did you know the fact that the Encyclopedia Britannica in its editions till 1823 considered the famous observatory at Benaras as one of the five celebrated observatories in the World?

There is a paper on a drill plough employed in South India by Capt.Hal Colf. He has said that he never imagined a drill plough, considered a modern European innovation, at work in remote villages in India.There are accounts of the Indian process of making steel which was called 'Wootz' & a sample of Wootz sent to them by one Dr.Helenus Scott have commented that it is decidedly superior than other steel they have seen.

Then we have the account of Le Gentil, who was an assistant to the famous Cassini, and tells us about how the Tamils calculated the eclipse, without pen and pencil, computing with shells on the basis of memorized tables. There are many papers that speak of our excellent agriculture tech-

niques, Indian astronomy, ice making, papermaking and making mortar etc. Who will believe that in a survey conducted in Madras Presidency during 1922-25, it was found that there were 11575 indigenous schools with 157195 students and 1094 colleges with 5431 students. These and other very interesting facts have been unearthed from archival material by Sri. Dharmapal. Since 1965 he has devoted all his time to exploring Indian archival material to construct a different picture of Indian Society of the late 18th century. He believes that India must rediscover itself so that its reconstruction is based on a true understanding of Indian Society and its genius and nature.

George Monbiot, well-known trade theorist and a widely read columnist with 'Guardian' writes in Times Of India [6.11.03]- "There is a myth that the rich nations became rich through free trade. Nothing could be further from the truth. Britain as India knows to its cost, fiercely protected its textiles industry [on which its Industrial revolution was built], banning the import of woolen cloth form Ireland in 1699, and calico [cotton cloth] from India in 1700. The idea was that these countries and others would be reduced to suppliers of raw materials. Had we not banned your produce, the FIRST INDUSTRIAL REVOLUTION may have taken place in India, not Britain. We maintained such protections, while smashing the manufacturing capacity of the colonies, until the 1850s, by which time we enjoyed unquestioned global economic supremacy". This and other similar works raises a question – Shouldn't European intellectual history then be re-written?

The Archaeological Survey of India and UNESCO sponsored a workshop recently in Delhi, organized by the Surabhi Foundation to collect together such remarkable instances of science peeping through monuments. It was felt that a deeper study of such monuments is needed, not only to understand the science behind them but also the motivation of their creators in having incorporated them in the first place. For, it may throw some light on the scientific ethos of those times.

A STEALTH BOMBER FROM - 'SHASTRA'

A glass-like Material based on technology found in an ancient Sanskrit text that could ultimately be used in a stealth bomber [wher material cannot be detected by radar] has been developed by a research scholar of Benaras Hindu University. Prof M A Lakshmithathachar, Director of the Academy of Sanskrit Research in Melkote, near Mandya and Mysore, told Deccan Herald that tests could not detect it. "The unique material cannot be traced by radar and so a plane coated with it cannot be detected using radar," he said. The academy had been commissioned by the Aeronautical Research Development Board, New Delhi, to take up a one-year study, 'Non-conventional approach to Aeronautics,' on the basis of an old text, Vaimanika Shastra, authored by Bharadwaj.

Though the period, to which Bharadwaj belonged to be not very clear, Prof Lakshmithathachar noted, the manuscripts might be more than 1,000 years old.

The project aims at deciphering the Bharadwaj's concepts in aviation. However, Prof Lakshmithathachar was quick to add that a collaborative effort from scholars of Sanskrit, physics, mathematics and aeronautics is needed to understand Bharadwaj's shastra.

The country's interest in aviation can be traced back over 2,000 years to the mythological era and the epic Ramayana tells of a supersonic-type plane, the Pushpak Vimana, which could fly at the speed of thought.

"The shastra has interesting information on vimanas [airplanes], different types of metals and alloys, a spectrometer and even flying gear," the professor said.

The shastra also outlines the metallurgical method to prepare an alloy very light and strong, which could withstand high pressure.

He said Prof Dongre of BHU had brought out a research paper Amshubondhini after studing Vaimanika Shastra and developing the material.

"There have been sporadic efforts to develop aeronautics in the country's history. There has never been a holistic approach to it. Vaimanika Shastra throws up many interesting details that can benefit Indian aviation programe," the director added. Prof Lakshmithathachar rubbished the tendency among certain scholars to discount such ancient Sanskrit texts and said, " Why would our scholars want to cheat future generations? Unless it was important, nothing was written in the old days. The fact that there exists manuscripts indicates the significance."

