

*With a forward by*  
DR. DAVID FRAWLEY



# SCIENCE OF THE SACRED

*Ancient Perspectives for Modern Science*



COMPILED BY  
DAVID OSBORN

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Ancient Perspectives  
for Modern Science

Compiled by  
David Osborn

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The text on the book page is written in a traditional script, likely Malayalam or Tamil, arranged in two columns. The handwriting is neat and legible. The page number '11' is visible in the top right corner. The book is held in a way that allows for easy reading.



# Forward

by Dr. David Frawley

We live in an age in which science and technology continue their rapid progress, that has been going on almost non-stop for the last two centuries. There are great advances in diverse fields, from genetics to physics, with practical applications through high tech and computer science, that has reshaped our daily lives in amazing ways.

Yet science has unlocked not only many of the wonders but also many of the dangers of the outer world. In spite of all the scientific development, our civilization appears to be sinking further into a worsening crisis, with increasing ecological disruptions, health and psychological problems, spreading violence, hatred and brutality. Even with all our advances in communication, we seem to lack any true leadership, or any overriding spiritual or ethical direction that can bring peace and happiness to humanity. Our advanced global media seems happier to broadcast violence and promote divisions between people than to serve as a force for peace. Science does not seem to have the vision or the compassion necessary to link us to the greater universe and the whole of life in a meaningful and harmonious manner. If science is not entirely the cause of our current world problems, it does not seem to have the solution either.

Under the influence of science, we have moved from the age of matter and its solid forms into the era of subtle energy and information technology. Science has progressively mentalized our world in the computer age, leaving the fixed realities of time and space far behind as we communicate quickly and transfer ideas and commodities worldwide in a matter of moments. Many people now spend more time inter-

acting with their computer terminals than with the living world around them. Clearly science is opening new frontiers that are also causing us to question the nature of physical reality. But science has not yet, it seems, broken through the barrier of the materialistic way of life to a life of higher awareness.

What is the nature of external reality that we contact through our senses? Are physical objects little more than force fields created by subatomic energy particles in the void of space? Is there an underlying universal intelligence or consciousness that is behind the marvels of the laws of physics or biology and their gestalt patterns?

Are we living in some greater cosmic mind or just in an accident of life in a strange array of inanimate forces, a happenstance of random chemical combinations? These are some of the deeper queries at the cutting edge of science that we need to face.

While science has done well in terms of physics, its understanding of life and the biological sciences remains problematical. Its medicine, based largely upon drugs, does not seem able to create positive health for humanity. Its psychology, also increasingly drug based, seems to be causing more depression and unhappiness. In addition, the social sciences, including accounts of human history, remain questionable, caught in an outer model of the human being that lacks any deep spiritual meaning.

However, the 'outer' sciences that dominate our present culture are not the only measure of human knowledge of the universe. As we push the limits of science, another type of science is emerging —



or reemerging — that can grant us a more authentic understanding of the true nature of ourselves and the vast cosmos in which we live.

Many ancient cultures and spiritual traditions speak of a higher science, an inner ‘self-knowledge’, through which we can know the cosmic reality not as an outer array of phenomena but as the very consciousness at the core of our own being. These sacred sciences have probably been best developed and preserved in India as the ‘yogic’ or ‘Vedic’ sciences, which remain to the present day well-researched, with clear teachings and practices, an extensive literature, millennia of experience, and can be made accessible and applicable to all humanity.

Unlike Europe, India was not a country that denied science in favor of religion, contrasting knowledge and faith as conflicting opposites. India viewed spirituality as the highest science through which we can directly know the true nature of reality, which itself is conscious and aware, not simply an inert external object or force. On this basis, even India’s outer sciences like medicine and astronomy have an inner basis as yogic paths, ways of understanding the cosmic mind, energy and processes.



This ‘inner science of consciousness’ now beckons us with a futuristic vision, not as a mere relic of ancient speculations but as the critical need of our times. Our culture has moved from matter to energy and information but still preserves the same outer view of the world, and with it an external seeking bound by time and space, that ends up with a destructive consumeristic model of life. We still look at ourselves in terms of a socially defined bodily identity, a confused mass of conditioned desires wandering between birth and death. In short, science has not questioned our ego-

identity but has only given impetus to the ego’s pursuit of power and control.

The Vedic sciences, on the other hand, open the door to a cosmic intelligence, to a sense of self and reality that is universal, not bodily based but rooted in awareness, love and bliss. The Vedas reveal that we are a mini-universe, a microcosm of energy and intelligence, with all the secret forces of the greater cosmos at work within us and accessible to our greater being. We are meant to function as a species to evolve a higher consciousness on the planet, not simply to enjoy ourselves at a mundane level.

Our current science is incomplete, a fragment of a greater way of knowledge. It is not entirely wrong as far as it goes, but it is but one level or aspect of a greater view. Modern science tends to pursue outer details and misses out on the underlying wholistic forces that create unity and individuality. For example, in pursuing the detailed chemistry of life, we have forgotten the life-force, the yogic Prana, which is the overall integrating power and intelligence behind these discrete and transient chemical reactions, weaving their diverse patterns into a consistent and enduring web of life and consciousness. Without understanding how consciousness can imprint outer phenomenon with a sense of being, purpose and reality linked to the universal and divine, merely to gather external data will only increase our confusion about the nature of the whole.

The following book, *Science of the Sacred*, addresses both the limitations of science and also charts a way beyond to these higher spiritual or sacred sciences. First, it contains a critique of modern science, examining both its strengths and weaknesses from the standpoint of Vedic science. Second, it provides various perspectives and updates on different Vedic sciences along with the Vedic view of the world. Relying on a number of important experts in their respective fields, the book provides both detailed information as well as deep insights that can help the reader expand their horizons of knowledge and understanding.

As a kind of ‘yogic critique’ of the limitations of modern science, the book provides extraordinary insight, showing how current views of history, biology and cosmology do not provide us with a real knowledge of our species, its place in the universe or its higher evolutionary potentials.

Relative to the different Vedic sciences, the book begins with a history of civilization and science in India and its value and then gradually introduces such specific topics as Vedic mathematics, Ayurvedic medicine and Vastu. It brings in the relevance of India's forms of art, dance, music and sacred sound, as we cannot separate science from art or spirituality and still have science be meaningful or address the whole of life.

Most importantly the book charts a way through which we can integrate both modern science and Vedic science, link the material sciences with greater spiritual sciences that unfold our real purpose in life. It does not reject science for a blind religious faith but looks to a greater intelligence in the universe in order to explain not only the laws of physics but the laws of life.

The book begins with how our culture's view of history shapes its approach to science and its estimation of non-western traditions, particularly the spiritual traditions of India. Many of us tend to believe that the views about history that we find in modern textbooks are proven truths on par with the laws of physics. Unfortunately social sciences do not have the simple exactitude of physical sciences. Our culture's dominant view of history – which is still largely rooted in colonial preconceptions – is not a scientific truth but largely a Eurocentric bias that often has little hard evidence to support it.



We ignore the eastern achievements in science, like the mathematics, physics, astronomy, biology and medicine in the Vedas. We have created a view of history that makes larger and older civilizations like India and China into little more than footnotes to events in Europe or the Middle East.

Our historical time lines have not expanded much beyond the time frame or location of Biblical chronologies. Though our current species is now scientifically speaking more than 150,000 years old, our social sciences are still largely working on a 5,000 year historical time line, with a bias towards Europe and the Middle East that ignores the greater portion of humanity, its achievements and its historical records.



Such ideas as the Aryan invasion or migration into India around 1500 BCE – which to date have no archaeological evidence to support them – remain in our textbooks today as an article of faith, a belief in the superiority of western civilization, rather than any fact on the ground. They are often used to discredit older spiritual traditions, whose teachings they present only in distorted translations, and do not represent any real effort to understand the philosophy or world view of the ancients. Once we remove these Eurocentric ideas, we can discover the spiritual or yogic heritage of humanity that India has preserved for all of us. We can reclaim the common roots of true science and true spirituality. The Vedas contain a mantric code of higher knowledge that modern scholars have failed to uncover, laboring as they are under the idea that culture is materially based and true knowledge is only of the outer world.

In the West, we associate religion with faith and science with true knowledge. In India, true religion or the discovery of the cosmic reality is a matter of knowledge, not an outer knowledge of the senses but a direct perception with the meditative mind. Ordinarily we rely upon our senses and their extensions for our knowledge of reality. Yet our senses are limited at best and extending them, even by sophisticated technology, cannot correct their fundamental errors or their outward view. However, the mind itself has a capacity of direct perception if we can bring it into a calm and silent state. Our individual consciousness has an ability to link itself with the universal conscious and access a much deeper level of knowledge, through which we can know the entire universe within ourselves. This is the approach of yogic science.



As a species we stand at a threshold. Will we be able to use our new technological expertise to create a truly enlightened planetary age or will it just serve to promote greater forms of exploitation and destruction. The key is to link the new science with the Vedic sciences. Modern science needs to learn its boundaries in order to do this, which is to recognize the place of Yoga and meditation for revealing our inner world and the eternal aspect of truth.

Science needs to learn to look within, to cultivate inner perception, not just an outer view of life. Historians meanwhile must learn to question their own cultural biases and look at ancient civilizations from a sense of the sacred, not as superstition, but as an awareness of the Divine presence inherent in all life.

*Science of the Sacred* provides an excellent foundation to enter into this process of restoring the higher knowledge and initiate its transformations within our own minds and hearts. We need a new profound level of thinking, a renaissance of both the mind and the spirit together.

Vedic systems of knowledge provide such a heritage that we can use to restructure knowledge both spiritual and mundane into a single network of understanding, caring and concern for all of life. May the reader use this insightful book to bring that greater light into the world!

Dr. David Frawley (Pandit Vamadeva Shastri)

Author, *Yoga and the Sacred Fire, Yoga and Ayurveda*, etc.

Director, American Institute of Vedic Studies  
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# Introduction

Marco Polo has written of India as the richest and noblest country in the world. A significant number of famous writers and high thinkers, such as Emerson, Thoreau, Schopenhauer, and Sagan, have praised the Vedas and Vedic culture as the inspiration for many of the higher philosophical and scientific concepts the world has known.

Voltaire, the famous French writer and philosopher, stated that “Pythagoras went to the Ganges to learn geometry,” and Abraham Seidenberg, author of the authoritative *History of Mathematics*, credits the early *Sulba Sutras* as inspiring all mathematics of the ancient world from Babylonia to Egypt to Greece. Indeed India is credited with the Pythagorean Theorem, the decimal system, the introduction of zero, and the concept of infinity. Additionally, the binary number system, essential for computers, was originally used in Vedic verse meters. Also, in South Indian musicology we find a hashing technique, similar to that used by modern search algorithms, such as Google’s. Noted scientist and writer Carl Sagan further stated, “Vedic Cosmology is the only one in which the time scales correspond to those of modern scientific cosmology.”

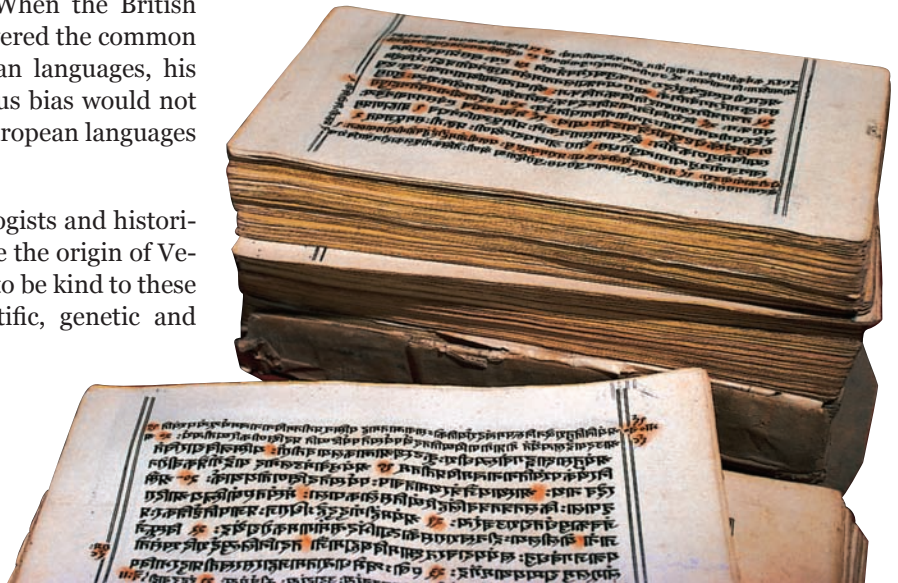
However, not all academics are so quick to praise India’s significant contributions. When the British indologist Sir William Jones discovered the common roots of Sanskrit and the European languages, his eurocentric world view and religious bias would not allow him to admit that all Indo-European languages originate from Sanskrit.

It is of no surprise that early indologists and historians credited European culture to be the origin of Vedic civilization. Yet history refuses to be kind to these scholars, as archaeological, scientific, genetic and

cultural evidence continues to mount against their erroneous “Aryan Invasion Theory.” Such evidence also indicates a cultural continuity in Indian thought, philosophy, metaphysics and socio-religious traditions, stretching back over millennia to the present day. Even Max Muller, the principal architect of the Aryan Invasion Theory, was forced to admit that his chronology of Indian history was arbitrary and speculative at best, adding further doubt to the Aryan Invasion hypothesis. Whereas the scientific and cultural contributions of China, Greece and Babylon are famous and well documented, those of India have been greatly overlooked. Indeed it almost seems that many indologists and historians have deliberately neglected its ancient traditions.

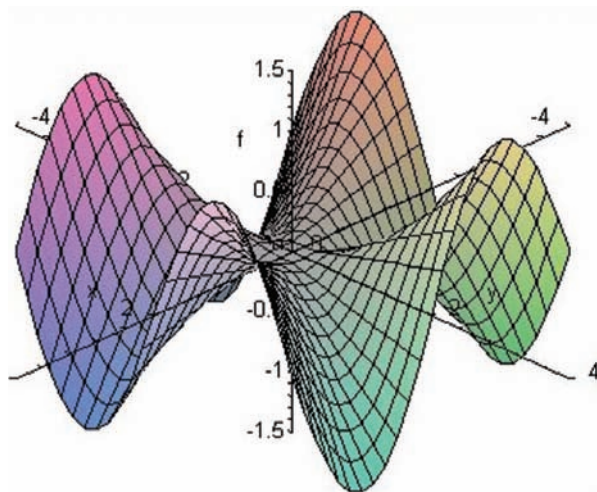
The purpose of this book is to present some of this evidence, which highlights the significant contributions of ancient India to world culture and science.

The *Scientific Verification of Vedic Knowledge* by David Osborn presents empirical evidence proving the antiquity of Vedic civilization as well as its many contributions.



The *History of Indian Science* by Dr. Subash Kak gives an elaborate overview of the many sciences found in Vedic culture.

Complex mathematical equations and computations can be easily solved within one's mind utilizing concepts inspired by the Vedas. This is elaborated by David Osborn in his article, *Vedic Mathematics or Not*.



In *Modern Science and Vedic Science*, Dr. David Frawley (Pandit Vamadeva Shastri) explores the Indian concept of knowledge and explains the harmony between science and spirituality in Vedic culture.

*Physics to Metaphysics* by David Osborn presents the esoteric spiritual conception of inconceivable oneness and difference (*achintya bhedabheda tattva*). This conception is offered as a solution to the deficiencies found in the popular writer David Bohm's monistic *Implicate Order* hypothesis of the manifest creation.

The article, *Has Science Failed Us?* by David Osborn examines the many defects and obvious failings of the modern scientific process and forces us to ask the question, "Is science scientific?"

*East Meets West* by Jack Hebner presents the refreshing appreciations and contributions of important writers and thinkers of the 19th and 20th century, such as Emerson, Thoreau and T.S. Eliot, who praised and drew heavily from the Vedic literatures.

*Architecture of the Vastu Shastra* by Jack Hebner illuminates highly scientific and detailed knowledge found in Vedic texts, from which the innumerable and magnificent temples of South India were meticulously constructed by mighty royal dynasties, such as the Cholas and Pandyas.

*Sacred Dance* by Jack Hebner highlights yet another important contribution of India's ancient culture — its traditional dance, such as Bharat Natyam and Kathakali.

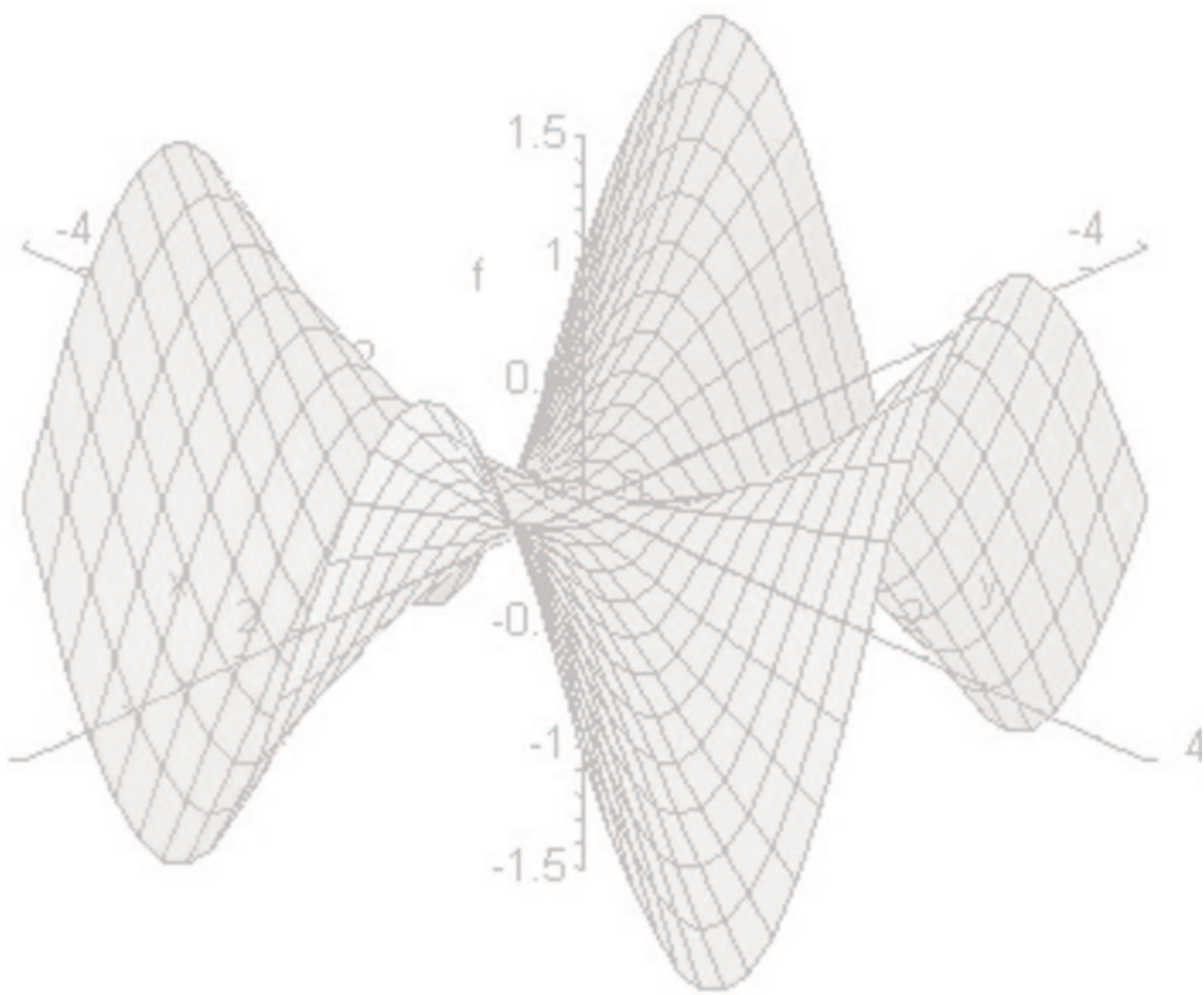
In *The Science and Art of Ayurveda* Dr. M. B. Siva Kumar, a practicing ayurvedic physician, presents an overview of the traditional Indian medical system of Ayurveda, an entirely natural healing technique, which uses natural herbs and medicines to assist the body in healing itself.

*Transcendental Sound* by Sridhar Dev Goswami takes us deeply into an area for which India is famous — mantra or transcendental sound vibration. Sound can influence us profoundly and the correct sounds can truly influence our lives positively.

In *Positive & Progressive Immortality*, Sridhar Dev Goswami explains the soul's independent journey through the planes of exploitation, renunciation, and dedication and how it finds ultimate satisfaction and fulfillment in a higher reality.

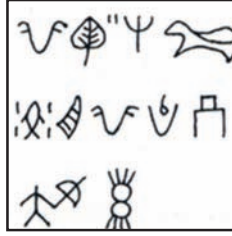
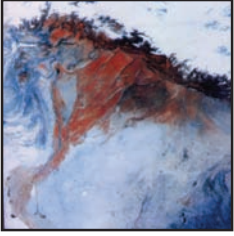
Sridhar Dev Goswami further traces the eternal soul's quest and continuing journey in four chapter excerpts from his book *Subjective Evolution of Consciousness* — a thought provoking and illuminating presentation to stimulate our intelligence from within.

These articles give a detailed overview of the various contributions of Indian civilization and it is our hope that this book will help the reader discover and appreciate the many wondrous facets of Vedic India.









# Scientific Verification of Vedic Knowledge

by David Osborn

A vast number of statements and materials presented in the ancient Vedic literatures can be shown to agree with modern scientific findings and they also reveal a highly developed scientific content in these literatures. The great cultural wealth of this knowledge is highly relevant in the modern world.

Techniques used to show this agreement include:

- Marine archaeology of underwater sites (such as Dvaraka)
- Satellite imagery of the Indus-Sarasvata River system,
- Carbon and thermoluminescence dating of archaeological artifacts
- Scientific verification of scriptural statements
- Linguistic analysis of scripts found on archaeological artifacts
- A study of cultural continuity in all these categories.

Early indologists wished to control & convert the followers of Vedic Culture, therefore they widely propagated that the Vedas were simply mythology.

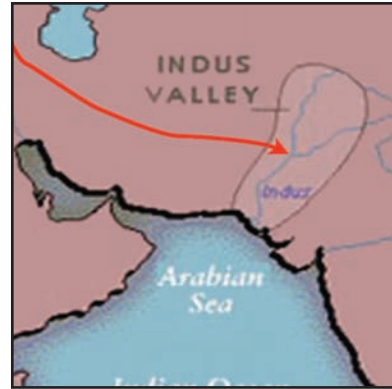
Max Muller, perhaps the most well known early sanskritist and indologist, although later in life he glorified the Vedas, initially wrote that the “Vedas were worse than savage” and “India must be conquered again by education... it’s religion is doomed.”

Thomas Macaulay, who introduced English education into India, wanted to make the residents into a race that was:

*“Indian in blood and color, but English in taste, in opinion, in morals, and in intellect.”*

However, the famed German Philosopher Arthur Schopenhauer stated that the Sanskrit understanding of these indologists was like that of young schoolboys.





These early indologists:

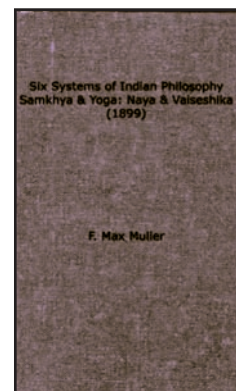
- Devised the Aryan Invasion Theory, denying India's Vedic past.
- They taught that the English educational system is superior.
- They intentionally misinterpreted sanskrit texts to make the Vedas look primitive.
- They systematically tried to make Indians ashamed of their own culture.
- Thus the actions of these indologists seems to indicate that they were motivated by a racial bias.

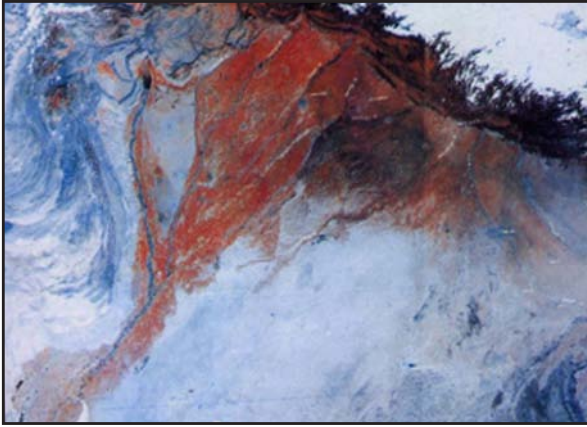
Innumerable archaeological findings and their analysis have recently brought the Aryan Invasion Theory into serious question. This theory is still taught as fact in many educational systems, despite much contrary evidence.

## The Aryan Invasion Theory Defined

- Vedic Aryans entered India between 1,500 and 1,200 B.C.
- They conquered the native Dravidian culture by virtue of their superiority due to their horses and iron weapons
- They imported the Vedic culture and it's literatures.
- This Aryan Invasion Theory, however, deprives the inhabitants of India of their Vedic heritage. The wealth of their culture came from foreign soil.

The Aryan Invasion Theory raises an interesting dilemma called *Frawleys Paradox*: On the one hand we have the vast Vedic literature without any archaeological finds associated with them and on the other hand, we have more than 2,500 archaeological sites from the Indus-Sarasvata civilization without any literature associated with them.





A preponderance of contemporary evidence now seems to indicate that these are one and the same cultures. This certainly eliminates this paradox and makes perfect sense, to an unbiased researcher.

## Facts which cast serious doubt on the Aryan Invasion Theory

- There is no evidence of an Aryan homeland outside of India mentioned anywhere in the Vedas. On the contrary, the Vedas speak of the mighty Sarasvati River and other places indigenous to India. To date, no evidence for a foreign intrusion has been found, neither archaeological, linguistic, cultural, nor genetic.
- There are more than 2,500 archaeological sites, two-thirds of which are along the more recently discovered dried up Sarasvati River bed. These sites show a cultural continuity with the Vedic literature from early Harappan civilization up to the present.
- Several independent studies of the drying up of the Sarasvati River bed, all indicate the same time period of 1,900 B.C.E.
- The significance of establishing this date for the drying up of the Sarasvati River is that it pushes the date for the composition of the Rig Veda back to approximately 3,000 B.C.E., as enunciated by the Vedic tradition itself.
- The late dating of the Vedic literatures by indologists is based on speculated dates of 1,500 B.C.E. for the Aryan Invasion and 1,200 B.C.E. for the Rig Veda, both now disproved by scientific evidence.



Max Muller, the principal architect of the Aryan Invasion theory, admitted the purely speculative nature of his Vedic chronology, and in his last work published shortly before his death, *The Six Systems of Indian Philosophy*, he wrote:

*“Whatever may be the date of the Vedic hymns, whether 15 hundred or 15,000 B.C.E., they have their own unique place and stand by themselves in the literature of the world.”*

द्वीपेषु तेषु वर्षाणि चत्वारिंशत्तथे  
 द्वीपाः समुद्राश्च अन्योन्यस्य तु मण  
 निर्ममे ब्रह्मा स्थानानीमानि सर्वश  
 ॥ १७ ॥ स्वर्गं दिशः समुद्रांश्च  
 मुहूर्तं सन्धिरात्र्यहम् । अर्द्धमासां  
 स सृष्ट्वा वै युगावस्थां विनिर्ममे ॥ २  
 या मया तुभ्यं पूर्वकालं प्रजास्तु त  
 प्रवर्तन्ति पुनः सर्गे बीजार्थं ता भर्वा  
 धर्मार्थकाममोक्षाणामिह ताः साध



## Vedic Culture is indigenous to India

It can be scientifically proven that the Vedic Culture is indigenous, through the study of cultural continuity, archaeology, linguistic analysis, and genetic research.

For example, the language and symbolism found on the Harappan seals are very Vedic. We find the *Om* symbol, the leaf of the *Asvatta* or holy banyan tree, as well as the swastika, or sign of auspiciousness, mentioned throughout the Vedas. *Om* is mentioned in the *Mundaka* and *Katha Upanisads* as well as *Bhagavad-Gita*.

The Holy *Asvatta* tree is mentioned in the *Aitareya* and *Satapata Brahmanas* as well as the *Taittiriya Samhita* and *Katyayana Smrti*.

The pictorial script of these Harappan seals has been deciphered as consistently Vedic and termed “Proto-brahmi,” as a pre-sanskrit script.

This piece of pottery (above right) from the lowest level of Harappan excavations with pre-harappan writing has been deciphered by some as *ila vartate vara*, referring to the sacred land bounded by the *Sarasvati* River, described in the *Rig Veda*.

Additionally, other archaeological finds are culturally consistent, such as the dancing girl, whose bracelets are similar to those worn by women of Northwest India today, as well as the three stone *Siva Lingas* found in Harappa by M. S. Vats in 1940. The worship of the *Siva Linga* is mentioned in the *Maha Narayana Upanisad* of the *Yajur Veda* and is still ardently practiced today.

The Vedas were maligned by early indologists because of their disagreement with their Eurocentric colonialists world view, a view which produced and depended on the *Aryan Invasion Theory*. The fact that the *Aryan Invasion Theory* has been seriously challenged recently by scholars and indologists, adds credence to the Vedas as viable, accurate and indigenous sources of information.

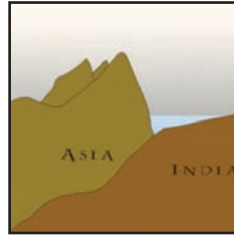
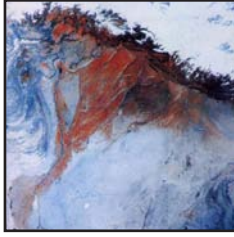
## Satellite imagery of the Dried Up *Sarasvati* River Basin

Using modern scientific methods, such as satellite imagery and dating techniques, it can be shown that the ancient statements of the Vedas are factual, not mythical as erroneously propagated. High resolution satellite images have verified descriptions in The *Rig Veda* of the descent of the ancient *Sarasvati* River from it’s source in the Himalayas to the Arabian Sea.

*pra ksodasa dhayasa sasra esa  
sarasvati dharunamayasi puh*

*prababadhana rathyeva yati visva  
apo mahina sindhuranyah  
Rig Veda 07.095.01.1-2*

“Pure in her course from the mountains to the ocean, alone of streams *Sarasvati* hath listened.”



The mighty Sarasvati River and its civilization are referred to in the *Rig Veda* more than fifty times, proving that the drying up of the Sarasvati River was subsequent to the origin of the *Rig Veda*, pushing this date of origin back into antiquity, casting further doubt on the imaginary date for the so-called Aryan Invasion.

The Satellite image (above left) clearly shows the Indus-Sarasvati river system extending from the Himalayas to the Arabian Sea. Here the Indus River is on the left, outlined in blue, while the Sarasvati River basin is outlined in green. The black dots are the many (several thousand) archeological sites or previous settlements along the banks of the now dry Sarasvati River.

The drying up of the Sarasvati River around 1900 B.C.E. is confirmed archaeologically. Following major tectonic movements or plate shifts in the Earth's crust, the primary cause of this drying appears to be due to the capture of the Sarasvati River's main tributaries by other rivers.

Although early studies, based on limited archaeological evidence produced contradictory conclusions, recent independent studies, such as that of archaeologist James Shaffer in 1993, showed no evidence of a foreign invasion in the Indus Sarasvati civilization and that a cultural continuity could be traced back for millennia.

In other words, Archaeology does not support the Aryan Invasion Theory.

## Evidence for the Ancient Port City of Dvaraka

Marine archaeology has also been utilized in India off the coast of the ancient port city of Dvaraka in Gujarat, uncovering further evidence in support of statements in the Vedic scriptures. An entire submerged city at Dvaraka, the ancient port city of Lord Krishna with its massive fort walls, piers, warfs and jetty has been found in the ocean, similar to that described in the *Mahabharata* and other Vedic literatures.

This Sanskrit verse from the *Mausala Parva* of the *Mahabharata*, describes the disappearance of the city of Dvaraka into the sea:

*niryate tu jane tasmin  
sagaro makaralayah  
dvarakan ratna-sampurnan  
jalenaplavayattada*

“After all the people had set out, the ocean flooded Dvaraka, which still teemed with wealth of every kind. Whatever portion of land was passed over, the ocean immediately flooded over with its waters.” (MB, MP, 7, verse 40)



Dr. S. R. Rao, formerly of the Archaeological Survey of India, has pioneered marine archaeology in India. Marine archaeological findings seem to corroborate descriptions in the *Mahabharata* of Dvaraka as a large, well-fortified and prosperous port city, which was built on land reclaimed from the sea, and later taken back by the sea. This lowering and raising of the sea level during these same time periods of the 15th and 16th centuries B.C.E. is also documented in historical records of the country of Bahrain.

Amongst the extensive underwater discoveries were the massive Dvaraka city wall, a large door-socket and a bastion from the fort wall.

Two rock-cut slipways of varying width, extending from the beach to the intertidal zone, a natural harbor, as well as a number of olden stone ship anchors were discovered, attesting to Dvaraka being an ancient port city

The three headed motif on this conch-shell seal (above left), found in the Dvaraka excavations, is in agreement with the reference in the scripture *Harivamsa* that every citizen of Dvaraka should carry a mudra or seal of this type.

All these underwater excavations add further credibility to the validity of the historical statements found in the Vedic literatures.

## Thirty-five Archaeological Sites in North India

Apart from Dvaraka, more than thirty-five sites in North India have yielded archaeological evidence and have been identified as ancient cities described in the *Mahabharata*. Copper utensils, iron, seals, gold & silver ornaments, terracotta discs and painted grey ware pottery have all been found in these sites. Scientific dating of these artifacts corresponds to the non-aryan-invasion model of Indian antiquity.

Furthermore, the *Matsya* and *Vayu Puranas* describe great flooding which destroyed the capital city of Hastinapur, forcing its inhabitants to relocate in Kausambi. The soil of Hastinapur reveals proof of this flooding. Archaeological evidence of the new capital of Kausambi has recently been found which has been dated to the time period just after this flood.

## Mahabharata

The *Mahabharata* also describes three cities given to the Pandavas, the heroes of the *Mahabharata*, after their exile:

Paniprastha, Sonaprastha and Indraprastha, which is Delhi's Puranaqila. These sites have been identified and yielded pottery & antiquities, which show a cultural consistency & dating consistent for the *Mahabharata* period, again verifying statements recorded in the Vedic literatures.





## Renowned Thinkers Who Appreciated the Vedic Literatures

Although early indologists, in their missionary zeal, widely vilified the Vedas as primitive mythology, many of the worlds greatest thinkers admired the Vedas as great repositories of advanced knowledge and high thinking

Arthur Schopenhauer, the famed German philosopher and writer, wrote that: “I ...encounter [in the Vedas] deep, original, lofty thoughts... suffused with a high and holy seriousness.”

The well-known early American writer Ralph Waldo Emerson, read the Vedas daily. Emerson wrote: “I owed a magnificent day to the *Bhagavat-Gita*.”

Henry David Thoreau said: “In the morning I bathe my intellect in the stupendous philosophy of the *Bhagavat-Gita*... in comparison with which... our modern world and its literature seems puny and trivial.”

So great were Emerson and Thoreau’s appreciation of Vedantic literatures that they became known as the *American Transcendentalists*. Their writings contain many thoughts from Vedic Philosophy.

Other famous personalities who spoke of the greatness of the Vedas were: Alfred North Whitehead (British mathematician, logician and philosopher), who stated that: “Vedanta is the most impressive metaphysics the human mind has conceived.”

Julius Robert Oppenheimer, the principle developer of the atomic bomb, stated that “The Vedas are the greatest privilege of this century.” During the explosion of the first atomic bomb, Oppenheimer quoted several Bhagavad-Gita verses from the 11th chapter, such as:

“*Death I am, cause of destruction of the worlds...*”

When Oppenheimer was asked if this is the first nuclear explosion, he significantly replied: “Yes, in modern times,” implying that ancient nuclear explosions may have previously occurred. This is significant because ancient weapons, much like modern nuclear weapons, are described many places in the Vedic literatures.

Lin Yutang, Chinese scholar and author, wrote that: “India was China’s teacher in trigonometry, quadratic equations, grammar, phonetics... “ and so forth.

Francois Voltaire stated: “... everything has come down to us from the banks of the Ganges.”

From these statements we see that many renowned intellectuals believed that the Vedas provided the origin of scientific thought.





## The Iron Pillar of Delhi

The Vedic literatures contain descriptions of advanced scientific techniques, sometimes even more sophisticated than those used in our modern technological world.

Modern metallurgists have not been able to produce iron of comparable quality to the 22 foot high Iron Pillar of Delhi, which is the largest hand forged block of iron from antiquity.

This pillar stands at mute testimony to the highly advanced scientific knowledge of metallurgy that was known in ancient India. Cast in approximately the 3rd century B.C.E., the six and a half ton pillar, over two millennia has resisted all rust and even a direct hit by the artillery of the invading army of Nadir Shah during his sacking of Delhi in 1737.

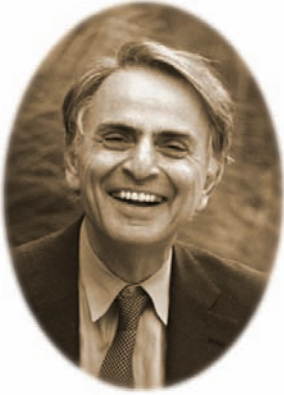


## The Heliodorus Column and Cultural Links to India

An example of India's cultural exchanges with European countries is found in the inscriptions on the Heliodorus Column, erected in 113 B.C.E. by Heliodorus, a Greek ambassador to India, and convert to Vaisnavism, as well as the 2nd century B.C.E. Coins of Agathocles, showing images of Krishna and Balaram. These artifacts also stand testimony that *Sanatan Dharma* predates Christianity.

The Heliodorus stone pillar confirms the link between India and other ancient civilizations such as Greece and shows that there was a continuous exchange of culture, philosophy and scientific knowledge between India & other countries. Indeed the Greeks learned many wonderful things from India.





## Vedic Cosmology

Vedic Cosmology is yet another ancient Vedic science which can be confirmed by modern scientific findings and this is acknowledged by well known scientists and authors, such as Carl Sagan and Count Maurice Maeterlinck, who recognized that the cosmology of the Vedas closely parallels recent scientific observations and calculations.

Carl Sagan stated, “Vedic Cosmology is the only one in which the time scales correspond to those of modern scientific cosmology.”

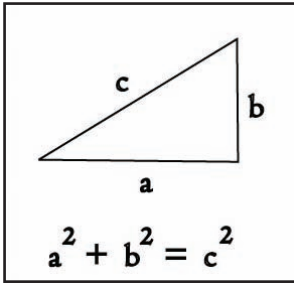
Nobel laureate Count Maurice Maeterlinck wrote of “a Cosmogony which no European conception has ever surpassed.”

French astronomer Jean-Claude Bailly corroborated the antiquity and accuracy of the Vedic astronomical measurements as “more ancient than those of the Greeks or Egyptians.” And that, “the movements of the stars calculated 4,500 years ago, does not differ by a minute from the tables of today.”

The ninety foot tall astronomical instrument known as Samrat Yantra (pictured above right), built by the learned King Suwai Jai Singh of Jaipur, measures time to within two seconds per day.

Cosmology and other scientific accomplishments of ancient India spread to other countries along with mercantile and cultural exchanges. There are almost one hundred references in the *Rig Veda* alone to the ocean and maritime activity. This is confirmed by Indian historian R. C. Majumdar, who stated that the people of the Indus-Sarasvata Civilization engaged in trade with Sooma and centers of culture in western Asia and Crete.





$$\begin{array}{r}
 12=10+2 \\
 13 \\
 +9 \\
 \hline
 22
 \end{array}
 \qquad
 \begin{array}{r}
 22 \\
 24987 \\
 +4979 \\
 +2985 \\
 \hline
 32951
 \end{array}$$

$$\begin{array}{r}
 10 \qquad 400 \\
 +9 \qquad \times 10 \\
 \hline
 19 \qquad 4,000 \\
 = 4 \times 10^3
 \end{array}$$

$$\begin{aligned}
 m &= \\
 m_0 / \sqrt{(1 - v^2/c^2)} \\
 \text{as } v &\rightarrow c \\
 m &\rightarrow \infty
 \end{aligned}$$

(tat) savitur varenyam

sa	vi	tur	va	ren	yam
light	light	heavy	light	heavy	light
1	1	0	1	0	1
1	2	4	8	16	32
1	2	0	8	0	32
					43
					44

A systematic arrangement of Janaka ragas.

F		Raga#	Chakra	F'	
Ri, Ga	Dn & Ni			Ri, Ga	Dn & N
C', D	G', A	1	7	C', D	G', A
	G', A'	2			G', A'
	G', B	3			G', B
	A, A'	4			A, A'
	A, B	5			A, B
	A', B	6			A', B
C', D'	G', A	7	8	C', D'	G', A
	G', A'	8			G', A'
	G', B	9			G', B
	A, A'	10			A, A'
	A, B	11			A, B
	A', B	12			A', B

## Vedic Mathematics

Voltaire, the famous French writer and philosopher, stated that "Pythagoras went to the Ganges to learn geometry." Abraham Seidenberg, author of the authoritative "History of Mathematics," credits the *Sulba Sutras* as inspiring all mathematics of the ancient world from Babylonia to Egypt to Greece.



As Voltaire & Seidenberg have stated, many highly significant mathematical concepts have come from the Vedic culture, such as:



- The theorem bearing the name of the Greek mathematician Pythagoras is found in the *Shatapatha Brahmana* as well as the *Sulba Sutra*, the Indian mathematical treatise, written centuries before Pythagoras was born.

- The Decimal system, based on powers of ten, where the remainder is carried over to the next column, is first mentioned in the *Taittiriya Samhita* of the *Black Yajurveda*.
- The Introduction of zero as both a numerical value and a place marker.
- The Concept of infinity.
- The Binary number system, essential for computers, was used in Vedic verse meters.
- A hashing technique, similar to that used by modern search algorithms, such as that of Google, was used in South Indian musicology. From the name of a *raga* one can determine the notes of the *raga* from this *Kathapayadi* system. (See Figure above right bottom.)

For further reading we refer you to the following more extensive article on Vedic Mathematics.

<http://www.vedicsciences.net/articles/vedic-mathematics.html>



## Vedic Sound and Mantras

The Vedas however are not as well known for presenting historical and scientific knowledge as they are for expounding subtle sciences, such as the power of *mantras*. We all recognize the power of sound itself by its effects, which can be quite dramatic. Perhaps we all have seen a high-pitched frequency shatter an ordinary drinking glass. Such a demonstration shows that loud sounds can produce substantial reactions

It is commonly believed that *mantras* can carry hidden power which can in turn produce certain effects. The ancient Vedic literatures are full of descriptions of weapons being called by *mantra*. For example, many weapons were invoked by *mantra* during the epic Kuruksetra War, wherein the *Bhagavad-Gita* itself was spoken.

The ancient deployment of *Brahmastra* weapons, equivalent to modern day nuclear weapons are described throughout the Vedic literatures. Additionally, *mantras* carry hidden spiritual power, which can produce significant benefits when chanted properly. Indeed, the Vedas themselves are sound vibrations in literary form and carry a profound message. Spiritual disciplines recommend meditative practices such as silent meditation, silent recitation of *mantras* and also the verbal repetition of specific *mantras* out loud.

A clinical test of the benefits of *mantra* chanting was performed on three groups of sixty-two subjects, males and females of average age 25. They chanted the *Hare Krsna Maha Mantra* twenty-five minutes each day under strict clinical supervision.

Results showed that regular chanting of the *Maha Mantra* reduces stress and depression and helps reduce bad habits & addictions. These results formed a PhD Thesis at Florida State University. Tests performed with similar mantras have produced corresponding results.

Spiritual practitioners claim many benefits from *Mantra* Meditation such as increased realization of spiritual wisdom, inner peace and a strong communion with God and the spiritual realm. These effects may be experienced by following the designated spiritual path.

## Conclusion

Most of the evidence given in this presentation is for the *apara vidya* or material knowledge of the Vedic literatures. The Vedas however, are more renowned for their *para vidya* or spiritual knowledge. And even superior is the realized knowledge of the Vedic *rsis* or saints — that which is beyond the objective knowledge of modern science — knowledge of the eternal realm of *sat, cit ananda* — eternity, blissfulness and full knowledge. But that is another presentation.

*The Scientific Verification of Vedic Knowledge* is available from DevaVision Video Documentaries as a downloadable file or DVD ( <http://www.devavision.org/> ).

हेरे कृष्ण हेरे कृष्ण

कृष्ण कृष्ण हेरे हेरे

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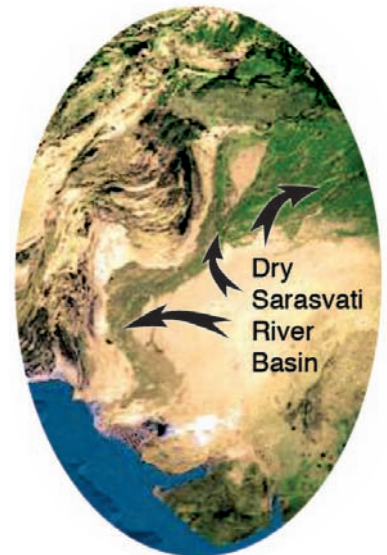
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# A Brief History of Indian Science

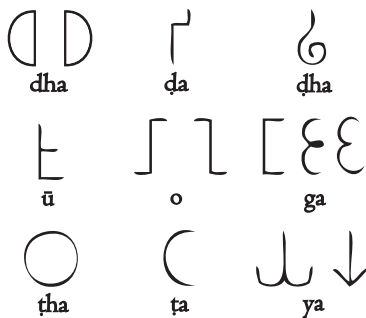
An essay in *Grolier Encyclopaedia*

by Subhash Kak, PhD

Indian literature provides us with considerable layered evidence related to the development of science. The chronological time frame for this history is provided by the archaeological record which has been traced in an unbroken tradition to about 7,000 BCE. Prior to this we have records of rock paintings that are believed to be as old as 40,000 BCE. The earliest textual source is the Rig Veda, which is a compilation of very early material. There are astronomical references in this and the other Vedic books which recall events in the third or the fourth millennium BCE and earlier. The recent discovery that Sarasvati, the preeminent river of the Rig Vedic times, went dry around 1,900 BCE due to tectonic upheavels (see satellite photo right) implies that the Rig Veda is to be dated prior to this epoch. According to traditional history, Rig Veda is prior to 3,100 BCE.