The academy has also embarked on other projects including 'Indian concept of Cosmology' with Indian Space Research Organisation, 'Iron and Steel in Ancient India- A historical Perspective' with the Steel Authority of India Limited, and 'Tools and Technology of Ancient India.'

Not only in the above-mentioned Sciences did ancient Indians take strides but also they were also aware of the nature and dimensions of the cosmos and man's relation to the place in the cosmos. Their keen perceptions were the nearest and sometimes better approximates to the space age conceptions of today.

Prof.Abdus Salam, Co-winner of the noble prize in Physics for 1979 emphasizes that in ancient and medieval times, China, India, Afghanistan and the Arab countries were among the Leaders of Science. He feels references to our " past glories", may help in reawakening our interest in science. It also removes the misconceptions in the western minds about the scientific tradition of the East, leading to productive scientific linkages and reinforces their co-operation and collaboration for future development between the two parts of the divided world.

AN ALTERNATIVE APPROACH TO SCIENCE AND TECHNOLOGY DIRECTED TO THE NEEDS OF INDIAN AND THIRD WORLD COUNTRIES

Engaging with the intellectual and scientific legacy of Europe didn't mean the acceptance or imitation of any unvedantic/Indian or alien learning; on the contrary, it was the

re-adoption of those values which the vedic India had handed over to the Europeans vie the Arabs and Greeks earlier in their own time of wakefulness; an inheritance which the latter had built on unlike the colonial india, which lapsed into deep slumber as a result of colonial designs. In Asian countries there is a feeling of inferiority about their scientific performance. Over centuries, this myth has contributed to the de-legitimization and destruction of traditional knowledge and traditional technologies by assigning to them an irrational and mystical status.

As Swami Vivekananda said "To the man who has begun to hate himself, the gate to degeneration has already opened; and the same is true of a nation. Our first duty is not to hate ourselves; because, to advance we must have faith in ourselves first and then in God".

A workshop on " An Alternative approach to management of Research, Development and Education in Science and Technology" was held in Bangalore. There the participants came to the conclusion of the necessity to revive the past tradition of Science and Technology and that there were many examples of Chinese and Indian contributions to the Industrial Revolution in Europe, whereas China and India however were stopped from a natural adoption of modern technologies because of military and economic restrictions associated with colonization. According to the commentary-cum-report on the proceedings of this workshop: " The discussion in the session helped to indicate that our traditional systems have been rich resources of APPROPRIATE SCIENCE AND TECHNOLOGY and it is an urgent research task in the history of science and technology to collect as much information as possible about the rationality of these systems before they are further lost".

Indians as well as other third world scientists need to recognize that they are entitled to create knowledge in terms of models, metaphors and methodologies that make sense in their historical and cultural contexts and allow research to be directed to the Needs of their Societies and still be called Scientists. An alternative approach to such relevant science and technology has to first oppose the overall western domination of third world scientific and technological research at level of organization, and more so, at the level of ideology.

TRADITIONAL CULTURE AND INSTITUTIONS – MOST EFFECTIVE MEANS FOR MASTERING MODERN TECHNOLOGY

A dualism is inherent in Japan; it appears that even as the Japanese modernize themselves outwardly and become increasingly proficient in technology and science, they become even more Japanese, socially and culturally. On this basis, they are able to maintain their identity and psychological security, and also deal with external forces effectively. Despite the long process of modernization, the Japanese have been able to preserve their cultural integrity, retain their language and maintain traditional behavior. There can be no modernization without change; but the Japanese have shown that it is possible to modernize without westernization and without the loss of cultural integrity.

In India, on the other hand, traditional organizations suffer from an inferiority complex, and desi-style firms are often far better at business than the so-called westernized 'professionally' managed companies who tend to play down their desi style. Of the two top Industrial houses in India, one is westernized and is considered superior to the other Industrial firm, who are still a family-style business, though the family-style management is far more dynamic and successful than the westernized one. This family-style business firm feel that the Marwari system of accounting is far superior to the western method, and that if they are a successful business it is not because they have people who went to MIT (Massachusetts Institute of Technology) which of course they did, but because these people were put through an intensive two-year program to study that the old (Indian) method. They feel that they have absolutely no intention of changing it.

At the other end of the spectrum are men like Sir Birn Mukherjee of Calcutta; so anglicized that they used to have roast beef and Yorkshire pudding for lunch on Sunday, but who have now simply vanished from the industrial scene without a trace. These people had the access to the latest technology, but were not robust enough to marry imported technology with indigenous culture and just went under. Indians, like the Japanese, are not opposed to modernization but also, like the Japanese; they seem to have great reservations about westernization and all that it implies. Japan has shown that it is possible to develop and grow at the same time, provided it does not create cultural disorientation.

What India has yet to learn from Japan is that traditional culture and institutions may be the most effective means for mastering modern technology. For very good reasons, Indians suffer from a psychological block where the West is concerned, whether it is western technology or western political institutions but this is the hangover of the recent past and there is no reason why future generations should not shake themselves free of their mental block. This might in fact happen sooner that we think, when a totally new generation without the faintest memory of western interference in our lives will have taken over. The risk that it might go the whole hog towards westernization is also there; but somehow it doesn't seem likely as our boys who propelled the growth in the software boom have proved it otherwise by not having lost their Indianness, while traversing all around the globe.

These software techies are increasingly being targeted by different governments for flimsy reasons unable to compete with our young, energetic and brilliant Indian minds! Netherlands with the help of Britain had arrested I-flex CEO and Malaysia police had rounded up and arrested a number of Indian software pros on flimsy grounds, showing protectionism. India is already a brand name in the global software and knowledge sector. So much so, paranoid American Congressmen and other politicians of western countries are trying to bring legislation to prevent their businesses from getting outsourced to India. There can not be a bigger testimony to India's increasing strength than this.

'Brand India' will succeed because "India's time is round the corner" and "we have a once-in-a-lifetime opportunity to lead the world," Reliance Industries chairman-cum-managing director, Mukesh Ambani told delegates attending

Ad Asia 2003. Recalling the country's past, Ambani said India was a global economic power at the turn of the 18th century, contributing a quarter of global output, but over the years colonial indulgence carpet-bombed 'Brand India' which has become just a memoir now. "Since Independence we are struggling to regain the lost dynamism and depleted vitality, and I believe, India's moment has arrived, he said.

US COMPANIES GO FOR YOGA BREAK

US Companies go for yoga break instead of coffee break. More and more American companies are encouraging their employees take a 'yoga break' in the office instead of a coffee break. As yoga gathers increasing acceptance in western medicine, citing its effects as relief for myriad conditions, including asthma, obsessive-compulsive disorder, menopause, chronic pain and arthritis, says the Wall Street Journal, some employers are beginning to realize the beneficial physical and emotional impact the ancient Indian practice can have on their work force. In today's environment, proponents say, yoga not only helps relieve tension and improve concentration but also may eventually help companies reduce the escalating expense of providing healthcare and provide a simple, low-cost way to offer more benefits to their employees rather than less. Among those who have discovered that yoga does indeed provide relief from stress are some of the New York firemen who were traumatized by September 11. [Don't you see, what had happened to these Firemen is oppression by terror, as a Clash of Civilizations and they finding relief by yoga as a Confluence of Civilizations, which is Indian culture from eons?]

This new millennium has brought to the surface the hidden conflicts between the forces of global homogenization/internationalism versus tribalism/nationalism. [Represented on the one end by the single super power [America] and tribal cultures, promoting religious fundamentalism in and around Gulf regions.] The outcome of this conflict to the world as a whole will be bad. American policies in the last few years have been self-destructive and short sighted. By these narrow policies, America is playing into the hands of its enemies, who are more patient. In the process, it's doing all it can to provoke more terror attacks against itself. America has many virtues but wisdom about the world is not one of them. A 14th century philosopher said if we were in the desert and all the boundaries were gone, we would inevitably create others.

When America was at war with radical Islam, the most popular poet in America was the Islamic Mystic Rumi, which suggests that while politicians or fundamentalist political groups are all about war, terrorism, death & destruction., culturally and individually people are reaching out to one another through mysticism. Mysticism of all world religions, strikes a universal chord, beyond any ideology.

An American who may be very hostile towards Osama bin laden or Saddam Hussien or even towards Islam is nonetheless moved by Mystic Islamic poetry and vice versa. People in the Islamic countries have no time for American government but watch American films and meet American people.

This place of hope, the meeting of minds beyond Ideology could come about only through the universal place, where we have more things common than different, is through mysticism, which strikes a universal chord. The one place in the whole world, where the interest in mysticism is much stronger than any other place is India.