Indian writing goes back to the beginning of the third millennium BCE. The later historical script called Brahmi evolved out of this writing. The invention of the symbol for zero appears to have been made around 50 BC to 50 AD.



## Vedic Science

Briefly, the Vedic texts present a tripartite and recursive world view. The universe is viewed as three regions of earth, space, and sky which in the human being are mirrored in the physical body, the breath (*prana*), and mind.

In the Vedic world view, the processes in the sky, on earth, and within the mind are taken to be connected. The Vedic seers were aware that all descriptions of the universe lead to logical paradox. The one category transcending all oppositions was termed *brahman*. Understanding the nature of consciousness was of paramount importance in this view but this did not mean that other sciences were ignored. Vedic ritual was a symbolic retelling of this world view.

Knowledge was classified in two ways: the lower or dual; and the higher or unified. The seemingly irreconcilable worlds of the material and the conscious were taken as aspects of the same transcendental reality.

The idea of complementarity was at the basis of the systematization of Indian philosophic traditions as well, so that complementary approaches were paired together. We have the groups of: logic (*Nyaya*) and physics



(Vaisheshika), cosmology (Sankhya) and psychology (Yoga), and language (Mimamsa) and reality (Vedanta). Although these philosophical schools were formalized in the post-Vedic age, we find the basis of these ideas in the Vedic texts.

The Sankhya and the Yoga systems take the mind as consisting of five components: *manas*, *ahankara*, *chitta*, *buddhi*, and *atman*. *Manas* is the lower mind which collects sense impressions. *Ahankara* is the sense of I-ness that associates some perceptions to a subjective and personal experience. Once sensory impressions have been related to I-ness by *ahankara*, their evaluation and resulting decisions are arrived at by *buddhi*, the intellect. *Chitta* is the memory bank of the mind. These memories constitute the foundation on which the rest of the mind operates. But *chitta* is not merely a passive instrument. The organization of the new impressions throws up instinctual or primitive urges which creates different emotional states. This mental complex surrounds the innermost aspect of consciousness, which is called *atman*, the self, or *brahman*.



## Physics and Chemistry

The Vaisheshika system considers nine classes of substances, some of which are nonatomic, some atomic, and others all-pervasive. The nonatomic ground is provided by the three substances ether, space, and time, which are unitary and indestructible; a further four, earth, water, fire, and air are atomic composed of indivisible, and indestructible atoms; self (*atman*), which is the eighth, is omnipresent and eternal; and, lastly, the ninth, is the mind (*manas*), which is also eternal but of atomic dimensions, that is, infinitely small.

The atoms combine to form different kinds of molecules which break up under the influence of heat. The molecules come to have different properties based on the influence of various potentials (*tanmatras*).

Heat and light rays are taken to consist of very small particles of high velocity. Being particles, their velocity is finite.

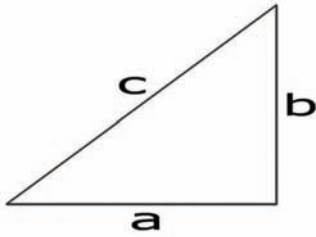
The gravitational force was perceived as a wind. The other forces were likewise mediated by atoms of one kind or the other.

Indian chemistry developed many different alkalis, acids and metallic salts by processes of calcination and distillation, often motivated by the need to formulate medicines. Metallurgists developed efficient techniques of extraction of metals from ore.

## Geometry and mathematics

Indian geometry began very early in the Vedic period in altar problems — as in the one where the circular altar (earth) is to be made equal in area to a square altar (heavens). Two aspects of the “Pythagoras” theorem are described in the texts by Baudhayana and others.

The geometric problems are often presented with their algebraic counterparts. The solution to the planetary problems also led to the development of algebraic methods.



$$a^2 + b^2 = c^2$$

## Binary numbers

Binary numbers (essential for computers, where all numbers are represented as a series of zeros and ones) were known at the time of Pingala's Chhandah-shastra. Pingala, who lived about the fifth century BCE used binary numbers to classify Vedic meters. The knowledge of binary numbers indicates a deep understanding of arithmetic.

## Astronomy

Using hitherto neglected texts, an astronomy of the third millennium BCE has been discovered recently. Yajnavalkya (1800 BCE ?) knew of a 95-year cycle to harmonize the motions of the sun and the moon and he also knew that the sun's circuit was asymmetric.

Astronomical numbers played a central role in Vedic ritual. Part of the ritual was to devise geometrical schemes related to the lengths of the solar and the lunar years. The organization of the Vedic books was also according to an astronomical code. To give just

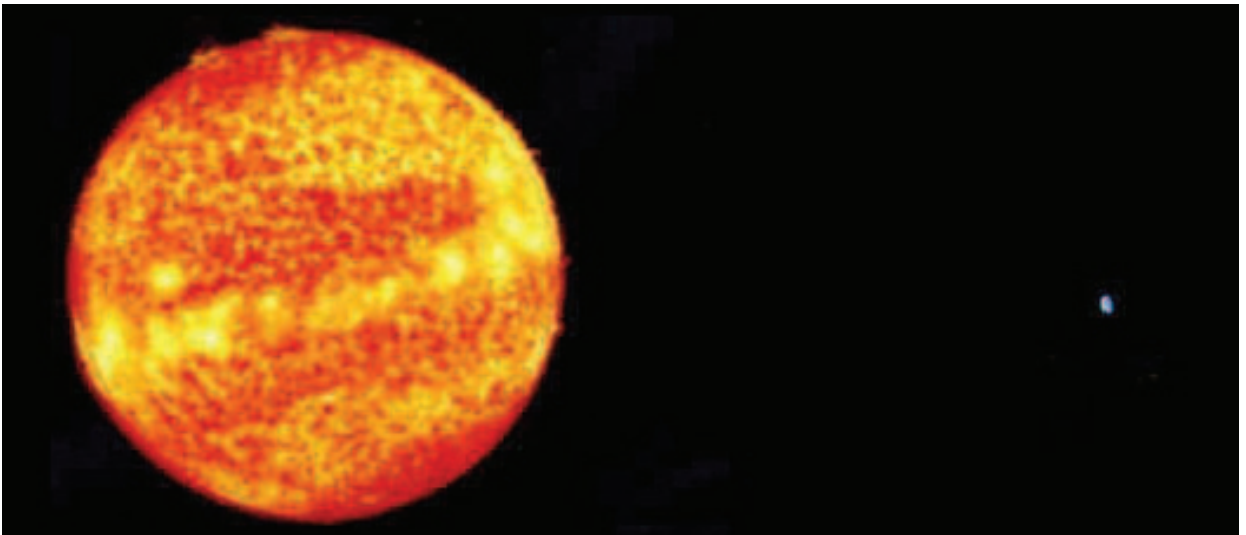
one example, the total number of verses in all the Vedas is 20,358 which equals  $261 \times 78$ , a product of the sky and atmosphere numbers of Vedic ritual!

The second millennium text Vedanga Jyotisha of Lagadha went beyond the earlier calendrical astronomy to develop a theory for the mean motions of the sun and the moon. This marked the beginnings of the application of mathematics to the motions of the heavenly bodies. An epicycle theory was used to explain planetary motions. Later theories consider the motion of the planets with respect to the sun, which in turn is seen to go around the earth.

## Cosmology

The doctrine of the three constituent qualities: *sattva*, *rajas*, and *tamas*, plays a very important role in the Sankhya physics and metaphysics. In its undeveloped state, cosmic matter has these qualities in equilibrium. As the world evolves, one or the other of these become preponderant in different objects or beings, giving specific character to each.

The recursive Vedic world-view requires that the universe itself go through cycles of creation and destruction. This view became a part of the astronomical framework and ultimately very long cycles of billions of years were assumed. Indian evolution takes the life forms to evolve into an increasingly complex system until the end of the cycle. The categories of Sankhya operate at the level of the individual as well. Life mirrors the entire creation cycle and cognition mirrors a life-history.





Cosmological speculations led to the belief in a universe that goes through cycles of creation and destruction with a period of 8.64 billion years. Related to this was the notion that light traveled with a speed of 186,000 miles per second. Since these numbers were not obtained through experimentation, the accuracy of these figures must be seen as remarkable coincidence.

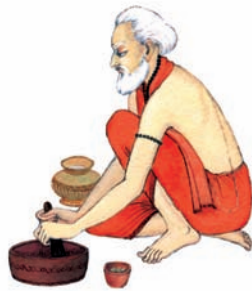


## Grammar

Panini's grammar (5th century BC) provides 4,000 rules that describe the Sanskrit of his day completely. This grammar is acknowledged to be one of the greatest intellectual achievements of all time. The great variety of language mirrors, in many ways, the complexity of nature and, therefore, success in describing a language is as impressive as a complete theory of physics. It is remarkable that Panini set out to describe the entire grammar in terms of a finite number of rules. Scholars have shown that the grammar of Panini represents a universal grammatical and computing system. From this perspective it anticipates the logical framework of modern computers.

## Medicine

Ayurveda, the Indian medicine system, is a holistic approach to health that builds upon the tripartite Vedic approach to the world. Health is maintained through a balance between three basic humors (*dosha*) of wind (*vata*), fire (*pitta*), and water (*kapha*). Charaka and Sushruta are two famous early physicians.



Indian surgery was quite advanced. The caesarian section was known, bone-setting reached a high degree of skill, and plastic surgery was known.

## The Medieval Period

Astronomical texts called *siddhantas* begin appearing sometime in the first millennium BC. According to tradition there were 18 early *siddhantas* of which only a few have survived. Each *siddhantas* is an astronomical system with its own constants. Some of the famous astronomer-mathematicians that arose in India's long medieval period are listed below.

### Aryabhata

In his book *Aryabhatiyam*, Aryabhata (born 476) sketched his mathematical, planetary, and cosmic theories. The parameters of *Aryabhatiyam* have, as their origin, the date of Friday, 18th February, 3102 BCE. Aryabhata took the earth to spin on its axis; this idea appears to have been his innovation. Aryabhata was aware of the relativity of motion as is clear from this passage in his book, "Just as a man in a boat sees the trees on the bank move in the opposite direction, so an observer on the equator sees the stationary stars as moving precisely toward the west."



### Brahmagupta

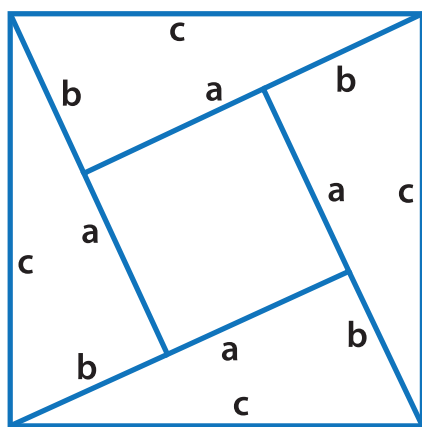


Born in 598 in Rajasthan, Brahmagupta wrote his masterpiece, *Brahmasphuta Siddhanta*, in 628. His school, which was a rival to that of Aryabhata, has been very influential in western and northern India. Brahmagupta's work was translated into Arabic in the eighth century at Baghdad and it became famous in the Arabic world as *Sindhind* and it influenced Islamic astronomy.

One of Brahmagupta's chief contributions is the solution of a certain second order indeterminate equation which is of great significance in number theory.

## Bhaskara

Belonging to the Karnataka region, Bhaskara (born 1114), was an outstanding mathematician and astronomer. Amongst his mathematical contributions is the concept of differentials. He was the author of Siddhanta Shiromani, a book in four parts: (i) Lilavati on arithmetic, (ii) Bijaganita on algebra, (iii) Ganitadhyaya, (iv) Goladhyaya on astronomy. The epicyclic-eccentric theories of planetary motions are more developed than in the earlier siddhantas.<sup>1</sup>



### Bhaskara's Proof

$$c^2 = 4 \cdot \frac{1}{2} ab + (a-b)^2 = a^2 + b^2$$

## Madhava

Subsequent to Bhaskara we see a flourishing tradition of mathematics and astronomy in Kerala which saw itself as a successor to the school of Aryabhata. Of these, Madhava (c. 1340-1425) developed a procedure to determine the positions of the moon every 36 minutes. He also provided methods to estimate the motions of the planets. He gave power series expansions for trigonometric functions, and for pi correct to eleven decimal places.

## Nilakantha Somayaji

A very prolific scholar who wrote several works on astronomy, Nilakantha (c. 1444-1545) found the correct formulation for the equation of the center of the planets and his model must be considered a

true heliocentric model of the solar system (a system with the sun at the center). He also improved upon the power series techniques of Madhava. The methods developed by the Kerala mathematicians were far ahead of the European mathematics of the day.

Another noteworthy contribution was by the school of New Logic (Navya Nyaya) of Bengal and Bihar. At its zenith during the time of Raghunatha (1475-1550), this school developed a methodology for a precise semantic analysis of language. Its formulations are equivalent to mathematical logic.

## The Modern period

Entering its modern era with the arrival of the English, India in the last two centuries has witnessed a renaissance of its science and a proper appreciation of the past achievements.

### Ramanujan



Some of the most important scientists born in the 19th century who made an international mark are Jagadish Bose (1858-1937) in electromagnetics and plant life, Srinivas Ramanujan (1887-1920) in mathematics, Chandrasekhar Venkata Raman (1888-1970) in physics, Meghnad Saha (1893-1956) in astrophysics, and Satyendra Bose (1894-1974) in quantum theory. More recent contributions of Indian science are part of the story of the contemporary world science.

### Footnotes:

1. The eccentric motion refers to a planet moving round the circumference of a circle, whose center does not coincide with the earth. The alternative "epicyclic" model, is one in which the planet turns about a point that itself orbits in a circle (the "deferent") centered at or near the Earth.



# Modern Science and Vedic Science

by Dr. David Frawley

## Vedic Science and the Pursuit of Truth

Real science consists of an objective pursuit of truth through observation and experimentation. It occurs apart from any beliefs or preconceptions about what it is going to find. It is based upon reason and direct perception, in which the reality is allowed to reveal itself to the unbiased eye.

However, the universe we live in is a multidimensional reality from the subatomic to the supra-galactic in the realm of physics alone. Biology, medicine, psychology and the social sciences require different perspectives and approaches. On top of these are subtle forces and influences, extrasensory, occult and spiritual, that many people claim to experience as well and have developed special methods of working with.

Besides any knowledge of the external world is the knowledge of the internal world, the perennial quest for Self-knowledge or knowledge of our true nature, as evidenced by the most primary and important of all life's many questions, "Who am I." This inner quest or inner science can be very different in approach than the outer sciences.

From an Indian perspective, we can call this inner science of Self-knowledge, 'yogic science.' Traditional Yoga and Vedanta also has its goal as the objective pursuit of truth. But it aims at the supreme truth — which is the eternal — that truth which never changes. It regards relative truths — up to and including the very existence of the external world itself — as ultimately an illusion because these eventually, at one time or level or another, are found not to be valid. This yogic science aims not just at the knowledge of the world but an understanding of Knower.

## Science and Spirituality in India

In India, science and spirituality have always gone together. Spirituality through Yoga and Vedanta has always been conceived of as a science, a way of knowledge to be approached with reason and experimentation through Yoga and meditation leading to the direct perception of truth. Other Indic systems of thought like Buddhism and Jainism have shared similar views.

Veda itself means knowledge, deriving from the Sanskrit root 'vid' meaning to know, to see or to cognize. The Vedas are called Vidyas which means ways of knowledge or perception (a term cognate with Latin video!). The Vedas we might say are the Vidyas or videos of the sages shown on the inner screen of the meditative mind. They were said to have been cognized by the human mind in tune with the universal Being or Brahman.

The Vedas address all aspects of existence through Dharma, the natural laws that uphold the universe, which reflect not only matter and energy but life, mind and consciousness. As such, the Vedas constitute what could be called a science in the modern sense of the word and much more. We can find among the Vedic sciences a whole range of sciences from astronomy and chemistry to psychology and surgery, extending to astrology and to the science of Yoga itself. We can call this integral approach to both the spiritual and material sciences as ‘Vedic science.’

Unlike medieval Europe, traditional India never saw a conflict between science and spirituality. It never suppressed science or art in favor of religion. Rather its arts and sciences developed in harmony with spirituality. However, it did discriminate between the material and the spiritual sciences.

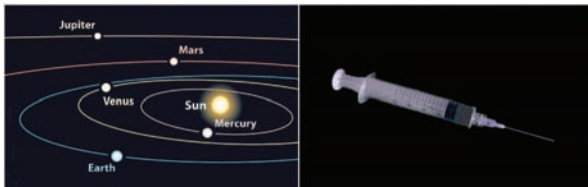
## The Higher and Lower Knowledge

The *Mundaka Upanishad* makes this clear. “Two sciences are to be known, the higher and the lower. The higher is through which the eternal is known.”

The lower knowledge consists of the outer forms of knowledge through which the transient factors are known, the aspects of name, form and action. The higher knowledge is self-knowledge through which the supreme is known.

This division of the higher and lower forms of knowledge reflects the Vedantic definition of reality as that which is eternal and the transient as an illusion. Because of this orientation, historically in India the inner or spiritual science gained the greatest attention, though the outer sciences were not neglected.

The lower sciences, moreover, can similarly be divided into two groups. The first are the usual material sciences like astronomy and medicine such as formulated in modern science.



Second are what could be called ‘occult’ sciences like astrology and Vastu, which modern science has generally neglected or rejected,



which suggest subtle influences of intelligence pervading the forces of nature.

While the Vedic mind never saw a real division between these two types of outer sciences (for example, Vedic Jyotish includes both astronomy and astrology), since the modern mind does, it is important to note this distinction.



## Science as Yoga

However, the distinction between the outer and inner sciences was never meant as a radical division. In the Vedic view, one can approach the outer sciences with an inner vision and turn them into inner sciences as well. In this way, the outer sciences can become inner sciences. That is why we find such diverse subjects from astronomy and mathematics, to music and even grammar defined as paths of Yoga or spiritual paths. We find the same groups of Vedic seers working with and developing the outer as

well as the inner sciences from the most ancient times, not finding working with one to necessarily be contrary to working with the other.

It remains possible to approach such outer sciences as physics as spiritual paths or paths of Yoga. They can be part of an inner science of Self-realization if one uses them to connect to the universal Being and Consciousness within the world and within ourselves. Much of modern physics is heading in this direction as it looks for an underlying consciousness to explain the underlying unity of the laws of physics.

Some scholars have said that this Indian emphasis on spirituality prevented the outer sciences from developing in India, since the outer sciences were not given the same priority. But we must remember that the dark ages in India came later than in the West, with repeated foreign invasions and conquests disrupting the country from 1,000 AD to 1,800 AD. Had this not occurred, India would have likely played a greater role in the development of modern science. Today we find many scientists coming out of India and many of these feel quite in harmony with Yoga, Vedanta and Buddhism, as well as with modern science.

## The Correct Means of Knowledge

Science rests upon a definition of what constitutes the right means of knowledge through which something can be known. Science, like the classical philosophies of India, recognizes the validity of sensory perception and reason as the main means at our ordinary disposal for gaining authentic knowledge about the world and about ourselves.

Yet science is not content with what the senses present us as reality, any more than the mystic or yogi is, though science builds upon rather than rejects what the senses show. Science has created a vast array



of special instruments and equipment from microscopes and telescopes that can greatly increase the range of our physical senses.

It has added other instruments like radio telescopes which bring in information about the universe from means that are related to but outside the scope of our ordinary senses. It has created special computers to extend the range of computation as well.

While Vedic science recognizes the importance of sensory perception and reason, it considers that there is another, more reliable and internal source of knowledge, particularly necessary for understanding the inner or spiritual world. This is the direct perception of the silent or meditative mind.

## The Meditative Mind as the Best Instrument of Science

Vedic thought holds that the best instrument of knowledge is the silent mind. This allows the mind itself, like an unflawed mirror, to directly reflect reality inside oneself. The mind becomes a reliable instrument of direct knowledge beyond the limitations of the senses. This silent mind is clearly defined in the Yoga Sutras of Patanjali and other texts as the state of *samadhi*. When the mind is in a state of peace and balance it becomes capable of directly perceiving the nature of things, which is consciousness and bliss. This is *samadhi-pramana*, *samadhi* as a means of knowledge in yogic thought, which opens up the inner world of the mind as clearly as our eyes open up the outer world of the senses.



In Vedic science, the meditative mind in *samadhi* is regarded as the appropriate instrument for knowing the inner reality. Pure consciousness,

God or Brahman, after all, is beyond any mundane name, form, number, time, place and person or it would just be another object or entity in the outer world. That which comprises the totality but is not limited by the totality cannot be examined by the instruments that work to provide knowledge of limited things.

This does not mean that examining the brain waves of meditators and other scientific experiments of this order are not of any value, but that these are secondary and indirect means of knowing the internal reality, like trying to examine a person through their body as reflected in a mirror, rather than examining the body directly.

We must employ the right instrument of knowledge to gain adequate knowledge of something. One cannot see the Sun with one's ears, for example. Only the eyes will reveal the light of the Sun. Similarly, the appropriate instrument for knowing the universal Being is not a limited instrument which looks externally, like a telescope, but the silent mind that is able to see within.

Yet while *samadhi* may not be an ordinarily recognized means of knowledge in science, we must note that many great scientific discoveries have been made by scientists when they were in the reverie of the inspired, concentrated or peaceful mind, in a kind of *samadhi*. Those who do deep research or concentrated thinking also develop the mind in a yogic way that can fall into *samadhi*, even without knowing what the state is! One could argue that all great discoveries or inspirations arise in a *samadhi*-like state of absorption and concentration.

Yet *samadhis* cannot be taken without scrutiny either and, like any source of knowledge, they also can be limited, mixed or partial. They are of different types and lesser *samadhis* may not yield entirely correct knowledge.

## The Conscious Universe

Modern science and Vedic science also differ in their view of the universe. In Vedic science the universe is a manifestation of consciousness. It is pervaded by consciousness as a universal power. This universal consciousness is different than the embodied consciousness in living beings, though it is related to it.

In modern science, consciousness has been mainly limited to living organisms and identified mainly by the development and functioning of the brain. However, modern science has begun to look for and many scientists recognize such a universal consciousness extending into a life intelligence in all organisms or even a planetary intelligence in the Earth itself. So as we gain a greater understanding of the conscious universe, the approaches of yogic and Vedic science are bound to become more relevant.

Yet Vedic science does not recognize just a background universal consciousness, but a cosmic intelligence and a universal life force to explain how that absolute consciousness is connected to the world of our ordinary experience. It posits God as the universal creator as the supreme intelligence behind the universe and pervading it, not as a mere article of faith or belief. In this way religion can be integrated into a spiritual science as well.

## The Need for both Outer and Inner Sciences

Clearly, the outer or material science has its value in helping us to understand and utilize the forces of the outer world. It gives us better technology which can make our lives easier. But when it comes to the inner world, scientific knowledge is often either indirect or misleading. For the inner knowledge, we need to cultivate the yogic sciences with their understanding not only of the physical universe but of the subtle forces behind the senses and of our true nature beyond time and space.



After all, the ultimate questions of human life, whether at a personal or a scientific level, are — “What in us can survive death?” and “How can we gain immortality?” Religions ordinarily try to answer such question by faiths, telling us to believe in something of this nature but not showing us how to directly perceive it for ourselves. Yogic science and similar forms of mysticism show us how to know the immortal and eternal in our own minds and hearts. This means that however practical the outer sciences may be for dealing with the external world, our deeper human quest is best addressed through the inner sciences.

## Important Vedic Sciences



Vedic Sciences include both subtle or occult sciences like astrology and the inner science of Self-knowledge through Yoga and Vedanta. Yet it sees all sciences as related. All knowledge is ultimately self-knowledge.

Our true self is not merely the human or psychological self but an expression of the universal Self. Each one of us is a manifestation of the infinite consciousness, intimately connected with the entire universe, with all beings, and ultimately with the Absolute beyond all time and space (Parabrahman). The key even to understanding medicine or physics is to look at the forces of the universe as existing both within and around us as powers of consciousness — to our true being in the universe and the entire universe within ourselves.

## Yogic Science

Yoga in the classical sense is the practical means of developing the meditative mind to allow for direct



perception of truth. As such, it is the basis of all the inner or Vedic sciences. Vyasa, the main ancient commentator on Patanjali's Yoga Sutras, the most important classical text on Yoga, defines Yoga as *samadhi* or the mind free of conditioning and preconception, the mind in a state of deep meditation. The Yoga Sutras begin with Samadhi Pada — the section dealing with Samadhi. The third and fourth sections of the book also deal mainly with Samyama, which is the joint practice of Dharana, Dhyana and Samadhi.

In the third section of the Yoga Sutras, different forms of knowledge gained by Samadhi are outlined. These include meditations on objects from sites in one's own body to the forces of nature that reveal both the nature of the universe and can grant superhuman powers.

The greatest knowledge that can be revealed by *samadhi* is that of the Purusha, which is not only our true Self but the Self of the universe and yet, in its own nature, is beyond all manifestation.

The field of Yogic science is vast. It includes practices like *asana*, *pranayama*, ritual, mantra and meditation.

It can reveal knowledge of our ordinary body and mind, and all aspects of the collective and cosmic minds, extending to the very processes of creation. Yoga contains special ways of knowledge relative to the body, mind, *prana*, senses and consciousness internally and to the powers of energy, light, matter and space externally.

## Ayurveda

Yet the deeper knowledge relates to spiritual practices, as well as bringing well-being to all aspects



of our nature. In the Vedic sciences, human well-being is defined as the harmony of body, mind, *prana* and soul (Atman or Purusha). Ayurveda, Vedic medicine, shows us how to find health and well-being through understanding the forces of nature and consciousness both within and around us.

The main different between Ayurveda and what we could call scientific medicine is that it recognizes an underlying *prana* or vital energy behind all bodily activities. Modern medicine tries to explain all these processes, sometimes extending to human emotion and intelligence, according to biochemistry alone, as if there were no conscious entity or force of life behind the process. In this regard, modern medicine is often more reductionist and physically based than is modern physics!

The concept of *prana* posits an overall field of energy and intelligence as a complete and holistic power to explain the factors of life at both individual and cosmic levels. As science is now looking for an underlying consciousness behind the universe to explain the laws of physics, it must also look to an underlying cosmic life-force behind life to explain its development. An organic system must include some unique being above and beyond its particular components, processes or chemical reactions.

## Vedic Astrology

If we live in a conscious universe, then the lights of the stars which illumine our world must reflect some power of consciousness as well. Jyotish or

Vedic astrology is aimed at helping us understand how the lights of the stars and planets affects our own bodies and minds and the fate of our world as a whole.

Time is not simply a force of physics but a power of intelligence and a process of the manifestation of consciousness. Vedic astrology helps us understand the karmic influences coming to us from the greater universe as channeled through the sun, moon and planets of the solar system. It holds that time is not simply neutral or a mere continuum but reflects various rhythms which project forces that affect the life and karma of living beings.

That time is projecting karma through the movement of the luminaries or heavenly bodies is an idea that seems illogical to modern science. But if we recognize that the universe is pervaded by consciousness, we can recognize that light ultimately is a power of consciousness, which means that astronomy must recognize astrology.

Astronomers have often complained that astrology is illogical. Yet actions that go beyond time and space or the ordinary laws of physics are part and parcel of the new physics. With its quarks and quasars, its uncertainty principle and quantum mechanics, physics does not appear any stranger than astrology. Such subtle connections of the new physics may provide some eventual credence for astrology as well.

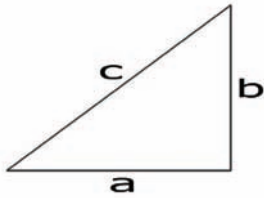
## Conclusion

Once we recognize the place and value of both the outer and inner sciences, we can learn to use both to improve our lives on all levels. This should be our real work as a species and it can be a great adventure of discovery and transformation. This universal pursuit of knowledge can be used to set aside our political and religious differences, which are not a matter of truth or direct perception but of clashing beliefs and opinions. The ultimate unity of science and spirituality can provide a light forward to a true global age of peace and harmony. In such a world the inner technologies of Yoga will be found to be as important as the latest advances in technology, if not more so.









The square of the hypotenuse of a right angle triangle is equal to the sum of the squares of the other two sides.

— Pythagorean theorem (6th century B.C.)

$$a^2 + b^2 = c^2$$

The diagonal chord of the rectangle makes both the squares that the horizontal and vertical sides make separately.

— Sulba Sutra (8th century B.C.)

# Vedic Mathematics or Not?

by David Osborn

I remember the time my faculty advisor pulled me aside and said, “You know, you can explain everything with math.” He was a rationalist, and for him God existed only in the sentiments of the uneducated. At the time I believed him, and I think his advice had a lot to do with my decision to pursue a degree in physics. Somewhere along the way, however, something happened (something my friends could never figure out) which drew me away from the spirit of that scholarly advice and subsequently my once promising career.

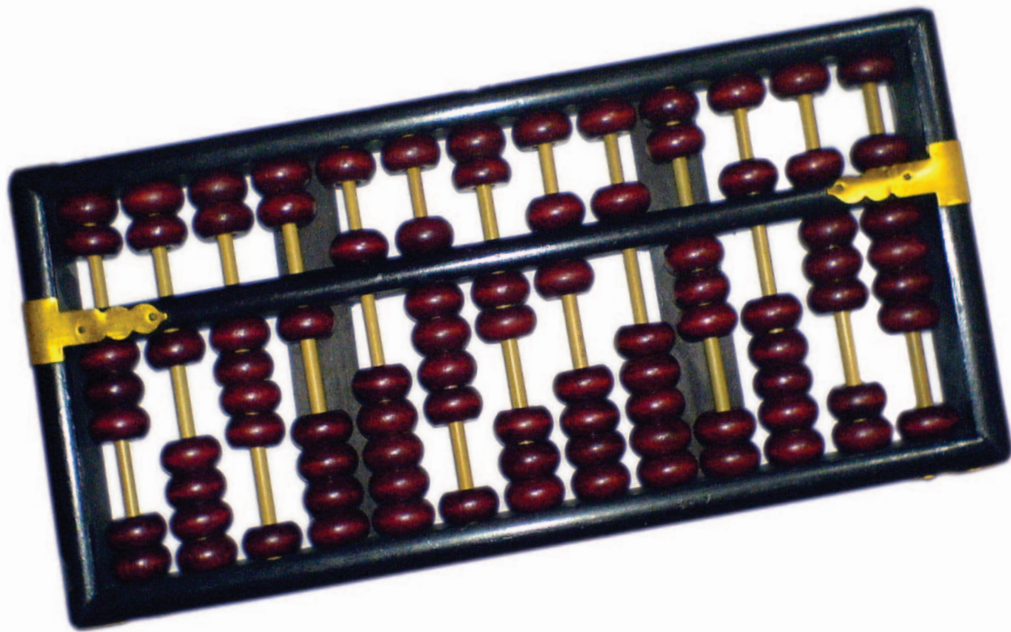
Unfortunately, I think I went too far to the other side. I threw reason to the wind, so to speak, and unceremoniously became a self-ordained “spiritual person.” Science, the foundation of which is mathematics, as I saw it, had nothing to offer. It was only years later, when the cloud of my sentimentalism was dissipated by the sun of my soul’s integrity, that I was able to separate myself from yet another delusion — the first being the advice of my favorite professor, and the second being the idea that I could wish myself into a more profound understanding of the nature of reality.

Math cannot take the mystery out of life without doing away with life itself. It is life’s mystery, its unpredictability — the fact that it is dynamic, not static — that makes it alive and worth living. We

may theoretically explain away God, but in so doing we only choose to delude ourselves; I = everything is just bad arithmetic.

However, before we can connect with our heart of hearts, our real spiritual essence, we cannot cast reason aside. With the help of the discriminating faculty we can know at least what transcendence is not. Withdrawing our heart from that is a good beginning for a spiritual life.

Mathematics has only recently risen to attempt to usurp the throne of Godhead. Ironically, it originally came into use in human society within the context of spiritual pursuit. Spiritually advanced cultures were not ignorant of the principles of mathematics, but they saw no necessity to explore those principles beyond that which was helpful in the advancement of God realization. Intoxicated by the gross power inherent in mathematical principles, later civilizations, succumbing to the all-inviting arms of illusion, employed these principles and further explored them in an attempt to conquer nature. The folly of this, as demonstrated in modern society today, points to the fact that “wisdom” is more than the exercise of intelligence. Modern man’s worship of intelligence blinds him from the obvious superiority of love over reason.



## Archimedes and Pythagoras

A common belief among ancient cultures was that the laws of numbers have not only a practical meaning, but also a mystical or religious one. This belief was prevalent amongst the Pythagoreans. Prior to 500 B.C.E., Pythagoras, the great Greek pioneer in the teaching of mathematics, formed an exclusive club of young men to whom he imparted his superior mathematical knowledge. Each member was required to take an oath never to reveal this knowledge to an outsider. Pythagoras acquired many faithful disciples to whom he preached about the immortality of the soul and insisted on a life of renunciation. At the heart of the Pythagorean world view was a unity of religious principles and mathematical propositions.

In the third century B.C.E. another great Greek mathematician, Archimedes, contributed considerably to the field of mathematics. A quote attributed to Archimedes reads, "There are things which seem incredible to most men who have not studied mathematics." Yet according to Plutarch, Archimedes considered "mechanical work and every art concerned with the necessities of life an ignoble and inferior form of labor, and therefore exerted his best efforts only in seeking knowledge of those things in which the good and the beautiful were not mixed with the necessary." As did Plato, Archimedes scorned practical mathematics, although he became very expert at it.

## Abacus: Mechanical counting device

The Greeks, however, encountered a major problem. The Greek alphabet, which had proved so useful in so many ways, because of its limited expressive capabilities, proved to be a great hindrance in the art of calculating. Although Greek astronomers and astrologers used a sexagesimal place notation and a zero, the advantages of this usage were not fully appreciated and did not spread beyond their calculations. The Egyptians had no difficulty in representing large numbers, but the absence of any place value for their symbols so complicated their system that, for example, 23 symbols were needed to represent the number 986. Even the Romans, who succeeded the Greeks as masters of the Mediterranean world, and who are known as a nation of conquerors, could not conquer the art of calculating. This was a chore left to an abacus worked by a slave. As we will illustrate, no real progress in the art of calculating nor in science was made until help came from the East.

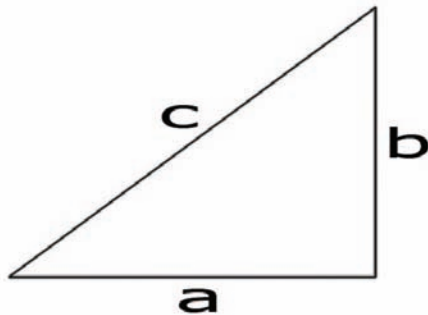
## Shulba Sutra

In the valley of the Indus River of India, the world's oldest civilization had developed its own system of mathematics. The Vedic *Shulba Sutras* (fifth to eighth century B.C.E.), meaning "codes of the rope," show that the earliest geometrical and mathematical investigations among the Indians arose from certain requirements of their religious rituals. When the poetic vision of the Vedic seers was externalized in symbols, rituals requiring altars and precise measurement

became manifest, providing a means to the attainment of the unmanifest world of consciousness. “*Shulba Sutras*” is the name given to those portions or supplements of the *Kalpasutras*, which deal with the measurement and construction of the different altars or arenas for religious rites. The word *shulba* refers to the ropes used to make these measurements.

*Math cannot take the mystery out of life without doing away with life itself, for it is life’s mystery, its unpredictability — the fact that it is dynamic, not static — that makes it alive and worth living.*

Although Vedic mathematicians are known primarily for their computational genius in arithmetic and algebra, the basis and inspiration for the whole of Indian mathematics is geometry. Evidence of geometrical drawing instruments from as early as 2,500 B.C.E. has been found in the Indus Valley.<sup>[1]</sup> The beginnings of algebra can be traced to the constructional geometry of the Vedic priests, which are preserved in the *Shulba Sutras*. Exact measurements, orientations, and different geometrical shapes for the altars and arenas used



$$a^2 + b^2 = c^2$$

for the religious functions (*yajnas*), which occupy an important part of the Vedic religious culture, are described in the *Shulba Sutras*. Many of these calculations employ the geometrical formula known as the Pythagorean Theorem.

This theorem (c. 540 B.C.E.), equating the square of the hypotenuse of a right angle triangle with the sum of the squares of the other two sides, was utilized in the earliest *Shulba Sutras* (the *Baudhayana*) prior

to the eighth century B.C.E. Thus, widespread use of this famous mathematical theorem in India, several centuries before its being popularized by Pythagoras, has been documented.

The exact wording of the theorem as presented in the *Shulba Sutras* is: “The diagonal chord of the rectangle makes both the squares that the horizontal and vertical sides make separately.”<sup>[2]</sup> The proof of this fundamentally important theorem is well known from Euclid’s time until the present for its excessively tedious and cumbersome nature; yet the Vedas present five different extremely simple proofs for this theorem. One historian, Needham, has stated, “Future research on the history of science and technology in Asia will in fact reveal that the achievements of these peoples contribute far more in all pre-Renaissance periods to the development of world science than has yet been realized.”<sup>[3]</sup>

The *Shulba Sutras* have preserved only that part of Vedic mathematics which was used for constructing the altars and for computing the calendar to regulate the performance of religious rituals. After the *Shulba Sutra* period, the main developments in Vedic mathematics arose from needs in the field of astronomy. The *Jyotisha*, science of the luminaries, utilizes all branches of mathematics.

The need to determine the right time for their religious rituals gave the first impetus for astronomical observations. With this desire in mind, the priests would spend night after night watching the advance of the moon through the circle of the *nakshatras* (lunar mansions), and day after day the alternate progress of the sun towards the north and the south. However, the priests were interested in mathematical rules only as far as they were of practical use. These truths were therefore expressed in the simplest and most practical manner. Elaborate proofs were not presented, nor were they desired.

## Evolution of Arabic (Roman) Numerals from India

A close investigation of the Vedic system of mathematics shows that it was much more advanced than the mathematical systems of the civilizations of the Nile or the Euphrates. The Vedic mathematicians had developed the decimal system of tens, hundreds, thousands, etc. where the remainder from one column of numbers is carried over to the next. The advantage

of this system of nine number signs and a zero is that it allows for calculations to be easily made. Further, it has been said that the introduction of zero, or *sunya* as the Indians called it, in an operational sense as a definite part of a number system, marks one of the most important developments in the entire history of mathematics. The earliest preserved examples of the number system which is still in use today are found on several stone columns erected in India by King Ashoka in about 250 B.C.E.<sup>[4]</sup> Similar inscriptions are found in caves near Puna (100 B.C.E.) and Nasik (200 C.E.).<sup>[5]</sup> These earliest Indian numerals appear in a script called *brahmi*.

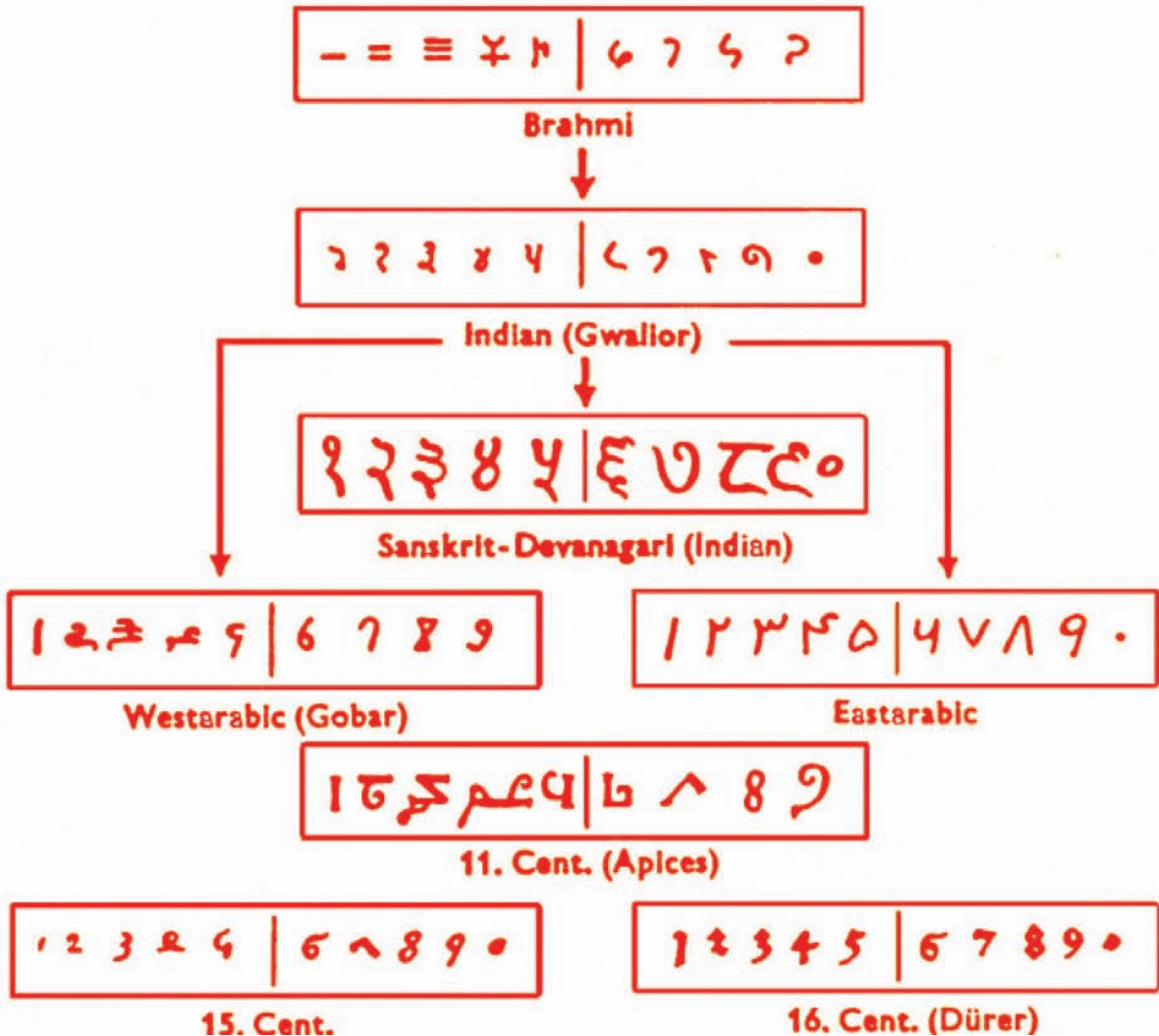
After 700 C.E. another notation, called by the name “Indian numerals,” which is said to have evolved from the *brahmi* numerals, assumed common usage, spreading to Arabia and from there around the world. When Arabic numerals (the name they had then be-

come known by) came into common use throughout the Arabian empire, which extended from India to Spain, Europeans called them “Arabic notations,” because they received them from the Arabians. However, the Arabians themselves called them “Indian figures” (Al-Arqan-Al-Hindu) and mathematics itself was called “the Indian art” (*hindisat*).

## Evolution of “Arabic numerals” from Brahmi

250 B.C.E. to the 16th century.

Mastery of this new mathematics allowed the mathematicians of Baghdad to fully utilize the geometrical treatises of Euclid and Archimedes. Trigonometry flourished there along with astronomy and geography. Later in history, Carl Friedrich Gauss, the “prince of mathematics,” was said to



have lamented that Archimedes in the third century B.C.E. had failed to discover the Indian system of numeration; how much more advanced science would have been, had he done so.

Prior to these revolutionary discoveries, other world civilizations — the Egyptians, the Babylonians, the Romans, and the Chinese — all used independent symbols for each row of counting beads on the abacus, each requiring its own set of multiplication or addition tables. So cumbersome were these systems that mathematics was virtually at a standstill. The new number system from the Indus Valley led a revolution in mathematics by setting it free. By 500 C.E. mathematicians of India had solved problems that baffled the world's greatest scholars of all time. Aryabhata, an astronomer mathematician who flourished at the beginning of the 6th century, introduced sines and versed sines — a great improvement over the clumsy half-cords of Ptolemy. A.L. Basham, foremost authority on ancient India, writes in *The Wonder That Was India*:

“Medieval Indian mathematicians, such as Brahmagupta (seventh century), Mahavira (ninth century), and Bhaskara (twelfth century), made several discoveries which in Europe were not known until the Renaissance or later.

“They understood the import of positive and negative quantities, evolved sound systems of extracting square and cube roots, and could solve quadratic and certain types of indeterminate equations.”<sup>[6]</sup> Mahavira's most noteworthy contribution is his treatment of fractions for the first time and his rule for dividing one fraction by another, which did not appear in Europe until the 16th century.

## Equations and Symbols

B.B. Dutta writes: “The use of symbols — letters of the alphabet to denote unknowns, and equations are the foundations of the science of algebra. The Hindus were the first to make systematic use of the letters of the alphabet to denote unknowns. They were also the first to classify and make a detailed study of equations. Thus they may be said to have given birth to the modern science of algebra.”<sup>[7]</sup> The great Indian mathematician Bhaskaracharya (1150 C.E.) produced extensive treatises on both plane and spherical trigonometry and algebra, and his works contain remarkable solutions of problems which were not discovered in Europe until the seventeenth and eighteenth centuries. He

preceded Newton by over 500 years in the discovery of the principles of differential calculus.

A.L. Basham writes further, “The mathematical implications of zero (*sunya*) and infinity, never more than vaguely realized by classical authorities, were fully understood in medieval India. Earlier mathematicians had taught that  $X/0 = X$ , but Bhaskara proved the contrary. He also established mathematically what had been recognized in Indian theology at least a millennium earlier: that infinity, however divided, remains infinite, represented by the equation  $00/X = 00$ .” In the 14th century, Madhava, isolated in South India, developed a power series for the arc tangent function, apparently without the use of calculus, allowing the calculation of pi to any number of decimal places (since  $\arctan 1 = \pi/4$ ). Whether he accomplished this by inventing a system as good as calculus or without the aid of calculus; either way it is astonishing.

Spiritually advanced cultures were not ignorant of the principles of mathematics, but they saw no necessity to explore those principles beyond that which was helpful in the advancement of God realization.

By the fifteenth century C.E. use of the new mathematical concepts from India had spread all over Europe to Britain, France, Germany, and Italy, among others. “The debt of the Western world to India in this respect [the field of mathematics] cannot be overestimated. Most of the great discoveries and inventions of which Europe is so proud would have been impossible without a developed system of mathematics, and this in turn would have been impossible if Europe had been shackled by the unwieldy system of Roman numerals. The unknown man who devised the new system was, from the world's point of view, after the Buddha, the most important son of India. His achievement, though easily taken for granted, was the work of an analytical mind of the first order, and he deserves much more honor than he has so far received.”

Unfortunately, Eurocentrism has effectively concealed from the common man the fact that we owe much in the way of mathematics to ancient India. Reflection on this may cause modern man to consider more seriously the spiritual preoccupation of ancient India. The *rishis* (seers) were not men lacking in practical knowledge of the world, dwelling only in the realm of imagination. They were well developed in secular knowledge, yet only insofar as they felt it was



necessary within a world view in which consciousness was held as primary.

In ancient India, mathematics served as a bridge between understanding material reality and the spiritual conception. Vedic mathematics differs profoundly from Greek mathematics in that knowledge for its own sake (for its aesthetic satisfaction) did not appeal to the Indian mind. The mathematics of the Vedas lacks the cold, clear, geometric precision of the West; rather, it is cloaked in the poetic language which so distinguishes the East. Vedic mathematicians strongly felt that every discipline must have a purpose, and believed that the ultimate goal of life was to achieve self-realization and love of God and thereby be released from the cycle of birth and death. Those practices which furthered this end either directly or indirectly were practiced most rigorously. Outside of the religio-astronomical sphere, only the problems of day to day life (such as purchasing and bartering) interested the Indian mathematicians.

## Poetry in Math

One of the foremost exponents of Vedic Math, the late Bharati Krishna Tirtha Maharaja, author of *Vedic Mathematics*, has offered a glimpse into the sophistication of Vedic math. Drawing from the *Atharva-veda*, Tirtha Maharaja points to many *sutras* (codes) or aphorisms which appear to apply to every branch of mathematics: arithmetic, algebra, geometry (plane and solid), trigonometry (plane and spherical), conics (geometrical and analytical), astronomy, calculus (differential and integral), etc.

It must be pointed out that these *sutras* given by Tirtha Maharaja are created by the author himself, as stated in the introduction to his book, “*Vedic Mathematics*” (published posthumously) and are therefore not actually Vedic.

These mathematical *sutras* are Vedic only in the sense that they are inspired by the Vedas in the mind of one dedicated to the Vedas. Thus the title “Vedic Mathematics” is not technically correct. Unfortunately the *sutras* from this book have been propagated and taught all over, under the misnomer of Vedic Mathematics.

Utilizing the techniques derived from these *sutras*, calculations can be done with incredible ease and simplicity in one’s head in a fraction of the time re-

quired by modern means. Calculations normally requiring as many as a hundred steps can be done by the Vedic method in one single simple step. For instance the conversion of the fraction  $1/29$  to its equivalent recurring decimal notation normally involves 28 steps. Utilizing the Vedic method it can be calculated in one simple step. (see the next section for examples of how to utilize Vedic *sutras*)

In order to illustrate how secular and spiritual life were intertwined in Vedic India, Tirtha Maharaja has demonstrated that mathematical formulas and laws were often taught within the context of spiritual expression (*mantra*). Thus while learning spiritual lessons, one could also learn mathematical rules.

Tirtha Maharaja has pointed out that Vedic mathematicians prefer to use the *devanagari* letters of Sanskrit to represent the various numbers in their numerical notations rather than the numbers themselves, especially where large numbers are concerned. This made it much easier for the students of this math in their recording of the arguments and the appropriate conclusions.

Tirtha Maharaja states, “In order to help the pupil to memorize the material studied and assimilated, they made it a general rule of practice to write even the most technical and abstruse textbooks in *sutras* or in verse (which is so much easier, even for the children, to memorize). And this is why we find not only theological, philosophical, medical, astronomical, and other such treatises, but even huge dictionaries in Sanskrit verse! So from this standpoint, they used verse, *sutras* and codes for lightening the burden and facilitating the work (by versifying scientific and even mathematical material in a readily assimilable form)!”<sup>[8]</sup> The code used is as follows:

The Sanskrit consonants:

*ka, ṭa, ṣa, and ya* all denote 1

*kha, tha, pha, and ra* all represent 2

*ga, ḍa, ba, and la* all stand for 3

*gha, dha, bha, and va* all represent 4;

*gna, ṇa, ma, and sa* all represent 5

*ca, ta, and ṣa* all stand for 6

*cha, tha, and sa all denote 7*

*ja, da, and ha all represent 8*

*jha and dha stand for 9*

*kṣa means zero.*

Vowels make no difference and it is left to the author to select a particular consonant or vowel at each step. This great latitude allows one to bring about additional meanings of his own choice. For example *kapa, tapa, papa, and yapa* all mean 11. By a particular choice of consonants and vowels one can compose a poetic hymn with double or triple meanings. Here is an actual *sutra* of spiritual content, as well as secular mathematical significance.

गोपीभाग्यमधुव्रात-श्रद्धिशोदधिसन्धिग ।

खलजीवितखाताव गलहालारसंघर ॥

*gopī bhāgya madhuvrāta  
srngīśo dadhi saṅdhiga  
khala jivita khātāva  
gala hālā rasaṅghara*

While this verse is a type of petition to Krishna, when learning it one can also learn the value of  $\pi/10$  (i.e. the ratio of the circumference of a circle to its diameter divided by 10) to 32 decimal places. It has a self-contained master-key for extending the evaluation to any number of decimal places.

The translation is as follows:

*○ Lord anointed with the yogurt of the milkmaids' worship (Krishna), ○ savior of the fallen, ○ master of Shiva, please protect me.*

At the same time, by application of the consonant code given above, this verse directly yields the decimal equivalent of  $\pi$  divided by 10:  $\pi/10 = 0.31415926535897932384626433832792$ . Thus, while offering mantric praise to Godhead in devotion, by this method one can also add to memory significant secular truths.

This is the real gist of the Vedic world view regarding the culture of knowledge: while culturing transcendental knowledge, one can also come to understand the intricacies of the phenomenal world. By the process of knowing the absolute truth, all relative truths also become known. In modern society today it is often contended that never the twain shall meet: science and religion are at odds. This erroneous conclusion is based on little understanding of either discipline. Science is the smaller circle within the larger circle of religion.

We should never lose sight of our spiritual goals. We should never succumb to the shortsightedness of attempting to exploit the inherent power in the principles of mathematics or any of the natural sciences for ungodly purposes. Our reasoning faculty is but a gracious gift of Godhead intended for divine purposes, and not those of our own design.

## Vedic Mathematical Sutras

Consider the following three sutras:

1. "All from 9 and the last from 10," and its corollary: "Whatever the extent of its deficiency, lessen it still further to that very extent; and also set up the square (of that deficiency)."
2. "By one more than the previous one," and its corollary: "Proportionately."
3. "Vertically and crosswise," and its corollary: "The first by the first and the last by the last."

The first rather cryptic formula is best understood by way of a simple example: let us multiply 6 by 8.

1. First, assign as the base for our calculations the power of 10 nearest to the numbers which are to be multiplied. For this example our base is 10.
2. Write the two numbers to be multiplied on a paper one above the other, and to the right of each write the remainder when each number is subtracted from the base 10. The remainders are then connected to the original numbers with minus signs, signifying that they are less than the base 10.

6-4

8-2

3. The answer to the multiplication is given in two parts. The first digit on the left is in multiples of 10 (i.e. the 4 of the answer 48). Although the answer can be arrived at by four different ways, only one is presented here. Subtract the sum of the two deficiencies ( $4 + 2 = 6$ ) from the base (10) and obtain  $10 - 6 = 4$  for the left digit (which in multiples of the base 10 is 40).

$$\begin{array}{r} 6-4 \\ 8-2 \\ 4 \end{array}$$

4. Now multiply the two remainder numbers 4 and 2 to obtain the product 8. This is the right hand portion of the answer which when added to the left hand portion 4 (multiples of 10) produces 48.

$$\begin{array}{r} 6-4 \\ 8-2 \\ ---- \\ 4/8 \end{array}$$

Another method employs cross subtraction. In the current example the 2 is subtracted from 6 (or 4 from 8) to obtain the first digit of the answer and the digits 2 and 4 are multiplied together to give the second digit of the answer. This process has been noted by historians as responsible for the general acceptance of the X mark as the sign of multiplication. The algebraic explanation for the first process is

$$(x-a)(x-b) = x(x-a-b) + ab$$

where  $x$  is the base 10,  $a$  is the remainder 4 and  $b$  is the remainder 2 so that

$$6 = (x-a) = (10-4)$$

$$8 = (x-b) = (10-2)$$

The equivalent process of multiplying 6 by 8 is then

$$x(x-a-b) + ab \text{ or}$$

$$10(10-4-2) + 2 \times 4 = 40 + 8 = 48$$

These simple examples can be extended without limitation. Consider the following cases where 100 has been chosen as the base:

$$\begin{array}{r} 97 - 3 \quad 93 - 7 \quad 25 - 75 \\ 78 - 22 \quad 92 - 8 \quad 98 - 2 \\ \hline 75/66 \quad 85/56 \quad 23/150 = 24/50 \end{array}$$

In the last example we carry the 100 of the 150 to the left and 23 (signifying 23 hundred) becomes 24 (hundred). Herein the *sutra's* words "all from 9 and the last from 10" are shown. The rule is that all the digits of the given original numbers are subtracted from 9, except for the last (the righthand-most one) which should be deducted from 10.

Consider the case when the multiplicand and the multiplier are just above a power of 10. In this case we must cross-add instead of cross subtract. The algebraic formula for the process is:  $(x+a)(x+b) = x(x+a+b) + ab$ . Further, if one number is above and the other below a power of 10, we have a combination of subtraction and addition: viz:

$$\begin{array}{r} 108 + 8 \text{ and} \\ 97 - 3 \\ \hline \end{array}$$

$$105/-24 = 104/(100-24) = 104/76$$

and

$$\begin{array}{r} 13 + 3 \\ 8 - 2 \\ \hline \end{array}$$

$$11/-6 = 10/(10-6) = 10/4$$

A sub *sutra*: "Proportionately" provides for those cases where we wish to use as our base multiples of the normal base of powers of ten. That is, whenever neither the multiplicand nor the multiplier is sufficiently near a convenient power of 10, which could serve as our base we simply use a multiple of a power of ten as our working base, perform our calculations with this working base and then multiply or divide the result proportionately.

To multiply 48 by 32, for example, we use as our base  $50 = 100/2$ , so we have

$$\text{Base } 50 \quad 48 - 2$$

$$32 - 18$$

$$2/30/36 \text{ or } (30/2) / 36 = 15/36$$

Note that only the left decimals corresponding to the powers of ten digits (here 100) are to be effected by the proportional division of 2. These examples show

how much easier it is to subtract a few numbers, (especially for more complex calculations) rather than memorize long mathematical tables and perform cumbersome calculations the long way.

## Squaring Numbers

The algebraic equivalent of the sutra for squaring a number is:  $(a+b)^2 = a^2 + 2ab + b^2$ . To square 103 we could write it as  $(100 + 3)^2 = 10,000 + 600 + 9 = 10,609$ . This calculation can easily be done mentally. Similarly, to divide 38,982 by 73 we can write the numerator as  $38x^3 + 9x^2 + 8x + 2$ , where x is equal to 10, and the denominator is  $7x + 3$ . It doesn't take much to figure out that the numerator can also be written as  $35x^3 + 36x^2 + 37x + 12$ . Therefore,

$$\begin{aligned} 38,982/73 &= (35x^3 + 36x^2 + 37x + 12)/ \\ (7x + 3) &= 5x^2 + 3x + 4 = 534 \end{aligned}$$

This is just the algebraic equivalent of the actual method used. The algebraic principle involved in the third sutra, "vertically and crosswise," can be expressed in one of its applications, as the multiplication of the two numbers represented by  $(ax + b)$  and  $(cx + d)$ , with the answer  $acx^2 + x(ad + bc) + bd$ . Differential calculus also is utilized in the Vedic sutras for breaking down a quadratic equation on sight into two simple equations of the first degree. Many additional *sutras* are given which provide simple mental one or two line methods for division, squaring of numbers, determining square and cube roots, compound additions and subtractions, integrations, differentiations, and integration by partial fractions, factorisation of quadratic equations, solution of simultaneous equations, and many more. For demonstrational purposes, we have only presented simple examples.

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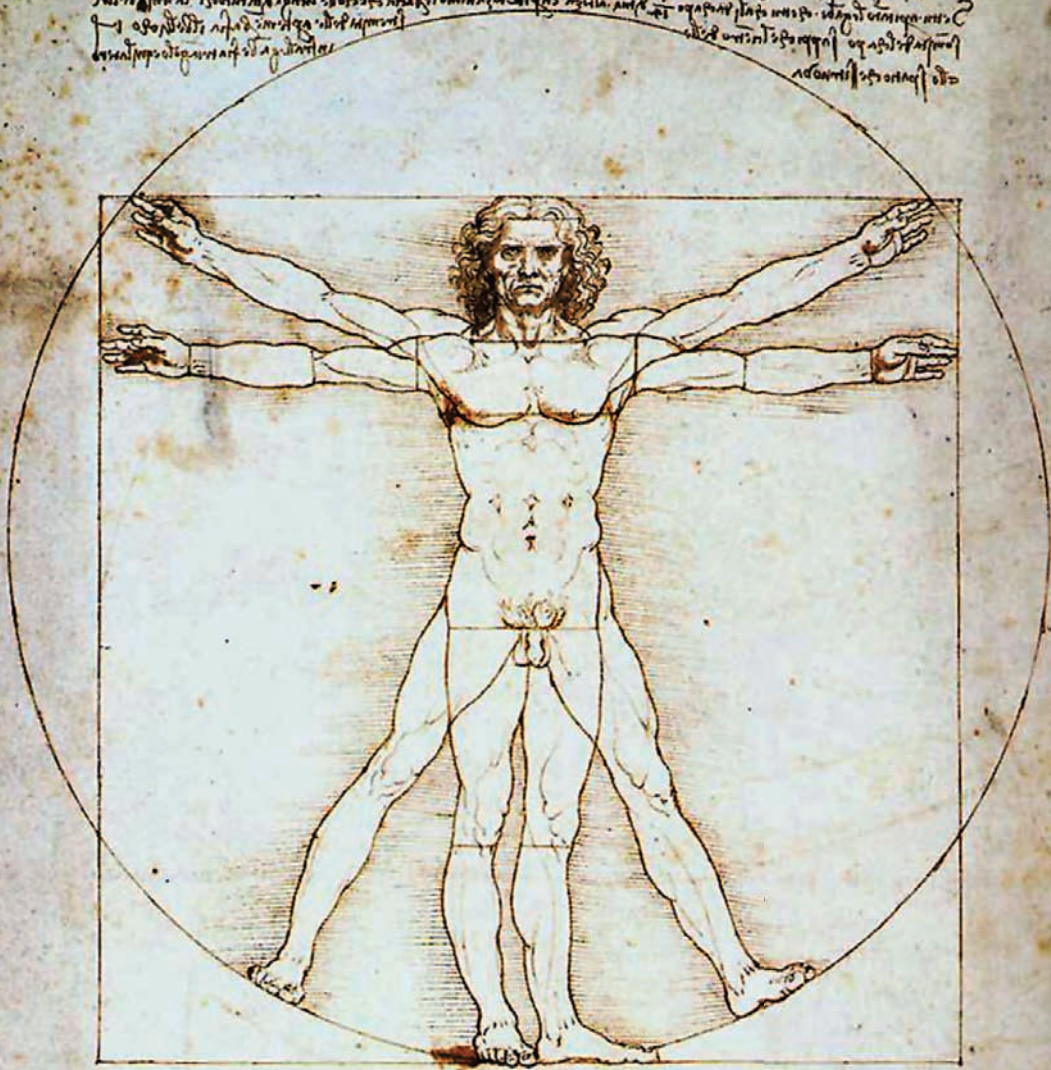
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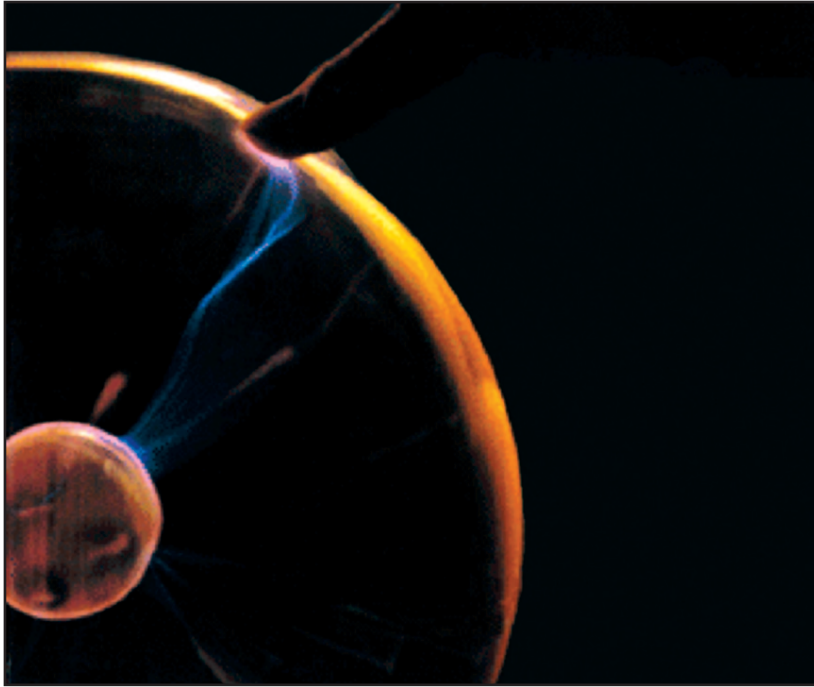
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# Physics to Metaphysics

## *The Vedic Paradigm*

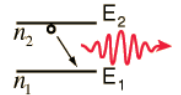
by David Osborn

For India's great realizers, the primary evidence in support of their theses is revealed scripture (*sastra*), such as the *Vedanta-sutras*. This evidence is considered to originate beyond the limits of human reasoning. Yet, especially for Westerners, as an introduction to the virtues of scriptural evidence, it may be prudent to first discuss the concept of a transcendental personal Godhead in the context of modern science and quantum mechanics in particular. Following the transition from Newtonian classical physics to quantum mechanics, several scientists have explored the possibility of a connection between physics and transcendence.

This may be due to the more abstract nature of quantum mechanics as opposed to classical physics. For example, classical physics attempts to describe the physical reality in concrete, easily understandable terms, while quantum mechanics deals in probabilities and wave functions.

Quantum mechanics, however, is much more rigorous in its attempt to describe reality and explains phenomena that classical physics fails to account for.

The "quantum leap" has given several physicists the hope that the transcendentalist's experience of consciousness can also be explained by the quantum mechanical theory. Although the quantum theory does not account for consciousness, it has become popular to attempt to bridge the gap between the transcendentalist's experience and the quantum mechanical world view. Some people have loosely called this the "new physics."



The rational spiritually-minded community cheered the appearance of Fritjof Capra's *The Tao of Physics* and Gary Zukav's *Dancing Wu Li Masters*. Later, David Bohm's *The Implicate Order* was similarly praised. Although there is good reason to applaud

their work and the work of others like them, their theories, scientifically speaking, do not quite bridge the gap between physics and transcendence. However, these scientists have to some extent become “believers” and that is a major breakthrough. Furthermore, the theories have turned many educated persons in the spiritual direction.



Of all the recent attempts to show the “oneness” in what physicists and transcendentalists speak of, Bohm’s implicate order theory is the most worthy of consideration. In comparison, Capra’s “realization” that the dance of Shiva and the movement of atomic particles is one and the same — although profoundly beautiful — falls more in the realm of poetry than science.

Of course any attempt to find harmony between the scientific world view and the mystic’s vision will be incomplete unless we adjust the scientific world view through an interface with the many realities it fails to account for (subtle bodies, consciousness, etc.).



Taking that liberty, as Bohm has, Dr. Richard L. Thompson, Mathematician and author of the book *Mechanistic and Non-mechanistic Science*, has postulated a new theory of “creation through sound” using what he calls *The Vedic Paradigm*.

Thompson advocates the philosophy of *achintya-bhedabheda*, a transcendental conception which, interestingly enough, fits well with the example of the hologram (often used to illustrate Bohm’s implicate order theory). This transcendental conception is different than the one Bohm advocates. Thompson attempts to show in his unpublished book, *End of Physics*, how some of the holes in Bohm’s theory can be filled using an alternative view of transcendence, namely *acintya-bhedabheda*.

Simply stated *acintya-bhedabheda* means that reality is ultimately, inconceivably one and different at the same time. Bohm is an adherent of *advaita-vedanta* or non-dualism. Non-dualists perceive reality as one homogenous substance. In their view all forms of variety and individuality are products of illusion. *Acintya-bhedabheda*, holds that the world of material variety is illusory but not altogether false. It insists that there is a transcendental variety and spiritual individuality that lies beyond illusion. *Acintya-*

*bhedabheda* is a theistic conception and *advaita-vedanta* is monistic or atheistic.

Thompson is a practicing scientist who has been pursuing transcendental disciplines for the last twenty years. This kind of combination is rare. It is hard to find someone who is thoroughly familiar with science as well as with spirituality. In order to appreciate his theory of creation by sound, it will be helpful to first briefly explain Bohm’s theory of the implicate order and then proceed to further elaborate on the philosophy of *acintya-bhedabheda*. Such explanations will serve as a preface to the discussion of creation, all of which shed new light on the nature of reality, helping to harmonize physics and metaphysics.

## THE IMPLICATE ORDER

Bohm’s explanation of reality involves an “implicate” and “explicate” order, with vague references to love, compassion, and other similar attributes that may lie beyond both the implicate and explicate. The implicate order is an ultimate physical substrate which underlies our present perception of reality. The reality that we perceive is what Bohm calls the explicate order. All order and variety, according to Bohm, are stored at all times in the implicate order in an enfolded or unmanifested state. Information continually unfolds or becomes manifest from the implicate order as the explicate order of our experience.

*Of course any attempt to find harmony between the scientific world view and the mystic’s vision will be incomplete unless we adjust the scientific world view through an interface with the many realities it fails to account for.*

Bohm uses the example of the hologram to help explain his theory. A hologram is a photographic plate on which information is recorded as a series of density variations. Because holography is a method of lensless photography, the photographic plate appears as a meaningless pattern of swirls. When a coherent beam of light — typically the laser — interacts with the plate, the resultant emerging light is highly ordered and is perceived as an image in three dimensions. The image has depth and solidity, and by looking at it from different angles, one will see different sides of the image. Any *part* of the hologram will reproduce the *whole* image (although with less resolution). Bohm would say that the three dimensional

form of the image is enfolded or stored in the pattern of density variations on the hologram.

A further understanding of the nature of Bohm's implicate order is somewhat more difficult to grasp. In the transition from the classical description of physical objects to a quantum mechanical description, one is forced to use mutually incompatible descriptions. That is, to understand the behavior of electrons, it is necessary to describe them as point-like particles and extended waves.



This concept of complementarity, devised in the 1920's by the physicist Niels Bohr, leads naturally to the thought that electrons, or their ultimate substrate, may not actually be fully describable in mathematical terms. Thus the ultimate physical reality may be an undefinable "something" which is only partially describable but not fully, because some of the partial descriptions will inevitably contradict each other. This is Bohm's idea regarding the nature of his implicate order.

Although Bohm accepts the reality of a whole containing distinguishable parts, he maintains that ultimately, reality at its most fundamental level is devoid of variety or individuality. Bohm believes that individuality is a temporal or illusory state of perception. According to his theory, although the parts appear to be distinct from the whole, in fact, because they "enfold" or include the whole, they are identical with the whole.

The intuitive basis behind this idea of wholeness is that when information is enfolded into a physical system, it tends to become distributed more or less uniformly throughout the system.

The hologram provides an easily understandable example. If portions of a hologram are blocked off, the resultant image remains basically the same. This, perhaps metaphorically, helps to illustrate the concept that the whole is present in each of its parts. Consider then a continuum in which all patterns ever manifested in any part of the continuum are represented equally in all parts. Loosely speaking, then one could say that the whole of the continuum in both space and time is present in any small part of the continuum. If we invoke the precedent of quantum mechanical indefinability, we could leap to the idea of a unified entity encompassing all space

and time in which each part contains the whole and thus is identical to it. Because wholes are made up of parts, such an entity could not be fully described mathematically, although mathematical descriptions could be applied to the parts.

## THOMPSON'S OBSERVATIONS

Although Bohm's theory of the implicate order is partially based on the standard methodology of physics, it is also apparent that it involves ideas that are not found in traditional science. Most of these ideas are clearly the influence of a preconceived notion of non-dualism.

Bohm's theory is sorely in need of a logical source of compassion which provides inspiration enabling finite beings to know the infinite. Ironically while Bohm emphatically states that it is not possible for unaided human thought to rise above the realm of manifest matter (explicate order) he proceeds to carry on a lengthy discussion about the unmanifest (implicate order). Although he speaks of compassion it is only in a vague reference to an abstract attribute. The logical necessity for an entity possessed of compassion is avoided by Bohm (although he almost admits the need). He retreats from this idea because the standard notions of a personal God are dualistic and thus undermine the sense that reality at the most fundamental plane is unified.

Bohm's idea that the parts of the implicate order actually include the whole is not fully supported by his physical examples alone. Indeed this is impossible to demonstrate mathematically. The part of the hologram is not fully representative of the whole. The part suffers from lack of resolution. It is qualitatively one but quantitatively different.

Bohm's account for the corruption in human society is also a short coming in an otherwise profound theory. The theory alleges that evil arises from the explicate order — which is a contradiction of the basis of the theory which states that everything in the explicate order unfolds from the implicate order. This means that evil and human society at large or something at least resembling it must be originally present in the implicate order. But what would lead us to believe that an undifferentiated entity would store anything even remotely resembling human society? Or how could there be evil in or beyond the implicate order which is the source of love and compassion?



Bohm states that the totality of all things is timeless and unitary and therefore incapable of being changed. Later on he proposes that through collective human endeavor the state of affairs can be changed. This is similar to the contradiction of *advaita-vedanta* in which ultimate oneness is thought to be *attained* even though it is beyond time and forever uninfluenced by our actions.

These are some of the scientific and philosophical problems with the theory of the implicate order pointed out by Thompson. They are resolved by Thompson by replacing *advaita-vedanta* with *acintya-bhedabheda*.

## ACHINTYA-BHEDABHEDA

The history of philosophy bears evidence that neither the concepts of oneness (non-dualism) or difference (dualism) are adequate to fully describe the nature of being. Exclusive emphasis on oneness leads to the denial of the world and our very sense of self as an individual — viewing them as illusion. Exclusive emphasis on difference divides reality, creating an unbridgeable gap between man and God. Both concepts at the same time seem necessary inasmuch as identity is a necessary demand of our reason while difference is an undeniable fact of our experience. Therefore a synthesis of the two can be seen as the goal of philosophy. In the theory of *acintya-bhedabheda*, the concepts of both oneness and difference are transcended and reconciled in this higher synthesis, and thus they become associated aspects of an abiding unity in the Godhead.

The word *achintya* is central to the theory. It can be defined as the power to reconcile the impossible. *Achintya* is that which is inconceivable on account of the contradictory notions it involves, yet it can be appreciated through logical implication.

*Achintya*, inconceivable, is different from *anirvacaniya*, or indescribable, which is said to be the nature of transcendence in the non-dualistic school. *Anirvacaniya* involves the joining of the opposing concepts of reality and illusion, producing a canceling effect — a negative effect. *Achintya*, on the other hand, signifies a marriage of opposite concepts leading to a more complete unity — a positive effect.

Just as the eye cannot see the mind but can be in connection with it if the mind chooses to think about

it, so similarly the finite can know about the infinite only by the grace of the infinite.

It may be helpful to draw upon a reference from Vedic literature. Actually, the example of the hologram is similar to an explanation of the basis of reality recorded in the *Brahma Samhita*. There we find a verse in which, ironically, Godhead has been described as personal and individual and Who, at the same time one with and different from His energies.

एकोऽप्यसौ रचयितुं जगदण्डकोटिं  
यच्चक्तिरस्ति जगदण्डचया यदन्तः ।  
अण्डान्तरस्थपरमाणुचयान्तरस्थं  
गोन्दिमादिपुरुषं तमहं भजामि ॥३५॥

*He is an undifferentiated entity as there is no distinction between potency and possessor thereof. In His work of creation of millions of worlds, His potency remains inseparable. All the universes exist in Him and He is present in His fullness in every one of the atoms that are scattered throughout the universe at one and the same time. Such is the primeval Lord whom I adore. (Brahma Samhita 5.35)*

In the material conception of form, the whole can be reduced to a mere juxtaposition of the parts. This makes the form secondary. In this verse the material conception of form is transcended. The supreme entity is fully present in all of the parts which make up the total reality and thus the supreme is one unified principle underlying all variegated manifestations. Yet He is personal and in this feature different from his parts or energies at the same time. The *Brahma Samhita* goes on to say that each of the parts of the Godhead's form are equal to each other and to the whole form as well. At the same time each of the parts remains a part. This is fundamental to the philosophical outlook of *acintya-bhedabheda*. It allows for the eternal individuality of all things without the loss of oneness or harmony. It also allows for the possibility that man, even while possessed of limited mind and senses, can come to know about the

nature of transcendence. The infinite, being so, can and does reveal Himself to the finite. Just as the eye can not see the mind but can be in connection with it, if the mind chooses to think about it, so similarly the finite can know about the infinite by the grace of the infinite. The concept of non-dualism however allows for neither of these things.

In the *Bhagavad-Gita* we find the following verse: (9.4)

*By Me in My unmanifested form this entire universe is pervaded. All beings are in Me, but I am not in them.*

Although this is inconceivable — *achintya* — an example drawn from material nature may help us to understand this concept (logical implication).

We cannot think of fire without the power of burning; similarly, we cannot think of the power of burning without fire. Both are identical. While fire is nothing but that which burns; the power of burning is but fire in action. Yet at the same time, fire and its burning power are not absolutely the same. If they were absolutely the same, there would be no need to warn our children that “fire burns.” Rather it would be sufficient to say “fire.” Furthermore, if they were the same, it would not be possible to neutralize the burning power in fire through medicine or *mantra* without causing fire to disappear altogether. In reality the fire is the energetic source of the energy which is the power to burn. From this example drawn from the world of our experience, we can deduce that the principle of simultaneous oneness and difference is all pervading, appearing even in material objects.



Just as there is neither absolute oneness nor absolute difference in the material example of fire and burning power, there is neither absolute oneness nor absolute difference between Godhead and His energies. Godhead consists of both the energetic and the energy, which are one and different. Godhead is also necessarily complete without His various emanations. This

is absolute completeness. No matter how much energy He distributes, He remains the complete balance.

In this theory the personal form of God exists beyond material time in a trans-temporal state, there eternity and the passage of time are harmonized by the same principle of simultaneous oneness and variegatedness that applies to transcendental form. Thus within Godhead there may very well be something that resembles human society which could unfold as the explicate order.

*The individual self is a minute particle of will or consciousness — a sentient being — endowed with a serving tendency. This self is transcendental to matter and qualitatively one with Godhead, while quantitatively different.*

A personal, “human-like” Godhead replete with abode and paraphernalia is a perennial notion. In this conception the explicate order becomes in effect a perverted reflection of the ultimate reality existing in the transcendental realm. The reflection of that realm, appearing as the explicate order, amounts to the kingdom of God without God. It would be without God inasmuch as God, being the center of the ultimate reality, when expressed in reflected form no longer *appears* as the center. This produces illusion and the necessity for corruption. The basis of corruption is the misplaced sense of proprietorship resulting in the utterly false notions of “I” and “mine.”

According to *acintya-bhedabheda*, the individual self is a minute particle of will or consciousness — a sentient being — endowed with a serving tendency. This self is transcendental to matter and *qualitatively* one with Godhead, while *quantitatively different*. The inherent defect of smallness in size in the minute self in contrast to the quantitative superiority of Godhead makes the individual minute particle of consciousness prone to the influence of illusion. This is analogous to the example of the hologram in which only a portion of the holographic plate is illuminated with a coherent light source. The resultant image, although apparently complete, is slightly fuzzy and does not give the total three dimensional view from all directions which one would observe when the entire holographic plate is illuminated.



Living in illusion, the atomic soul sees himself as separate from the Godhead. As a result of imperfect sense perception he is caused to make false distinctions such as good and bad, happiness and distress. The minute self can also live in an enlightened state in complete harmony with the Godhead by the latter's grace — which is attracted by sin-

cere petition or devotion. The very nature of devotion is that it is of another world, and for it to be devotion in the full sense, it must be engaged in for its own sake and nothing else. This act of devotion is the purified function of the inherent serving tendency of the self. It makes possible a communion with Godhead. In this communion the self becomes one *in purpose* with the one reality and eternally serves that reality with no sense of any separateness from Godhead. If we accept this theory then there is scope for action from within the explicate order, such as prayer or meditation, to have influence upon the whole. At least it would appear so, inasmuch as, in reality, the inspiration for such action has its origin in Godhead. Of course this idea is also found in varying degrees in many perennial theistic philosophies. It is perhaps most thoroughly dealt with, however, in the doctrine of *acintya-bhedabheda*.

Although it is true that the human mind cannot possibly demonstrate the truth of this conception, this does not provide sufficient justification for rejecting the notion in favor of something more abstract, such as non-dualism. The fact is that *any* conception of the Godhead that is generated from the finite mind is subject to the same criticism. If we are limited to our mundane mind and senses for acquiring transcendental knowledge, then we may as well forego any speculation about transcendence and turn our attention exclusively to the manifest mundane world. The *acintya-bhedabheda* theory of transcendence, however, at least allows for the possibility of the finite entity to approach the plane of transcendence through the acquisition of transcendental “grace.” This conception provides for us something we can do in relation to Godhead (such as prayer or meditation) whereby our understanding can be enhanced. Alternatively, the non-dualistic approach really affords no method of approach.

Finally it must be emphasized that both the doctrines of non-dualism and *acintya-bhedabheda* are quite extensive and impossible to deal with thoroughly in this short article. At least it should be clear that insistence on the non-dual conception of the ultimate reality creates problems for the theory of the implicate order. At the same time the theistic doctrine of inconceivable simultaneous oneness and difference at the very least deals with these problems adequately.

## CREATION THROUGH SOUND

Thompson points out that the purely physical observations on which Bohm's theory is based provide insight as to how physics can be linked with transcendence. Thompson suggests that, scientifically speaking, the implicate order is limited to the observation that “organized macroscopic forms can arise by natural physical transformations from patterns of minute fluctuations that look indistinguishable from random noise.”



Such patterns could appear in many different forms such as electromagnetic fields (light waves) or the matter waves of quantum mechanics. These patterns which may later produce distinct macroscopic events can either be all-pervading or localized, and two such patterns could even occupy the same volume of space.

Thompson uses the philosophy of the *Bhagavad-Gita* and other Vedic literatures as a source of metaphysical ideas. He offers a tentative proposal of a synthesis of physical and spiritual knowledge by introducing the necessary element of divine revelation.

He states that, “According to the *Srimad Bhagavatam*, the material creation is brought about and maintained through the injection of divinely ordered sound vibrations into a primordial material substrate called *pradhana*. According to this idea, the *pradhana* is an eternally existing energy of the supreme which is potentially capable of manifesting material space and time, the material elements, and their various possible combinations.” In the absence of external influences no manifestations would take place. However, the *pradhana* will indeed produce various manifestations under the influence of

intelligently directed sound vibrations generated by the Godhead. Thompson explains the meaning of “sound,” coming from the Sanskrit word *shabda*, as “any type of propagating vibration, however subtle.”

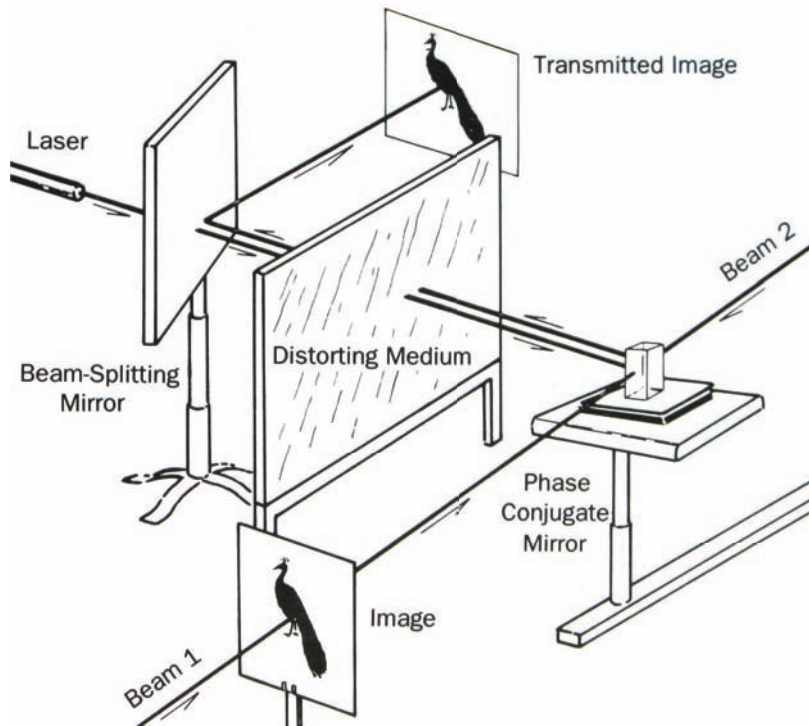
Keeping in mind that creation is a very complex affair, let’s look at the final stages of creation in which organized forms are generated and controlled in a setting made up of the physical elements as we know them. According to the *Vedic Paradigm*, at this stage, transcendental sound is introduced into the material continuum on the most subtle level. As a result, grosser elements are agitated, and finally organized structures such as the bodies of living organisms are produced.

Consider the phenomenon of optical phase conjugation — a process that can reverse the motion of a beam of light and cause an image scrambled by frosted glass to return to its original, non-distorted form. In a typical experiment, light is reflected from

an object and passes through a pane of frosted glass. It then reflects from a device called a phase conjugate mirror and passes back through the glass. When the light enters the eye, one perceives a clear, non-distorted image of the original object. This can be contrasted with the garbled blur one would observe if the light were reflected back through the glass by an ordinary mirror. See Figure below.

The explanation of this phenomenon is that the light on its first pass through the frosted pane is distorted in a complicated way by irregularities in the glass. The phase conjugate mirror reverses the distorted beam, and as it passes back through the glass it precisely retraces its steps and thus returns to its original non-distorted form.

The beam reflected from the phase conjugate mirror has the curious property that it encodes information for the original image in a distorted, unrecognizable form, and as time passes, the distortion is reduced



Typical apparatus for demonstrating the property of optical phase conjugation. Coherent light from the laser source (on left) passes through the silvered mirror and through the distorting medium (center). The light beam then enters the phase conjugate mirror and encodes it with a pattern of information particular to the distorting medium. Pump beam 1 transmits the image (lower left) to the phase conjugate mirror where it is combined with the distortion information stored in the phase conjugate mirror. When this pre-distorted beam passes back through the distorting medium (towards the left), the result is a clear non-distorted reproduction for the original image (top center).

and the information contained by the beam becomes clearly manifest. Normally, we expect to see the opposite — a pattern containing meaningful information will gradually degrade until the information is irretrievably lost.

Thompson further elucidates the connection between the material and transcendental levels of existence with an example similar to that of optical phase conjugation. Suppose we have an arrangement in which pictures are being transmitted through a sheet of frosted glass. On one side of the glass we would see a series of images but we would not be able to determine the source of the images on the other side of the opaque glass. But in thinking about it, one would expect that the light coming through the frosted glass would become distorted. The fact that it does not, seems to indicate that there is some sort of intelligence which is organizing or ordering the transmitted images. This is a simplified example of optical phase conjugation. Similarly, the order and complexity we find in matter must have intelligence behind it, although we at present cannot directly see that intelligence. The Vedic conception states that a veil of illusion called *maya* prevents living beings in the material domain from directly perceiving their origin, Godhead — the supreme intelligent being. The Vedas further maintain that although God predominates the material nature, He is manipulating it in such an expert way that His influence cannot be detected; as Bohm states, “Complex patterns of events seem to unfold simply by material action and reaction.”

As Thompson progresses in the formulation of his *Vedic Paradigm*, a number of questions arise. How are the postulated organized vibrations introduced into the known physical continuum? How can some outside influence be accommodated? This would seem to involve violations of certain basic laws of physics such as conservation of energy, the second law of thermodynamics, and statistical laws of quantum mechanics.

In response to these objections, Thompson postulates a model involving levels of physical reality more subtle than quantum fields. “One can readily imagine a hierarchy of subtler and subtler levels culminating in an ultimate substrate which is transcendental and not amenable to mathematical description. Organized wave patterns could propagate through this hierarchy from the transcendental level to the level of gross matter. In such models the quantum fields

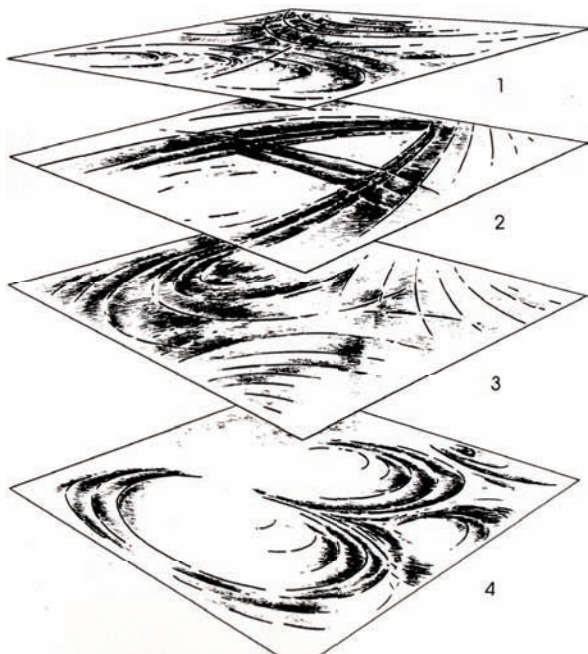
will be reducible to these subtler levels, and phenomena on these levels will have effects on the level of the quantum fields.” In the transition from Newtonian physics to quantum mechanics and further to quantum field theory, the conceptual framework diverges from the domain of familiar mechanical imagery. Thompson suggests that “The degree of subtlety of a level of reality corresponds to the degree of novelty and unfamiliarity of the concepts needed to adequately comprehend it. On the subtlest (or transcendental) level, the materially inconceivable principle of *acintya-bhedabheda-tattva* becomes applicable.”

*According to the Vedic paradigm, the conscious self is transcendental and has the same qualitative nature as the Godhead. Thus the link between conscious will and the initiation of physical action by the brain should also entail the transmission of patterns of information from transcendental to gross physical levels of reality.*

The introduction of wave patterns into the gross material realm from an outside independent source should produce detectable violations of the conservation laws of physics. It would not be surprising to find violations of known laws if such subtler levels of material energy do exist. Indeed, the existence of the neutrino was postulated by Enrico Fermi in the 1930's because of an apparent violation of the principle of conservation of momentum in the radioactive decay of certain atomic nuclei. The discovery of the neutrino showed the existence of a subtle level which was previously unknown. It is therefore entirely reasonable to speak of the existence of more subtle levels which are as yet undiscovered. Also, in his unpublished book, Thompson shows that models which receive influences from more subtle levels without undergoing any detectable change in momentum or energy may be constructed.

Thompson suggests, “Let us suppose for the moment that organized wave patterns are continually being injected into the known physical continuum perhaps from subtler levels of physical reality. Such patterns will appear to be random, especially if they encode information for many different macroscopic forms and sequences of events. For this reason they will be very difficult to distinguish from purely random patterns by experimental observation.”