" Though many Sufis (the mystics of Islam) were prosecuted and killed in their land of birth, they where received with open arms by the Indian civilization and where honored, nurtured & benefited by the teachings of this Sufis in India', says Shri Mumtaz Ali.

No, Shri Mumtaz Ali does not roll out his prayer mat and kneel in obeisance each time the muezzin calls. He would in all probability, roll out his mat, assume the padmasana posture and discourse on the finer aspects of Vedantic philosophy to a rapt audience [especially when he is speaking at Bharitya Vidhya Bhavan or India International Center at New Delhi, you invariably find Dr. Karan Singh, presiding and introducing Shri. Mumtaz Ali to the auidence]. Here lies the paradox - and the enigma – of this the 54 - year – old founder of the Satsang Foundation and he truly represents the Genius of Indian mysticism

NO NARROW NATIONALISM-TESTIMONY OF EUROPEAN SCHOLARS

By presenting the Indian tradition of science and technology, it should not be taken as narrow nationalism. As distinguished western historians like Louis Jaccollicot, Ernest Wood, Colebrook Andre Tomas, Balvaskya, Sir William Jones, Barthelemy st., etc. have all brought forward their testimony of achievements of Vedic India in legislation, ethics, philosophy, science and religion. These Scholars told a story not told before or told badly and disjointedly. It is the story how these people rediscovered the splendors of a great civilization by dusting and removing the cobwebs and wiping the soot and the grime that had gathered over the centuries and reconstructed the history of a great nation from bits and fragments that together made a jigsaw puzzle. In doing so they helped to lay bare a culture of whose magnificence the rest of the world had only a hazy idea and of which the majority of the Indians themselves were oblivious.

There is no adequate preservation and publication of Sanskrit manuscripts and original documents available in India. It must be the first task of the historians to search and preserve these texts.

RE-EXAMINATION IN WESTERN SCIENCE – HIGHER PHYSICS AND EASTERN MYSTICISM

Scientific and technological thinking is at present undergoing a re-examination in the Western world. Factors previously considered outside the domain of European Science and Technology, such as social, cultural and ethical are now being introduced. These have always been an integral part of Asian scientific and technological thinking. Vedic textbooks had always had materialistic sciences studied together with spiritual sciences. This integration was always there in eastern scriptures. For example Ayurveda - the medicinal science is a part of the Vedas.

Higher Physics and Eastern Mysticism are merging today. The results that are emerging are big breakthroughs from the 19th Century materialistic universe of the western physics. The new world view emerging is of a holistic universe, not as a structure built out of independently existing, unanalyzable entities, but rather as a interlinking patterns of relationships among what we call objects and events, whose meaning arise entirely from their relationship to the whole cosmic process.

The third part of the cult-generating Matrix, the Hollywood movie series represents many celluloid revolutions for India, with a world box-office bonanza for all the three movies. India's inclusion on the world premiere map was a fitting tribute to the fact that the film derives its core philosophy from Vedantic thought, according to which the real world is nothing but maya or illusion.

While the war between man and machine reaches a crescendo in the final explosive chapter of Wachowski Brothers' triology, the 'Spirits of the Universe' and 'Navras' are the centerpieces of the musical score, it is the prayer for enlightenment in Sanskrit choral chants that spells the essential message of the movie—Let peace prevail everywhere. As the credits roll out at the end of the movie the Sanskrit chants, Asatoma sadgamaya, Tamasoma Jyothirgamaya, Mrithyorma Amrutangamaya, reverberate.

The Indian contribution doesn't end with the music alone. When Neo [Keanu Reeves] is caught in an identity crisis, he turns to one little kid, Sati [played by nine-year old Tanveer Atwal] for help. In fact, the core plot revolves Neo taking philosophical advice from Sati's Indian parents, Ramachandra and Kamala, on how Karma and love score over evil.

Dr. Karan Singh was speaking at the inaugural address of "Science and Beyond", a four day international symposium of Cosmology, Consciousness and Technology in Indian traditions, being organized by the National Institute of Advanced Studies, Bangalore and The John Templeton Foundation, US. He recalled the time when he was health minister and had started a project at the Nimhans at Bangalore, called 'project consciousness'. It was abandoned as soon as he left the ministry. "Had the project continued, we could have produced the first Nobel laureates in consciousness research".