Consider a two-dimensional wave field — exemplified by the surface of a body of water. This is illustrated in Figure 2, below. A two-dimensional wave field is capable of propagating waves which can be expressed by what is called the classical wave equation. In the first frame of Figure 2 we see the wave field moving in an apparently random way. As time passes it becomes apparent that this pattern of waves contains hidden information. This is illustrated in successive frames, where first in frame 2 we see that a letter “A” has appeared in the field. This form quickly takes shape and dissipates (frame 3), and it is replaced in frame 4 by the similar rapid appearance and disappearance of the symbol *Aum*. Actually the information for both symbols is present in all 4 frames of the figure. This example is discussed in detail by Thompson in his book:



“Thus much of the random noise that surrounds us may consist of information for patterns that will ‘unfold’ in the future to produce macroscopic results, while the rest consists of the ‘enfolded’ or ‘refolded’ remnants of past macroscopic patterns.”

“Because the original source of these patterns is the inaccessible transcendental level, it is not possible to produce them at will. A thorough investigation of this phenomenon would necessarily depend on the analysis of observed spontaneous events.”

Thompson believes that this type of study might be fruitful in the field of cognitive science. “According to the *Vedic Paradigm*, the conscious self is transcendental and has the same qualitative nature as the Godhead. Thus the link between conscious will and the initiation of physical action by the brain should also entail the transmission of patterns of information from transcendental to gross physical levels of reality.”

The concept of the unfolding of information is also useful in the field of natural history. The predominant scientific viewpoint is that the origin of living species can be explained by Darwin’s theory of evolution by natural selection and random variation.



Included in the group of those who have always dissented from this view is Alfred Russel Wallace, the co-inventor of Darwin’s theory. Wallace felt that certain biological phenomenon, such as the brain, could not be accounted for properly without the action of some higher intelligence. Similarly, Bohm feels that “Natural selection is not the whole story, but rather that evolution is a sign of the creative intelligence of matter.” Thompson has pointed out that “Bohm regards this intelligence as emanating either from his implicate order or from beyond.”

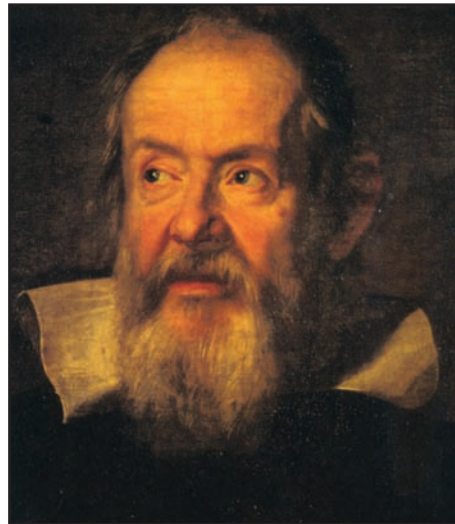
The *Vedic Paradigm* proposes that the supreme intelligent being can create or modify the forms of living beings by the transmission of organized wave patterns into the physical realm. Of course both this theory of creation by sound and the Darwinian theory of evolution are very difficult to verify. Thompson states, “The theory of creation by sound vibration involves transcendental levels of reality not accessible to the mundane senses, and thus in one sense it is more unverifiable than the purely physical Darwinian theory. However, if a purely physical theory turns out to be empirically unverifiable, then there is nothing further one can do to be sure about it. In contrast, a theory that posits a supreme intelligent being

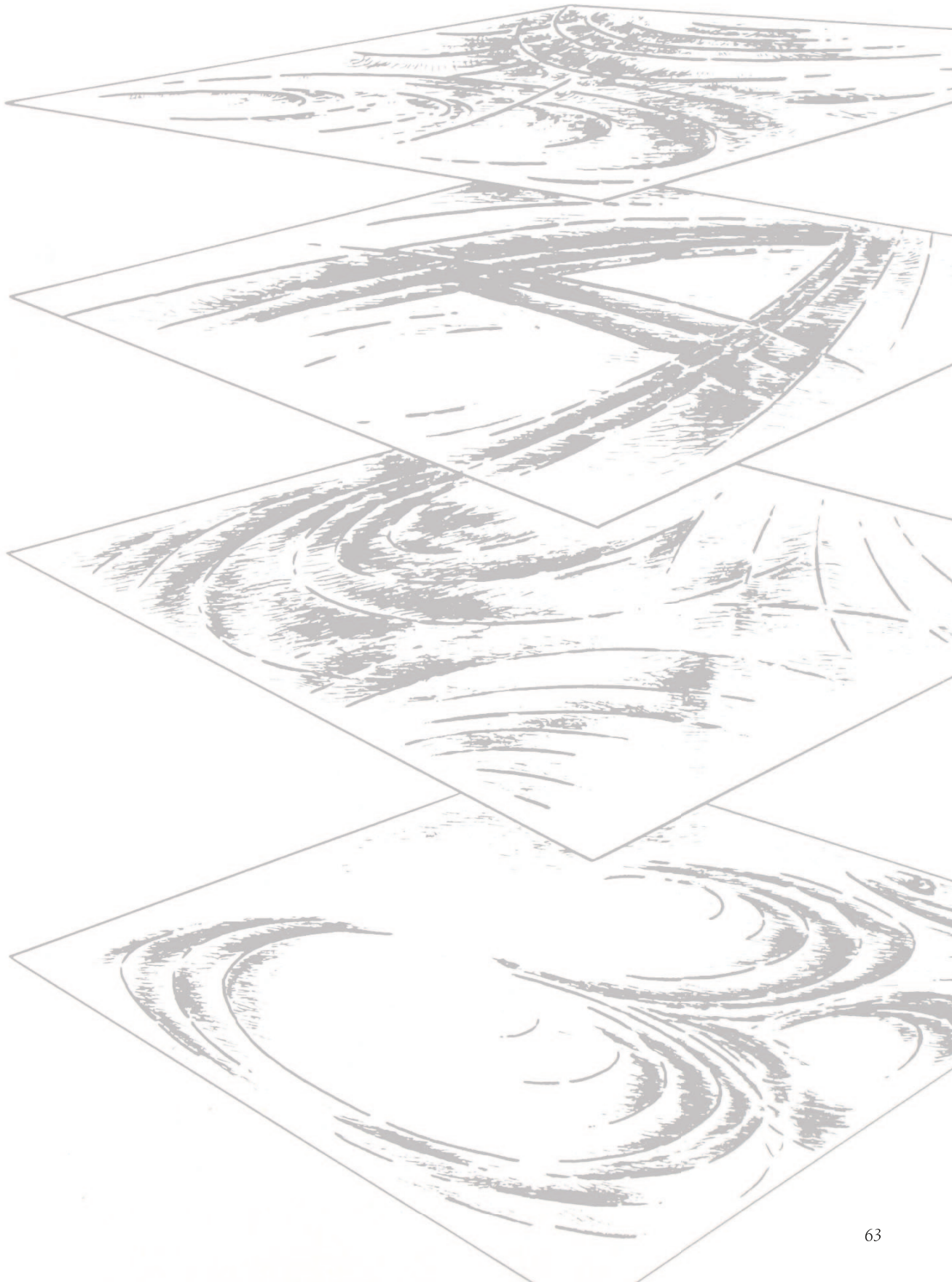
opens up the possibility that further knowledge may be gained through internal and external revelation brought about by the will of that being.”

This entire approach is in line with the oft-mentioned need for a new paradigm, a new world view which is said to be in the making. Although the mechanistic world view founded by Descartes, Galileo, Newton, and Bacon has dominated thought since the seventeenth century — now, in the twenty-first century, the severe limitations of this view have become apparent. The mechanistic approach must be replaced with a holistic approach. Rather than torturing nature for her secrets, Thompson’s idea calls for a reverence for nature and a humble appeal to Godhead for divine service.

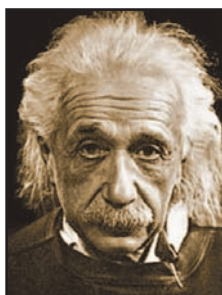
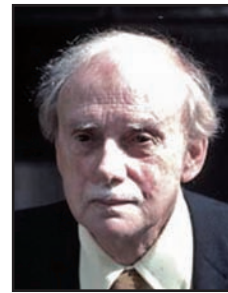
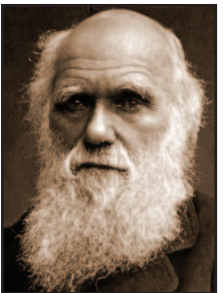
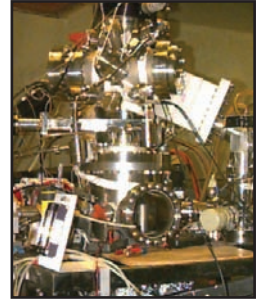
Finally, in Thompson’s own words, “This approach to knowledge and to life also constitutes one of the great perennial philosophies of mankind, but it has tended to be eclipsed in this age of scientific empiricism. To obtain the fruits of this path to knowledge, one must be willing to follow it, and one will be inclined to do this only if one thinks the world view on which it is based might possibly be true. Establishing this possibility constitutes the ultimate justification for constructing theories such as the one considered here: linking physics and metaphysics.”

1) *The Holographic Paradigm* by Ken Wilber, p. 211-212.











# Has Science Failed Us?

by David Osborn

## THESIS

Scientists generally insist that all phenomena can be described, in principle, in terms of measurable quantities which can be calculated using simple mathematical laws, thus reducing the universe to a mechanism and humans to complex submechanisms whose will and feelings correspond to nothing more than patterns of chemical interaction among molecules. The vast majority of these scientists are bent on eliminating the concept of God from all descriptions of reality and it's creation.

Renowned physicist and Nobel laureate, Erwin Schrodinger, father of Quantum Mechanics, writes: "No personal God can form part of a world model that has only become



accessible at the cost of removing everything personal from it."<sup>(1)</sup>

We find that almost all of the scientists have chosen to rule out god from the very beginning of their research.

Presumably scientists seek to improve their position of knowledge and better satisfy their needs (pleasures) in this world by controlling nature. Unfortunately we find that so-called scientific progress more often brings an unexpected toll, a negative reaction from the material energy.

With the proliferation of automobiles, air pollution threatens humanity, the industrial revolution has brought air and water pollution, truck farming with

it's pesticides and chemical fertilizers has introduced innumerable poisons into our food system.



Advances in physics have brought about the nuclear threat and possible holocaust, appliances and other modern amenities (time saving devices) have inadvertently spawned drunkenness and obesity and with urbanization the breakdown of morals, ethics and mental stability.

Even with all the advances in medical cures, new and incurable diseases have only increased. It seems that the goals of knowledge and pleasure have not been achieved.

## SCIENTIST'S IMPERFECTIONS

It is often found that scientists are not unbiased in their search for the truth, giving preference to evidence which supports their desired thesis and unscientifically rejecting alternative theories as unsuitable without proper consideration.

Alfred Russell Wallace, co-author with Charles Darwin of the *Theory of Evolution by Natural Selection* advised, "the proper way to treat evidence as to man's antiquity is to place it on record, and admit it provisionally wherever it would be held adequate in the case of other animals; not, as is too often now the case, to ignore it as unworthy of acceptance or subject its discoverers to indiscriminate accusations of being impostors or the victims of impostors."



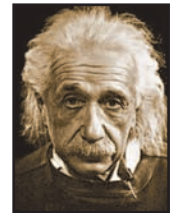
Although scientists are subject to the four defects of all humans, namely, they make mistakes, are subject to illusion, have a cheating propensity and defective perception (*bhrama, pramada, vipralipsa, karanapatava*), their findings when accompanied by some sort of verifiable experimental proof, are accepted as factual descriptions of reality.

Even so, theories of creation, formation of life, and evolution cannot be rigorously proven nor do they adequately describe reality. Scientists have not provided us with adequate answers to fundamental questions about the universe, galaxies and life forms.

All too often scientists forcibly assume [albeit incorrectly] that their laboratory experimental evidence can be applied elsewhere under different circumstances. Further, almost all currently accepted theories of Creation and Evolution are unverifiable and often contradicted by reliable evidence. However, when concepts such as *consciousness*, a *creator intelligence* and *soul* are introduced as viable concepts, the scientists demand that they be detectable by experimentation.

Alternative world views which need to be examined more closely are those which include these concepts of *consciousness*, *spiritual qualities* and a *grand designer* or *universal designing intelligence* (god).

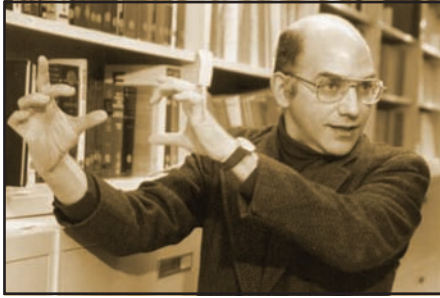
Although Albert Einstein professed atheism, he agreed that there is a perfect "brain" behind all the natural physical laws. It is common sense that there is some cause behind each action. Even machines cannot run automatically without an "operator" to turn them on or repair them. There is no logical reason for ruling out in advance alternative strategies for explaining the creation and its constituent parts. Yet, the vast majority of scientists reject outright any argument in favor of design, since such a concept is not reducible to physical processes and simple mathematics. We think this approach of the scientists is unscientific.



Gödel's incompleteness findings shook the very foundations of 20th-century mathematics, just as relativity theory and quantum mechanics redirected contemporary physics research.

Gregory Chaitlin of the IBM T.J. Watson Research Center takes Gödel's incompleteness results one step further and shows with algorithmic information theory that mathematics has much more widespread and serious limitations than hitherto suspected. Chaitlin provides the LISP and Mathematica software so we can run our own calculations if we desire.

Chaitin's work focuses on the problems of mathematical "truth" as a convenient fiction. There are infinitely



many possible mathematical facts, but, according to Chaitin, the underlying relationships among them are impossible to establish. This isn't good news for anyone interested in a "theory of everything," since, if the foundation is built on cottage cheese, the tower is going to be a bit tippy at best. Even worse, Chaitin's results demonstrate that not only is there no structure to the foundation of mathematics, the foundation is in fact random. Bad news, reductionists! <sup>(2)</sup>

$$W = \dot{a}_{p \text{ halts}} 2^{-|p|}$$

## PROPER EDUCATION

The purpose of the Educational system is to teach students how to solve the problems of life, yet educators are simply propagating how to increase one's entanglement in this material world by economic development and sensory enjoyment. We do not find a department in the Universities which teaches what is the actual goal of life.

$$\Delta p \Delta x \geq \frac{1}{2} \hbar$$

When Heisenberg's uncertainty principle, imaginary numbers and other non-verifiable conceptual models are accepted by our scientific friends, what is the problem in considering such concepts as the spiritual soul? Consciousness is the symptom of the spirit soul's residency in the body of the living entity. It is a fundamental aspect of reality which cannot be totally ignored in any valid scientific explanation of reality.



## FAILURE OF SCIENCE

In the field of mathematics, which underlies all other branches of science, the imaginary number "i," (the square root of minus one) is essential for most complex theoretical calculations. However this "imagi-

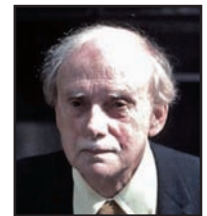
nary" number cannot be proven by experimentation. It is also not possible to prove by experimentation the Third Law of Thermodynamics or Heisenberg's Uncertainty Principle. Yet these principles are absolutely essential for modern scientific theories.

In the beginning of the Nineteenth Century it was believed that atoms could not be divided, yet as we entered the Twentieth Century the fundamental building blocks of atoms such as neutrons, protons and electrons were discovered. Hardly a year goes by without the discovery of yet finer subdivisions into subtler entities, such as quarks, with even stranger qualities, such as: up, down, charm, strange, top and bottom. Newtonian Mechanics was accepted as the proper scientific explanation of reality until it was discovered in the Twentieth Century that it failed to describe the motion of these fundamental particles. Quantum Mechanics was devised to cope with this inadequacy. The General Theory of Relativity was also devised by Albert Einstein to help further explain fundamental concepts.



$$\hat{H}_{DC} = \sum_i \hat{h}_D(i) + \sum_{i \neq j} \frac{1}{r_{ij}}$$

Because General Relativity and Quantum Mechanics appear to contradict each other, Quantum Field Theory was developed. This theories inventor, Nobel laureate P.A.M. Dirac, confessed, "It seems to be quite impossible to put the theory on a sound mathematical basis." <sup>(3)</sup>



So we can clearly see that the various evolving theories of the scientists are constantly changing as they scramble to adjust their theories, all of which are riddled with speculation. These theories can never be perfect because the scientists themselves are imperfect and subject to the four human defects. With our limited knowledge, tiny brains, limited experience and resources we cannot hope to understand the unlimited.

Noted astronomer Bart J. Bok wrote in Scientific American "...we did not suspect it would soon be necessary to revise the radius of the Milky Way upward by a factor of three or more and to increase it's mass by as much as a factor of 10." <sup>(4)</sup>

## BIG BANG THEORY



For lack of other alternatives, scientists generally support the “Big Bang” Theory of creation, which postulates that in the beginning of creation all the matter in the universe was concentrated into a single point of mass at a high temperature which then exploded producing

a superheated cloud of sub atomic particles. However this initial condition is mathematically indescribable. A point of infinitesimal circumference and infinite density is called a “singularity,” a physical impossibility.

Of this, renowned mathematician Stephen Hawking and Professor G.F.R. Ellis write, “It seems to be a good principle that the prediction of a singularity by a physical theory indicates that the theory has broken down.”<sup>(5)</sup>



Thus the scientists stand convicted of the crime of making unverifiable supernatural claims — precisely what they accuse the transcendental saints of doing.

These various “Big Bang” theories lead to a stage of uniformly distributed gas which is expanding. Again, what happens after that is the subject of further speculation and has not been properly explained by our scientist friends.

Various alternative theories have been proposed which are little better. Of one such attempt, the “Inflationary Model” of the universe, it has been written, “It is then tempting to go one step further and speculate that the entire universe evolved from literally nothing.”<sup>(6)</sup> The nothingness mentioned here is a hypothetical quantum mechanical vacuum, a state which is virtually indescribable. This vacuum is actually very complicated to describe and it is unknown how it could have evolved further to produce the life forms present today, although a number of theories have been proposed.

Attempts by the German scientist Manfred Eigen to describe how an inert chemical soup might transform

into self-reproducing cells elicited such comments as: “Clearly these papers [of Eigen and coworkers] raise more problems than they solve.”<sup>(7)</sup>

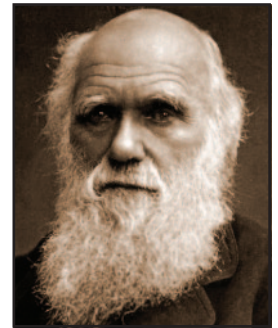
Their failure is like the frog in the well speculating as to the size of the Pacific Ocean by comparing it to his well.



## DARWIN'S THEORY OF EVOLUTION

Darwin himself admitted that speculation was necessary in the formulation of a theory, “I am a firm believer that without speculation there is no good and original observation...”<sup>(8)</sup>

His Theory of Evolution published in his book “Origin of Species” has been accepted as fact, although it is based on Darwin’s fallible speculations. His critics write, “If the theory of natural selection of Darwin is correct, why can’t we see the intermediate forms of species, the connecting links?” Darwin did not have the answer nor the archeological evidence to back it up. Although there is ample evidence for many species, fossil records provide almost no evidence for the intermediate connecting links.

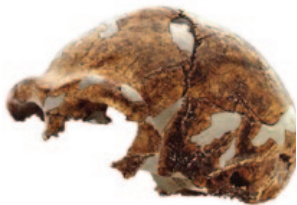


Later, scientists revised Darwin’s theory with their “Punctuated Equilibrium” evolutionary theory, supposedly making evolution invisible in the fossil record. Yet this theory is not verifiable in any way. It is indeed strange that scientists speak with absolute conviction of Darwin’s Theory of Evolution, when it has been calculated that out of one billion species that

have lived since the Cambrian period, that 99.9% of these species left no fossil record, thus leaving scant evidence (some of which is contradictory) to support this theory.

There are innumerable anomalies in the archeological artifacts, such as: Human remains have been found from the wrong time period in the wrong continent, pollen of flowering plants from the wrong time period, etc —which sharply contradict this theory of evolution. These contradictions are either brushed aside by traditional evolutionists or rejected.

Indeed it has been noted that the vehemence of their opposition and the lengths to which they will go to discredit and reject any evidence contradicting their sacred theories, is proportional to the significance of its challenge to their theories. Studies of artifact dating which does contradict evolutionary theories have been published along with such statements that the authors were, “painfully aware that so great an age poses an archaeological dilemma.”<sup>(9)</sup>



Yet, such significant finds are simply not mentioned in standard textbooks and popular accounts of human evolution, nor are they included in the evolutionists writings. Sir Arthur Keith, an eminent British evolutionist, wrote, “Were such discoveries in accordance with our expectations, if they were in harmony with the theories we have formed regarding the date of man’s evolution, no one would ever dream of doubting them, much less of rejecting them.”<sup>(10)</sup>

A hint of the prevailing attitude towards unwelcome finds (those which contradict the predominating evolutionary theory) is provided by a quote of William H. Holmes during his opposition to the Tertiary humans found by J. D. Whitney, “Perhaps if Professor Whitney had fully appreciated the story of human evolution as it is understood to-day, he would have hesitated to announce the conclusions formulated, notwithstanding the imposing array of testimony with which he was confronted.”<sup>(11)</sup> What he is really saying is that if the evidence does not support the favored theory, then it should be disregarded.



## FURTHER PROBLEMS WITH DARWIN’S THEORY OF EVOLUTION

The modification of species by breeding has been heralded since the time of Darwin as evidence of evolution, yet experiments have shown that there are natural limits to the changes which can be brought about by breeding. Experiments with plums and roses by the eminent biologist Luther Burbank confirmed these limits, “In short, there are limits to the development possible.”<sup>(12)</sup>

A staunch advocate of evolution, Ernst Mayr of Harvard University found similar results in his experiments with fruit flies. Some altered species died out while others reverted to their original state a few years and generations later.<sup>(13)</sup> These results show a strong anti-evolutionary characteristic in the species examined.

Domestic animals have not evolved in four to ten thousand years. “Ten thousand years of mutations, crossbreeding, and selection have mixed the inheritance of the canine species in innumerable ways without its losing its chemical cytological [cellular] unity. The same is observed of all domestic animals: the ox [at least 4,000 years old, the fowl (4,000), the sheep (6,000), etc.”<sup>(14)</sup>

It has been found that ancient Egyptian pyramids contain depictions of various species of animals which remain unchanged to this day. Why have the species not evolved?

Evolution theory fails miserably to account for complex form. How can small sequential changes over many generations improve the survivability of each generation such that these changes develop? It seems that the intermediate steps would decrease the species fitness rather than increase it. However, this would simply not take place unless each successive stage provided some definite advantage over the previous stage. Otherwise, the changes cannot be attributed to natural selection.

A particularly vexing question is that of the evolution of the eye in previously sightless species. Darwin himself admitted this shortcoming of his theory, "To suppose that the eye with all its inimitable contrivances for adjusting the focus to different distances, for admitting different amounts of light, and for the correction of spherical and chromatic aberration, could have been formed by natural selection, seems, I freely confess, absurd in the highest degree."<sup>(15)</sup>



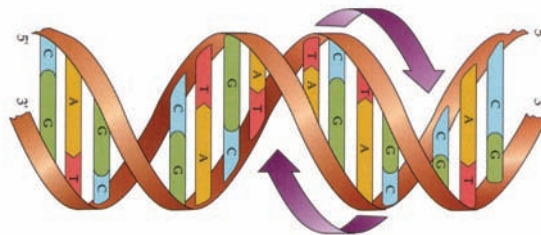
Anthropologist Frank Spencer stated in 1984: "From accumulating skeletal evidence it appeared as if the modern human skeleton extended far back in time, an apparent fact which led many workers to either abandon or modify their views on human evolution. One such apostate was Alfred Russel Wallace (co-author of the Theory of Evolution)."<sup>(16)</sup>

Evolutionary theorist Theodosius Dobzhansky has stated that there is almost zero chance of human evolution being repeated.



Modern humans do not have Neanderthal ancestors in their family tree, a new DNA study concludes. The DNA extracted from the ribs of a Neanderthal infant buried in southern Russia 29,000 years ago was found to be too distinct from modern human DNA to be related.<sup>(17)</sup>

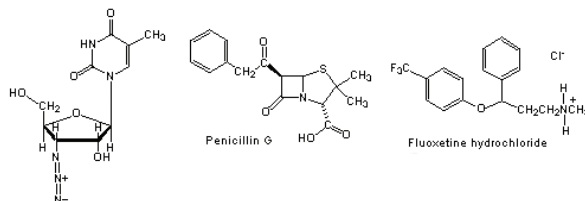
Jonathan Wells, a molecular and cell biologist from the University of California at Berkeley who is a senior fellow of the Discovery Institute, in his *Icons of Evolution* does more than cast doubt. He takes 10 so-called "proofs" of evolution offered in current textbooks and shows where not one of them is in fact a proof of anything, and several are actually frauds.<sup>(18)</sup>



In view of so much strong evidence to the contrary, it seems very misleading to present Darwin's Theory of Evolution as factual, as has been done and continues to be presented in today's school textbooks.

## LIFE FROM CHEMICALS?

Scientists have long theorized that life has emerged from a primordial chemical soup without the direction of any higher organizing principles. They theorize that simple molecules randomly combine into inconceivably complex organic compounds, which again evolve into higher self-reproducing organisms. How any of this happens is yet to be explained.



James Watson, co-discoverer of the DNA structure wrote, "Not only will the exact structure of most macromolecules within the cell remain unsolved, but their relative locations within cells can only be vaguely known."<sup>(19)</sup>

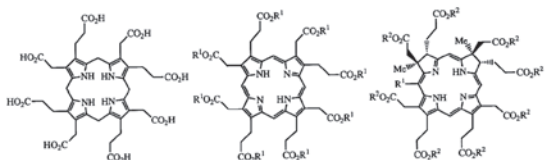
The great question is: How can inert matter, acting according to simple physical laws alone, generate the remarkable molecular machinery found in even the simplest cell?

Experiments by chemists hailed as demonstrating the "creation" of life showed no signs of evolving into even slightly more complex forms, what to

speak of cells. The relative success of Stanley Miller in producing amino acids by running a spark thru a gaseous substance believed to be similar to the ancient atmosphere from which life arose, is actually of little consequence. It is quite another matter to go the next step to complex cellular components with their complicated mechanisms. Another chemist, Sydney Fox, produced small drops of protein by heating dry amino acids and dropping them into water. His results were equally unimpressive and failed to demonstrate how inert chemicals could evolve into highly organized complex cells.

Albert L. Lehninger aptly expressed the dilemma, “At the center of the problem is the process of the self-organization of matter.”<sup>(20)</sup>

The scientist’s quest to show how a set of simple natural laws can explain the transformation of a few basic molecular building blocks of life into a single self-reproducing cell can be compared to finding a simple computer program which can take the 26 letters of the alphabet and transform them into a Shakespearean masterpiece. To help our readers formulate an idea of the complexity of this task we mention that Professor R. B. Woodward of Harvard, winner of a Nobel Prize in chemistry in 1965, took eleven years working with ninety-nine scientists to synthesize the vitamin B-12 molecule.



Scientists claim to be able to produce life, but can they create one mosquito, produce milk from grass or put a banyan tree in a capsule the size of a mustard seed? I think not. Their claims are simply so many words, not backed up with results.

In view of the fact that there exists no viable theory on the chemical origin of life, perhaps other factors may be involved in chemical evolution, such as a self-intelligent organizing principle.

## COULD LIFE ARISE BY CHANCE?



A number of scientists, left with no other viable alternatives, then turn to blind chance as a last resort explanation in their attempts to save the theory of evolution. Some scientists have calculated the probability of life arising by chance from a primordial soup and shown that it is virtually zero.<sup>(21)</sup>

### Chance & The Origin of Life

To give some idea of what exactly is involved in supposing that life could have emerged by a random combination of chemicals in a primordial soup, let us imagine that this soup covered the entire surface of the earth to a depth of one mile.



We shall divide this volume into tiny cubes measuring one angstrom unit on each side. (An angstrom unit is about the size of a single hydrogen atom.) Let’s also assume that the soup is extremely concentrated, so that reactions are taking place within each of the cubes within the soup.

Now, in the expectation of obtaining the simplest possible self-reproducing organism, let the reactions take place a billion times per second in each cube. And let’s further assume that the reactions have been going on for 4.5 billion years, the estimated age of the earth.



Scientists Fred Hoyle and Chandra Wickramasinghe has estimated that the chance of obtaining the simplest self-reproducing system by random combination of molecules is at best somewhere in the neighborhood of 1 in 10 to the fortieth power attempts. But if out of extreme generosity we reduce the required number of proteins from 2,000 to only 100, then the probability is still 1 in  $10^{2,000}$  [1 in 10 to the 2,000 power].

Now, if you add up all the possible attempted billion-per-second combinations in our hypothetical primordial soup, you wind up with only 10 to the 74th power throws of the chemical dice. That means the odds of getting the required self-producing system out of our soup would be 1 in  $10^{1926}$  [10 to the 1,926th power]. We wouldn't expect that to happen in the entire course of the earth's history!



Of course, a diehard gambler might say it's highly unlikely but it just could happen by chance. The thesaurus gives the following meanings for chance: accidentally, unintentionally, undesignedly, without design, by accident, by mistake, inadvertantly, randomly, unpredictably, luckily, etc. But this is a completely meaningless use of this word. In order for a statement about an event with a nonzero probability of happening to be meaningful, we would have to observe enough repetitions of the event to establish a statistical pattern. Only this would allow us to say, "This event has probability  $p$  of happening."

For example, we say that when we toss a coin there is probability of one in two that it will turn up heads. This probability is established by examining the behavior of the coin over several hundred trials. Now, if you have an event with a probability of one in a million, it would take hundreds of millions of trials to establish this. And if the event has an estimated probability of 1 in  $10^{2,000}$ , you would need many times that number of trials. The basic point is this: What is meant by a probability of 1 in  $10^{2,000}$  is that a cer-

tain statistical pattern corresponding to this figure will be observed over the required vast number of trials. If there is no possibility of performing these trials (as is certainly the case here), then there is no meaning to saying an event happens with that very small probability.

On this planet, it has been shown elsewhere, that you can only have a maximum of  $10^{74}$  trials. Now we can be extremely generous and grant the chemical evolutionists that the trials can be taking place in primordial soups on as many planets as there are atoms in the entire universe — about  $10^{80}$ . Then you get a grand total of  $10^{54}$  trials — still an infinitesimal number compared to  $10^{2,000}$ . The conclusion is simple. It's meaningless to talk about the origin of life in terms of chance. To say it happened randomly is just the same as saying it happened, and we already know that. In that case, all we can say is that it is an unique event.

## CONCLUSION

Scientists seem obsessed with the concept that complex life forms have evolved progressively from simple building blocks. However direct experience shows just the opposite, that complex forms actually originate from even more complex forms. On the basis of information theory and also the basic principle of the Second Law of Thermodynamics regarding increasing entropy, or the tendency towards disorder, we can understand that to go from a simple system to a more complicated one, additional design information is necessary. If we say that this information is encoded in the DNA, then we ask simply for an explanation of how this encoding information may happen to appear without any external input to our inert primordial soup.

Our capacity to function in an intelligent way and make decisions based on external stimuli depends on our consciousness. The phenomenon of consciousness cannot be denied, yet because consciousness itself cannot be explained quantitatively, scientists themselves generally neglect to include this essential element in their constructs. Fortunately not all of them feel this way.

Albert Einstein recognized that there was a perfect intelligence behind all the natural physical laws. He concluded that the cosmos; "reveals an intelligence of such



superiority that compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection.”

He is not alone in this thought. Other important scientists have considered the concept of a higher source transmitting design information; that there is a purpose in the universe. Robert Broom, who made important anthropological finds wrote, “The origin of species and of much of evolution appears to be due to some organizing and partly intelligent spiritual agency associated with the animal or plant, which controls its life processes and tends to keep the being more or less adapted to its environment. But in addition to this there seem to be other spiritual agencies of a much higher type which have been responsible for what may be called greater evolution... These spiritual agencies appear to have worked by directing from time to time the inferior agencies which are associated with the animals and plants.”<sup>(22)</sup>

Alfred Russell Wallace, co-author of the *Theory of Evolution by Natural Selection* along with Charles Darwin, expressed similar thoughts, “If there is such an Infinite Being, and if... his will and purpose is the increase of conscious beings, then we can hardly be the first result of this purpose. We conclude, therefore, that there are now in the universe infinite grades of power, infinite grades of knowledge and wisdom, infinite grades of influence of higher beings upon lower. Holding this opinion, I have suggested that this vast and wonderful universe, with its almost infinite variety of forms, motions, and reactions of parts upon part, from suns and systems up to plant-life, animal-life, and the human living soul, has ever required and still requires the continuous coordinated agency of myriads of such intelligences.”<sup>(23)</sup>



Stephen Hawking, the most famous scientist of our day, stated in 2002, “It is difficult to discuss the beginning of the universe without mentioning the concept of god.

“My work on the origin of the universe is on the borderline between science and religion, but I try to stay on the scientific side of the border.”

“It is quite possible that he acts in ways that cannot be described by scientific laws.”<sup>(24)</sup>

If we cannot explain the origin of life via simple principles, then the only choice other than giving up our quest is to search for more complex principles as the source.

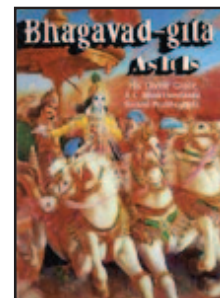
So, one might rightly ask then, where do we turn for a proper understanding of reality and the purpose of life itself? If we cannot trust the knowledge or findings of any human source, then where can we find a reliable source of information?



## REAL KNOWLEDGE

We suggest that a body of knowledge does exist which provides sufficient explanation of the nature and origin of the universe and the living organisms that inhabit it. We refer to the ancient sanskrit Vedic literatures of India, an internally and externally verifiable and consistent presentation of information. Herein we find profuse descriptions of an intelligent creator and his creation.

Perhaps the most well known of these literatures, *The Bhagavad-Gita*, although not technically Vedic, explains the nature of the conscious soul as an in-dweller in the bodies of various species and its journey to other bodies after the death of its present body according to the laws of *karma*. The living entity has free choice to act properly or improperly and receives the resultant good and bad reactions in terms of success and failure, happiness and distress.



Also encoded within this vast body of literature is a description of the process of *bhakti-yoga*, a process for obtaining enlightenment and rising beyond the ordinary platform of eating, sleeping, mating and defending. The essence of these teachings may be found in the *Bhagavad-Gita*.

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# East Meets West

## *Oriental Seeds in Occidental Soil*

by Jack Hebner

Although worlds apart in terms of geography and culture, no two nations have been so intimately connected as the United States and India. It was Christopher Columbus' fateful error, in his search for a new route to India, that led him to the discovery of America. He had heard of India from the writings of Marco Polo<sup>[1]</sup>, whose descriptions of India's riches had fired the ambitions of many a traveler. "The part of India known as Malabar," Polo had written, "was the richest and noblest country in the world."<sup>[2]</sup> And Marco Polo, it may be remembered, had by then seen many lands, not least China.

The hope of discovering a passage to India was not given up even after the time of Columbus and settlement in the New World. Rather, the hope intensified as Missouri Senator Thomas Hart Benton<sup>[3]</sup> dreamt of discovering a land route to India — as opposed to Columbus' sea route — and with the coming of the railroads many thought that this dream would soon be realized. Senator Benton's statue in St. Louis bears an inscription which reveals his hopefulness: "There is the East; there lies the road to India."

*"The part of India known as Malabar," Marco Polo had written, "was the richest and noblest country in the world."*

Up until the eighteenth century, interest in India was largely for trade and other commercial purposes. India was a land with multifarious riches: silks, spices, diamonds, gold. And these brought good prices in Western ports. In Boston, for instance, merchants dealing with Indian trade quickly grew in wealth and prestige. It was considered a distinction to have one's office on "India Wharf," where American captains sought for their families and business acquaintances such treasures as carnelian necklaces, pieces of valuable cobweb Dacca muslin and even rare books

in Sanskrit.<sup>[4]</sup> When Captain Heard of the Salem brig Caravan set out for Calcutta in 1812, he took with him a request from his friend, Henry Pickering, for a "Sanskrit Bible."<sup>[5]</sup>

*"There is the East;  
there lies the road to India."*

Sanskrit literature was soon in great demand. And it was not long before Indian thought began to manifest itself in American writing. Defending Indian lifestyle against various attackers, American writers — especially those with a deep appreciation for Indian philosophy — began dedicating much of their work to establishing the undeniable value of ancient Indian thought. Pamphlets appeared criticizing the British attitude toward India, most notably the exploitative tactics that East India Company exerted on Indian villagers. Writing under the name "Rusticus," John Dickinson, author of *Letters of a Pennsylvania Farmer* said:

"Their (Company officials) conduct in Asia for some years past, has given ample proofs, how little they regard the laws of nations, the rights, liberties or lives of men. They have levied war, excited rebellions, dethroned Princes and sacrificed millions for the sake of gain. The revenue of mighty kingdoms have entered their coffers. And these not being sufficient to glut their avarice, they have, by the most unparalleled barbarities, extortions and monopolies, stripped the miserable inhabitants of their property and reduced whole Provinces to indignance and ruin. Fifteen hundred thousand, it is said, perished by famine in one year, not because the earth denied its fruits, but this 'Company' and its servants engrossed all the necessities of life and set them at so high a rate, that the poor could not purchase them."<sup>[6]</sup>

For nearly three decades, from 1836 to 1866 or the end of the Civil War in America, the United States witnessed the flowering of an intellectual movement, the like of which had not been seen before. The movement flourished in Concord, Massachusetts and was known — though it had no formal organization — as the Transcendental Club or Circle. Its members were Ralph Waldo Emerson and Henry David Thoreau, the Unitarian Minister James Freeman Clark, the teacher and philosopher Amos Bronson Alcott, Margaret Fuller, and some clergymen. Their collective achievement in quality of style and in depth of philosophical insight has yet to be surpassed in American literature. And their major influence, without exception, were the Vedic literatures of India.



**Ralph Waldo Emerson** (1803-1882), “I owed a magnificent day to the *Bhagavat-Gita*. It was the first of books; it was as if an empire spake to us, nothing small or unworthy, but large, serene, consistent, the voice of an old intelligence which in another age and climate had pondered and thus disposed

of the same questions that exercise us.”<sup>[7]</sup> Emerson is the first great American literary figure who read deeply and fully the available philosophic literature from India<sup>[8]</sup> It certainly shows in his own writings. In a letter to Max Mueller, Emerson wrote: “All my interest is in Marsh’s *Manu*, then Wilkins’ *Bhagavat Geeta*, Burnouf’s *Bhagavat Purana* and Wilson’s *Vishnu Purana*, yes, and few other translations. I remember I owed my first taste for this fruit to Cousin’s sketch, in his first lecture, of the dialogue between Krishna and Arjuna and I still prize the first chapters of the *Bhagavat* as wonderful.”<sup>[9]</sup>

By 1856 Emerson had read the *Kathopanishad* and his ideas were increasingly reflecting Indian influence. His poems, such as *Hamatreya* (a poem composed in 1845) showed he had digested his Indian philosophic readings well. *Hamatreya* apparently was inspired by a passage from the *Vishnu Purana* (Book IV). He was concerned with the subject of illusion — *maya*. He wrote about it. In his essay *Illusions* he said: “I find men victims of illusions in all parts of life. Children, youths, adults and old men, all are led by one bauble or

another. Yogavindra, the goddess of illusion, is stronger than the Titans, stronger than Apollo.”<sup>[10]</sup>

In his poem *Maya* he wrote:

Illusion works impenetrable,  
Weaving webs innumerable,  
Her gay pictures never fail,  
Crowds each other, veil on veil,  
Charmer who will be believed,  
By man who thirsts to be deceived.

But the poem by which Emerson is best remembered and one which is often quoted for the influence Vedic thought had on him is *Brahma*.

If the red slayer thinks he slays,  
Or if the slain thinks that he is slain,  
They know not well the subtle ways  
I keep, and pass, and turn again.

Fear or forgot to me is near;  
Shadow and sunlight are the same;  
The vanished gods to me appear;  
And one to me are shame and fame.

They reckon ill who leave me out;  
When me they fly, I am the wings;  
I am the doubter and the doubt;  
And I the hymn the Brahmin sings.

The strong gods pine for my abode,  
And pine in vain the sacred Seven;  
But thou, meek over good!  
Find me, and turn thy back on heaven.

Some of his stanzas were almost directly quoted from these lines in the *Bhagavad-Gita*:

“He who thinks that the living entity is the slayer or that the entity is slain does not understand. One who is in knowledge knows that the self slays not nor is slain. (Bg. 2:19)

“O son of Kunti, the nonpermanent appearance of heat and cold, happiness and distress, and their disappearance in due course, are like the appearance and disappearance of winter and summer seasons. They arise from sense perception, O scion of Bharata, and one must learn to tolerate them without being disturbed.”(Bg. 2:14)

“*Fate is nothing but deeds committed in a prior existence.*”

*Brahma* was composed in 1856 and represents the maturity of Emerson's comprehension of some of the fundamental concepts of Vedic thought. According to Professor Frederic Ives Carpenter, those sixteen lines probably express those concepts "more clearly than any other writing in the English language — perhaps better than any writing in Hindu literature itself." Emerson also wrote knowledgeably about reincarnation, the theory of Karma and of Fate, of the latter not in the classic Greek sense, but in its Indian interpretation: "Fate is nothing but deeds committed in a prior existence."

## The Great Transcendentalist: Henry David Thoreau



Emerson and Thoreau are invariably paired as the two leading Transcendentalists. Thoreau was the younger of the two. He was also the more exuberant and impetuous and the more frankly admiring of Vedic thought. There is no record that he read any Indian literature while at Harvard, but in Emerson's li-

brary he found and read with zest Sir William Jones' translation of *The Laws of Manu* and was fascinated. In his Journal, he wrote: "That title (*Manu*)... comes to me with such a volume of sound as if it had swept unobstructed over the plains of Hindustan... They are the laws of you and me, a fragrance wafted from those old times, and no more to be refuted than the wind. When my imagination travels eastward and backward to those remote years of the gods, I seem to draw near to the habitation of the morning, and the dawn at length has a place. I remember the book as an hour before sunrise."

Later, in *A Week on the Concord and Merrimack Rivers* (1849) he was again writing about the same work, "Most books belong to the house and street only, and in the fields their leaves feel very thin... But this, as it proceeds from, so it addresses, what is deepest and most abiding in man. It belongs to the noontide of the day, the mid-summer of the year, and after the snows have melted... (it) will have a place of significance as long as there is a sky to test them [the sentences of *Manu*] by."

"In the morning I bathe my intellect in the stupendous and cosmogonical philosophy of the *Bhagavad-Gita*."

Thoreau read the *Dharma Sastra* in 1841, when he was twenty-four, and the *Bhagavad-Gita* when he was twenty-eight years of age.<sup>[13]</sup> Of the latter he wrote: "The New Testament is remarkable for its pure morality, the best of the Vedic Scripture, for its pure intellectuality. The reader is nowhere raised into and sustained in a bigger, purer, or rarer region of thought than in the *Bhagavad-Gita*. The *Gita*'s 'sanity and sublimity' have impressed the minds even of soldiers and merchants." He had the *Gita* with him during his stay by Walden Pond.<sup>[14]</sup>



"What extracts from the Vedas I have read fall on me like the light of a higher and purer luminary, which describes a loftier course through a purer stratum," he remarked in 1850. "The religion and philosophy of the Hebrews are those of a wilder and ruder tribe, wanting the civility and intellectual refinements and subtlety of Vedic culture."<sup>[15]</sup> He writes in Chapter Sixteen of *Walden*: "In the morning I bathe my intellect in the stupendous and cosmogonical philosophy of the *Bhagavad-Gita*, since whose composition years of the gods have elapsed and in comparison with which our modern world and its literature seems puny and trivial."

Thoreau died very young but during his mature years he read a great deal of Indian literature, perhaps more than Emerson. In 1855 he received from an English friend an entire treasure-chest of 44 volumes dealing with Vedic literature. For them he fashioned a new



case from driftwood found in a New England river “thus giving Oriental wisdom an Occidental shrine.”

The extent of Thoreau’s reading of Indian literature is astounding. He read Jones’ translation of *Shakuntalam*; Wilson’s translation of the *Sankhya Karika* and of *Vishnu Purana*; Wilkins’ translation of *Harivamsa* (which he later put into English) and Garcin de Tassy’s *Histoire de la Litterature Hindoui et Hindostan*. In his Journal, he wrote: “One may discover the root of an Indian religion in his own private history, when, in the silent intervals of the day and night, he does sometimes inflict on himself like austerities with stern satisfaction.” No wonder Gandhi loved and revered him and accepted Thoreau as his teacher.<sup>[16]</sup> In another time and place, he would have been considered the ideal Yogi-ascetic, seeker after Truth.

An American scholar, John T. Reid, commenting on *Walden*, has said that if one read it, without screening its lines for possible foreign influences, the net impression will be that of a frugal, practical Yankee, greatly interested in the details of New England’s flora and fauna, gloriously happy in the tranquil peace of unsullied Nature, an eccentric at odds with most of his neighbor’s foibles. “He was not in any accurate sense a Yogi,” adds Reid, “but he did pay devoted heed to those glimpses of light from the Orient which he saw.”<sup>[17]</sup>

## Teacher, Quaker, Rover, Mystic

Apart from Emerson and Thoreau, four other distinguished Americans of the period showed an interest in, or were influenced by, Indian philosophic thought. They are Alcott the Teacher, Whittier the Quaker, Melville the Rover and Whitman the Mystic.