Deepak Chopra, the most popular Indian living in America, who is known to have shown the light to Michael Jackson, Madonna and Goldie Hawn, shies away from the tag of a guru? "I 'm an author, a theoretician, a physician, a scientist. The label of 'guru' has been given to me by the media and it could be misleading,' he adds. He feels modern science should look towards ancient Indian philosophy for answers.

NATARAJ REVEALS COSMIC SECRETS

Ever since historian Anandha Coomaraswamy extolled the Nataraja bronze (dancing Shiva) from Tamil Nadu as "poetry but nonetheless science", interpreting the Nataraja as the "cosmic dance" of Shiva has been widely accepted. Fritj of Capra catapulted Nataraja into a modern-day scientific icon when he euphorically stated in his cult book of 1974, *The Tao of Physics* that "the dancing Shiva is the dancing universe, the ceaseless flow of energy going through an infinite variety of patterns that melt into one another". Shiva is referred to in many hymns as the brooding destructive Lord, dancing on the burning cremation grounds. How far then, did the creators of the Nataraja icon have a scientific comprehension?

It has been argued that the Nataraja metal icon can be viewed as a human or anthropomorphic representation of dynamic cosmic phenomena. Indeed, texts such as *Naisadhiyacharita* poetically describe the scattering of myriad stars in the sky by Shiva's dance and splintering of rocks and crystals of Mount Kailash while the *Vadnagar Prasasti* speaks of Shiva playing with newly created planets as if they were crystal balls. If you have seen & remember the last scene in the Hollywood' film, 'Men in Black-I', you will see the visualization of the above idea splendidly. At the end of the movie-the audience is shown a birds eye view of the earth disappearing as a small speck into the solar system. The solar system disappearing into the Universe & the Universe shrinking and becoming one of a number of crystal balls, tossed about playfully by a creature.

A close examination of the symbolism evident in Chidambaram – the temple by the sea coast of Tamil Nadu dedicated to the worship of Nataraja-shows that the ancient seers' revelations encompass concepts which are at once both mystical and tantalizingly scientific. *Chit* is consciousness and *ambaram* refers to the cosmos and a literal translation would be the cosmic consciousness. The shrine to Nataraja at Chidambaram architecturally and conceptually links the cosmic realms and the inner consciousness through Shiva's dance- the *anandatandava* or dance of bliss – where Shiva is described by the Tamil poet, Umapati of Chidambaram, as *sachchidananda;* that is, 'being, consciousness and bliss'.

The *Chit Sabha* or the golden-roofed 'Hall of Consciousness' in the Chidambaram temple is the only shrine where the Nataraja metal icon is worshipped inside the innermost sanctum, the *garbhagriha*. In all other Shiva temples it is the aniconic lingam that is worshipped in the *garbhagriha* whereas the Nataraja bronze is the utsava murti, taken out in procession during festivals. Shiva, as *lingobhavamurti*, is the infinite cosmic pillar whose beginning and end could not be fathomed by either Vishnu or Brahma (somewhat like the mysterious pillar in the science fiction classic 2001: *A Space Odyssey* by Arthur C Clarke, of which it was said "my god, it's full of stars!"). Instead, inside the Chit Sabha, by the side of the Nataraja bronze, is enigmatic Chidambara Rahasyam or the secret revelation of Chidambaram, wherein Shiva is worshipped as the formless akasa lingam. It symbolizes the sky, represented, aptly by a curtained empty space. The curtain represents the *aroopa* or formless manifestation of Sivakami or Shakti, the primordial feminine energy who inspires and witnesses Shiva's cosmic dance. This presages an intuitive understanding of concepts such as the wave-particle duality of quantum physics, with matter and energy being sides of the same coin.

The *Tatvaryastava stotra*, a hymn on Nataraja at Chidambaram, describes Shiva as sky-clad and

Chidamabaram as the sacred spot for the element, sky, where Shiva, as Lord of the Universe, is both the universal dancer and the witness of his own dance, who creates and removes *maya* before finally ensuring emancipation. Maya, represented by a black curtain behind Nataraja in the Chit Sabha, can be interpreted as a 'measure of reality' with the *Mayamata* being an ancient text on architectural measurements. Therefore, not only is Shiva's dance cosmic, but Shiva can also be identified with the sentient universe, as well as with the consciousness within, which creates and destroys notions of reality. These ideas hint at quantum mechanical paradoxes such as observer-created reality inherent to Heisenberg's Uncertainity Principle. They also bring to mind the ideas of 'quantum consciousness' and 'the infinite brain' theorized by physicist Roger Penrose who strove for a grand unified theory of the forces of the universe encompassing quantum consciousness in his book *The Emperor's New Mind*. Indeed, the profound concepts symbolized by the Chidambaram temple are a humbling reminder of our sheer insignificance and transience in the gigantic universe that we, so often self-indulgently and haughtily, inhabit.