**Amos Bronson Alcott** (1799-1888) was a visionary, a stimulating and original teacher whom Carlyle called “the good Alcott,” a kind of venerable Don Quixote whom nobody could even laugh at without loving. He was born poor and as a young man earned his livelihood as a peddler. But he taught himself, read widely in the well-stocked libraries of Philadelphia, and became acquainted with the Quakers and their doctrine of the ‘Inner Light.’ Born in Connecticut, he returned to his native New England and for a time carried out his well-known educational experiment at the Temple School. That did not succeed and for a time he did some writing, but with no demonstrable financial gains. So he went back to manual labor and

in the meantime he held public “conversations” in the best Socratic style. He thus transmitted the sum of his own reading to young minds.

Alcott was an enthusiastic vegetarian (as were Emerson and Thoreau)<sup>[18]</sup> and tried to introduce his ideas in his ill-fated utopian experiment of Fruitlands (1841). He was, in a sense, the father of the Organic Food concept, but, as with his progressive educational experiments, was too far ahead of his time.

Unlike Alcott, **John Greenleaf Whittier** (1807-1892) was a talented poet who was influenced by Emerson and from whom he borrowed a copy of the *Bhagavad-Gita*. To Emerson he wrote: “I will e’en keep it until I restore it to thee personally in exchange for George Fox (founder of the Society of Friends, the Quakers). It is a wonderful book and has greatly excited my curiosity to know more of the religious literature of the East.”<sup>[19]</sup>

The results of Whittier’s reading are evident in a good number of his poems like “The Oval Heart,” “The Cypress Tree of Ceylon,” “The Dead Feast of the Kol-Folk,” and “The Khan’s Devil.” A particularly striking example of his use of Indian material is his well-known poem “The Brewing of Soma,” which describes the preparation and use of the Vedic sacrificial drink.



**Walt Whitman’s** relationship (1819-1892) to Vedic thought is considerably complex. Emerson once described Whitman’s *Leaves of Grass* as a blending of *Gita* and the New York Herald. In his reminiscing essay, “A Backward Glance O’er Travel’d Roads” (1889) Whitman claims to have read “the ancient Hindu poems” and there is enough evidence to show that in 1875 he had received a copy of the *Gita* as a Christmas present from a English friend, Thomas Dixon.<sup>[20]</sup>

Although the mystic trend in much of Whitman’s work is unmistakable, he was never the less a product of America in its robust love for life and zest for living.

One report has it that it was Thoreau who led Walt Whitman to dip into what was then collectively called “Oriental” literature. We have to take the word of his

biographer for that. Whitman, from all the evidence, was vastly impressed by his readings. It is only in recent years that critics have come to recognise the deepening of Whitman's religious feeling and his far saner intuitions of human nature in such superb poems of the late 1850's and the 1860's as "Out of the Cradle Endlessly Rocking," "When Lilacs Last in the Dooryard Bloom'd" and "Passage to India" — a term, incidentally, that E.M. Forster was to pick up in later years.

Of "Passage to India" it has been especially said that it "contains his most eloquent idealism." His main theme was the question asked by the feverish children of the modern age: "Whither, O mocking life?" The coming together of the seas in the Suez Canal, the crossing of the great American continent by steel do not satisfy, they are but shadows of a greater dream. There must be a passage to more than India. The soul, "that actual me," must voyage beyond its material successes in order to amplify its love, its ideals, its "purity, perfection, strength."

So "sail forth — steer for the deep waters only."

Passage O soul to India

Eclaircise the myths Asiatic, the primitive fables...

The far-darting beams of the spirit, the unloos'd dreams,

The deep-diving bibles and legends

The daring plots of the poets, the elder religions;

O you temples fairer than lilies pour'd over by the rising sun!

O you fables spurning the known, eluding the hold of the known, mounting to heaven!

You lofty and dazzling towers, pinnacled, red as rose, burnished with gold!

Towers of fables immortal fashion'd from mortal dreams!

You too I welcome and fully the same as the rest!

You too with joy I sing!

Whitman's constantly phrased and re-phrased conception of "the real me" — 'I pass death with the dying' brings to mind the reincarnation doctrine, as it is specifically mentioned in the *Bhagavad-Gita*.

## The Early American Indologists



The American Oriental Society, founded in 1842 for the study of Sanskrit itself, did not start in American universities until some years later. The first American Sanskrit scholar of any repute was Edward Elbridge Salisbury (1814-1901) who taught at Yale (Elihu Yale was himself ultimately connected with India and had profound respect for Vedic philosophy). Another early Sanskritist, Fitzedward Hall (1825-1901) was in the Harvard class of 1846 but left college to search for a runaway brother in — of all places — India, where he continued his studies of Indian languages and even became tutor and professor of Sanskrit at Banaras. He was the first American scholar to edit a Sanskrit text — the *Vishnu Purana*.

One of Salisbury's students at Yale, **William Dwight Whitney** (1827-1901) went on to become a distinguished Sanskritist in his own right, having studied in Berlin under such distinguished German scholars as Bopp and Weber. Whitney became a full professor of Sanskrit language and literature at Yale in 1854, wrote his classic *Sanskrit Grammar* (1879) and was the doyen of Indologists of his period. Whitney succeeded in the Chair of Sanskrit Studies of Yale by Edward Washburn Hopkins (1857-1932). Hopkins was an excellent scholar but made his name principally as an exponent of India's religions. His book *The Religions of India* (1895) was for many years one of the principal works on the subject available in America and his *Origins and Evolution of Religion* published in 1923, sold well.

With Yale leading the way, Harvard caught up and beginning with James Bradstreet Greenough (1833-1900), had a succession of great Sanskrit teachers, the most distinguished among them was Charles Rockwell Lanman who taught for over forty years, publishing such works as *Sanskrit Reader* and *Beginnings of Hindu Pantheism*. But his greatest contribution was planning and editing the *Harvard Oriental Series*. In his time he was responsible for influencing such students of his who were later to achieve literary renown as T. S. Eliot, Paul Elmer More and Irving Babbitt. The tradition of American Indologists has been nobly kept up by those who followed: to mention only a few names, A.V. William Jackson, Franklin Edgerton, W. Norman Brown, and Joseph Campbell.

## T.S. Eliot and the Three Cardinal Virtues



T.S. Eliot, who was born in St. Louis, Missouri, studied at Harvard, the Sorbonne and Oxford and received the Nobel Prize for literature in 1948, drew his intellectual sustenance from Dante, Shakespeare, the Bible, St. John of the Cross and other Christian

mystics, the Greek dramatists, Baudelaire, and the *Bhagavad-Gita*. Over and over again, whether in *The Waste Land*, *Four Quarters*, *Ash Wednesday* or *Murder in the Cathedral*, the influence of Indian philosophy and mysticism on him is clearly noticeable.

Eliot was a twenty-three year old student at Harvard when he first came across eastern philosophy and religion. What sparked his interest in Vedic thought is not recorded but soon he was occupied with Sanskrit, Pali and the metaphysics of Patanjali. He had also read the *Gita* and the *Upanishads* as is clear from the concluding lines of *The Waste Land*. *The Waste Land* ends with the reiteration of the Three Cardinal Virtues from the second Brahmana passage in the *Brihadaranyaka Upanishad*: *damyata* (restraint), *datta* (charity) and *dayadhvam* (compassion) and the state of mind that follows obedience to the commands is indicated by blessing *Shantih shantih shantih*, that Eliot himself roughly translated as “the peace that passeth understanding.” But it is the *Gita* that evidently made a more permanent imprint on Eliot’s mind. It will be found relevant not only to *The Waste Land*, but to *The Four Quarters*, *The Dry Salvages*, and *The Family Reunion*. The tolerance preached by the *Gita* is echoed in Eliot’s use of imagery drawn from several religions. As Prof. Philip R. Headings has remarked in his study of the poet, “No serious student of Eliot’s poetry can afford to ignore his early and continued interest in the *Bhagavad-Gita*.”<sup>[21]</sup> In a sense Eliot follows in the giant footsteps of Emerson and Thoreau and the early Transcendentalists, but, it would seem, with a greater sense of urgency and relevance. There is a sharper, keener perception of what endures and should endure, and incessant demand that all traditions of literature, music, painting, architecture and philosophy be put to their proper psychic or religious use. In that

sense, Eliot’s message is the message of the *Gita*, of the essential utility of all activity: a message for all time, though it is harder to understand because it must be united from the materials, tone and perspective of his poems.

## Conclusion

In modern times (since the death of T. S. Eliot in 1965) the influence of India’s spiritual thought in America has taken leaps and bounds. Turbulent peace-seeking days of the sixties and seventies opened the doors for alternative thinking, and Spiritual India was welcomed with open arms. Words like *dharma* and *karma* have come to be listed in our English dictionaries, and meditation (of some variety) is practiced, or at least attempted, by millions of Americans.

The list of prominent thinkers over the last twenty years who have been profoundly affected by the spiritual precepts of India is too long to mention. In music, in art and in literature, as well as the political arena, the serenity of transcendental thought quietly expounded in humility from the shores of India has had a greater (although subtle) influence on the American public than perhaps any other single foreign culture.

Although a slight shift away from spiritual ideals was experienced in the early to mid-eighties, it appears to have been only a momentary hesitation. The now materially-exhausted yuppies are again searching for deeper values, and the New Age spiritualists, most of whom accept reincarnation, karma, meditation, chanting and vegetarianism are filling the spiritual gap. Of course there are unscrupulous persons who seek to flourish materially in the spiritual marketplace, and the New Age community is overrun with imitation. But the precious commodity of the spiritual gems of the *Vedas*, the *Gita* and India’s other literary jewels continue to shine light on the proper utilization of the modern world of material affluence. With the spiritual eyes of the East and the material legs of the Western world, the lame man and the blind man may once and for all see and walk on the path of freedom from all anxieties.

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# Architecture of the Vastu Sastra

## According to Sacred Science

by Jack Hebner

With the passing of the ages empires are created and destroyed, new cultures appear and then again fade, like changing seasons into the shadows of eternity. Vanishing into oblivion, all that remains of those that were once great and powerful in this world are but a handful of relics. Time, the destroyer of all things, vanquishes even the most invincible empires, leaving behind their remnants to be marveled at by future civilizations. And marvel we do at the wonders of the past, especially the architectural wonders. Be it the pyramids of Egypt, the cathedrals of Rome, the Parthenon of Athens, the Forbidden City in Beijing, or Stonehenge, our mind is at once awed by the beauty and grandeur of ancient architecture.

Until recent years modern society has viewed much of the world's ancient architecture and art as "simply decorative" or, in a general sense, as a tribute to God; not that it might have any "practical" function in helping us to understand the nature of the world we live in. However, recent studies in the field of Sacred Architecture (*Vastu Shastra*) by men like Keith Critchlow of the Royal College of Art in London, have uncovered hidden dimensions revealing a far-reaching connection between architecture and the nature of existence. Critchlow, perhaps the best-known advocate of the theory of sacred architecture, believes that basic architectural principles on the physical level are integral with structure on the metaphysical level.

Most sacred architects maintain that the ultimate reality exists beyond the mundane plane of temporary forms. As such, that higher reality, infinite in nature, can make itself known to the finite living entities, in the world here below. It does so through revealed forms which, while seemingly limited and temporary, provide a bridge between the finite and the infinite.



Some regard the ideal forms of sacred *Vastu* architecture as metaphors, while others prefer to see them as fixed, eternal truths. In any case it is a fact that sacred architectural forms (as presented in the *Vastu Shastra*) have the ability to uplift the human consciousness from the mundane reality to the supernatural.

William Irwin Thompson of the Lindisfarne Mountain Retreat in Colorado says about his chapel, "Anyone entering our chapel — no matter what their religion — would feel the sacred calling of the place and wish to sit in silence." Architect Michael Baron reports that people sometimes cry the first time they enter the Lindisfarne Chapel. He explains, "They find it touches something very familiar inside them. Others don't say a word; they sense the sacredness of the place. They may not be sure what's going on, but they are affected by it."

Throughout the world it's hard to find a place where sacred architecture is as developed a science as is that found in India. India's ancient temples and palaces are certainly among the finest ever built. From the Taj Mahal, the seventh wonder of the world, to the Pagodas of Tamil Nadu, from the Himalayan hill shrines to the great temple at Jagannatha Puri, India is a veritable treasure-house of sacred architecture. In fact there are more existing examples of sacred architecture in India than in all other countries of the world combined.

The knowledge of sacred architecture in India has existed in the oral tradition since before the Vedic Age, some five thousand years ago. From the oral tradition it was later recorded in the Sanskrit mantras and compiled under the title *Vastu Shastra*.

According to Indian authorities the *Vastu Shastra* is possibly the oldest known architectural treatise in the world today.

The word *shastra* means literature or more accurately “enlightened literature.” The word *vastu*, meaning the manifest, comes from the word *vastu*, meaning the unmanifest. The philosophical purport of the words *vastu* and *vastu* form the basic concepts of India’s sacred architecture and are among the first lessons taught to the students of *Vastu Shastra*. That which is manifest in this world, *vastu*, it is said, is originally existing on the plane of the transcendental or unmanifest, *vastu*.

To instruct the beginning students of the *Vastu Shastra* about the meanings of *vastu* and *vastu*, the unmanifest and the manifest realities, the example is used of the moon and its reflection in water. “The moon is present in the sky, but when rising above a lake it becomes visible or manifest in the water. In the same way the origin of all things exists first in the eternal reality and then becomes manifest here below

in the world of gross sensual objects.” This simple analogy demonstrates the nature of *vastu*, that which exists eternally, and *vastu*, that which is temporarily manifest.

The students of the *Vastu Shastra* thus perceive existence in terms of two dimensions: first the infinite spiritual realm and second the finite accommodating space for insentient material objects. This concept of a superior plane of existence, where the original form of things exist eternally, is the basis of India’s sacred architecture.



While researching sacred architecture we talked with Ganapati Sthapati, the Senior Architect at the Government College of Architecture and Sculpture in Mahabali-



puram, South India. Sthapati informed us that the science of the *Vastu Shastra* is traceable to at least the year 3,000 B.C.E., if not before.



The earliest known master of the *Vastu Shastra* was Maya Danava, recognized as the founder of the tradition of India's sacred architecture. Sthapati, who holds the esteemed title Brahma Sri, awarded to him by the government of India for his achievements in the field of architecture, further assured us that the science of *Vastu*

*Shastra* is a living tradition in India and is in no danger of becoming extinct.

We visited several classrooms at the college where students are taught the variety of skills and techniques necessary in the science of sacred architecture. Beginning with concept and design, the students are taught each and every aspect of sacred architecture: geometry, drafting, stone sculpture, bronze casting, wood carving, painting, etc. All the textbooks and reference materials are written in Sanskrit, which every student is required to learn.

Those students who excel in all phases of sacred architecture will graduate with a degree in architecture and receive the title Sthapati. Those students specializing in a particular department of sacred architecture like sculpture or painting become certified as Master Artisans. After earning a degree graduating students will have the opportunity to apply their designing skills in building temples and other facilities requiring knowledge of the *Vastu Shastra*.

Of all types of structures in the field of sacred architecture, the building of a temple requires the utmost degree of knowledge and training. Those building a house, a school or even an office building take into consideration the basic knowledge of sacred architecture for successful execution; but the temple, being the very abode of divinity, requires the greatest skills and is the most painstaking in its execution. In the development of a temple

project all phases of construction from beginning to end are thought out and executed according to the direction of the *Vastu Shastra*.

First of all it is necessary to select a suitable place where the temple should be built. The suitable choices are mentioned in the *Vastu Sastra*: "The best location to build a temple is at a *tirtha* (holy place)." "A *tirtha*," says Ganapati Sthapati, "is a ford or crossing place from this world to the above—a point of marriage between transcendence and the mundane. A *tirtha* provides a crossing place for the upward journey of the soul and a place for the downward crossing—for the crossing of higher entities who sometimes descend to this world for the good of mankind."

If construction of the temple at a *tirtha* is not possible then another appropriate location should be found. The *Vastu Sastra* says, "The temple of Godhead should be situated in a beautiful place where rivers flow, on the banks of a lake or by the seashore; on hill tops, mountain slopes, or in a hidden valley. The site of the temple may be selected in a forest, a grove, or in a beautiful garden. Temples should also be built in villages, towns and cities or on an island, surrounded by water."

Next a construction plan is required and here begins the highly technical aspect of sacred architecture — to bring about the descent or manifestation of the unmanifest and unseen. Ganapati Sthapati explained this process to us in great detail. "The architect or Sthapati begins by drafting a square. The square is literally the fundamental form of sacred architecture in India. It is considered the essential and perfect form. It presupposes the circle and results from it. Expanding energy shapes the circle from the center; it is established in the shape of the square. The circle and curve belong to life in its growth and movement. The square is the mark of order, the finality to the expanding life, life's form and the perfection beyond life and death. From the square all requisite forms can be derived: the triangle, hexagon, octagon, circle etc. The architect calls this square the *vastu-purusha-mandala* — *vastu* the manifest, *purusha* the Cosmic Being, and *mandala*, in this case, the polygon.

"When completed the *vastu-purusha-mandala* will represent the manifest form of the Cosmic Being; upon which the temple is built and in whom the temple rests. The temple is situated in Him, comes from Him, and is a manifestation of Him. The *vastu-purusha-mandala* is a mystical diagram. It is both



the body of the Cosmic Being and a bodily device by which those who have the requisite knowledge attain the best results in temple building.”

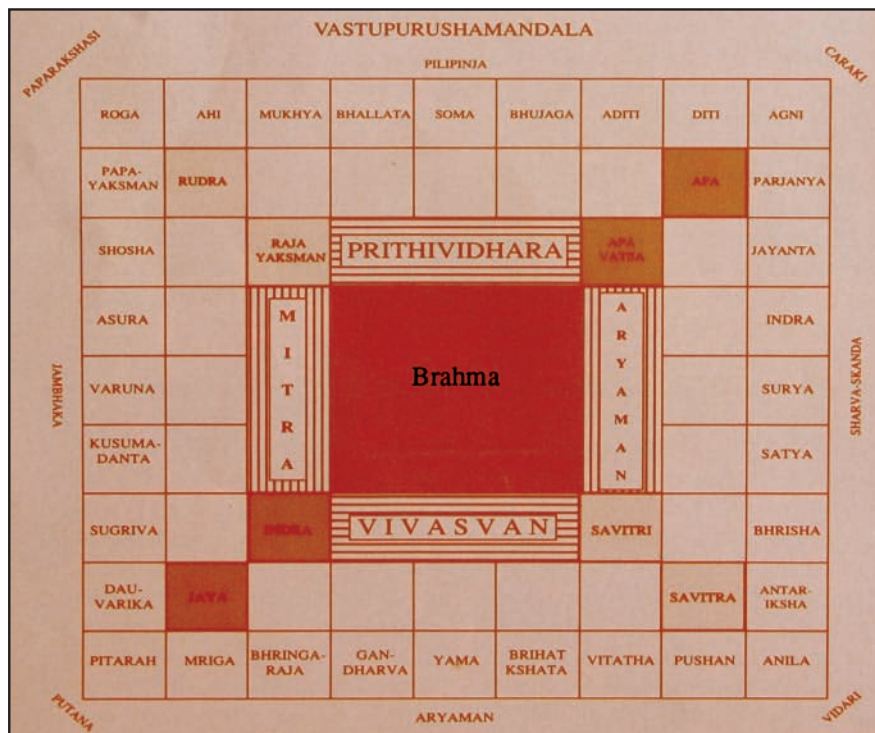
The conception of the “Cosmic Being” as a person has held a prominent place in Indian theistic thought since time immemorial. We were shown an interesting quotation in the ancient Sanskrit literature that illustrates the personal features of the Cosmic Being. “The planetary systems in space from the highest down to the lowest represent the head, neck, chest, thighs, legs and feet, respectively, of the Great Universal Being. His arms are the divine entities headed by Indra, the ten directional sides are His ears, and physical sound is His sense of hearing. His mouth is blazing fire. The sphere of outer space constitutes His eye sockets and the eyeball is the sun as the power of seeing. The rivers are His veins, the trees are the hair of His body and the omnipotent air is His breath. The passing ages are His movements.”<sup>[1]</sup> The perception of the Cosmic Being is considered to be the preliminary stage of self-realization and thereby a qualified form of pantheism, which gradually leads one to understand the personal feature of the transcendent Godhead.

The concept of spirituality in the system of sacred architecture in India is something that goes beyond the mere static relations between inert objects and

space as found in other architectural traditions. The relationship of objects with one another and space in India’s sacred architecture extends to include higher entities said to be in charge of various aspects of universal affairs, all of whom carry out their work in accordance with the will of God.

In order to establish the *vastu-purusha-mandala* on the construction site, it is first drafted on planning sheets and later drawn upon the earth at the actual building site. The knowledge of its meaning and execution is the first discipline which the architect must master and it requires in-depth understanding of astrology. The drawing of the *mandala* upon the earth at the commencement of construction is a sacred rite in itself. The rites and execution of the *vastu-purusha-mandala*, for which a priest will also be summoned later on, are not accessory nor are they a mere accompaniment to the temple. They sustain the temple in their own sphere of effectiveness to the same extent that the actual foundation supports its weight.

Based on astrological calculations the border of the *vastu-purusha-mandala* is subdivided into thirty-two smaller squares called *nakshatras*. These *nakshatras* correspond to the constellations or lunar mansions through which the moon passes in its monthly course. The number thirty-two geometrically results from a repeated division of the border of the single



square. It denotes four times the eight positions in space: north, east, south, west, and their intermediate points. The closed polygon of thirty-two squares is now symbolical of the recurrent cycles of time as calculated by the movements of the moon. Each of the *nakshatras* is ruled over by a divine entity, called a *deva*, which extends its influence to the *mandala*. Outside the *mandala* lie the four directions, symbolic of the meeting of heaven and earth and which also represent the ecliptic of the sun — east to west and its rotation to the northern and southern hemispheres.

The center of the *mandala* is called the station of Brahma, the first of beings and the engineer of universal order. Surrounding Brahma are the places of twelve other entities known as the sons of Aditi, who assist in the affairs of universal management. The remaining empty squares represent the *akasha* or pure space. The *vastu-purusha-mandala* is now complete, forming a sort of map or diagram of astrological influences that constitute the order of the universe and the destinies of human lives. When placed on the building site the *vastu-purusha-mandala* determines the time for beginning construction. Only by the combination of the *vastu-purusha-mandala* and astrological calculations can this factor be ascertained.

The temple itself should always face east as that is considered the most auspicious direction — the place of origin of the sun. From the east appears the rising sun, the destroyer of darkness. The sun is the giver of



life. It brings joy and happiness and is the watchful eye of the “Cosmic Being.” The *Vastu Shastra* states that a building with improper proportions and wrong orientation will create an environment which is conducive to disturbances like disease, death and

destruction, and may be inhabited by subtle entities with envious and deceitful natures.

As we learned more and more about the science of sacred architecture, it became apparent that the construction of a domestic building or of a temple is something like the birth of a human being—who according to the time and place of his birth will come under certain astrological influences throughout life. The time of construction, the place and position of a structure are all important factors for the future of the building. Therefore, according to the *Vastu Shastra*, all structures should be erected according to auspicious astrological calculations to assure successful execution, longevity, and lasting prosperity.

From the diagram of the *vastu-purusha-mandala* the architect next proceeds to develop the vertical and horizontal dimensions of the temple. Here too, a wide range of factors must be taken into consideration. To guide the sacred architect of today, a long and rich tradition of already existing temples and sacred buildings in India serves as a great inspiration to his work. The architect’s creative intelligence will be an all-important ingredient in the final design, while the *mandala* and the *Vastu Shastra* will continue to be the tools of his execution.

The size of the structure will determine the various kinds of building materials to be used at different stages of the construction. Building materials like stone, marble, brick, plaster, wood, etc., are selected for the main body of the temple, whereas elements like gold and silver will be used for final ornamentation. Only organic materials are used in sacred architecture. Man-made materials like simulated marble, plastic and asbestos are not acceptable building materials. The reason being that inorganic materials are not considered adequate conductors of cosmic energies.

The plotting graphs of the temple are divided into two main sections—the ground plan and the vertical alignment. The square, the rectangle, the octagon and the pentagon are fundamental patterns in the horizontal or ground plan. In the vertical alignment the pyramid, the circle and the curve are most prominent. The subdivisions of the ground plan include the *brahmasthana* (the main shrine and smaller chapels) and the *mandapam* (balconies, assembly halls and auditoriums). The vertical plan consists of drawings for the gopuram (entrance ways), the *vimana* (the structure above the main shrine or chapel) and the *prakara* (the walls).

The *brahmasthana* is said to be the principal location in a temple since it is here that the seat of Godhead will eventually be placed. At the base of the foundation of the *brahmasthana*, located at the station of Brahma on the *vastu-purusha-mandala*, a ritual is performed called *garbhadhana*, the ritual which invites the soul of the temple to enter within the buildings confines. In this ritual a *brahmin*, priest, places



a golden box in the earth during the ground-breaking ceremonies. The interior of the box is divided into smaller units exactly resembling the *vastu-purusha-mandala*. All the units of the gold box are first partially filled with dirt. In the thirty-two units representing the *nakshatras* (lunar mansions), the units of Brahma and the twelve sons of Aditi, the priest places an appropriate *mantra* in written form to invoke the presence of the corresponding divinity.

The Sanskrit *mantras* chanted by the priest are in no way less important than the *mandala* itself. The *mandala* having set up an archetypal diagram of universal order, the *mantra* infuses the *mandala* with spiritual powers. The *mantras* chanted by the priest are distinct from ordinary mundane sounds. *Mantras*, composed of “atomic” monosyllabic sounds derived from the Sanskrit alphabet, are said to be non-different from the very substance which they

invoke. The *mantras* are the subtle form of the *mandala* and are inseparable from it. As the architect must have undergone extensive training in the field of sacred architecture and astrology to construct the *mandala*, similarly the *brahmin* who chants the *mantras* must also have requisite knowledge of the science of sacred sound vibrations.



In the unit of Brahma a golden serpent with many raised hoods is placed. The serpent form is then surrounded with nine precious jewels or *navaratna*. Ananta represents the energy which supports the very existence of the universe. The universe rests in space and that space is the energy of Godhead appearing as Ananta. The nine jewels—diamonds, emeralds, rubies, pearls, yellow sapphire, blue sapphire, red coral, cats-eye and jade—invoke the astrological influence of the nine planets.

A gold lid with the seven continents of the earth engraved on it is placed on top of the box. When this is done the priest then performs the ritual sacrifice or sanctification ceremony called *agni-hotra*, the fire sacrifice. During the *agni-hotra* the priest offers clarified butter, the symbol of religious principles, into the fire, which represents the mouth of the Cosmic Being. Along with the offering of clarified butter, five types of grains—rice, wheat, barley, rye and dhal, all produced of the earth — are also offered in the fire. This too is performed with the chanting of *mantras*.



Once the *garbhadhana* and *agni-hotra* ceremonies are complete, the actual construction of the temple takes place according to the previous preparations.

When the foundation is finished the vertical structure is raised and the body of the Cosmic Being becomes visible to the naked eye. The external features of the temple are brought to life through finely sculpted figures and paintings. The art and sculpture frequently portray the forms of divine entities and the different stages of consciousness in the gradual evolution of life throughout the universe. This is no less exacting a science than that of the architect or of the *brahmin* priest.

Muthai Sthapati, an instructor at the Government Architectural College, pointed out that it is often the work of the master artisan, through painting and sculpture, that most enables one to perceive the actual sacredness of the temple.

The *prakaras* or walls that fortify the temple may vary in size and number according to the dimensions of the temple. Larger temples, like the one in Sri Rangam, are sometimes surrounded by up to seven concentric walls which represent the seven layers of matter — earth, water, fire, air, ether, mind and intelligence — that cover the original consciousness of the living entities in the material world. The *gopurams*, or gateways through the *prakaras*, are symbolic of being liberated from the bondage of matter as one enters the temple and proceeds toward the central shrine.

The *vimana* or tower, also called the *shikara*, is raised to its final height above the sanctum as the last stones are put into place. Resembling a great mountain, the *vimana* is crowned with a golden spire called *kailash*, the heavenly abode. At the sides of the *vimana* are fixed the fierce faces of Yali, the protector of the temple. The temple is now ready for the ceremony known as *pratistasthana*, the installation of the deity. The sacred altar in the *brahmas-thana*, central shrine, is located directly above the gold box, placed in the earth during the *garbhadhana* ceremony. Here on the sacred altar representing the heart of the Cosmic Being, the deity of Godhead called the *archa-vigraha*, the manifest form of total divinity is installed. The *mandala*, the *mantra*, and above all the sincerity and faith of the participants combine together to invoke the appearance of Godhead. The universe is the manifestation of the divine form of Godhead in the world of mundane existence. The body of the temple is the representation of that cosmic form, whereas the *archa-vigraha* is the manifestation of the transcendental form of Godhead descending from beyond the mundane. The ceremony

for installing the deity is performed with great pomp and upon its completion the temple is complete.

There are altogether forty-five basic varieties of temples mentioned in the *Vastu Shastra*. These too have their many variations and thus the styles of sacred temple architecture in India are as unlimited and diverse as the very nature of the infinite being they represent.



From the drawing table to the finished product of a gorgeous temple, sacred architecture in India is a science and a work of art. Moreover it is an attempt to raise the human consciousness to the stage of self-realization where one ultimately sees Godhead everywhere, in all things, and at all times.

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# Sacred Dance

by Jack Hebner

As far as historical records show, dance in India has always been associated with spirituality and the pulsating rhythm of cosmic life. Indians have always held dance as sacred and have practiced it as a means of entering into divine consciousness.



Shiva, a principal demigod in Indian religious tradition, is the patron saint of the sacred dance; he is known as “Nataraja,” the king of dancers. According to Ananda Cooramaswamy, an eminent Indian scholar, the dance of Shiva is a manifestation of the primal rhythmic energy which has three meanings: first, rhythmic play, the source of all movement within the cosmos; second, the purpose of his dance is to release the countless souls of mankind from the snare of illusion; and finally, the place of dance, Chidambaram, the center of the universe, is within the heart.

According to authorities on Indian sacred dance, and in the words of its countless performers, the dance is profoundly spiritual. The ritual of dance is mentioned in India’s earliest literature, the Vedas, and has always accompanied religious ceremonies.

The distinguished Indian dancer Enakshi Bhavani, whose book *The Dance in India* is an authoritative classic on the subject, also calls Indian sacred dance “a science, an art, and an exposition at the same time.” Because it demonstrates the deeply philosophical and highly spiritual moods of the Indian people, in India sacred dance is given the foremost position among all the traditional arts.

## Bharat Natyam & Sacred Dance

Whereas spontaneity in Indian dance was previously cherished, over the course of time it evolved into a methodical performing art with various schools and strict disciplines. Over 2,000 years ago, Bharata Muni wrote the *Natya Shastra*, or the science of drama which included a comprehensive guide to sacred Indian dance. In this work Bharata Muni says that Brahma, the predominating demigod of this universe, brought the entire science of *natya*, dance and drama, to the Earth in ancient times.

Bharata Muni, it seems, possessed a mind that delved deeply into the mysteries of that knowledge which comes with yogic meditation and contemplation, and



his inner visions of beauty, perfect rhythm, and noble attributes of the symbolic movements provided a formidable prerequisite to his composing his manual. Amazingly enough, most sacred dance in India still follows the outlines and rules laid down in the *Natya Shastra*.

As in other sacred arts in India such as architecture, some regard the ideal forms — or postures — as symbolic of truth, while others prefer to see them



as being in perfect harmony with the cosmic rhythm. Some schools consider that when the sacred dance is properly performed, the divine entities of Godhead and the celestial beings which the performers portray “manifest” themselves onstage; thus the sacred dance becomes one with reality in that

it has the ability to uplift the human consciousness from the mundane world to the supernatural. Since this requires the disciplined use of the entire body and all of its means of expression, in the *Natya Shastra*, ten basic postures of the body, thirty-six of the hand, nine of the neck, and thirteen poses of the head are delineated. The various schools of dance have elaborated on these principal postures, each of which has a specific meaning constituting a precise body language capable of telling complex stories to audiences familiar with these conventions. The dancer requires exacting coordination of footwork, bodily movement, hand gestures, placement of arms, and movements of the head, eyes, eyebrows, and neck, synchronized with the finely intricate beats of a drum.

The most striking feature of India’s sacred dance is undoubtedly the hand gesture known as the *mudra*. By a beautiful and complicated code, the hand alone is capable of portraying not only a wide range of emotions, but gods, mortals, animals, natural scenery, action, and so on, and each posture and body movement creates an effect which invokes transcendental emotion. It is a traditional belief that certain currents generated by repeated rhythmic movements of the body create moods and atmosphere that bring powerful results affecting man and nature alike. Thus seasonal dances, festival dances, and ritual dances evolved.



Ultimately, through practice of the standard dance forms sacred dancers could so awaken their spirituality as to dance their way to divine consciousness. In order to attain this elevated state of consciousness, the Indian dancer had to achieve a true unison of the inner self and the physical being and become immersed in the divine.

Before the advent of Buddhism in India, dancers were generally recruited from the upper classes of Indian society. Princesses and women of culture counted dancing as an accomplishment and cultural asset demanding serious study. And study they did, as sacred dance, being a holistic art and science, required well educated and well rounded performers for success. Therefore, prospective dancers from an early age had to learn not only dance, but dramatics, perfume-making, make-up, music, grammar, and the art of conversation, and had to be learned in philosophy and theology.



The ascendancy of Pali Buddhism in India after 500 B.C.E. interrupted the full and continuous evolution of sacred Indian dance. This form of Buddhism emphasized a more abstract form of spirituality and all

of the sacred arts declined during this period, especially since members of the higher echelons of society were forbidden to dance or sing or play on musical instruments. But around the time of Christ, Vedic concepts of philosophy and spirituality in India rebounded to



enjoy a strong renaissance, fueled by the immense popularity of the great Vedic classics *Ramayana* and *Mahabharata*. During the first and second centuries C.E. this resurgence gained new heights of achievement for the Vedic arts, including dance, which continued unabated for almost a thousand years.

The Chola dynasty (ninth century to thirteenth century C.E.) gave new impetus to all the sacred arts, especially dance, by rich patronage and devotion. Elaborate temple construction was a special tour de force of the Cholas, and they established schools of sacred dance in their newly-built temple complexes—hence, sculptures of dance in Orissa, Andhra, and all over South India highlighted the unique status of sacred Indian dance during this period.

Under the weight of the British occupation of India and the secularizing effects of modernization in the nineteenth century, sacred Indian dance suffered a dramatic decline for the second time; however, the Nobel Prize-winning poet Dr. Rabindranath Tagore and other concerned members of India's high society worked to repopularize sacred Indian dance and make it more accessible to the general public. With the new rise of popularity, dancers were now welcome from almost any sector of society — dancing was no more the elite privilege of the upper classes.

In the twentieth century sacred Indian dance has regained a prominent place on the international stage due to the brilliant work of such dancers as Uday Shankar, whose dancing is applauded on four continents. His performance in the Radha-Krishna Ballet is especially appreciated for bringing to light the grace, power, and subtlety of sacred Indian dance to contemporary audiences.

There are many schools of sacred Indian dance — Bharata Natyam, Kathakali, Kathak, Manipuri, Oris-

si, Mohini Atam, Krishna Atam, and Bhagavat Mela — all loved by the Indian people. To them the sacred dances represent divine beauty in motion, deliberate steps leading to divine consciousness. Among these schools, two are exceptional for surveying as they are prominent and representative of the rest: Bharata Natyam and Kathakali.



## Bharata Natyam

Bharata Natyam is sometimes called “an art for eternity” because its practice today is virtually the same as it was thousands of years ago. It is the most common dance style performed throughout all of India, although the tradition is most popular in the southern states like Tamil Nadu and Kanartaka. Bharata Natyam is the mother art for most of the other sacred dance systems of India and is the main source of inspiration for the allied arts of sculpture, painting, and icon-making. Although Bharata Natyam was originally a child of the temples, it has now become extremely popular on the secular stage as well.



The derivation of the word “Bharata” to describe this system is most intriguing: many experts claim it to be a compilation of the first syllables of the three main elements of Bharata Natyam—*bha* as in *bhava* or mood, *ra* as in *raga* or melody, and *ta* as in *tala* or rhythmic timing.



In ancient times a group of holy adepts known as the Nattuvanars preserved the art of Bharata Natyam and taught it to others. While the Nattuvanars taught, the female temple dancers known as *devidasis* or “handmaidens of God” performed. Undergoing rigorous training, many *devidasis* started developing their skills at the age of five. Some stone inscriptions in Tangore mention that in the eleventh century A.D. nearly 400 *devidasis* practiced their art of dancing at the famous Brihat-Ishwara temple, while about 100 were attached to the Shiva temple at Kanchipuram. The monarchs of the time made the *devidasis* an established institution by paying them a salary for their religious duties.

Traditionally, over the last 1,000 years women almost exclusively performed Bharata Natyam with one exception — the Bhagavatars, who were members of the *brahman* or priestly class who found the dance drama the best medium for interpreting the great philosophic teachings of the *Bhagavatam* scripture, which contains a biographical study of the life of Sri Krishna. The Bhagavatars’ performances were known as Bhagavat Melas. Their dramatic action, lyrical composition, choice music and classic dance form were mingled to glorify the spiritual pastimes of Sri Krishna and other incarnations of Godhead in such an entertaining and artistic way as to create an art which truly expounded dance as Bharata Muni had conceived it in his *Natya Shastra*.



## Katha Kali

The trends of modernization have scarcely made any inroads on the naturally isolated state of Kerala in southwest India; therefore, the Kathakali dance style indigenous to this area continues to flourish without any impediments. Because villagers performed this

art for other villagers, and village life is so stable in Kerala, this state affords us one of the purest visions of ancient Vedic life and culture.

Kathakali literally means “story play,” and is unique in its avant-garde approach to Indian sacred dance form. The performances are based on incidents contained in sacred Sanskrit classics like *Mahabharata* and *Ramayana*, on Kerala’s own ancient Sanskrit drama *Kudiyattam*, and on pastimes from Sri Krishna’s life that were popularized in Kerala around 1650 C.E.



Sacred Indian dance is divided into two categories — vigorous or masculine, and gentle or feminine. Kathakali is most vigorous and is performed by men, yet a similar, gentler form also exists called Kummi in which the performers are mostly women. In either case, the players are spiritual initiates who treat their green room like a shrine and hold all of their paraphernalia to be articles for worship. While following the principles of *Natya Shastra*, Kathakali has developed its own manual as well, the *Hastalakshana Dipika*, which contains Kathakali’s own special contributions to sacred Indian dance.



Kathakali dancers are highly esteemed in Kerala. In bygone days the leading houses of the land organized their own Kathakali troupes. No expense or trouble was considered too great; the upper classes in Kerala happily patronized

Kathakali and continue to do so even to this day.

The Kathakali dancer never stands erect. His stance may seem unnatural, but is actually like that of a *yogi*, whose activity is dictated by a conscious inner

force. The dancer's angular movements, tense and virile, create a fabric of rhythms which he weaves with a sustaining strength. Make-up and masks used in Kathakali reveal and enhance the personality of the characters — from head to toe, the Kathakali costumes

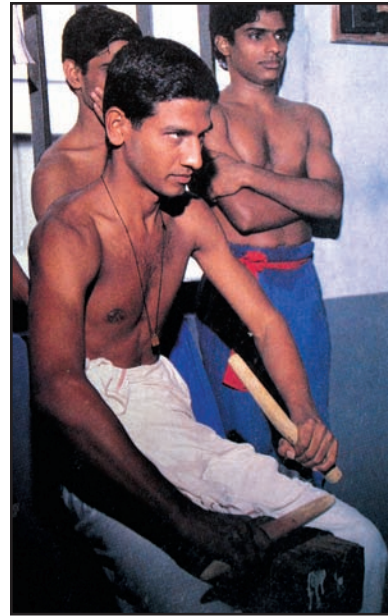


make for an elaborate presentation. Powerful expression, religious fervor, and pantomime also continue to distinguish Kathakali, with the dancers' faces used more in Kathakali than in any other sacred Indian dance style.

Everything about Kathakali deals with the major archetypes of life. The stage,

whether in the courtyard of an ornate temple or in a village meeting place, is about sixteen square feet. The stage represents the world that has come into being in space by the primal act of the creator. In order to evoke the mysteries of existence, Kathakali is never performed during daylight. At sunset the evening's stillness is pierced by vigorous drumming to announce that night's performance, and expectancy is aroused in the people for the open-air, all-night journey into the heart of life.

The only illumination for the performance are two coconut oil-fed lamps supported by tall, shining brass stands. The thicker cluster of wicks faces the stage and represents the sun. The thinner cluster is set towards the audience and symbolizes the moon. These oil-fed lamps have a distinct personality and function in the drama. The lamps both vivify and subdue — an effect that can hardly be improved by



the most advanced lighting schemes of the modern stage. The dancing flame of the oil lamp, sometimes leaping and sometimes flickering, pulsates with an almost intelligent energy that seems to be reacting to the rhythmic cadences and moods of the play. The spiritual and mysterious atmosphere of Kathakali is heightened by the lamps, especially in combination with the natural outdoor setting.

The first drumming of a Kathakali show vibrates, "*Pralaya, prayala dimurdala*," which signals the end of the cosmic deluge and the start of a "New Age." There is no scenery or backgrounds because Kathakali involves the pastimes of Godhead and the demigods who are beyond time and space. Before the main story is told, there is a section of the show called *purappad*, which means going forward, as in the grand pageant of life on Earth. In the *purappad* the various phases and moods of this world are depicted.

The drumming, singing, and dancing go on all night and into the early morning. The dance progresses like a serious sacred rite impelled by the force of some mysterious power. Like the waves of an ocean, it surges forward. Sometimes gentle, then rising and swelling, the dance becomes turbulent and overwhelming. Like the avant-garde theater of modern times, when the action in Kathakali is larger than the stage, it spills over, around, and through the audience, as in the performance of the story of Sri Krishna and his poor brahman friend Sudama. First we find Krishna alone with his wife Rukmini in their Dwaraka palace; then suddenly, Krishna becomes

restless, looks intently into the distance, and plunges into the densely packed audience. From the rear of the audience we see the thin figure of Krishna's boyhood friend Sudama approaching us in tattered clothes. The performers then return to the center stage.

In Sudama's genuine joy at meeting Krishna again after many years of separation, he forgets why he came — to ask Krishna for financial help. Repeatedly, Krishna bows down and then embraces Sudama, offering him all comforts. Overwhelmed by Krishna's kindness, Sudama eventually leaves the palace, satisfied with his reunion with Krishna, but with his pockets empty. Upon returning home, however, he finds that Krishna has built him a palace and stocked it with all the riches necessary for a long and comfortable life.

When the red horizon announces the dawn of a new day, the Kathakali performance comes to an end. The lamps around the stage go out, but the experience, the joy, and the realizations of divinity live on within both the performers and the audience.

Whatever the form of sacred dance in India, the ultimate goal is to bring its participants to higher and higher levels of self-realization. To the uninformed observer it may appear that the dance is meant for a good evening's entertainment, but entertainment is an experience of the mind and body, whereas the real experience of sacred dance is transcendental to all the material senses. Proper understanding of the inner meaning of sacred dance enables all of its participants to be drawn closer to the "stage" of divine consciousness through the medium of sound, movement, and emotion.







# The Science and Art of Ayurveda

## *The Eternal Science of Natural Healing*

by Dr. M. B. Shiva Kumar

### Introduction:

Ayurveda is one of the most ancient medical systems in the world. The knowledge of Ayurveda originated with the origin of this world. Hence it is regarded as an eternal knowledge of natural life. The principles and the herbs of ayurveda are first described in *Rigveda*, the first of the four Vedas.

*Ayu* means 'life,' which begins with conception and continues till death; *Veda* means 'knowledge'. Thus, Ayurveda represents the complete knowledge of good health & ill health – the causative, curative and preventive aspect of good health and the ways to achieve it.

It is also said in *Sushruta Samhita* that Lord Brahma remembered and gave Ayurveda containing 1,00,000 shlokas. Later since the people could not read and remember it, he divided it into 8 branches as follows:

1. *Kaya chikitsa*: Internal medicine
2. *Shalya Tantra*: Surgery in Ayurveda
3. *Shalakya Tantra*: Medical and surgical treatment of eye, ear, nose and throat diseases.
4. *Bhutavidya*: Treatment of disorders due to subtle entities (*bhutas*) in the external environment, like viruses and bacteria. It also includes ayurvedic psychiatry.

5. *Kaumarabhrutya*: Ayurvedic Pediatrics, Obstetrics and Gynecology.

6. *Agada Tantra*: Ayurvedic Toxicology.

7. *Rasayana Tantra*: Rejuvenation, Geriatrics and Nutritional science.

8. *Vajikarana Tantra*: Sexology.

It is most amazing to understand how the sages in ancient times derived and added to their knowledge of Ayurveda, as well as their diagnostic methods, their classification of diseases based on the signs and symptoms observed in the patient, and the treatment with various herbs and minerals which are available in nature around them. To attain this knowledge, they used the following methodologies (*pramanas*):

1. *Pratyaksha* – Direct perception through our senses
2. *Anumana* – Logical inference
3. *Aptopadesha* – Authentic verbal and documentary testimony
4. *Yukti* – Experimental evidence



Dashamula, prepared from these ten herbs, pacifies all the three dosas. It is good for asthma, cough, headache, drowsiness, inflammation, fever, flatulence, pain in the thoracic region and anorexia.

Dashamula is commonly used as an active ingredient in the majority of rejuvenating medicines.

## Principle of Environmental Similarity (Loka purusha samya)

Ayurveda believes that the existence of living beings includes the physical body, mind and soul. The individual is a miniature replica of the vast universe outside. Both are made up of the five basic factors or *panchamahabhutas*, namely:

- a. *Akasha* (ether / space)
- b. *Vayu* (kinetic energy)
- c. *Teja* (radiant energy / fire)
- d. *Jala* (water / cohesive factor)
- e. *Prthvi* (earth / mass)

The individual (*purusha*) and the universe (*loka*) are in constant interaction with one another, and derive or exchange the *panchamahabhutas* from each other, thus trying to maintain their normalcy and homeostasis. This continuous exchange is regulated by the law of *samanya* and *vishesha* (homologous or similar and heterologous or non-similar). According to this law, homologous matter in the universe increases the similar in the individual while a heterologous matter decreases the same. This continuous interaction between the individual and the external universe continues in a natural way as the individual breathes air, drinks water and consumes food articles from nature. As long as this interaction is wholesome and

balanced, the person is in optimum health. When this harmony breaks, the seed of illness is sown.

## Theory of Tridosha:

*Tridoshas* (three humors or factors of health), when they are excited or imbalanced, are considered in ayurveda to be the intrinsic factors responsible for the causation of disease. These three factors, *vata*, *pitta*, and *kapha*, are called *doshas*, because they are susceptible to imbalance and vitiation. In the state of equilibrium they support the body and are known as *dhatu*s. This state of balance is known as *samyata* — a disease free state. The *tridoshas* arise from five basic factors: *Vata* arises from *akasha* and *vayu*, *Pitta* arises from *vayu* and *tejas*, and *Kapha* arises from *jala* and *prthvi*.

The human body is supported by these three basic *doshas* in the same way as a dwelling house is supported by its pillars. According to *Sushruta Samhita*, blood (*shonita*) is also considered as the fourth *dosha* and all four together determine the origin, preservation and dissolution of the living organism.

Normal *Vata* represents:

- Enthusiasm, inhaling and exhaling, voluntary activities, proper movement of the *dhatu*s (tissues) in the body, and the timely excretion of waste products from the body.
- *Rajasic* or dynamic in function.

Normal Pitta represents:

- Sight, digestion, heat production, hunger, thirst, softness and suppleness of the body, lustre, clearness, cheerfulness and intelligence.
- Sattvic or balancing and transformative in function.

Normal Kapha represents:

- Unctousness or oiliness of the body, normal functioning of joints, stability of the body, potency, strength and immunity, forbearance, courage and greedlessness, wisdom and memory retention.
- Tamasic or conserving and stabilizing in function.

## Dosha Prakrti:

It is evident that no two human beings are similar. This is explained in Ayurveda on the basis of *dosha prakrti* or *doshic* constitution. According to this, every human being is born with a certain predominance of one, two or three *doshas* — depending on the predominance of *doshas* in the units of conception from one's parents during uniting.

*Dosha Prakrti* is the genetically determined relative proportion of three *doshas* and represents the physique, physiology and psyche of the individual. It never changes over one's whole life span.

*Doshic* constitution is important for understanding an individual's life span, health, diagnosing disease, susceptibility to disease, mental status, selection of herbal remedies, *panchakarma* treatments, and preventive and promotive health care. Generally there are seven types of *dosha prakrtis* described in classical text. Those with a predominance of *vata*, *pitta*, *kapha*, *vata pitta*, *pitta kapha*, *vata kapha*, and balanced *vata pitta kapha*.

The first six *prakrtis* above, are said to be not so healthy, indicating easy susceptibility to *doshic* imbalance, whereas the last *prakrti* is the most desired and healthy one. Further, among 1-6 above, *vata prakrti* (No. 1) is the worst, *pitta prakrti* is medium and *kapha prakrti* is better, whereas No. 4, 5, 6 are inferior to 1, 2, 3, 4.

Generally, each *doshic* type is more susceptible to the disease of similar *doshic* origin.

## The Trigunas:

During the time of evolution of the individual, the *trigunas* manifest in each and every living being — in humans it manifests in their mind. As mentioned earlier, *vata*, *pitta*, and *kapha* are predominantly *rajasic*, *sattvic* and *tamasic* respectively.

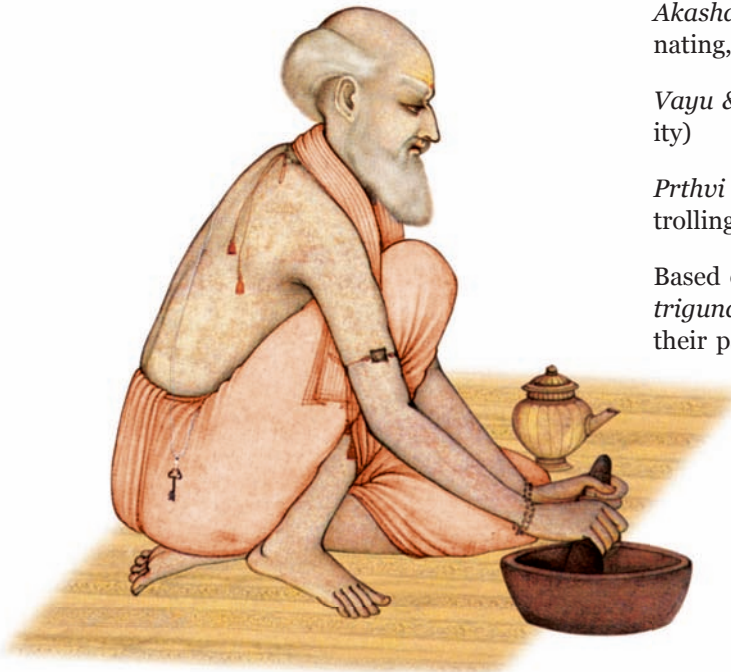
The predominance of the five main factors in the *Trigunas* are as follows.

*Akasha* — *Sattva guna* (Complete balance, illuminating, leads to knowledge)

*Vayu* & *Teja* — *Rajoguna* (Dynamic, induces activity)

*Prthvi* & *Jala* — *Tamoguna* (mass & inertia — controlling, restricting movement or activity)

Based on the dominance of one or the other of the *trigunas* during the conception of an individual, their psyche is decided. These variations are classified under three major mental constitutions or *manasa prakrtis*: *sattvic*, *rajasic* and *tamasic*.







Triphala is composed of equal parts of Haritaki, Amalaki and Bibhitaki and is recommended more than any other ayurvedic herbal formulation. It is used to promote appetite and digestion, increase the number of red blood cells, and aid in removal of undesirable fat in the body.

Recent medical research conducted by several leading academic institutions in India has revealed that Triphala has a significant medicinal value as a potential detoxifying and anti-cancer agent.

## Qualities of mental constitutions:

Sattvic Mind – non violence and humility

- Giving to others
- Forbearance
- Truthfulness
- Living on the right path
- Faith in God
- Knowledge
- Intelligence
- Memory
- Courage
- Non-interest in materialism

Rajasic Mind – Sorrow or grief,

- Unnecessary traveling or moving
- Lack of courage
- Pride

- Lack of truthfulness
- Violence
- Desirous of flattery or recognition
- Happiness
- Lust
- Anger

Tamasic mind – Depression

- Lack of faith in God
- Interest in non-righteous activities
- Lack of intelligence
- Lack of knowledge
- Lethargy
- Somnolence

Each of these three main types of constitutions are further subdivided into sixteen subtypes.

There are seven types of *sattvic* mental constitutions, six types of *rajasic* mental constitutions and three types of *tamasic* mental constitutions.

## Theory of self healing (Svabhavoparamavada)

According to ayurveda, the human body has an innate ability for self defense against disease and a spontaneous capacity for healing injuries. Every moment the process of replacing dead cells in our body with new living ones is going on. Even though the individual does not notice this, the process of ketabolism and anabolism are continually progressing. When the ketabolic process takes over the anabolic process, the body deteriorates.

### Causation of Diseases

The imbalance of the *doshas* in the body are the result of disharmony between the man and the outer world (*purusha* and *loka*). Changes in the external environment can happen in the following ways:

1. Straining of the senses beyond their limits (*Asatmyendriyarthasamyoga*).
2. Thinking, speaking and acting incorrectly in spite of knowing better. (*Prajnaparadha*).
3. Extreme climatic variations (*Parinama*).

The body reacts to these stimuli or changes by rebalancing the *tridoshas*, leading to a state of equilibrium, resulting in good health. The cognitive organs (*jnanendriyas*) generally work within narrow limits against the variations in the external environment. When these variations are within normal limits, the balance of *doshas* is maintained.

However, when any of the following occur, an over-stressing (*atiyoga*), understressing (*hinayoga*), no stress (*ayoga*), or improper stress (*mithiyayoga*), with the sense organs, they exert an internal stress in the body which leads in each case to the overall imbalance of the *tridoshas'* equilibrium.

Recovery from these internal stresses and the survival of the individual are mostly determined by the ability of the *tridoshas* to attain a state of equilibrium (*samyata* of *doshas*). The time interval between the deterred balance of *doshas* (*dosha vaishamyas*) and restoration of a state of equilibrium (*dosha samyata*) constitute the various stages of the disease process which are explained as *kriyakalas* or the stages of the disease at which the treatment should be done. According to *Sushruta samhita*, there are six stages or

*kriyakalas*: 1. *Samchaya*, 2. *Prakopa*, 3. *Prasara*, 4. *Sthanasamshraya*, 5. *Vyakti*, and 6. *Bheda*.

A thorough knowledge of the concept of *kriyakalas* is needed for the recognition of the disease process even in its very beginning stage. *Sushruta* has remarked that "Only he, who knows properly *sanchaya*, *prakopa*, *prasara*, *sthanasamshraya*, *vyakti*, and the *bheda* stages of *doshas* can be regarded as a real physician."

### Six evolutionary stages of the disease:

1. Accumulation (*Samchaya*). This is the beginning phase of the disease, wherein the imbalanced *doshas* are accumulated and confined to its normal place, instead of freely moving. This stage is characterized by vague symptoms, such as:

Dullness and fullness in the abdomen  
- due to vata

Yellowish discoloration of the body parts  
- due to pitta

Heaviness of the limbs/body, laziness  
- due to kapha.

During this state, the individual develops a dislike towards the causative factors of the imbalance, including food and activities. For example, if a person develops heaviness after taking a heavy sweet meal, he may feel like not taking food again. Instead he may feel like fasting or taking some appetizing spices. A good physician should treat the individual at this stage. If not, the disease process moves into the second stage.

2. *Prakopa*. In this stage, the *dosha*, which had accumulated previously in its normal place, becomes swollen (increases in volume) and abnormal. The blood, which is considered as the fourth *dosha*, plays its role in carrying this vitiated *dosha* to different parts of the body. The *vata* or kinetic force which moves the blood throughout the body in its channels also plays its role in the evolution of the disease process.

3. Spread (*Prasara*). In this stage, the *doshas* start spreading to other parts or organs of the body from their normal places. This is similar to the overflowing of water from the dam during the rainy season. Again here also, the force behind this is *vata*, the only



*Trikatu is a traditional ayurvedic preparation containing black pepper, Indian long pepper and ginger.*

*It is widely used as part of many ayurvedic treatments for gastric dysfunction because the powerful heating quality of this combination kindles the digestive fire and burns kapha, fat and toxins.*

*Also, Trikatu supports healthy metabolism, allowing nutrients to be properly digested and assimilated, thus aiding in weight management.*

mobile *dosha*. As the rains are seen in the area where rain bearing clouds are present, similarly the disease starts manifesting in the area of the body where the abnormal *doshas* are present. If the causative factors are not strong enough, these *doshas* may remain quiescent, coating the internal channels, waiting for a suitable time to manifest. The symptoms developed during this stage are as follows:

Distension of the abdomen with pain and rumbling noise, *vata* moving into *pitta* and *kapha* channels --- due to *vata*

Burning sensation, sucking type of pain, and a sensation of heat --- due to *pitta*

Anorexia, weak digestion, heaviness of limbs, and vomiting --- due to *kapha*

4. Localisation (*Sthanasamshraya*). In this stage, the *doshas* start localizing and lodge in the particular part of the body where the channels of circulation are deranged or blocked. Here preliminary symptoms of the disease manifest. Generally, only at this stage do most people realize they are sick.

5. Full manifestation (*Vyakti*). This stage is characterized by the fully developed disease, as a result of the interaction between the *doshas* and the tissues (*dhatu*s) in the body. Here the disease manifests with its characteristic signs and symptoms. The treatment can be surgical, medical or both.

6. Complication (*Bheda*). This is the stage when the disease may become subacute, chronic or incurable, causing irreversible damage or anatomical changes. This condition generally occurs because of mis-diagnosis or improper treatment at the previous stages. If the disease process proceeds into this stage, it can also cause another disease or it may produce genetic changes, either in the individual or in the offspring.

## The concept of seven tissues (sapta dhatus)

There are seven tissues in our body which are continuously supporting and nourishing at the same time. They are:

1. *Rasa* -- Plasma
2. *Rakta* -- Blood
3. *Mamsa* -- Muscle
4. *Meda* -- Adipose tissue
5. *Asthi* -- Bone
6. *Majja* -- Marrow
7. *Shukra* -- Reproductive tissues

In our body, at every moment, the above tissues are constantly formed, destroyed and reformed with raw

materials from the nutritional portion of our food, after proper digestion (*ahara-rasa*), thus maintaining a state of dynamic metabolic equilibrium. Each one of the above seven tissues have *agni* (the fire principle) in it, which metabolizes the *ahara-rasa* and continuously forms the respective tissues.

*Ojus* is said to be the vital essence of all the seven tissues, concerned with the strength and immunity of the individual. This is of two types:-

1. *Para ojus* — Located in the heart, measuring about eight drops in quantity.
2. *Apara ojus* — Located all over the body, a handful in quantity.

## The Malas

Along with the *dosha* and *dhatu*, *malas* represent the third important entity of the living body. *Malas* are considered as waste products produced by the body, which are to be expelled (including the *doshas* and *sapta-dhatus* in their abnormal states of functioning). Generally the *malas* are: stool, sweat, urine, gas, excretions from the nose, ear, tongue etc... The *malas* are important for the proper functioning of the body, as are *dhatus* and *doshas*. The production of waste products is an index of life's activities and the body can never be without them.

## The Concept of Agni.



Ayurveda considers *Agni* (fire) as the cause for all metabolic and digestive activities in our body. There are 13 types of *Agni* in our body:

There is one main digestive fire (*jataragni*), seven tissue fires (*dhatwagni*), and five fires from the five basic elements (*bhutagni*).

*Jataragni* digests the food and breaks it down into five distinct groups (namely those belonging to the earth, water, air, fire and ether elements). The fire



present in each of these, digests the substance belonging to that element, leading to a radical change in their qualities, making them fit for being assimilated by those fires present in the respective tissues.

## Ayurvedic regimen for the maintenance of health

Ayurveda advocates a complete plan for the whole year, for the purpose of maintaining health, as well as for the prevention of disease. This can be classified under

- i. Day regimen (*Dinacharya*)
- ii. Night regimen (*Ratricharya*)
- iii. Seasonal regimen (*Rtucharya*)

### I. Day Regimen:

A. Getting up: Approx. 4.30 - 5.00 AM. (Brahmi Muhurta: about 1-1/2 to 2 hours before sunrise) Benefits: Active mind, freshness, increase in concentration and memory power.

B. Excretion of stool and urine and washing the area. Should not read, talk or sing while passing urine and stool. Benefits: Cleanliness, maintenance of appetite and health, balance of tridoshas

C. Brushing of teeth: With herbs like bark of Neem, Ficus bengalensis, terminalia arjuna, Acacia catechu (or the herbs having bitter, astringent, or pungent tastes). These can be used in the form of powders mixed with a little honey or sesame oil. Benefits: Enhancement of taste perception, feeling of well-being, preservation of oral health.

D. Tongue scraping: With a metallic or wooden tongue scraper or the leaves of Mango or Neem. Benefits: Same benefits as that of C.

E. Paying respect to God and elder people in the house and chanting holy names. Benefits: Increase in positive attitude, faith, and love.

F. Putting ointments (*anjana*) into the eye - black collyrium or white collyrium, Weekly once apply ointments made from the extract of berberis plant (*rasanjana*). Benefits: Better vision and beauty of the eye, healthier eye and eye lids. Weekly application of *rasanjana* clears the *kapha* (blocking substance) from the eye (which is the seat of *alochaka pitta*).



Brahmi is used as a herbal brain tonic, to rejuvenate the body, as a promoter of memory and as a nerve tonic.

It improves memory and helps overcome the negative effects of stress. It is unique in its ability to invigorate mental processes whilst reducing the effects of stress and nervous anxiety.

Brahmi induces a sense of calm and peace and has gained world wide fame as a memory booster and mind alertness promoter. It is widely used as an antioxidant and in improving the brain cell functions.

G. Put nasal drops like Anutaila, 2 drops into each nostril. Benefits: Clearness of face, better nasal and oral hygiene, better voice, increased performance of sensory organs, reduction of dark patches, wrinkles, hair fall and grey hair.

H. *Gandusha* (swishing oil in the mouth) - Take 2-3 tsp of pure sesame oil or prescribed medicated oil and swish it in the mouth for 8-10 minutes. Benefits: Prevention of cracked lips, dry lips, dry mouth, hoarseness of voice, distaste or foul breath.

I. *Dhumapana* (herbal smoke inhalation) - optional. This is good for those having clogged sinuses and congestion. Benefits: Prevention of *vata-kapha* disorders of the eye-nose-throat and mouth, opening up of sinuses and channels of circulation above the neck.

J. Exercise should be done until one feels shortness of breath. During the hot summer do minimal exercise. During sickness or after heavy meals, intercourse, fever, or diarrhea, do not do any exercise. Benefits: Increase in strength and stamina, increase in metabolism, reduction of obesity, lightness of body, increase in stress/pain tolerance.

K. Oil massage of head and body (for thin and normal build) or Powder massage with special herbal powders and mud (for the obese) Benefits: Oil massage reduces *vata* and *kapha*, makes the body smooth, soft, flexible, and gives beautiful skin. Powder mas-

sage reduces fat deposits, relieves body odor and sweat.

L. Bathing: In the summer use clean normal water. In the winter or rainy season use warm or hot water. However, hot water is not good on the head. Benefits: Increase in appetite, potency & life span, enthusiasm, reduction of body odor, sweat, dirt, itching, and tiredness.

M. Diet food according to ayurvedic recipes. Benefits: Balances the *doshas*, maintains proper nourishment of tissues (*dhatu*s)

## Natural Urges & their importance

For the promotion of health and prevention of disease, ayurveda advocates that one should not abolish, withhold or induce thirteen important natural urges in the body. If one does this, he is more susceptible to the following illnesses:

1) Flatus - Abdominal disturbances or pain, upward movement of air in the gastrointestinal tract, tiredness, constipation, stoppage of urine, dimmed vision, weak appetite and digestion and heart diseases.

2) Stool - Calf muscle pain, runny nose, headache, upward movement of air, abdominal pain, fecal odor from the mouth.

3) Urine - Weakness of the body, kidney stones, pain in the bladder, scrotum or genital areas.

4) Eructation (belching) - Distaste, tremors, constipation, chest pain, cardiac pain, flatulence, cough, hiccups.

5) Sneezing - Headache, weakness of sensory organs, stiff neck, facial paralysis.

6) Thirst - Weight loss, tiredness of body parts, deafness, delirium, vertigo, heart diseases.

7) Hunger - Degeneration of tissues, anorexia, depression, weight loss, abdominal pain, dizziness.

8) Sleep - Delirium, heaviness of eyes and head, laziness, yawning, muscular pain.

9) Cough - Increase in cough, asthma, anorexia, heart disease, tuberculosis, hiccup.

10) Shortness of breath due to exertion - Abdominal disturbances, heart diseases, delirium.

11) Yawning - Similar to the diseases mentioned for sneezing (No. 5).

12) Tears - Runny nose, eye pain, headache, heart pain, stiff neck, anorexia, vertigo, abdominal disturbances.

13) Vomiting - Hives, dermatitis, eye diseases, itching, anemia, fever, cough, asthma, nausea, dark patches over the face, swelling of the body.

14) Ejaculation of semen - Early discharge of semen, pain in the genital area, swelling, fever, chest pain or discomfort, stoppage or dwindling of urine, weakness of body, scrotal pain, kidney stones, impotence.

The above descriptions of the vast number of diseases (to which a person becomes more susceptible if he indulges in trying to withhold urges or induce them), indicates that it is very important to follow the natural urges of the body in order to maintain health.

## II. Night regimen

After the strenuous day's work, one should:

A) Take bath with normal, warm / hot water depending on the season.



B) Take proper food.

C) Walk 100 yards after dinner.

D) Two hours after food one can sleep in the bed, his head facing east or south. For promotion of health, sleep is considered an important part of our regimen. The latest one should go to bed is 10 PM.

## III. Seasonal Regimen

The whole year has been divided into 6 seasons according to Ayurveda. For western countries these divisions of seasons must be adjusted according to local climate.

Seasonal foods and activities are given below:

Nov.-Dec. (*Hemanta*). Foods: Nourishing type of food. Ghee, oil, sweet & salty diet, herbal wines, sugarcane, molasses, milk, and rice. Activities: Exercise, oil massage, fomentation with steam, herbal smoke, eye ointments, sun-bath, herbal paste application.

Jan.-Feb. (*Shishira*). Same as above

March-April (*Vasantha*) Foods: Honey, barley, wheat, application of sandal paste, herbal wine, ginger, pomegranate juice, honey mixed water. (Should not eat cold and heavy food, no day sleep, no ghee-oil, no sour or sweet tasting food) Activities: In this season, since the *kapha* increases too much, it is advisable to remove the *kapha* by *pancakarma* therapies such as *vamana* (vomiting) and *nasya*, and also other therapies such as mouth swishing, herbal smoke, exercise, and herbal paste application.

May-June (*Greeshma*). Foods: Lemon juice, pomegranate, sweet predominant food, rice, milk, ghee, grapes, tender coconut water, sugar. No pungent, salty, sour or hot food. No herbal wines. Activities: Minimal or no exercise, no travelling during hot sun. Wear light clothes

July-Aug. (*Varsha*) Foods: One year aged rice, wheat, barley, greengram dal with ginger and spices plus ghee, diluted herbal wines prepared from grapes, boiled water, light-oily-hot-sour-salty food during rainy days.

Because *vata* increases in this season, ayurveda advises to use bitter medicated ghee and *basti* (enema).

Do not use a lot of liquids. No cold drinks/food. Activities: Minimal or no exercise or sex. Undergo blood letting or *virechana* respectively if blood or *pitta* is abnormal. No day sleep.

Sept.-Oct. (*Sharad*). Foods: Light and cooling diet, use of astringents, sweet and bitter tasting food, rice, wheat, green gram, sugar, honey, bitter gourd, amla, grapes, vetiver (khus) oil application. No heavy meals, strong wines, yoghurt, alkaline, oil, animal fats, or cold drinks. Activities: Since *pitta* aggravates during this season *virechana* or purging and blood letting is advised. Taken internally, bitter ghee medicines are advised. No sunbathing, no exposure to strong winds from front side and no day sleep

**Ayurvedic Diet :**

Ayurveda considers the proper diet (*ahara*) as an important part of one's lifestyle. It is also an integral part of ayurvedic therapy, along with ayurvedic medicines (*oushadha*) and proper physical and mental activities (*vihara*). Hence an ayurvedic diet consists of:



(A) Proper selection and combination of the different ingredients of food.

(B) Proper cooking methods

(C) Proper eating habits

**DETAILS:**

(A) Proper selection and combination of different ingredients of food: Ayurveda classifies the foods based on their perceived tastes, of which there are basically six, given below.

Every food in this universe has a dominance of one or a combination of more than one tastes, totaling about 63 in number. Since the 5 basic element combinations are different to each taste, each food is also different from the other. Hence each food has a specific action on the *doshas* increasing, decreasing or neutral.

While preparing the food, one should be careful not to combine the foods having the following tastes.

Sweet + astringent (Fruit + green tea)

Sweet + salty (Fruit + Salt)

*Ayurvedic classification of foods according to the six tastes*

Taste	Ayurvedic name	Five element Combination	Action on Tridoshas		
			Vata	Pitta	Kapha
Sweet	Madhura	Earth, water	↓	↓	↑↑
Sour	Amla	Earth, Fire	↓	↑	↑
Salty	Lavana	Water, Fire	↓	↑	↑
Pungent	Katu	Air, Fire	↑	↑↑	↓↓
Bitter	Tikta	Air, Ether	↑	↓	↓
Astringent	Kashaya	Air, Earth	↑↑	↓	↓

↑ - increases      ↑↑ - highly increases

↓ - decreases      ↓↓ - highly decreases

Sweet + pungent (Sweet cake + chilli)

Sour + astringent

Salty + astringent

Sour + bitter

Salty + bitter



Here the principle is that the foods having the above equal combination of tastes are not conducive to health. If one consumes such food regularly, over a period of time he may become ill.

Ideal diet according to Ayurveda:

A complete ayurvedic diet should consist of foods having all the six tastes in different proportions. The grains such as wheat, rice, millet, corn and barley should occupy the major portion of a meal, along with legumes, vegetables and spices. Aged (one year old) rice is good, especially for the obese and diabetics. Cooked and uncooked foods should not be combined together, if so, this can cause a weak digestive fire. An ideal meal according to ayurveda should consist of 50% whole grains like wheat, rice etc., 20% legumes like blackgram, green gram and 30% vegetables.

(B) Proper cooking methods

For proper cooking, ayurveda advocates earthen, steel, copper or wooden utensils. If it is copper, then the inside of the pot should be properly tinned. Deep frying in oil or ghee is unhealthy. For cooking only fresh vegetables should be used. Spices like blackpepper, cumin, turmeric, coriander, fennel and cloves are to be added at the end of cooking to enhance the taste and aroma. For cooking, sesame oil, coconut oil, olive oil, sunflower oil, or ghee can be used.

The rice or vegetables cooked in a pressure cooker is harder to digest than the same thing cooked in an open vessel. Hence, one should eat a little less in the case of pressure cooked food. Chick peas should be

always cooked with ghee, otherwise it can produce a loss of virility or potency.

Among different types of salts, rock salt is always preferred over other salts, because rocksalt increases the digestive fire, balances the *tridoshas* and is good for the eyes. As far as possible, one should not eat a meal reheated more than once. Keeping the cooked meal in the freezer and reheating it again is unhealthy.

Ghee should always be prepared from butter, on a low flame. Butter should be prepared by churning yoghurt. Among different types of milk, cow's milk is regarded as the best.

(C) Proper eating habits:

While eating the food, ayurveda advises some rules which are as follows.

(i) Eat while the food is warm and fresh.

(ii) Eat the food which is mixed with ghee or suitable oil. Do not eat dry. (Not applicable to obese people).

(iii) Eat only about 75% of one's stomach capacity. Before eating one should know their maximum food capacity, and then fill up to 50% of this capacity with solid food like rice, pasta or bread. Drink liquids like water, soup or butter milk to about 25% of stomach capacity. One should leave a space of about 25% in the stomach for the easy movement of food and air.



decide whether the previous meal has been digested or not. If, one cannot decide, then take a 1 inch piece of fresh ginger, 1 teaspoon lemon juice or 1/2 tsp of haritaki powder, and 1/4 teaspoon of rocksalt. Mix with 30 ml of normal water, and drink. Wait for 15 minutes and then take food. Eating when there is no hunger, produces 'ama' (undigested food) which acts like a toxin. Ama is a fertile ground for different infections and a causative factor for autoimmune disorders like rheumatoid arthritis, lupus, and ankylosing spondylitis.



(v) Select a quiet, clean, place to eat. Do not eat in a noisy place.

(vi) Do not eat too quickly or too slowly. Remember to chew the food properly.

(vii) Do not talk, laugh or joke while eating, because this may divert the focus from the food and one may not realize what and how much he has eaten or that the food has become cold.

(viii) While eating, one should be selective of their food. He should decide which food is conducive to his health and only eat that.



(ix) One should not eat when his mind is afflicted by anger, lust, jealousy, sorrow or fear.

(x) Do not fast when you are hungry. If you have to fast for spiritual purposes, then take at least fruits instead of grains.

(xi) During a meal, one should eat sweet tasting foods in the beginning, sour & salty in the middle and pungent, bitter and astringent at the end. Butter milk is excellent to drink at the end of a meal, the quantity of which should not exceed 200 ml at a time. It helps to keep the digestive fire up, reduces fat and removes the toxins from the intestines.

To reduce weight, one can drink water at the beginning of the meal. For normal persons about 100 – 200 ml of water should always be taken along with the meal. This helps to mix the food properly and aids the digestion.

Drinking a lot of water, juice or liquids during a meal, eating after the hunger disappears, going to bed very

late, excess sleep in the day, withholding the urge to pass stool or urine – all these lead to weak digestion, which in turn can produce an imbalance of the *do-shas*.

## Diagnosis in Ayurveda:

Ayurveda gives a lot of emphasis on the analysis of a disease with reference to the individual's original state of health. In a community, we see that not everyone becomes sick in case of an epidemic disease. Ayurveda believes that the level of optimum health is not a constant, but varies depending on the season, the environment and geographic variations, etc. Hence, in Ayurvedic diagnosis the disease is evaluated against the patient's basic standard of health. Ayurveda uses the following three methods to examine the patient:

a) Inspection (*darshana*)

b) Touch or palpation (*sparshana*)

c) Questioning or history taking (*prashna*)

The diagnosis in Ayurveda is classified into two parts.

1. Examination of the patient
2. Examination of the disease

### Examination of the patient:

Generally a physician should observe and understand the following ten points before treating a patient:

- 1) The patient's physical and mental constitution (*prakriti*)



- 2) Disease susceptibility (*vikrti*)
- 3) Quality of tissues (*sara*)
- 4) Body build (*samhanana*)
- 5) Anthropometric measurements (*pramana*)
- 6) Adaptability (*satmya*)
- 7) Mental strength (*sattva*)
- 8) Appetite and Digestion (*ahara shakti*)
- 9) Exercise endurance (*vyayama shakti*)
- 10) Age

### **Examination of the disease:**

This is done in 2 stages:

#### **A. Eight point examination (*astasthana pariksha*)**

Examination of

- i) Pulse (*nadi*)
- ii) Urine (*mutra*)
- iii) Stool (*mala*)
- iv) Tongue (*jihva*)
- v) Voice & speech (*shabda*)
- vi) Skin (*sparsha*)
- vii) Eyes (*druk*)
- viii) Face & overall appearance (*akruti*)

#### **B. Examination of the six important parts of the body**

- i) Head & Neck
- ii) Trunk
- iii) Left lower limb
- iv) Right lower limb
- v) Left upper limb
- vi) Right upper limb

Examination of these six important parts of the body also includes understanding the imbalances in the thirteen major channels (*srotas*). Ayurvedic texts describe the causative factors for the abnormalities of channels and the resulting signs and symptoms.

Ayurvedic physicians should also look at the following points before diagnosing disease:

1. Causative factors (*nidana*) such as improper diet, irregular sleeping, etc.
2. Early symptoms of the disease (*purva rupa*). Before the manifestation of the actual disease, the imbalanced *dosas* produce vague symptoms, which, by observation the physician can understand which disease is forthcoming.
3. Complete signs and symptoms of the disease.
4. Wholesome and unwholesome food and activities (*upashaya*).
5. Disease process or pathogenesis (*samprapti*).

Ayurveda classifies disease under four categories of prognosis:

1. Easy to cure.
2. Difficult to cure.
3. Medicine dependent (disease will aggravate if medicine is discontinued).
4. Non-curable.

## Panchakarma - The Biopurification Therapy of Ayurveda

Ayurvedic Therapies are broadly classified into 2 categories, namely :

1. Pacification (*samshamana*)
2. Purification (*samshodhana*)

*Panchakarma* belongs to the *samshodhana* therapy. Here 'pancha' means five, 'karma' means 'procedures'. Generally *panchakarma* includes five therapeutic procedures done for the purpose of eliminating the vitiated *doshas* from the body through the nearest route. They are:

- a) Vomiting (*vamana*)

b) Purging (*virechana*)

c) Enema (*basti*)

d) Nasal drops (*nasya*)

e) Blood letting (*raktamokshana*)

These five procedures can be applied in ayurvedic treatment for preventive, curative and promotive purposes.

As a preventive measure, every year, even a healthy person is supposed to undergo the following procedures: *Vamana* in March-April, *basti* in July-August, and *virechana* in Sept-Oct., to remove the vitiation of *doshas*, so that the accumulation of *doshas* doesn't happen and the homeostasis of *doshas* is well maintained. This is explained as a necessary procedure in seasonal regimen.

As a curative measure, *panchakarma* is applied earliest at the first and second stages of the disease (*kriyakala*) to expel the vitiated *doshas*, so that the disease process doesn't proceed further and the manifestation of disease is prevented. If the disease has already manifested (Stage 5), elimination of the waste products (i.e. abnormal *doshas*) increases the effectiveness of the medicine and helps to relieve the disease. Hence in chronic diseases, one may have to undergo *panchakarma* repeatedly to achieve the desired level of therapeutic efficacy.

To promote health prior to rejuvenation therapy, *panchakarma* is applied. As washing the cloth properly is essential prior to dyeing it, so also *panchakarma* cleansing is essential before any rejuvenation therapy. Doing *panchakarma* before rejuvenation helps to make the ayurvedic medicines like chyavana-prasha and aswagandha many times more effective.

The whole procedure of *panchakarma* can also be categorized as follows:

- 1) Preparatory (*purvakarma*): *dipana*, *pachana*, *snehana*, *swedana*
- 2) Main five procedures (*pradhanakarma*) – *vamana*, *virechana*, *basti*, *nasya*, *raktamokshana*
- 3) Post-*panchakarma* procedures (*paschat karma*) – special dietary regimens and herbal smoking, mouth swishing, etc.



It is very important to prepare the patient properly before the administration of *panchakarma* procedures by increasing the digestive fire (*dipana*), digesting the *ama* (*pachana*), internal and external oleation (*snehana*) – internally by drinking medicated ghee, and externally with oil massage, sweating (*swedana*) – either by heat or by steam. By *snehana*, the body with all the inside channels becomes soft and the solidified *doshas* or waste products start disintegrating. Later with the administration of *swedana*, these waste products melt down and start moving in the channels and are then expelled through the nearest orifices like the mouth, nose or anus.

It is generally known in Ayurveda that *vamana*, *virechana* and *basti* are best to remove the vitiated *kapha*, *pitta* and *vata* respectively. But in reality, *vamana* also cleanses *pitta*, *virechana* with oily drugs is also effective for *vata*. And *basti* can be used to eliminate the imbalanced *kapha* or *pitta* along with *vata* by decoction enemas.

### Vamana procedure in short:

The procedure starts with a minimum of three days to a maximum of seven days medicated ghee consumption at breakfast time on an empty stomach. This is continued until the ghee appears in the stool. After the ghee intake is finished, the patient is given a *kapha* diet the night prior to *vamana*. On the next day in the morning he is given an oil massage and steam bath. This procedure should be done before forty-eight minutes after sunrise.

After *vamana*, herbal smoking (*dhumapana*) is done in selected cases to remove the excess *kapha* adhering to the nasal-oral route.



A special light diet is prescribed for the next 3-7 days including the day of *vamana*.

*Virechana* is also done in a similar manner, but here after the ghee intake is over, the oil massage and steam bath is given for the next 3 days and on the third day purging is given.

*Basti* is of 3 types:

- a) Cleansing or decoction enema (*niruha*)
- b) Nourishing or oil enema (*anuvasana* or *taila basti*)
- c) Enema given through external genital orifice (*Uttara basti*)

Cleansing enemas generally contain the following ingredients in a thick liquid form: honey, rocksalt, oil or ghee, herbal paste (*kalka*), decoction, and sometimes milk, cow urine, fermented liquid (*kanjika*) may also be added. These ingredients are mixed in a particular order, churned into a uniform emulsion and given to the patient around mid-morning (10 a.m.) with an enema apparatus. The enema should be allowed to act for 48 minutes and later should come out on its own. If not it should be taken out with the help of suppositories.

An oil enema is given immediately after food in the morning.

*Uttara vasti* is given through the external genital orifice, which generally contains pure and sterile medicated oils. This is useful to treat genital or urinary problems.

*Nasya*: It is a procedure to treat the diseases above the neck and to cleanse the head. It is of 3 types:



(a) Purgative nasal drops (*virechana nasya*). It is of cleansing in nature and is used in epilepsy, mumps, brain retardation and *kapha* diseases.

(b) Nourishing nasal drops (*brimhana nasya*) – used for *vata* disorders such as paralysed arms, loss of voice, speech disorders, headaches, dark patches over the face, black moles, falling of hair, split hairs and chronic eye diseases.

(c) Pacifying Nasal drops (*shamana nasya*) This is done to balance the *doshas* above the neck for diseases like chronic headache, sinusitis and nasal allergies. This is used to treat weakness of brain functioning and many other diseases of the head, eyes, ears and nose. It also improves the power of vision, memory and mental faculties.

In this *nasya* procedure, the patient is placed on a table with his nose facing upwards, the drops are administered into each nostril. The dose can vary beginning from two up to thirty-two drops, depending on the type of medicine and disease. No *nasya* should be done on a rainy cloudy day.

Blood letting is done to treat blood disorders. It is also one of Sushruta's surgical procedures. It is done with the help of instruments such as sharp blades, animal horns, or with the application of leeches.



Along with the above *panchakarma* procedures, the following *pre-panchakarma* procedures have gained much importance in the treatment of *vata* disorders.

1) Oil massage (*abhyanga*): special medicated oils, prepared from sesame, coconut or castor oil, can be used to massage the body in a synchronized manner by two masseurs on either side of the body. The patient should lie in a supine position on a special wooden massage table. The procedure starts with a head massage, then body massage along with the upper and lower limbs.

Benefits of an oil massage

- Maintains youthfulness
- Cures *vata* diseases



- Tones the body
- Helps one sleep
- Makes the skin soft and firm
- Prevents skin diseases and injuries
- Increases life span

*Vata* personalities can have an oil massage every day with oils such as Ksheerabala, Karpasasthyadi or Dhanwantaram.

*Pitta* personalities can have an oil massage on alternate days with oils such as Manjistadi, Bhringamalakadi or Balaswagandhadi.

*Kapha* personalities can have an oil massage once in every four days with oils such as Vatamardanan or Kottamchukkadi.

There are hundreds of varieties of oils in ayurveda specific to each condition, the decision of which to use should be left with an experienced *vaidya* (ayurvedic physician). To remove the oil from the body during bath, generally chick pea (*channa*) powder or herbal powder can be used.

*Dhara*: This is a specialized procedure where a certain type of liquid is poured continuously over the body part for a specific period of time. It can be classified into three categories:

(a) On the head (*shirodhara*)



(b) All over the body (*sarvanga*)

(c) Local (*pradeshika*)

(a) *Shirodhara* on the head is useful in diseases such as insanity, diseases of the head, ear, mouth, eyes and other *vata* diseases. In this procedure, about 2.5-3 liters of specified oil or medicated butter milk is taken in a *dhara* vessel, which is held over the forehead of the patient, who is lying on the *dhara* table. The liquid is poured in a steady stream from a height of about 4 inches above the forehead. This is done for 45 to 90 minutes depending on the condition of the patient. The liquid used can be medicated buttermilk, oil, milk, breast milk, oil and ghee, coconut water, decoctions of herbs, fermented rice water or pure water.

*Thakradhara* cures premature grey hair, fatigue, infirmity and emaciation, headache, lack of vitality, pricking pains of the palm and sole, diabetes, lack of proper functioning of the limb joints, chest pain, dislike for food, indigestion, dyspepsia, diseases of eye, nose, throat and ears. It also improves the *doshic* balance and the power of sensory organs.

(b) *Dhara* over the whole body is employed in diseases like arthritis of multiple joints, parkinsons disease, muscular disorders, and swelling all over the body. Here also the procedure is similar to *shirodhara* but four persons are required to pour the liquid simultaneously all over the body.

(c) Local *dhara* is done in cases of arthritis, oedema, abscesses, wounds etc.



*Sarvanga taila dhara (pizichil)* is a modified form of *sarvangadhara*, where oil, ghee, or a combination of these are used to pour over the body with the help of 4-5 masseurs for a period of 60-90 minutes with the patient lying on the massage table.

*Shirovasti*: It is the best among the methods of oil application to the head. Here, the oil is retained over the scalp with the help of a special headcap. *Shirovasti* is very useful for the loss of tactile sense, facial paralysis, insomnia, dry nostrils and throat, certain types of cataract, severe headache and insanity. It can also treat nervous disorders, arthritis, malnourishment, blood disorders and skin diseases.

*Pinda sweda* or *navara kizi* is a procedure under *swedana*, in which the whole body or any specific part is made to sweat by the rubbing application

of certain medications tied in a cotton cloth piece, heated by dipping in specific herbal decoctions. This procedure is done for about 60 to 90 minutes and is considered one of the most effective ayurvedic treatments for *vata* disorders. It removes the stiffness of the joints, cleanses the body channels, improves complexion, increases appetite and digestion, reduces excessive sleep and removes sluggishness.

## Ayurvedic treatment of chronic disorders

Ayurveda, with its holistic approach towards health has opened a new possibility for the modern world to approach disease with a positive attitude. In ayurveda, the name of the disease is not important, because



it always looks at the root cause of the disease, the *doshic* disharmony. As compared to the allopathic system of medicine, Ayurveda has proven to be very successful in treating chronic diseases like chronic colitis, arthritis and neuromuscular diseases etc.

Gastro-intestinal disorders: Ayurveda gives a lot of importance to the balanced fire (*samagni*) which is the real cause of balance of the *doshas*, life span, good complexion, health, enthusiasm, nutritional status, immunity and physical strength. Based on the state of the digestive fire, a number of disorders are listed in the ayurvedic texts, such as:

(a) Loss of appetite and indigestion (*agnimandya* and *ajirna*).

(b) Gastritis and Hyper acidity (*amlapitta*)



(c) Acute abdominal pain due to gas, abscess or lump (*gulma*)

(d) Hemorrhoids with systemic illnesses (*arshas*).

(e) Diarrhoea and dysentery (*atisara* and *pravahika*)

(f) Chronic bowel irregularity and irritable bowel syndrome (*grahani*)

(g) Gastrointestinal bleeding disorder (*raktapitta* and *raktatisara*)

(h) Gastric and duodenal ulcer (*annadrava shula* and *parinama shula*)

(i) Gallstone disease (*pittashmari shula*)

(j) Anal fistula (*bhagandara*)

Ayurveda believes that weak, hyper or irregular fire is the root cause of all diseases related to the gastrointestinal tract. Hence the treatment aims at *dipana* (increasing the fire), *pachana* (increasing the digestion), cleansing the *kapha*, *pitta* and *vata* through *vamana*, *virechana* and *basti* respectively. Some of the herbs used for treating these disorders are gin-



ger, black pepper, long pepper, cumin, turmeric, fennel, plumbago root, cyperus rotundes, holarrhena antidysenterica, lemon, garlic, cinnamon, nutmeg, neem, andrographis paniculata, bilva, triphala, etc. The choice of drugs or combination is to be left to the  *vaidya*. There are numerous herbal and mineral recipes available from the herbal shops like Hingwastaka churna, chitrakadi vati and dadimastaka churna. Among foods buttermilk is regarded as very important in preventing many gastrointestinal disorders.

The uniqueness in ayurveda lies in treating the root cause of the health problem rather than treating just the symptoms. Ayurveda is able to treat innumerable numbers of diseases, such as hepatitis, diabetes, dermatitis, arthritis, gout, inflammatory bowel disorders, kidney stones, anxiety and depression, migraine headaches, chronic sinusitis, chronic bronchitis, asthma, respiratory allergies, neuromuscular disorders, myopathies, etc.

The holistic approach in ayurveda comprised of proper food, proper activities with a code of conduct and medicine gives ayurveda a distinct advantage over other health care systems.







ॐ भूभुवः स्वः

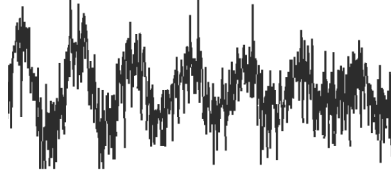
तत्सवितुर्वरेण्यं

भर्गो देवस्य धीमहि ।

धियो यो नः प्रचोदयात् ॥

# Transcendental Sound

by Sridhar Dev Goswami



*om bhūr bhuvah svaḥ tat savitur vareṇyam  
bhargo devasya dhīmahi dhiyo yo naḥ pracodayāt*

The name of God cannot be uttered by a material tongue, nor can a material ear hear the sound of the name. God is *adhokshaja*, one who has reserved the right of not being exposed to organic senses. All of our experience, knowledge, and memories have been gleaned with the help of mundane senses. Our tongue is comprised mostly of earth and water elements. The nerve endings extending to all parts of the body carry charges of electricity (also a material element). If an object is too far away, it is not touchable, seeable, tasteable, etc. If an object is too close, it is also imperceptible. We can't see our own *tilaka* mark or eye make-up. When the senses are extended by microscopes and telescopes, they have a greater range, but we are still limited to the material sphere. The telescope cannot penetrate the outermost cover of the universe and the microscope lens is composed of atoms and therefore cannot see the atom or anything smaller than the atom. Likewise, the system of mental speculation is also insufficient to perceive the spiritual element. Mind is a material element whose density is very slight, yet it's speculations are no more spiritual than hard rocks.