'IN POST-COLONIAL PERIOD, HISTORY MUST BE RE WRITTEN'

Eminent historian and archaeologist David Frawley of American institute of Vedic Studies, New Mexico, USA, feels that there is an urgent need to rewrite the history of India, as it was done in many countries during the post-colonial period.

During a informal talk with reporters on Sunday at the Rashrtothana Parishat, Bangalore [Dec1, 02]. Frawely said that India was still suffering from the colonial influence, backed by Marxists, who uphold the Western interpretation of history. "But the [western] scholars could not comprehend the development of civilization in India," he said.

"Most of the interpretations were done during the 19th century, when archaeology had not evolved and the scripts like Vedas were read with European references," Frawley pointed out.

"Many of the interpretations made by European scholars during the 19th century have been proven wrong with the advent of archaeological breakthroughs. The satellite imagery showing the existence of the Saraswathi River, which finds repeated mention in Vedic literature is the first proof." Frawley said.

"Secondly, European scholars say that there was no relation between the Harappan civilization and the Vedas. However, the Harappa excavations have found that the civilization was full of Vedic symbols. The Gulf of Cambay discovery is the latest addition to prove that Harappa was linked to the Vedic period," Frawley argued.

"According to the latest discoveries, Harappan sites were found in places like Afghanistan and Iran. The new theory is that the civilization moved from the Saraswathi basin to the Ganges basin in around 2500 BC, when the Saraswathi River dried up," Frawley said.

"India has some of the greatest literature in the world. How can we expect it to be written by some barbaric nomads from Western Asia?" he added.

David Frawley's newly published book, 'Gods, Sages and Kings' presents a remarkable accumulation of evidence pointing to the existence of a common spiritual culture in the ancient world from which present civilization may be more of a decline than an advance. The book is based upon new a interpretation of the ancient Vedic teachings of India, and brings out many new insights from this unique source often neglected and misinterpreted in the West. In addition, it discusses recent archaeological discoveries in India whose implications are only now beginning to emerge. This book reveals the geography of the ancient Vedic world, including the sacred Himalayan lands of the Soma. It shows the lineages of the Vedic kings and the realms that they ruled. It deciphers the ancient Vedic calendar and its sophisticated system of astronomy going back to before 4000 B.C. and uncovers the yogic practices of the ancient Vedic seers that appear to be behind all the religions of the World. It suggests that all the peoples of the ancient world may be related to the Vedic culture including those of Sumeria, Egypt, China, and the Americas. David Frawley challenges in this book the accepted views of the origins of civilizations in a profound way.

CONCLUSION: AN INDIAN ENDING

India's culture is ageless and is as relevant after the twentieth century as it was to the twentieth century before Christ.

The extreme deteriorating standards of Science and Religion is destroying the world. At the one end of the hemisphere great strides in Western Science have given way to power rivalry heralding nuclear annihilation. On the other end of the hemisphere religious fanaticism is playing havoc in the Middle East and other countries around it. This developments represents the requirement That now more than ever before that western man needs more esoteric or eastern (spiritual) awakening to balance his own materialistic and pragmatic orientation, whereas the eastern man needs to include more of the Western mentality and concepts in gaining discipline, cleanliness, care for public opinion, fear of corruption by the common people, thus bringing Peace on the globe EARTH.

After surveying the story of the entire human race, Dr.Arnold Toynbee observed: "It is already becoming clear that a chapter which had a Western beginning will have to have an Indian ending if it is not to end in the Self-destruction of the human race .....At this supremely dangerous moment in human history, the only way of salvation for mankind is the Indian way-Emperor Ashoka's and Mahatma Gandhi's principle of non-violence and Sri Ramakrishna's testimony to the harmony of religions. Here we have an attitude and spirit that can make it possible for the human race to grow together into a single family and in this new millennium, this is the only alternative to destroying ourselves'. In the words of Sri.Aurobindo: 'India of the ages is not dead, nor has she spoken her last creative work; she lives and has

still something to do for herself and the human race'. Isn't Vedic Science an Appropriate Technology?

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