There is a common belief that by extending the potency of the mind we can conceive the infinite, but this process is defective. If the infinite can be confined within a limited mind, it is not infinite. I don't even know how many hairs are on my own head. Mental speculators grind their brains over abstract aphorisms of Zen and the *Upanishads* and think that

by their own power they can achieve something like infinity. The result is that the mind explodes and dies of exhaustion. And the reaction is deplorable: total forgetfulness of the self and the infinite.

There are channels by which the infinite descends. He has all power, glory, beauty, knowledge, wealth, and renunciation. He is dominant, all-extending, free, and autocratic. The infinite cannot be contained in a limited sphere, but if he is really infinite then he has the power of making himself known in all his fullness to the finite mind. When, out of His own prerogative, he takes the initiative and reveals him-



self to the devotee, there is actual perception of God-head, self-realization, transcendental revelation. He comes by the channel of transcendental sound, he comes by vibrating the spiritual tongue of the pure devotees representing him to the world. The spiritual element vibrates the tongues of the sat-guru's audience, which have hitherto never been vibrated.

It must be noted that if the guru is bogus, then that name will not touch the spiritual spark within the coverings of the mind and body. It may sound the same, but it is not, just as milk and whitewash look the same but are altogether different. Now, many such artificial gurus are about, camouflaging, as it were, the genuine devotees. If someone finds a treasure beneath a tree and marks the tree with his initials and then comes back to find every tree marked with the same initials, he is unable to recall the original tree.

Sat-gurudeva utters the holy name. Our material ears hear some sound that resembles the transcendental

name of God. Our eardrum moves the liquid of the inner ear, half water and half air, which vibrates the ethereal element and touches our mind. At this point, the soul has still been untouched, and there has been no genuine spiritual experience. By hearing with the mind's impressions, we can enjoy the sound of the cymbals, the beat of the chant, the pleasant company and effect of listening and hearing. But it doesn't stop there. Piercing the mind, the original sound uttered by guru moves our intellect, and we consider the transcendental philosophy. For millions of years, sages chanted the sound received from Sri guru on the banks of many holy rivers. Ideas flood everywhere about the possible effects of the *mantra*. While being quite blissful, this is not spiritual revelation in the true sense. Beyond the intelligence is the spiritual element, the soul. That sound, having cut through all my senses including the mind and intellect, now vibrates the finest sentiments of my own real existence. This is the perception of the holy name on the spiritual plane with my spiritual ear. Then the soul,



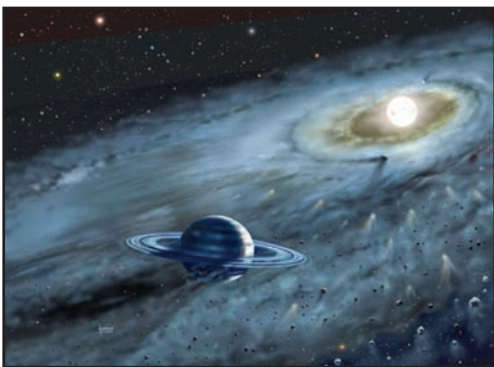
inspired, recapitulates, sending the vibration back into the intelligence, mind, etc., out to my external tongue and we say, 'Krishna.' And dance in ecstasy.

Sounds, sounds, sounds — catch hold of the sounds. Seize the waves traveling within the ether, and your happiness is assured in spiritual life. One sage has explained in his *sutra* that massive epidemics are due to contamination of the ether by impure sound. When the lawyers and pleaders in the court begin to tell lies in the name of justice, these sound vibrations contaminate the ether. This in turn contaminates the air and water which people breathe and drink, and epidemic is the result.

When four-headed Brahma creates the universe, the seed ingredient is sound, *Om*. And from that *Om* the *gayatri-mantra* is born.

*om bhūr bhuvah svaḥ tat...*

In this sound, the fourteen planetary galaxies sprout like whorls of spiraling stars and planets, with the sun situated in the very center of the universe. Each planetary system is composed of a different sound uttered by Brahma. Each galaxy provides the infinite *jivas*, the living entities, with their particular spheres of *karma* (action), *dharma* (religious functions), *artha* (economic development), *kama* (sensual enjoyment and suffering), and *moksha* (facility for liberation). It is the function of Brahma to provide these different galaxies and planets according to the sinful and meritorious deeds of the innumerable living beings.



Brahma utters a different sound for each planetary system and his engineer, Vishvakarma, creates the planets according to those sounds. The subtle elements and gross elements are distributed in this way. In our planet, the predominating elements are earth and water. In other worlds, only water is found. On the sun, fire is the prominent element. If a spiritual

individual, under the effects of illusion, or *maya*, wishes to end his gross existence, he may enter a planet of air, ether, mind, or intelligence and live as a ghost.

The individual *jiva* is also endowed with a particle of creative power, and he creates his tiny sphere of influence by sound. Some *jiva*'s spheres of influence are no bigger than their own craniums, and some *jivas* have influence over a community, a nation, or even a whole planet. The beauty and harmony of their particular spheres of influence depends on the quality of sounds they produce.



When one nation tries to conquer another nation, the first points to capture are the radio stations, the newspapers, the journals, the lines of communication. By sending out its manifesto

by sound, the government can move the former leaders from their posts and capture the country. Then, also by sound, the new government becomes established. If there should be any defect in that sound, then the whole thing is ruined. That is why there is so much alteration in the world situation. The sound of all these *jivas* is, to quote the Bible, babbel. Nonsensical sounds are entering and contaminating the ether, the air, the water, and the very molecular structure of each and every person, place, and thing.

A person's mind is composed of two functions, technically termed *sankalpa* and *vikalpa*. *Sankalpa* means the mind's desire to join thought into concepts, theories, and tableaux of theories. *Vikalpa* is the mind's function of rejecting thoughts, simplifying and limiting experiences which are gathered through the senses of sight, hearing, smell, taste, and touch. Both functions are controlled by sound. Here is an experiment: close your eyes. When I repeat a number you will see the number flash before your mind like a cash register. One – three – seven – four – The processes of *sankalpa* and *vikalpa* respectively make the thoughts come and go. This is a very simple form of the mind's process. On a more complicated scale, there is the very risky business of intentionally invading the sound waves with defective sound. The lines of communication are filled with impure sound from the most elementary schoolbooks to the most advanced so-called philosophy. The congressional fili-

busters are another excellent example of intentional pollution of sound channels. But if we were to infuse spiritual sound into the ether, saturate the ether with the transcendental sound vibration of the name of God, the *mantra* would purify, enlighten, and saturate every being with its potencies.

The spiritual sound of the *maha-mantra* first wipes the material dust from the mirror of our mind. *Chetodarpana-marjanam*. The mind is like the intermediate connecting medium between the spirit and that material external covering called the body. The soul has no material activity. When covered by *maya*, or illusion, the soul remains dormant in a state of suspended animation. The magnitude of the soul is so great, however, that it infuses consciousness on all sides. Through the medium of the mind, the senses act and we 'know' things. If this lens, the mind, is put out of focus by the external nature, we suffer confusion, pain, disease, and death. Yes, death is a state of mind only, as the soul has no death. By the mind we mistakenly think, 'Oh, I'm dying!' 'I'm drowning!' 'I'm giving birth!' 'I'm sick!' etc. When the mind is cleansed by the *maha-mantra*, the mind is forcibly purified. All the material concoctions, which are the cause of our suffering, are forcibly murdered, starved to death. They thrive on material sense pleasures. Flooding the mind with transcendental sound is just like stepping on a bomb: all those misconceptions of material suffering and enjoyment are shattered, murdered, and the material mind is conquered wholly, leaving no enemies behind. The mind then reflects the spiritual knowledge, quality, and energy of the soul self.

Next, *bhava-maha-davagni-nirva-panam*. The fire of conditional life is thus extinguished. Nirvana, which most people are trying to understand from Buddhist texts, means extinguishing the fire of material existence. This body has been burning from the very beginning of time by the process of digestion. Biologists all declare that the body is a burning organism, giving off heat, water vapor, and carbon dioxide. After seventy or more years, our body is completely consumed by that smoldering digestive fire, and we move into another body, only to burn up that one too. It is like chain-smoking, with the lit end of the cigarette you light up a fresh cigarette, and on and on. By the potency of the transcendental sound, the cause of that fire is extinguished.

Then, *shreyah-kairava-chan-drika-vitaranam-vidya-vadhu-jivanam*. The transcendental sound spreads the light of benedictions, peaceful suggestions and fearlessness, and no more anxieties invade the mind. We approach the world after coming out of the womb with many deep-rooted fears: Is there safety? Is there happiness? Is there peace? The answer is the basic seed.



*Om*, in this sense, means one big spiritual yes. *Om* yes, a positive answer. Simply by negating the mind, the questions of the soul are not satisfied; something positive must be given. The *maha-mantra* floods the minds with suggestions of truth. And *anandam-budhi-varaha-nam-prati-padam-purnamritasva-danam*. A full draught of the ocean of blissful nectar is served to the soul, who has been thirsty from time immemorial.

*Sarvatma-snapanam-param-vijayate-sri-krishna-sankirtanam*. This point has a two fold meaning, one external and one internal. *Sarvatman* means all *jivas*. The holy name bathes all souls with spiritual bliss, knowledge, and love. The transcendental sound completely overcomes the soul with his sublime potencies.

But *atman* has many meanings, as given by Chaitanya Mahaprabhu. *Atman* means the Supreme Absolute Truth, the body, the mind, the intelligence, endeavor, conviction, and nature. By uttering the pure sound of the *maha-mantra*, one invades the very cause of everything that exists. The mind, body, and soul, and even nature itself, can be changed into transcendental nature by one exclamation of the pure name. Capture the sound waves which are the cause of every item of existence and saturate them with the name of God. The result will be the total transformation of energy.

An *ashrama*, temple, and the paraphernalia in it are all divine. The environment in which we live in the *ashrama* is not the same as the one in which we were born. It is 'there;' it is the spiritual world. The more we progress in our *sadhana* (spiritual practice) the more God will reveal himself to us.

चेतोदर्पणमार्जनं

भवमहादावाग्निनिर्वापणं

श्रेयःकैरवचन्द्रिका

वितरणं विद्यावधूजीवनम् ।

आनन्दाम्बुधिवर्धनं

प्रतिपदं पूर्णामृतास्वादनं

सर्वात्मस्त्रपनं परं

विजयते श्रीकृष्णसङ्कीर्तनम् ॥ १ ॥





# Positive & Progressive Immortality

by Sridhar Dev Goswami

Because the soul is a particle of consciousness, he is endowed with free will. Eliminating free will, only gross matter remains. Without independence, the soul could not progress from bondage to liberation, and his ultimate salvation would be impossible. But his spirit of exploitation is a foreign force, an intoxicant; a miscalculation that surrounds his independence.

Life's objectives may be scientifically analyzed as threefold: exploitation, renunciation, and dedication. The most common tendency is found in those engaged in exploiting other persons, species, or elements, for mundane sense enjoyment. Such persons desire to materially elevate themselves in the present environment, and thus they are described as elevationists. A more sober class discovers the severe equal and opposite reactions to worldly pursuits (*karma*), and they engage in renunciation of the world in search of equilibrium. They hope to escape the world's concomitant reactions and sufferings. Thus their goal is liberation, and they are known as salvationists or liberationists. But if we dive deeply into the revealed scriptures, it will be apparent that the pursuits of both exploitation and renunciation are not only fruitless, but injurious to real progress.

The normal, wholesome, and happy plane is in the life of dedication. Without exploiting or borrowing

anything from the environment, and without attempting to artificially renounce it, one who is sincere to dedicate himself naturally comes into contact with a higher and more subtle plane of life. By his readiness to give and serve, he will attain to a higher society and achieve appropriate guidance. The enjoying spirit forces one to be associated with a lower section to control and enjoy. And the renouncing spirit allures even the scholars with its "prestigious" superiority over exploitation. Thus it is more dangerous, just as a half-truth is more dangerous than falsehood. As it is difficult to awaken someone from the deepest possible sleep, the liberationists may remain for incalculable time within their cell of non-differentiated liberation. But the higher existence will invite the service of one who desires to purely dedicate himself without remuneration.

Service, dedication, is the summum bonum of the teachings of the Vaishnava school, the third plane of life where every unit is a dedicating member in an organic whole. In such a normal adjustment, everyone mutually assists one another in their service to the center, the higher recipient, the highest entity. Everything is existing to satisfy Him. If this were not the case He would not be the Absolute. God is the prime cause of all causes, and everything exists for Him, to satisfy Him.





A barren conception of mere “deathlessness” cannot afford us any knowledge of a positive thing, but only freedom from the negative side. If immortality means “no influence of mortality,” what, then, is its positive conception? What will be the nature, movement, and progress of that which is im-

mortal? Without this understanding, immortality is only an abstract idea. Because it does not appear to exhibit the symptoms of death, stone would be “more immortal” than human beings, and conscious entities would be “mortal,” forever denied immortality! What, then, is the positive conception of immortality? How are the immortal “immortal”? What is the positive reality in immortality? How can one become immortal? One must search out his intrinsic location in the universal order. It will not do to attempt to solve only the negative side of life which is full of suffering — birth, death, infirmity, and disease. We should know that there exists a conception of life worth living for. This positive side has been almost totally neglected in most general religious views.

For instance, the Buddhist theory is that after liberation, nothing remains. Buddhists crave absolute extinction of material existence. And the Shankarite monist theory of liberation is to lose one’s individuality by



“becoming one” with the non-differentiated aspect of the Absolute. They postulate that when the triad of seer, seen, and seeing, or knower, knowable, and knowledge culminate at one point, the triad is destroyed and nothing remains.

This is a vague area of “negative immortality.” The “oneness” in which the perception of individuality is obscured is a marginal or “buffer” state midway between the material and spiritual worlds. Composed of innumerable souls, it is an immortal plane devoid of specific variegatedness. It possesses positivity only in the sense that it is a plane of existence, a background, but in itself it lacks a positive development of variegated existence. The nature of the background is oneness, and development woven over it necessitates plurality or a differentiated nature.



Thus, the “immortality” of the impersonalistic schools such as the Shankarites and others offers no positive life. But in Vaishnavism, immortality is a positive, dynamic existence. Above the non-differentiated Brahman aspect of the absolute, the transcendental variegated experience begins. Situated there in the spiritual plane is the positive Kingdom of God.

Transcending the vague areas of “negative immortality” that the impersonalists aspire for, the devotees — the Vaisnavas dedicate



themselves to the life of eternal devotional service to the Supreme Lord of the transcendental realm. Although the soul can maladapt himself to a fallen state of existence in the planes of exploitation and renunciation, he is inherently adaptable to the positive life in the Kingdom of God. Positive immortality is possible only for the surrendered. All others are necessarily mortal. Only those who have wholly given themselves to the center are living in eternity.

With a broad vision, we must know ourselves as created of smaller stuff, and thus only with assistance from above can we improve our situation and achieve a position in the higher plane. A submissive, serving attitude is necessary. If we submit, the universal authoritative aspect of the Absolute will take us upward to a higher prospect. He is the autocrat, the absolute knowledge, the absolute good: everything about Him is absolute. Being in a vulnerable position as we experience in this world, why then should we not submit to Him?

The road to the sphere of transcendence is the deductive or descending method. We can reach the absolute good, the absolute will, by His consent alone. Only by faith in absolute surrender is anyone allowed entry into that domain; never by “exploration,” by “colonization,” or by attempting to become a “monarch” there. No inductive or ascending method such as renunciation or ordinary *yoga* can compel Him to accept us. Whosoever He chooses can alone reach Him. Although the highest point of the renunciates is desirelessness or freedom from possessiveness, the surrendered soul is naturally desireless. Detachment is only the negative side of surrender, and above selflessness, the devotee surrenders himself to the higher substance, and this is what it means to be awake in another world, another plane of life. Such is the positive Vaishnava conception of life — to determine one’s real self beyond the jurisdiction of the world of misconception.

The nature of progressive substance is eternal existence, knowledge, and beauty. The one harmonizing organic whole contains similarities and differences, held inconceivably in the hand of the Absolute. And



there is no anarchy in the absolute power. Nonetheless, mercy is found to be above justice.



Above judiciousness the supreme position is held by love, sympathy, and beauty: “I am the absolute power, but I am friendly to you all. Knowing this you need never fear” (*Bhagavad-Gita* 5.29). This revelation relieves us of all apprehension — we are not victims of a chaotic environment, but it is judicious and considerate, and the ultimate dispenser is our friend.

Surrender is the foundation of the world of devotion. It is the very life and essence. One cannot enter into that domain without surrender. It must be present in every form of service, and to attempt divine service without it will be a mere imitation or a lifeless formality. The entire gist of the Vedic instruction is to dedicate oneself to the service of the Godhead. Without surrender, the activity will be adulterated with exploitation, renunciation, artificial meditation, and so on.

By constitution the soul is the Lord’s servant, and the Lord has the right to do anything according to His sweet will. If accepting this truth we undertake devotional practices, only then will our activity be devotional. The activity of the self-dedicated soul alone can be called devotion. Sincere prayer will help us to seek the help of the Lord, but again, prayer in the spirit of surrender can alone reach Him. The path of devotion entails inviting the positive to descend and embrace us: “I am very low and You are so high. You can purify me for Your higher purpose. Be pleased. Otherwise I am helpless.”

It is impossible to take Him captive in the cage of our knowledge. Only the way of devotion can help us. In every respect He is high, great, and infinite; and we are comparatively small. His mercy, His sympathy, love, and grace are the only medium through which we can come to know Him. And cultivating good faith in that autonomous sweet land which is so high, we will earnestly hope and pray to be associated with the Absolute as His devotee; and that will bring our happy prospect for the future.



# Subjective Evolution of Consciousness

*FOSSILISM, HYPNOTISM & THE COSMOS*

by Sridhar Dev Goswami

This chapter is an excerpt from a conversation between Sridhar Dev Goswami and neurophysiologist Dr. Daniel Murphey and physical organic chemist Dr. Thoudam Singh.

**Dr. Singh:** When scientists speak of evolution they mean that life has evolved from matter. I have heard you speak of evolution with quite a different concept. You say that everything is evolving from consciousness.

**Sridhar Dev Goswami:** Yes, consciousness comes first and then matter. The basis of all things material is consciousness, which is spiritual. Consciousness can contact consciousness directly. When consciousness comes into the stage of matter, material conception, we experience a kind of vague consciousness; first there is hazy consciousness and then material consciousness. But everything has its spiritual side. And as eternal souls; our direct connection is really only with the conscious aspect of existence. For example, the Earth is conceived of as a woman. According to the Vedas, the presiding deity of the Earth is a woman. And the sun is conceived of as a devata, a male god.

The soul, coming into material consciousness, must come through some hazy reflection of consciousness, *cidabhasa*. Only then can the soul experience material consciousness. Before pure consciousness evolves to material consciousness, it will pass through a hazy stage of consciousness or *cidabhasa*. So in the background of every material thing, there is a spiritual conception. This cannot but be true.

**Dr. Singh:** What is *cidabhasa*?

**Sridhar Dev Goswami:** Something like mind. Suppose consciousness comes to feel matter. When consciousness is coming to the material world to know the material world, it has to first pass through

material consciousness, and then it can feel what is matter. According to Darwin's theory, matter gradually produces consciousness, but before producing consciousness it must produce some hazy consciousness, then mind, and then the soul. But in reality, it is just the opposite. So subjective evolution parallels objective or material evolution. But in the evolution of consciousness, the supersubject is first, then the individual soul or *jiva*-subject is next. Then, from the subjective consciousness of the *jivas*, matter is produced. But consciousness must penetrate hazy consciousness to perceive matter. I say that the process of evolution moves from the top downward. The Absolute Reality — if we at all assert that there is anything which is the absolute reality — must possess two qualifications. What is that?

First, in the words of Hegel, he must be by himself: He is his own cause. Second — and more important to us, he is for himself: He exists to fulfill his own purpose. He is not subservient to any other entity, for then his position would be secondary. Reality the Absolute is full in himself. All other things are coming from him. The perfect substance already exists. What appears to us as imperfect comes down according to our own defective senses.

The imperfect must be dependent upon the perfect, the ultimate reality. And the imperfect may be so arranged by him in order to prove his perfection. To prove the perfection of the Absolute, there is conditioned and unconditioned, finite and infinite reality. The defective world therefore has an indirect relation to the truth. However, consciousness cannot jump at once into the conception of matter; it must pass through a process to come to material consciousness. From the marginal position, from the verge of the higher eternal potency, evolution and dissolution of this material world begins. This takes place only on the outskirts of *svarupa-sakti*, which is the

system responsible for the evolution of the spiritual plane, and is an eternally evolving dynamic whole. It is not that nondifferentiation is the origin of differentiation. An eternally differentiated substance exists. That plane is filled with *lila*, dynamic pastimes. If a static thing can be conceived of as eternal, then why can't a dynamic thing be conceived of as eternal? That plane of *svarupa-sakti* is fully evolved within. It is eternal. Evolution and dissolution concern only the degradation of the subtle spirit to the gross material platform and his evolution towards perfection. Here there is evolution and dissolution, but these things do not exist in the eternal abode of *svarupa-sakti*.

**Dr. Singh:** Objective evolution is what modern science calls Darwinian evolution, but how does subjective evolution unfold in Kṛṣṇa conscious science?

**Sridhar Dev Goswami:** You have to take the example of hypnotism. Through a form of mystic “hypnotism,” the supersubject controls the subject to see a particular thing, and he is bound to see that. One may think that as we see a stone, the stone compels us to see it as stone, but it is just the opposite: we are compelled to see it as stone being under the influence of the supersubject who displays everything as he likes. When he commands, “See stone,” then we shall see stone. Full control over whatever we see rests in his hands. No power to control what we see rests in the objective world. The objective world is fully controlled by the subjective. This is confirmed in *Bhagavad-Gīta*, where Kṛṣṇa says *pasya me yogam aisvaryam*: “If I say, ‘Behold my mystic power,’ you are bound to see it. You have no other choice.”

Kṛṣṇa says *mattah smṛtir jñanam apohanam ca*: he is the prime cause of remembrance, forgetfulness, and intelligence. He is the controller. For his own pleasure, his *lila*, he can do anything. This is true not only in the material world, but also in his own domain. What is meant by this statement of the *Gīta* concerns this *brahmanda*, this material world. The gist of this statement is that from the lower planetary systems up to the highest — this entire area of evolution and dissolution — everything is manipulated by him. No credit can be attached to any external thing. All credit should go to the center who controls everything. And reality is subjective. It is based on consciousness. Color is perceived through the eye. It is not that the color is there and the eye can catch it. But the seer sees through the eye and perceives color. So color is a perception. Its position as actual substance should be traced to the subtle plane of

existence. This is the nature of reality: the gross is coming from the subtle.

In Sāṅkhya philosophy, of course, that is described as a bifurcated thing. According to Sāṅkhya philosophy, there are three branches of reality: the sense, the senses, and the sense objects. Sound is created by the ear, color is produced by the eye, and so on. The objects of the senses are in the mode of ignorance, *tama-guna*, the sensual instruments are in the mode of passion, *raja-guna*, and the power of sensation is in the mode of goodness, *sattva-guna*. From these proceed light, the eye, and color; sky, the ear, and sound. In this way, mundane reality branches in three ways: *tamo*, *raja*, and *sattva*. So the gross world is coming from the subtle through the channel of consciousness. The feeler, the instrument of perception, is creating the object of his perception.

Try to understand this principle of hypnotism. The whole thing is hypnotism — this whole creation — and it is completely in the hand of the Supreme Subject. All material laws have no meaning; the laws and the sublaws are all pertaining to the subjective world.

**Dr. Murphey:** But how can one perceive this sort of hypnotism?

**Sridhar Dev Goswami:** How can we know beforehand that in a laboratory, combining hydrogen and oxygen — two gases — will produce water? Only when one comes to a particular stage of scientific knowledge can he know that a more subtle thing like gas can produce a tangible material thing like water. In that way, when you have an idea of the higher substance, then you can understand how from the subtle, the gross has originated.

The relative world is a perverted reflection of the absolute reality. Highly qualified things must be given the position of causal importance. It is not that a lower thing can produce a higher thing, but it is easy for a higher thing to produce something lower. This is not difficult to understand. The modern scientific position is saying basically that stone can produce soul; but why not consider that soul can produce stone? We have to inquire about that process — how the soul can produce stone. But we have done away with that and instead we say that stone is gradually producing soul — we are very fond of investigating in that line. Why? The subtle should be given more importance than the gross. Why should we think that man has created God, and not that God has created man?

**Dr. Singh:** Then God is the magician and we are his subjects?

**Sridhar Dev Goswami:** Not only is he a magician, but the Super-magician. He is not merely the kind of magician that is within our experience.

**Dr. Murphey:** What is the role of Yogamaya, the Lord's internal potency?

**Sridhar Dev Goswami:** She is found in the eternal company of Krsna. In our conception of divinity, *purusa/prakrti*, the masculine/feminine, are existing together. Potent and potency, substance and potency, are inconceivably interconnected. Otherwise, if we conceive of the Supreme Soul as existing independent of any potency, that will be the *brahman* conception of Sankaracarya: ultimate consciousness as non-differentiated oneness. So the Absolute Truth includes both potent and potency — *purusa/prakrti* — consciousness with energy. Actually there are three main elements to be traced within divinity: *jnana, bala, and kriya*. The eternal aspect of the absolute whole is divided in three ways: energy, consciousness, and ecstasy. Thinking, willing and feeling. *Sat, cit, ananda*. *Sat*, the potency for maintaining existence, is the potency of Baladeva (*bala*). *Cit*, the consciousness aspect, is Vasudeva (*jnana*). And *ananda*, ecstatic feeling, is Radhika (*kriya*). *Jnana, bala, kriya* (knowledge, strength, feeling); *sat, cit, ananda* (eternity, cognition, bliss); *sandhini, samvit, hladini* (existence, realization, ecstasy): Baladeva, Krsna, Radharani. These are the three phases of *advaya-jnana*, or the one whole. The one whole can be thought of in its primary evolved stage in three ways: main consciousness, main energy, and main satisfaction. In three phases we are to conceive of that ultimate reality. It is there: *jnana, bala, kriya ca*. Thinking, feeling, willing. *Sat, cit, ananda. Satyam, sivam, sundaram* (eternity, auspiciousness, beauty). And these three principles are expressed through evolution and dissolution in the eternal and non-eternal. These aspects of theism have been dealt with in a very scientific way in the *Sri Krsna Samhita* of Bhaktivinoda Thakura. Once, I considered from this point of view the question of the planets in Vedic cosmology. We see that by the movement of the different planets, a solar eclipse is caused by the moon's shadow falling upon the Earth. And yet in the scriptures it has been described that during an eclipse, the planet Rahu is devouring the sun or the moon.

When Srila Bhaktisiddhanta Sarasvati Thakura was in Puri during his last days and an eclipse came, one devotee who was supposed to know *siddhanta*, the conclusions of scripture, was sitting next to Prabhupada. He suddenly ridiculed the idea given in the *Bhagavatam* that during a solar or lunar eclipse Rahu



devours the sun or moon. I could not tolerate that such a remark should be passed in regard to the *Bhagavatam* and argued that what *Srimad-Bhagavatam* has stated is not to be taken lightly. I offered what seemed like some far-

fetched support. I said that in his *Jaiva Dharma*, Bhaktivinoda Thakura has created so many characters, but I think that they are not imaginary. What he has written might have occurred during some other millennium (*kalpa*), or day of Brahma, and that has now come to the surface. In this way I went on to support the cosmological position of the *Bhagavatam* by arguing that what is necessary to prove reality must also have some real position. It cannot but be. In this way my argument went and Prabhupada supported me. In understanding the position of the planet Rahu, what Sukadeva and Vyasadeva have said is geographically impossible, but their statements are there in *Srimad-Bhagavatam*, and the literal meaning of the scriptures is not to be taken lightly. Considering the importance of the literal meaning of scripture, Bhaktivedanta Svami Maharaja presented *Bhagavad-Gita As It Is*.

I thought, "How am I to prove what the *Bhagavatam* says? I don't know. But what is said in *Srimad-Bhagavatam* must be true. I have faith in that." There are so many statements on the cosmology of the universe in the scriptures. The Aryans, the spiritually developed men of former times, used to see everything as consciousness. They saw that the shadow is also conscious. The shadow, *abhasa*, is also considered to be a stage of consciousness. Only through that shadowy stage of consciousness can we come to the material conception of a thing. Before we reach the conception of a shadow, we must pass through some

mental stage, and personification may be attached to that mental stage. The personification of the shadow may be referred to as “Rahu.” The soul approaches matter, the material world, but before that, he must pass through a shadowy stage of consciousness called *cidabhasa*. Consciousness passes through the shadow level of consciousness into matter, non-consciousness. And that shadow stage of consciousness has its personality. It is also conscious, and may be known as “Rahu.” Every material conception presupposes a spiritual conception of that particular thing. The shadow through which consciousness must pass in order to perceive things as material has personality, and in the *Bhagavatam*, the *rsis*, the seers of the truth, are addressing it as Rahu. Because they are highly developed, they find the personal aspect of existence everywhere. What we perceive to be dead matter, they perceive to be conscious. Therefore, they always take the personal perspective. The soul, when going to experience any material conception, will have to pass through a medium which influences his consciousness to see things as material. What is concrete matter is unknown. It is a mere effect of consciousness. As everything material must have some conscious origin, or origin in personal consciousness, there must be a personal conception of the sun, the moon, the Earth, and all the planets. Before we reach the conception of a shadow or any other object, the soul has to pass through a conscious stage. That stage has some spiritual existence as a person. Therefore the *Bhagavatam* refers to the sun, the moon, and the planet Rahu, as persons.

Everything — the Earth, the moon, the stars, the planets — has a personal conception. In the background of what we can perceive with our dull senses, everything that is said to be matter, there must be a personal conception. Without the influence of a personal conception, consciousness cannot reach the stage of gross matter. Therefore, in the ancient scriptures we find that the great sages and *rsis* are always addressing everything within this world as a person. Although to us it is dead matter, they have considered them as persons. Why? The matter is rather the shadow of the personal entity. The personal, conscious entity is more real, and the matter we perceive through dimmed consciousness is less real.

**Dr. Murphey:** So that shadow is Rahu?

**Sridhar Dev Goswami:** When we conceive of the personal representation of that shadow, it will be known as Rahu. Everything is conscious. The shadow,

its effect — everything. When the moon is between the sun and the Earth, the shadow of the moon is coming here, and what is coming is also conscious. Everything is conscious first — then there is matter. From the personal conception things evolve to gross consciousness. It is all personal. So the *rsis* with such a vision of reality used to address everything as a person — the trees, the mountains, the sun, the moon, the ocean. When pure consciousness is coming to experience pure matter, then there must first be some mixed stage, and that is a person suffering in *karma*. Person means they are not a fully developed spiritual person at present, but in a mixed condition. So what the *rsis* are saying — that everything is a person — is real; it is not a concoction.

Everything is conscious. As the present scientists say everything is matter, we have real cause to think that everything is conscious. Whatever you see does not matter; we can directly feel what is in our nature. That is conscious. Our consciousness may be in a developed or degraded position, but consciousness is nearer to us. We feel our mental energy only.

**Dr. Murphey:** This is a bit difficult for us to fully grasp. When we see color, what are we actually seeing?

**Sridhar Dev Goswami:** That is a mental stage.

**Dr. Singh:** What is the reality of that object?

**Sridhar Dev Goswami:** Reality — that is in the soul. Only the soul is real; the seer is reality. The subject is real. And whatever the subject feels also emanates from the subject.

**Dr. Singh:** But are the objects the subject perceives also persons? When we are seeing the color red, now is red also a personality?

**Sridhar Dev Goswami:** Everything has its representation in the original, personal, conscious, spiritual reality. Otherwise, there is no possibility of its being reflected into this plane as matter. First there is consciousness and then when it is in a more gross condition, it appears to be matter. In the study of ontology it is taught that when studying a particular thing, although we can know that it has certain attributes to the eye, and that it appears to the ear in a particular way, these are all appearances. Independent of appearances, the ontological aspect of a thing — what it is, the reality of a thing — is unknown and

unknowable. My contention is that when consciousness is going to feel non-conscious matter it will have to pass through a conscious area to meet the material object. So the full perception of that material thing cannot but be conscious; and consciousness always indicates person. First there is conception and then the material idea. The conscious world is very near and the material world is very far off. Therefore the great *rsis*, whose thinking is highly developed, address whatever they find within the environment as if they are all persons. In the Vedas, the ancient scriptural literature of India, we find that the saints and sages are always in the midst of so many persons; in the background everything is a person.

**Dr. Murphey:** And person means thinking, feeling, willing.

**Sridhar Dev Goswami:** Thinking, feeling, willing — a living entity has three phases. And it is also the same with God and his potency. There is a subject existing first, and then his experiences. And experiences of the subtlest character come first and are given the most importance. And when the subject is coming to the more distant area to conceive of matter, that will be the farthest point from him. He will address everything by which he is surrounded with personal conceptions. A personal conception cannot but assert that matter is far off. The direct connection of consciousness is with the shadow, the reflection of the material into the conscious world. The soul can understand that only. If matter can exist independently, then also matter has a shadow in the conscious world and the soul is concerned with that shadow. In other words, there is the person and then the body. Just as the body is the after-effect of the conscious living agent, matter is the after-effect of spirit. Irrespective of all material consciousness, that which is in direct contact with soul is all personal. *Ci-dabhasa* is something like the mental substance we have within.

There are two kinds of persons, *ksara* and *aksara*: the pure liberated soul and the soul who is struggling in matter. When liberated and non-liberated persons are mixed within the world of material transactions, whether as moving or non-moving entities, or whatever their position might be, still they should be considered persons. Since everything is a unit of consciousness, everything has personal existence.

**Dr. Murphey:** So externally we see the Ganges as water, but in reality she is a person.

**Sridhar Dev Goswami:** Everything is a person. Before we go to the material conception, we must pass through the personal conception or aspect of that thing. In Vrndavana everything is conscious, but some things are posing in a passive way. But they are all conscious: the Yamuna river, the cows, the trees, the fruit — everything is conscious, spiritual, but they pose in different ways. Being able to detect the conscious characteristic in everything, the Aryans saw all of nature as conscious and personal, and addressed everything as conscious. Consciousness and personality are the universal basis of reality. Whatever we may experience is conscious. The reflection of a material object is within me, and the plane within me is conscious. The subject is consciousness, and whatever kind of thing the object may be, it casts its reflection into the plane of consciousness. The observer of any objective reality is involved only with consciousness from beginning to end, and can have no conception of matter apart from consciousness.

**Dr. Murphey:** How can we differentiate consciousness from mind?

**Sridhar Dev Goswami:** In *Bhagavad-Gita* the path of differentiation between consciousness and mind is suggested: *indriyani parany ahur*. What is *atma*, the soul, the spiritual conception? We have come to the world conception by a particular process. By the process of elimination we can trace out what the mind is. It is said that the basis of the mind is acceptance and rejection: *sankalpa-vikalpa* — “I want this, I don’t want that.” What is the mind? A thing that contains apathy and sympathy for the external world. That is the mind. We have to trace within us what that thing is. It is within us, and one has to enter into his own self and try to have some personal experience of what the mind is. Then by internal analysis one can try to come directly in touch with the faculty of judgement, reason, intelligence, by asking, “What is intelligence?” “Where is it within me?” We should try to find that out and come in touch with that directly. We should inquire, what is the mind? It is already within me. But what is it? And what is reason within me? What is the source of the mind and intelligence? And crossing the stage of the decisive faculty, what is the soul? We must try, as a *yogi* does, to come in direct touch with the elements within us. Mind and intelligence are within each of



us. Why should we not be able to trace out exactly what they are, to see internally what they are?

**Dr. Murphey:** When our faith is growing in a particular direction, how can we know that our realizations are coming from our own internal self, from our inner consciousness, and not from the influence of the environment, the circumstances that surround us?

**Sridhar Dev Goswami:** The self is in a dormant state, but by some external help it may be reawakened, just as when one is sleeping, by external interference a man can be roused. It is something like that. Someone is dormant, but when, by external help, he awakes from his slumber, he again becomes aware of himself. Once he is awakened and his self-awareness has returned, he immediately knows, “I was such and such; I am such and such.” By the help of our friends we may recover our health. In the same way, if we continue to apply the process of *bhakti*, we shall become more and more conscious of our self and of reality. We are our own guarantee.

**Dr. Murphey:** I wanted to clarify one point. In Kapila’s system of analysis, Sankhya, he says that *pradhana* is “that unmanifested matter which is eternal.” You say that everything is consciousness. Is *pradhana* also composed of consciousness?

**Sridhar Dev Goswami:** Yes. What is material is only the misconception which is the cause of all this material existence. But it also has personality — Devi, the goddess. The world begins within misconception. When you have the proper conception, then you can

thing is all right — only the disease, our misconception needs to be removed.

**Dr. Murphey:** The disease is our lack of Krsna consciousness.

**Sridhar Dev Goswami:** Lack of consciousness means misconception, disease: This is described in *Srimad-Bhagavatam*: *bhayam dvitiyabhinivesatah syad* — the disease is separate interest. The deviation from our normal spiritual condition, the development of misconception, is based on the charm — the prospect — of separate interest. That is the root cause of all misunderstanding. The conception of local, provincial interest has caused the difference between a proper conception of reality and misconception. We have gone away from the central conception. From universal consciousness we have come to this provincial plane. And according to the gradation of consciousness in its development from provincial to universal, we may find ourselves in so many different planets or planes of existence: *bhur, bhuvah, svah, jana, mahar, tapa, satya*, all these different stages of development are involved in this process of provincialism and universalism.

But loss of consciousness of the center is the root of this entire material existence. One who is conscious of the organic whole, on the other hand, is in the most healthy position. That is proper adjustment, and maladjustment is the cause of our present diseased condition. Adjustment is life; it is liberated life, and to be the prey of maladjustment is to approach pain and misery. Everything within the environment is all right; the only difficulty is found in the conception of



read Krsna *lila* everywhere. Everything will excite you about Vrndavana. You won’t see the outward thing if you are relieved from misconception. A madman has a maladjusted brain. He may be in the midst of friends, but he is lost in his madness, his paranoia. When he goes back to his normal position, he finds the same thing — all friends. In the same way, every-

selfish special interest. Our aversion to the universal interest is the cause of our detachment from the conception of the whole and from happiness and health. We have been deprived of the happiness of our healthy position, and the cause is selfish interest. The Absolute Autocrat is absolute good. So there is no room for complaint against him. Krsna says:

*suhrdam sarva-bhutanam*. He is the owner of everything — in comparison, we are nothing. But still, he is our friend. We should not forget that. We are represented in him. Our detachment from him is the cause of all the miseries that we are suffering. We and others like us have lost faith in him, but he is our friend. We are jealous of him and are thinking, ‘I am not the master? Someone else is the master — this is intolerable. No taxation without representation!’ But our interests are well-represented in Kṛṣṇa. He cares about us even more than we can conceive. Why do we forget that?

If we only reinstate ourselves in that faith, we will be all right. It is our fault that we are suffering; otherwise there is no difference in vision from the universal standpoint. *Isad apetasya*, we have turned away from our master. But we should remember that he is our master, he is our well-wisher, he is our guardian. Deviation from that consciousness is misery of an infinite magnitude. Its cause is very subtle and very minute; it is our mentality of separate interest. And as a result, we have been captured by the enemy camp. Patanjali has said we are moving towards evil in an intelligent, organized way. That is not only mad but wicked; it is worse than mad, according to Patanjali. What will be the relief of a soul in such a deplorable condition? A madman is in possession of everything — he is only out of his mind. His consciousness has to be adjusted properly. Then he will find, “Oh, everything is all right — let me go back home.” At present his consciousness is cast aside. He is not at home; his consciousness must be pushed homeward. That is the problem. Our Guru Maharaja used to say, “I don’t admit any famine in this world — only that of a lack of Kṛṣṇa consciousness, *jagate eka matra hari-katha-durviksa chada ara kona durviksa nai*.” Whenever he became excited, he used to use this expression. He would say: “From door to door tell everyone, ‘Kṛṣṇa is the Supreme, you are all servants of Kṛṣṇa.’ Remind everyone of this, from door to door. Then they will find, ‘Oh, I have everything I need. I am *kṛṣṇa-dasa*, a servant of Kṛṣṇa. I must connect with Kṛṣṇa.’ That link must be supplied, and then everything will be all right. There is no dearth of anything else. There is no real misery, except that we have forgotten Kṛṣṇa, our Lord. That is the only point we must push. This is the universal necessity. I don’t admit any necessity besides this.”

Within this world there is always a fire burning; but there is no necessity of extinguishing the fire, because we have nothing to do with the world that will be burned into ashes by the fire. All our inner de-

mands can be met only in connection with Kṛṣṇa. All other things are unnecessary. They may be burned into ashes or devoured by flood. We have no real concern with any of those things. Rather, those material attachments are dragging us back towards the wrong thing. And as a result, we can’t allow our mind to be attracted to Kṛṣṇa. The things of this world, or attachments, are all negative; these things are all our enemy. The whole universe may be burned to ashes, but we will not be affected in any way. The world may be devastated — the Earth, the sun, the moon, the stars — everything may vanish, but still we remain. The soul is eternal. And if we can have a connection with Kṛṣṇa, the things of this world are all unnecessary for us and for everyone else. Why should we come to live in the mortal world, erroneously identifying ourselves with flesh and blood? We only think that we are being born and dying. But it is a false notion. Everything is conscious. And when we realize it fully, we shall be fixed in the *svarupa-sakti* domain in the spiritual world. There, the different living beings may pose as matter, as the Yamuna, as water, as creepers, as trees, but they are all conscious units simply posing in different ways.

**Dr. Murphey:** It is said that when Kṛṣṇa goes to take bath in the Yamuna, all the waves rush in to embrace Kṛṣṇa.

**Sridhar Dev Goswami:** Sometimes the stones melt feeling the imprint of Kṛṣṇa’s lotus feet. Everything is conscious. So it is also in the case of Rahu and Ketu and other planets. Everywhere in the scriptures, the spiritually developed sages are found talking with nature as if they are talking with a person. And it is real. But our consciousness, is deviated in ignorance. So as scientists, you must crush the philosophy of fossilism. Bhaktivedanta Svami Maharaja has ordered you to take a strong position in the scientific community in the West and crush fossilism. Why should we accept fossilism? First there is consciousness. This is Berkley’s theory. Not that mind is in the world, but world is in the mind. Everything is based on consciousness; no conception — nothing remains — without consciousness. So ultimately all undesirable things are only a mental concoction.



# Subjective Evolution of Consciousness

## CONSCIOUSNESS & EVOLUTION

by Sridhar Dev Goswami

*Prakṛti*, the material nature, does not evolve consciousness like fossilism. But on the other hand, both are within consciousness. There is no necessity of movement for the soul here. The soul is inactive, indifferent, passive in this enjoying plane. That is another original conception. The soul does not take its place in the negative side; it is meant for the positive side. But accepting that the soul is in the background, *prakṛti* or material energy — the body — works on its behalf. The relationship between body and soul is like the relationship between a minor and his false guardians. It is something like what happens when the proprietor of an estate is a minor and the managers take advantage of his youth to loot and enjoy the estate. The *baddha-jīva* soul is in the minor's position. The soul cannot control these revolting managers, the five senses. He need only have the contact of a major soul. With the help and guidance of the major soul, he can subdue his managers and gain mastery over his own property. A fallen soul's position is like a minor proprietor. He is helpless. He is doing nothing; the managers are doing everything using his own resources; they are doing everything in the name of the proprietor. The soul is inactive, non-cooperating. But the body, mind, intelligence, and false ego are working on behalf of the soul — the real ego — as if he were on their side.

But if his real interest inside is roused by a major soul who is connected with Paramatma and with Bhagavan, then the soul will find his own field there. He'll control the senses and mind and utilize them in the service of the Lord. He'll say, "Everything is for Kṛṣṇa, not for me."

So Kṛṣṇa says, *sarva-dharman parityajā mam ekam saranam vrajā*: "Give up all your duties and come to Me. And your present duties good or bad, whatever you can conceive from your present position — give up everything and come straight to Me. I'm everything to you." This is Kṛṣṇa consciousness.

Kṛṣṇa is telling us: "You belong to me, you are my property. Just as you can say that you are master of any property, so you are my property, my slave." That is the truth, and by accepting that truth we will live in a higher plane. We will be the gainer, we will come into our normal position. At present, in an abnormal position, we are suffering from thinking, "I'm the master, the monarch of all I survey." But that ego is our worst enemy if we are to progress in devotional service.

And service to Kṛṣṇa is of different varieties. There is service in general and then there are services of a particular type: *santa*, *dasya*, *sakhya*, *vatsalya*, *madhura*. And then there are also divisions according to whether devotion is calculative or spontaneous. In this way there is a hierarchy in the development of the devotional condition. The highest development is *ujjvala-rasa*. *Ujjvala-rasa* means super-fine, the brightest, surpassing all, where we find Kṛṣṇa in consortherhood without any consideration of any law. Autocratic consortherhood. And this particular nature and behavior is described in a book written by Rupa Goswami titled *Ujjvala-nilamāni*.

The first part of devotion is given in *Bhakti-rasamṛta-sindhu*. In that book, from the very beginning of an ordinary civilized religious life, Rupa Goswami takes us up to different devotional relationships *santa*, *dasya*, *sakhya*, *vatsalya*, and *madhura-rasa*. But the details of *madhura-rasa*, the highest relationship with Kṛṣṇa, has been described by Rupa Goswami in *Ujjvala-nilamāni*. *Nilamāni*, Kṛṣṇa, in his highest luster: *ujjvala*. *Nilamāni* in consortherhood. And what are Kṛṣṇa's charac-



teristics? How does he play with his paraphernalia in the *madhura rasa*? That has been described in detail in *Ujjvala-nilamani*.

Even the greatest literary scholars are dumbfounded to find how divine love has been analyzed so finely and elaborately in this book of Rupa Gosvami. Subtle points have been analyzed, organized, and distributed in that book. And the great scholars become dumbfounded when they come to such statements. As *Bhagavatam* says: *muhyanti yat surayah*. In the introduction, *Bhagavatam* gives this warning, this caution to the scholars: “You will all be dumbfounded when you attempt to come to this plane. Scholarship will not allow you to flourish here.” The nature of that plane is so mysterious that even great scholars won’t be considered fit to enter there.

Only the surrendered souls can understand and feel these subtle points of devotion. Outsiders, who remain objective inquirers and researchers, can’t have any entrance here. It is the superior subjective realm, the supersubjective realm. That plane is above even the plane of soul.

And to understand this, we must first inquire about the soul. First there is mind, *manah*, then intelligence, *buddhi*, then soul, *atma*. The soul is evergreen: it does not die. Soul is eternal, constant. It is said in the *Upanisads* and in the *Gita* if once we can meet our soul, then a diametrical change comes in our life. At that time we will be astonished to realize, “Oh, such a highly qualified thing is here within me! In ignorance, I was considering that this perishable body and this flickering mind, was my true self. But the material senses and mind are all trespassers, they have some inimical tendency towards my true self. I am soul, I have no necessity of all these things. Without these unnecessary material things I can live! No food is necessary for the soul from the jurisdiction of this material plane. The soul is independent. What a wonderful existence I have! In reality I am soul, and the nature of soul is so noble, so high, so good.” A diametrical change of consciousness comes at this point and one tries to enter into that higher realm. Spiritual reality is what is necessary for us. We are soul, we are independent of matter. We are made of such transcendental existence. Nothing can threaten the soul’s existence — not the atomic bomb, nuclear war, lightning, thunder, or earthquakes. All the troubles of this material world are limited to this body which is a foreign carcass, a concocted representation of my true self. My true self exists on the spiritual plane, on

a higher level. If we can really have a touch of that realization, a glimpse of our own identity — if we can feel within that the soul is independent of matter, then a revolutionary change will take place within our minds. Then our attempt to progress in spiritual life becomes quite genuine. Otherwise, our progress is suspicious, doubtful. We grasp it intellectually, and think, “Yes, let me try. I’m hearing, of course, that I have a good prospect in spiritual life; by my intelligence I can follow something. Let me try.” But progress on the intellectual plane is only hesitating progress. When one comes to the plane of one’s own soul, however, one will find one’s self and realize, “Here I am!” At that time all false conceptions which have been held for so long will vanish like a dream. They will all be finished, and one will think, “I’m to start a new life.” And the new prospect will open to make progress in the higher plane.

Soul is nearby. We can try to find out what the soul is if we can eliminate the material elements. This is the process of the *Upanisads* and is mentioned in the *Bhagavad-Gita: indriyani parany ahuh* (3.42). First we are to understand that our senses are primary. If my senses are removed, the entire world of our experience is nothing to me. Only through my senses can I be aware of the existence of the outside world. Minus senses, eyes, ears, no world is apparent to me. Then, above the senses is the mind. What is the mind? The mind deals with acceptance and rejection: *sankalpa vikalpa*. In other words, the mind thinks, “I want this, I don’t want that.” It deals with attachment and hatred. The mind determines who is enemy and who is friend, this is mine, that’s yours. If we want to understand the mind we have to look within, to inquire within: what is that element in me that seeks friends and avoids enemies? Where is he? Sometimes the mind is apparent; then other times it is hiding. I must find out where the mind exists, of what substance is it composed? By analysis I can understand what aspect of my inner self is the mind. Then, having some idea of what the mind is, I may analyze that part of me which deals with reason, the intelligence. Where is the intelligence?

When the mind demands something; the intelligence says, “Don’t take that, don’t eat that.” By introspection, I may look within and find out: what is that principle in me which reasons? Where is that fine thing? What is its nature, its substance, its existence? We shall try in our introspection to find it out, substantially. If that is possible, then the next

step will take us to the soul. What is that soul which makes possible the intelligence, the reason by which we act, which prompts the mind to want, and also gives our senses the power to connect with things? What is that spark of knowledge? Where is that soul within me? What position does it hold? I want to see it face to face. Then in this way we can evaporate like lightning all the misconceptions of body and mind. By finding the soul through introspection, we may experience the lightning touch of realization.

At that time, the whole world will be turned in a diametrically different line, and we shall see things differently: “Oh, this material life is undesirable! These senses are enemies in the garb of friends. If I confront them now, they say that I may have an honorable friendship with them, and that without them I can’t live. But it is all a hoax.”

From a realization of the soul, from the point of that wonderful knowledge, one may come to see the ocean of knowledge. One may begin to see what is in the subjective area, and hanker for how to come in connection with that divine realm. At that time, the very trend of one’s life will be changed, and a total change will come in our search, in our standard of prospect in life. And our search will take a concrete shape in devotion. In this way, we must begin our search after the higher sphere. And how to enter there?



It is the opposite of this plane of exploitation. In Milton’s *Paradise Lost*, Satan said, “It is better to reign in hell than serve in heaven.” But we shall experience just the opposite: “It is better to serve in heaven than to reign in hell.” To serve in

heaven is highly superior than to reign in hell.

The question of energy and power is important in the mortal world, but in the constant and eternal world, this sort of energy has no value. That plane is composed of eternal substance. It is not like this troubling plane which is always breaking, always disappearing, always disappointing, and full of treachery. That divine plane is constant. Life goes on there without any need of food, rest, or medicine. There is no need of the labor to earn bread in that

higher realm. All these things are not necessary in a plane of reality where everything is permanent and of eternal value. All these problems which are making us madly busy are easily eliminated in one stroke. That is the nature of that plane. And if we realize that we are members of that plane, then the question becomes, what to do? How to approach the higher realm? That will be our problem. We cannot force our entry there; we must be granted a visa. We cannot master that finer realm — we must allow ourselves to be utilized by it. In other words we must come to the position of slavery. We shall have to realize that mastership here in the mortal world is a curse, and the slavery in that higher world is a boon.

And the *Bhagavatam* will help us in our progressive march towards that higher plane.

*nasta-prayesv abhadresu  
nityam bhagavata-sevaya  
bhagavatya uttama-sloke  
bhaktir bhavati naisthiki*

The impure, undesirable things within us are going to almost completely vanish, almost disappear by our serving association with the *Srimad-Bhagavatam* and the devotee. *Sadhu* and *sastra*. In this way, the continuous connection with Krsna consciousness comes out from within. The interrupting elements that result from renunciation and enjoyment vanish, the covers vanish, and the continuous flow within, the connection with pure Krsna consciousness comes out.

There are two covers: the exploiting tendency and the renouncing tendency — *karma* and *jnana* — the exploiting spirit and the tendency for knowledge that leads to liberation. They are not proper elements of our soul, of our real entity; they are only covers. And by our serving association with the *Srimad-Bhagavatam* and the devotee, they are uncovered, and the continuous flow of Krsna consciousness within comes out.

*Nishta* means *nairantaja*, continuous.

*adau sraddha tatah sadhu-  
sango’tha bhajana-kriya  
tato’nartha-nivrttih syat  
tato nistha rucis tatah*

When the covers are removed, then we find that inner continuity of flow with Krsna connection within us, and *naisthiki-bhakti* appears. That is completely

clear, cleansed. *Bhaktir bhavati naisthiki*: then on the basis of *nistha*, that is, the continuous flow, then further progress is made on the positive side — *asakti*, attachment, then *bhava*, spiritual emotion, then *prema*, divine love — in this way the inner aspect of devotion will gradually come out. And we shall be able to dive deep into reality. As we give up the external covers, and we experience what may be considered as death in the external world — die to live — we shall enter into the inner side more and more.

**Question:** This verse says *nasta-prayesu abhadresu*, that the impurities are almost destroyed. Why not completely destroyed?

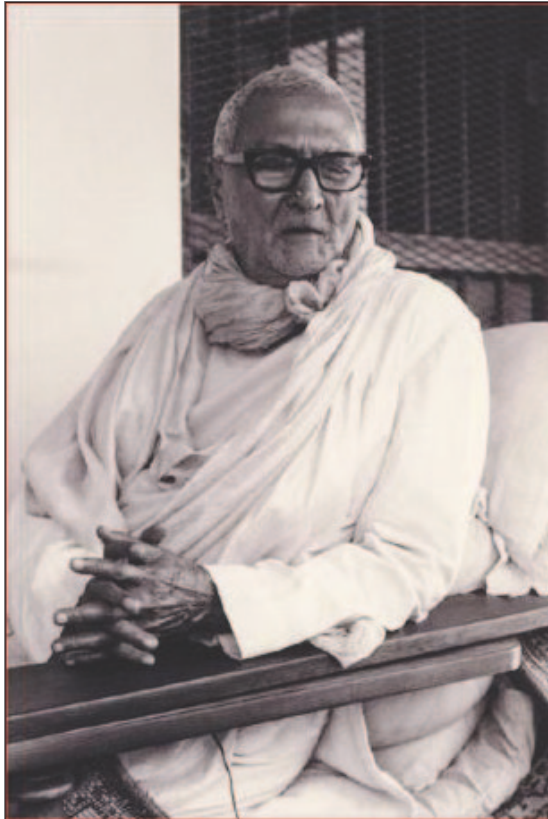
**Sridhar Dev Goswami:** That means it happens gradually. The gradual development is described there. *Nasta prayesu* means when the stage of *nistha* comes, when all the undesirabilities are almost finished, then we can have a real peep into the thing. Just as before sunrise, when there is twilight in the early morning, the sun is not there, but the darkness has been dispelled. The darkness has been mainly removed, but the sun has not yet risen. In the same way, the *Bhagavatam* is describing how *bhakti* develops gradually. *Nasta-prayesu*: it is not finished immediately; there is a gradual process of *sadhana* — a means to an end. And gradually, slowly, according to the capacity of the devotee, and the endeavor, the *sadhana*, one's *bhakti* develops. When darkness has almost been finished, the non-gentle, abnormal, exploitative symptoms like the mean attempt to exploit the environment, gradually disappear. And in this way, gradually, we make further progress. It is not that all of a sudden — in one stroke — everything is cleared. Rather, according to our *bhajana*, our *sadhana*, our attempt, the undesirable elements will gradually vanish, go away. And by different stages we shall reach the goal. These stages have been

described by Rupa Goswami as follows in his *Bhakti-rasamrta-sindhu* (1.4.15-16):

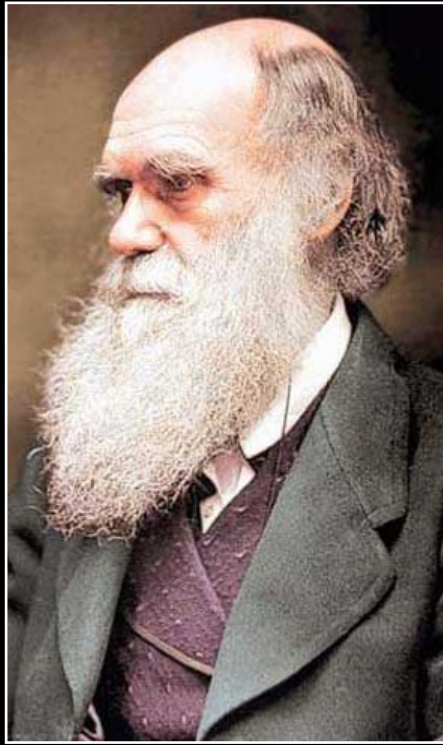
*adau sraddha tatah sadhu-  
sango'tha bhajana-kriya  
tato'nartha nivrttih syat  
tato nistha rucis tatah  
athasaktis tato bhavas  
tatah premabhyudancati  
sadhakanam ayam premnah  
pradurbhave bhavet kramah*

“In the beginning there must be faith. Then one becomes interested in associating with pure devotees. Thereafter one is initiated by the spiritual master and executes the regulative principles under his orders. Thus one is freed from all unwanted habits and becomes firmly fixed in devotional service. Thereafter, one develops taste and then attachment. This is the way of *sadhana-bhakti*, the execution of devotional service according to the regulative principles. Gradually spiritual emotions manifest and intensify, then finally there is an awakening of divine love. This is the gradual development of love of Godhead for the devotee interested in Krsna consciousness.”

Rupa Goswami says that *nistha* means “continuous connection.” After *nistha*, the mundane negative side is eliminated, and then, in the positive side, we may make progress. Then, after this there are the higher stages: *asakti*, *bhava*, and *prema*. Within *prema*, there are also different stages: *sneha*, *mana*, *raga*, *anuraga*, *bhava*, *maha-bhava*. In this way *bhakti* develops to the topmost plane, *maha-bhava*. *Maha-bhava* means Radharani. That supermost intensity of *bhakti* which is not found anywhere else is found only in her. That is called *maha-bhava*. In this way, *bhakti* — divine love — develops in different stages up to the highest level.







# Subjective Evolution of Consciousness

## *THE PLANE OF MISCONCEPTION*

by Sridhar Dev Goswami

We should understand that we are living in the plane of misconception. The whole thing is false. It is all a part of illusion. Within the world of illusion, some thing may have its place, but when we deal with the real truth, however, we will conclude that everything here is like a dream. This whole world is like a dream, a misconception. Any part of this world will therefore also be misconception. What is real, what is truth, will become apparent when a thing is judged in connection with the real world. The association of saints who have a genuine connection with spiritual reality promotes this transaction.

What is real and what is unreal? Whatever has a connection with the real self, with the soul, is real. Soul is consciousness in the world of pure consciousness. Whatever is connected with the mind in the mental world of false ego is all false. A part of the false is also false, extremely false. But it has got its negative utility.

Everything is true only by having connection with the Absolute Truth. Everything is there in the absolute. So the finite cannot produce anything which is not in the infinite. The finite world, therefore, is rather a shadow or a perverted reflection of the whole truth.

The foundation of my argument is as follows: Caitanya Mahaprabhu explained that while Sankaracarya has denied the existence of this perverted reflection, we cannot dismiss it.



If it does not exist, then why has Sankara come to preach Vedanta? Illusion means “this is not that.” One thing may appear to be some thing else. An illusion is not what it appears to be, but it is not nonexistent. In that way it is real. It has its existence.

Within the real world which is created by the help of the Lord’s internal energy, *svarupa-sakti*, this world of misconception has no place. But in a relative way, the conditioned world has an indirect relationship with the unconditioned world. So *maya* is existing. In that sense it is true. But it is false in that it cannot give you the desired result you are searching after. In that sense it is all false.

**Dr. Marchetti:** Vaisnavism says that this material nature is real as a reflection. But it is not real as the absolute reality of the spiritual world. Could you explain?

**Sridhar Dev Goswami:** Reality is composed of unreal substance and real substance. We may see it like that. This is the world of misconception. Misconception means “I think something is mine, but really it is not mine.” Everything belongs to the Absolute. Everything belongs to him. But we say “it is mine,” and we quarrel with each other.

Actually, everything within this world is the property of another. But as a result of misconception, we fight with each other and so many reactions result from that fight. The difficulty is that the soul is entangled in this mock fight. Otherwise this world of fighting and misconception has no value. But the dust of spirit, a very infinitesimal part of the spiritual reality, is entangled in this world and concerned with this world of mock fighting. Without the spiritual energy within this world, nothing would remain. A magician's sleight of hand is all based on misconception. It is false. Still we are perplexed by his tactics. That is also true. A magician or hypnotist can show what is not real to be real, and yet while we are under his spell we cannot deny its reality.

Everything, including our own self, belongs to Krsna. But the difficulty arises when we see something other than Krsna — separate interest. The consciousness of separate interest is the root of all evils. We are one with Krsna, but whenever the seed of separate interest sprouts, and we think we have some separate interest, that we are not included in the interest of Krsna, that is the root of such misconception.

*bhayam dvitiyabhinivesatah syad  
isad apetasya viparyayo smrtih  
tan-mayayato budha abhajat tam  
bhaktyaikayesam guru-devatatma*

In this way, the scriptures have given a diagnosis of the disease or concoction of false conception. We are living in a fool's paradise. And the very beginning of material existence that we can trace is at the inception of a separate interest. The first deviation from *advaya-jnana* is a conception of separate interest.

**Question:** How can we know what is actually real?

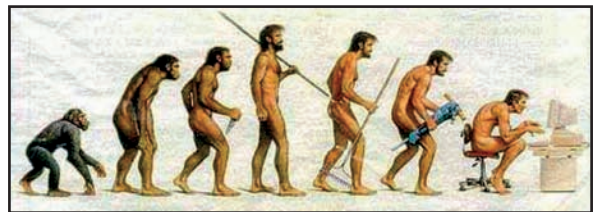
**Sridhar Dev Goswami:** The scriptural name is *sraddha*, or faith. That is the developed state of *sukrti* or spiritual merit. When our faith is developed, it leads us to *sadhu-sanga*, the association of saints. The agents of the divine world, who are in the plane of reality — the *nirguna* wave beyond this world of creation — come to establish some connection with reality in our soul. That is the deepest element. The connection with saints produces faith, and faith can see reality.

There is a world which is only approachable by faith *sraddhamayo'yam loka*. Just as color is seen by the eyes and sound is perceived by the ear, that world

can be perceived only by faith. Only faith can see and feel it. The Supreme Reality cannot be perceived with any other senses. Faith is the real function of the soul and that is awakened by the agents of Vaikuntha, the saints. By faith one's association with saints increases, and by this transaction the culture of reality takes place. Gradually this process makes us become fully conscious. At that time we realize that this world in which we are living is all transient and that our home is elsewhere. Our real home is located in the world of pure consciousness.

**Question:** Is that the same process by which the materialist sees this world as real?

**Sridhar Dev Goswami:** No. Realization of spiritual reality is independent of all material contamination or misconception. That injection into our soul is given by Vaikuntha, by the eternal associates of Vishnu. Perceiving spiritual reality is the function of the soul, not of the material ego or senses. It is independent of that. When a patient is unconscious, the doctor gives him an injection. Then consciousness comes and after that he can cooperate with the doctor by describing his symptoms. But before one can cooperate with the doctor, the doctor does different things to help the unconscious patient. In the same way, when we are fully engrossed in our material engagement, the saints from the higher plane of reality act like doctors to inject some understanding of divinity into our consciousness. In this way they try to awaken our spiritual self-interest, our consciousness of the soul.



**Dr. Singh:** Once Bhaktivedanta Svami Maharaja asked us to prove that matter comes from life, by using science. I didn't know how to start. How can we prove that matter comes from life?

**Sridhar Dev Goswami:** The definition of evolution given by Darwin is that life comes from the fossil. But we say just the opposite. Evolution from inside of consciousness is the cause of our seeing the different things of this world. The evolution is from within. Evolution is not from the outside, as we might ordinarily think. This is the teaching of Vedanta. Reality does

not develop from imperfection to perfection; it is only that a part of the perfection seems to be imperfect. To theorize that the imperfect is producing perfection is ludicrous.

It is far more reasonable and easy to conceive that a part of the perfection has somehow become imperfect. It is perceived by us to be imperfect. That is the natural and more reasonable conclusion. We have to accept something of what Darwin says but where does the fossil come from? And that the fossil can produce the infinite is a foolish idea.

The body is amazing the doctors with so many wonderful phenomena. They cannot fathom so many questions. How is it built? How are consciousness, intelligence, and genius centered in the brain? That wonderful thing which we find in the brain, the thought of the genius, is not produced by a material thing. The starting point must be the wonderful thing. We say that really exists — that wonderful thing, the source of all wonders.

Everything is full of wonder. If we analyze the atom, we will be in wonder. Only we impose limitations. But when we analyze the atomic parts of wood or stone, we will be in wonder. The infinite is everywhere. Perfection is everywhere. The trouble is that with our limited thinking we have produced a world of limits. But we who are captured by the “scientific” way of thinking are not ready to admit that. That is the puzzle. From the biggest to the smallest, from the lowest to the highest, everything is wonderful. But we won’t admit that. We will go to the fossil and say that the fossil is producing everything. But what is that fossil?

**Dr. Marchetti:** But how can we prove to the scientists that matter comes from life? These are philosophical arguments. The scientists will say, “What is the utility of philosophical arguments?”

**Sridhar Dev Goswami:** In the beginning of the electric generation, the famous scientist Michael Faraday gave a public demonstration of the power of electricity. In one experiment, Faraday generated electricity. With the current generated by his dynamo, he was able to move some pieces of paper. After watching the wave of current move some pieces of paper, a lady challenged him, “What is the utility of your electricity, Dr.



Faraday?” And he said, “Madam, would you please tell me, what is the utility of a newborn babe?”



Is death philosophical? Death is there to frustrate all other things if you don’t take shelter in philosophy. Philosophy can only face the greatest enemy, death.

And death is not limited to a particular thing; it will include the whole world. The sun, the moon, the stars, this globe, and everything else will vanish in due course of time. The scientists themselves tell us so. If we want to live beyond the plane of death, philosophy will help us have an eternal life of eternal peace. Only philosophy can give us that.

All these sciences of technology are simply an attempt to increase the glamour of this life. They are all enemies of the soul, deadly enemies. All of them lead us but to the grave. The grave is true and only dealing with the grave philosophically will relieve us. Otherwise, we are all finished. These materialistic scientific conceptions are cunning enemies surrounding us. They are tempting us, “Live in the material world; We shall help you.” This is illusion.

**Dr. Marchetti:** When you said that the world is in the mind, isn’t that idealism?

**Sridhar Dev Goswami:** Berkley’s idealism: not that we are in the world, but the world is in our mind. Of course in a higher sense, we are not concerned with the mind. The material mind is also a part of the world of misconception. The soul is living in the soul region, and the mind, ego, and everything else is dependent on the soul.



If the soul is withdrawn, nothing remains. Here also, if life is gone, the body will perish.

If the souls are withdrawn from this world, nothing will remain. The soul is reality. This mundane reality is to be described as a misconception which appears in the soul much the same as a dream appears in a person. The soul himself is unconcerned. And if the soul is returned to the world of soul, and consciousness is withdrawn from this plane, nothing remains. It is all darkness. And it cannot exist independently. So this material reality is created by the soul's revolting attitude, his unhealthy attitude.

Just as a man who is in a diseased condition experiences delirium. Disease is the cause of delirium. The delirium itself has no independent existence. The hallucination does not exist outside his mind. If you want to remove the delirium, you must treat the patient. His brain needs medicine. When he is treated, the world of delirium vanishes. In a similar way, the soul has developed a diseased condition, and he suffers from delirium. And as the collective souls are suffering collectively from this delirium, this world appears real. Collectively so many misguided delirious persons are being connected or disconnected with this material reality.

**Dr. Murphey:** Then what is the difference between the world of reality and the material world?

**Sridhar Dev Goswami:** This material world is only a reflection of complete reality; it is a conception we find exciting to us. Compelled by local interest of enjoyment, we have embraced this creation of the Lord. With our spiritual vision covered by the spectacles of prejudice, we are seeing things in a distorted way. The Lord is not to be blamed; our spectacles should be blamed. Everything is meant for him; the only difference in our vision of reality is that our vision is tainted with the colors of our different kinds of selfish interests. And the different planetary systems in the material world are different sub-planes in the plane of enjoyment or exploitation. Our distorted consciousness is the source of the different colors of the things that surround us.

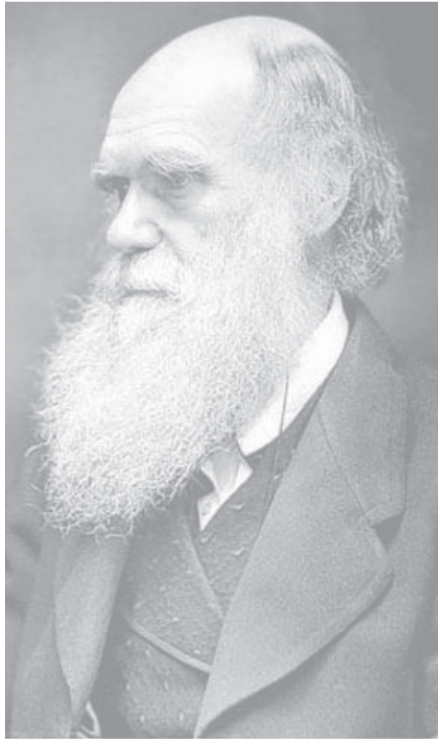
And when these illusory conceptions are fully removed, we will find that everywhere it is Krsna and

Krsna only. And when the conception of Godhead as Lord and Master is removed, then receiving his impetus of activity from Krsna consciousness, the soul will find himself in Vrndavana. But in order to attain that stage, we must have no consciousness of this body, or the mind, or the country conception, the nation conception, or the globe conception. All planes of limited conception must be crossed. From soul to Supersoul, the soul must enter deeper and deeper into reality. You will find everything there. There you will find that Radharani and Krsna in Vrndavana is not false. It is neither poetry nor imagination.

The only requirement is that we must develop our deeper nature, our self-identification, through self-determination. In Hegel's language, self-determination is the fulfillment of all of us. Self-determination in the Vaisnava conception means *svarupa-siddhi*, spiritual identity. Who am I? What is my deeper self beyond my mind or my intelligence? Where am I? What is my inner self-interest? I must enter the plane of reality, I must get back my proper self. And in Krsna's connection I will enter the environment and see what the world really is.

If I am given some wine or some poison, then I shall become beside myself. I shall see things in a distorted way. I will be unable to recognize my sister or mother and actuated by animal nature, I will see everything as an object for my enjoyment. The crude tendency of lust will cover my vision of everything. Then again when I am sober, I shall see the same things, but my perception of them will be changed.

In this way we must be prepared to go deeper beneath the surface reality, and find out who we are, what is our real self-interest. We should try to see the paraphernalia of reality according to our genuine self-interest. Through self-determination we must learn to see things the opposite of the way we are seeing them at present. We must try to understand how to find ourselves. And by surrendering ourselves to Krsna's interest, then we shall try to go back home, back to Godhead.





# Subjective Evolution of Consciousness

*THESIS, ANTITHESIS & SYNTHESIS*

by Sridhar Dev Goswami

**Sridhar Dev Goswami:** What subjects are you studying?

**Student:** Philosophy and religion.

**Sridhar Dev Goswami:** In which university?

**Student:** San Francisco State.



**Sridhar Dev Goswami:** You are a student of religion and philosophy. Have you studied Hegel? Hegel's philosophy is sometimes described as panentheism. Panentheism proposes that God is present in all things, but in contrast to pantheism it affirms that God is also an independent being above and beyond all things. Hegel is also known for perfectionism. He says that the nature of the absolute is both conditioned and unconditioned combined. The truth develops through thesis, antithesis, and synthesis, and by this method everything progresses. According to Hegel, the absolute is by itself and for itself. And he also used the German equivalent of the expression "die to live." These were his chosen expressions.

Such expressions are very useful for those in the theistic line. If you want to live a progressive life you will have to die as you are. Your ego must be

dissolved and then the real inner or finer self will come out. This is a good philosophy to have appeared amongst the Westerners.

The concept of die to live comes in the line of Vaisnavism. Hegel has also said that the Absolute is "by Himself" and "for Himself." "For Himself" means that the Absolute Truth is the Supreme Enjoyer. In the *Bhagavad-Gita* Krsna says:

*aham hi sarva-yajnanam  
bhokta ca prabhur eva ca  
na tu mam abhijanati  
tattvenatas cyavana te*

This is the most vital point to establish God as a person. He is the enjoyer. If anything is enjoyed, the enjoyer will hold the supreme position. This cannot but be. Everything is meant for his enjoyment. And he is the supreme. "By Himself" means that the absolute is supreme — everything is meant for his satisfaction. This is a necessary truth; it is not questionable. And also, his existence is subjective.

No object can exist without a subject. No thing can exist without a thinker. There must be a thinker. For example, what is a fossil? As we examine it we observe color and the hardness of stone, but these qualities are simply thoughts within us — a thinking stage.



What is color? A concept within our consciousness. So any kind of existence presupposes a subject or consciousness. This is the crux of the argument. No object can exist without a subject. And no subject can exist without an object. There is the thinker and the thought. If there is a thinker, he must be thinking something — so an object is there. And if there is an object, then whatever attribute it has must be reflected in the consciousness of a subject. Otherwise no existence is possible. Do you follow?

**Student:** Yes. It is very clear.

**Sridhar Dev Goswami:** These are all Hegel's original conceptions, his contributions to philosophy. He was a very important philosopher. And for a Western thinker, his philosophy was very near to that of the Eastern thinkers. In many respects, Hegel's philosophy is very close to Ramanuja's philosophy.



Of course, there are many important Western philosophers. Kant's philosophy is very influential. Are you familiar with Kant?

**Student:** Yes.

**Sridhar Dev Goswami:** Have you studied Descartes?

**Student:** Yes, somewhat. He said, "I think, therefore I am."

**Sridhar Dev Goswami:** He is said to be the father of modern philosophy. Then there is Berkley; he is an extreme subjective thinker. Locke, Hume, Mill, Berkley, Johnson, Kant, Hegel — all these are important Western philosophers.

**Student:** I prefer to study Eastern philosophy.

**Sridhar Dev Goswami:** What kind of Eastern philosophy do you study? Sankhya? Yoga? Nyaya? Vaishesika?

**Student:** Zen Buddhism and Taoism — Chinese philosophy.

**Sridhar Dev Goswami:** Confucius came from China. Before Buddhism, Confucius was present in China. Then gradually moving West we find Socrates, Plato, and Aristotle. Have you studied them?

**Student:** Yes, I have studied them a little.

**Sridhar Dev Goswami:** The concept of parallelism forwarded by Plato is also accepted in Vaisnava philosophy to a certain extent. According to Plato, the forms we experience are a reflection of ideal form. This was his understanding of how the forms we perceive are a perverted reflection of the original spiritual world. That is the theory of parallelism of Plato.

**Student:** Can you please explain more about the parallels between Hegel's philosophy and Krsna consciousness?

**Sridhar Dev Goswami:** In Hegel's philosophy, truth progresses through thesis, antithesis, and synthesis. The truth moves in a crooked way. In the philosophy of Krsna consciousness, the word *vilasa* means "playful movement." You may take it to mean that the Absolute is absorbed in play. And that is expressed through crookedness. *Aher iva gatih premnah svabhava-kutila bhavet:* A serpent moves in a crooked way; similarly, the movements of the Absolute are not straight, but crooked. *Vilasa*, or the conception of *lila* — the divine pastimes of the Lord — is something like that. This is similar to Hegel's opinion in which the truth develops in a crooked way through thesis, antithesis, and synthesis. There is thesis, then its opposite, and then again they unify and create a new thesis. Then again antithesis, and again a greater harmony in synthesis.



In this way truth is dynamic; it develops and makes progress. Hegel was the deepest thinker among the Western philosophers. Of course, other German scholars like Max Muller were also deep thinkers. In fact, Germany had such great appreciation and fondness for Indian culture that certain ancient books that can no longer be found in India may still be found in Germany. The Germans were never the colonial masters of India, but still they were extremely inquisitive to know about the cultural books of India. In spite of the war, many rare, ancient Indian books that can no longer be found in India are still safely preserved in Germany.

**Student:** I had a question regarding the philosophy of Berkley. According to Berkley the world is in the mind. It seems that the Berkley theory tends to negate the ex-



istence of this world. It tends to argue against any type of reality.

**Sridhar Dev Goswami:** But Hegel has come to relieve Berkley somewhat. Someone may challenge Berkley: “I may think that there is a hundred dollars in my pocket — but if I search my pocket, will I find it there?” Hegel says that it must be there somewhere in the Universal Mind. That is Hegel’s standpoint.

**Student:** Then it is present somewhere.

**Sridhar Dev Goswami:** And that wave comes gradually. This was my argument regarding Bhaktivinoda Thakura’s *Jaiva Dharma*. Have you read that book?

**Student:** No, I’m not familiar with that book.

**Sridhar Dev Goswami:** In that novel, the characters who speak on spiritual life are apparently imaginary. The different persons in that book — Brajanatha, the Babaji, and others — seem to be imaginary characters discussing spiritual life. But I once explained that what is in Bhaktivinoda Thakura’s mind — what he has written in *Jaiva Dharma* — is not imagination. At one time or other, the persons and events he mentions must have existed, and these things will again have to come into existence. Do you follow?

**Student:** I’m not sure.

**Sridhar Dev Goswami:** What Bhaktivinoda Thakura saw in his mind must exist somewhere in this world, sometime in the future, or sometime in the past. That very thing he describes in an apparently fictional way actually existed. Let me give you an example. When I speak, the sound moves at a certain speed. That sound can be heard later in another place. The same is true in the case of light, isn’t it?

**Student:** Yes.

**Sridhar Dev Goswami:** So Sri Caitanyadeva, with his divine sound, chanted here and performed *sankirtana*. He preached and the velocity of that divine wave is still going on. And now in some place in a universe, it may be found. Do you follow? Am I clear?

**Student:** I think so.

**Sridhar Dev Goswami:** The velocity of that light is going on; it is not lost. In the same way, the sounds I am now pronouncing are not lost; they are trav-

eling for some distance through time and space. Whatever I see — that wave of light — is also traveling. The radio broadcasts from World War II — that war period, the war vision — is also there in space somewhere, vibrating at a certain rate. That vibration was once here, but now it somewhere else. It is floating in some plane of reality in time and space. If I throw a flower into the waters of the Ganges, then it is carried away by the current. If I can move with more speed than the current, I can find that flower somewhere else far away in the river. So the velocity of light — eyesight velocity — moves 186,000 miles in a second. If it is possible to move faster than the speed of light, then we can overtake the wave of visual events that are carried by that light. It is possible.

In a similar way, what exists in the plane of imagination now must have existed in reality at some time in the past or future, but it is now found somewhere else. It is said that the pastimes of Krsna move from one universe to the next in the same way that the sun moves from one time zone to the next. Now morning is here; five minutes from now, sunrise and morning will take place somewhere else. In this way, it is always sunrise somewhere. Here or there; the rising sun is to be found somewhere on the Earth. If we can move at the speed of the sun, then for us it will always be sunrise.



What came within the mind of Bhaktivinoda Thakura, what he may have described in an apparently fictional way, must exist somewhere in the plane of reality, in the past or in the future. It is reality, not imagination.



Everything is real. It is not imagination. What I see in my dreams is now false. But in some former lifetime, in my past I experienced that reality. I had that sort of vision, and that has come to me now as a dream. It was a fact, and only now is it a dream.

What is in the mind may be abstract to us, but in the Universal Mind, everything is concrete. Whatever exists within the plane of imagination must be, and can be traced somewhere.

**Student:** Although everything is, in one sense, in the mind, still, when I feel hot and I find that others also feel hot, I conclude that it is hot. It seems that according to Berkley, this is just going on in my mind.

**Sridhar Dev Goswami:** You have to understand the fundamental truth that what is hot to you may be a cold environment for some other organism. It is a question of degree. Our experience of coolness and heat depends on our degree of tolerance. What is cool to us may be hot to another. In this way we have to adjust with the idea of reality; what is hot to me may be cool to another. Reality is one thing for human beings; it is something else entirely for insects, worms, and other organisms. What is bright to us is dark to another. What is bright to an owl is dark to us. Do you follow?

**Student:** Yes.

**Sridhar Dev Goswami:** Creation is of a variegated nature. The experience of our eyes and ears is different from the experience of others whose senses are different from ours. What we can hear, others cannot hear. But our ears cannot detect subsonic or ultrasonic sounds. Our ears can detect only a limited spectrum of sound. Our vision is also limited. We can see neither infrared nor ultraviolet light. Our feeling, our sense of touch, is sensitive to an extremely limited degree. So all realities are co-existent; reality is adjusted according to our own experience. Something feels cool to me; that very thing is hot to another. In this way it is “hot” or “cold” according to our subjective experience. And so “our reality” will exist. So what is perceived by the mind is not imagination; it is reality. What is imagination to me is reality to another. The rising sun and the setting sun can be perceived simultaneously from different angles of vision. Within the whole creation all experience is co-existent.

What you now feel to be cool you can easily feel to be very hot by the will of the Supreme Lord. By his will, everything is possible. Everything depends on him. He is the ultimate cause. What you consider as intolerably hot, you will be forced to feel as intolerably cold in a minute, if God so wills it. Everything depends upon his will. And that is coming here in either a modified way, in a general way, or in a particular special way according to his whim. In this way there may exist a gradation in how he manifests his will, but his will is the prime cause of everything. And

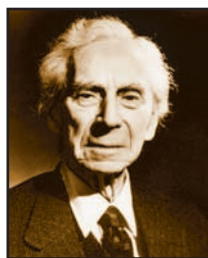
he is above law. We must be conscious of that. Then we will be able to explain anything.

**Student:** So he is something like a hypnotist.

**Sridhar Dev Goswami:** Yes, he is a hypnotist. Everything depends on the sweet will of the Absolute. Everything is designed and destined by him. Everything is in his hands. The absolute center is by himself and for himself. He alone knows the purpose of everything. No one else. He alone knows his ways; no one else can know his ways. We may know only as much as he wants us to know. And that also can change by his sweet will. So he completely free, an autocrat.

And that supreme autocrat can be captured only by love, not by knowledge. His ways are uncertain. How will our knowledge help us to understand him? Knowledge may be useful in understanding a thing if it follows a fixed law and has a fixed nature. But the Absolute is an autocrat; at any moment he can change all the laws. Then how shall we know the infinite? In trying to understand the Absolute Truth, all our previous experience becomes null and void. At every second he can show us a new color. No degree of knowledge can make any clear statement of truth about God. Knowledge is futile in regard to the infinite. First he is moving in one way, then another. On what basis will we make our calculation? His position is always changing by his sweet will.

His heart can be captured only by surrender. Through surrender alone we may please him. And if he likes, he may make himself known to us, but even then we may only know that portion of his personality, only that much about him, that he cares to reveal to us. The designer of reality is an autocrat; he is above law. We must consider this carefully. He who is designing this universe is above law; he is not under the jurisdiction of any law; he does not have any fixed nature. At any time, he may change his position according to his sweet will. And whatever he wills, that must come about.



**Student:** Bertrand Russell says that if there is a God, he must not be good. God himself is not bound by law, but if we violate the law of God, we suffer. If God were good, he could have created all the souls of this world above law.

**Sridhar Dev Goswami:** If he says that, then that means that he wants to become the God of Gods. To Mr. Russell we say, “The Absolute Truth is unknown and unknowable. How can his ways be known? He is an autocrat. And you want to impose your crooked, meager, finite experience upon the Universal Truth! Your experience is the limited of the limited. And you want to thrust that small experience onto the unlimited whole? It is a most deplorable argument based on an assertion of faulty knowledge. From your finite position you want to know the measure of the whole infinite, and then criticize him. What is the foundation of your criticism? From what basis are you approaching the infinite to criticize him? How much do you know about him?”

“If you see a mother chastising her son, and you see only that portion of her behavior, you may conclude that she is very cruel. But you do not know the affection with which the mother cares for the child. You are not aware of how she feels for his future good. You are unaware of all this. You may say that she is punishing the son and that she is therefore cruel, but you do not know the context of her behavior. Every incident must have its future and its past, and you must carefully trace that out before passing any judgement or making any remark.”

“In your case, how much are you limited in relationship to the infinite? To what extent can you understand him? Your capacity for knowing the infinite is very meager. No one should attempt to make any remark about the infinite will on the basis of his own limited capacity. That is injudicious, and suicidal to a man of understanding.”

**Student:** I have heard it said that according to Vedic ontology, the soul is marginal. Do the *jiva* souls in the marginal or *tatastha* position have knowledge that there is an upper and a lower world, that there is suffering in the material world and divine service in the spiritual world?

**Sridhar Dev Goswami:** A *jiva* soul has adaptability of both sides; marginal means “endowed with adaptability towards both the spiritual and material worlds without participation or any experience of either.” The marginal soul (*tatastha jiva*) has only seed adaptability towards both. He is situated in the margin between the spiritual and material worlds, and the margin strictly means that one is in a position to analyze adaptability. He can go towards the spiritual world and he can come towards the material world.



The possibility of either is there in potentiality, but he is left to exercise his freedom. Because the soul is a conscious unit, he has free will. Freedom is inseparable from consciousness. A conscious unit and freedom are one and the same. Conscious atom means endowed with freedom. Without freedom, it is matter.

**Student:** The soul has freedom, but does it have knowledge of the different aspects of reality?

**Sridhar Dev Goswami:** Because the soul is very small, his freedom is also imperfect; a soul in the marginal position is very vulnerable. Freedom does not mean absolute freedom. Because the soul's existence is small, his freedom is defective — there is the possibility of committing a mistake. Freedom of the minute soul does not mean perfect freedom. Complete freedom would be perfect reality, but the minute soul is endowed with the smallest atomic freedom. This is the position of the atoms of consciousness, and this is why they are vulnerable. They may judge properly or improperly; that is the position of those who are situated in the marginal position. If the soul were not endowed with the freedom to determine his position, we would have to blame God for our suffering. But we cannot blame God. The starting point of the soul's suffering is within himself.

The suffering of the soul in bondage is similar to the suffering of one who is addicted to a drug. Before one begins taking intoxication, the first step towards addiction is curiosity. Then after one has taken intoxication for a certain amount of time, he cannot do without intoxication. Our attachment to *maya*, or misconception, is like addiction to a drug. At first we are curious, but when we become habituated to the intoxication of misconception, we are forced to continue using that intoxicating substance. Before

beginning the habit it might never have begun. But once you have begun, as much as you cultivate an addiction, the intoxication will devour you.

The first cause of our entanglement with material nature was our mixing with Maya in a play of curiosity. But as much as we make friends with her, so much she comes to devour us. In this way we are in the clutches of *maya*. But in the beginning our involvement was very slight, like one experimenting with drugs. The beginning of our play with *maya* involved the voluntary misuse of our free will, and that has led us to this present stage where *maya* has devoured us. *Maya* means our attraction for intoxication: where there is love of exploitation, there is *maya*. And truth is the opposite of exploitation. Truth is found in dedicating everything for the center, for Krsna.

**Student:** If in the marginal position (*tatastha*) the soul has exposure to both reality and illusion, why doesn't he have enough discrimination to come to the right path?

**Sridhar Dev Goswami:** He has no real depth of discrimination; only a little discrimination. But it is there. However small it may be, it is there.

**Student:** Can he also go to the spiritual domain of the Lord?

**Sridhar Dev Goswami:** Yes, and some souls do go to that side. Some go to that side, and some come to

this side. The soul has independence. Not all come to one side or the other. Then there would be some compulsion. But there is no compulsion. It is a free choice; some are coming to this side, and some are going to that side.

**Student:** Is there any knowledge that can come from outside, or is it possible for the soul in the marginal position to get help from an outside agent?

**Sridhar Dev Goswami:** At every stage in our existence, outward help is present. But in the undifferentiated stage of spiritual existence in the marginal plane, only higher agents can help. An ordinary saintly person cannot detect the defects or transcendental qualities in the undifferentiated soul. Such help is the work of a higher personality. Only God himself or an exalted or empowered saintly person can help a soul in that condition. Suppose you have a newborn baby. Only a doctor who is a specialist with advanced knowledge can treat the newborn. But when the child is a little grown up and can talk, he can explain the symptoms of what is painning him. At that time, an ordinary doctor may help him. Ordinary saints cannot help us in every stage of life. They can guide us and help us only up to a certain standard. But the Lord himself and those highly empowered saints who are closely connected to him can help us in any stage of our spiritual development.



यस्ते सखिभ्य आ वरम् ॥ उत ब्रुवन्तु नो निदो निरम्यतश्चिदारत । दधाना इन्द्र इद् दुवः  
 ॥ ७ ॥ उत नः सुभगाँ अरिर्वोचेयुर्दस्म कृप्यः । स्यामेदिन्द्रस्य शर्मणि ॥ एमाशुमाशवे भर  
 यज्ञश्रियं नृमार्दनम् । पतयन् मन्दयत्सखम् ॥ अस्य पीत्वा शतक्रतो घनो वृत्राणामभवः ।  
 प्रावो वाजेषु वाजिनम् ॥ तं त्वा वाजेषु वाजिनं वाजयामः शतक्रतो । धनानामिन्द्र  
 सातये ॥ यो रायो इवनिर्महान्त सुपारः सुन्वतः सखा । तस्मा इन्द्राय गायत ॥ ८ ॥ आ  
 त्वेता नि षीदतेन्द्रमभि प्र गायत । सखायुः स्तोमवाहसः ॥ पुरुतमं पुरुणामीशानं  
 वार्याणाम् । इन्द्रं सोमे सचा सुते ॥ स घा नो योग आ भुवत् स राये स पुरंध्याम् ।  
 गमद्वाजैभिरा स नः ॥ यस्य संस्थे न वृण्वते हरी समत्सु शत्रवः । तस्मा इन्द्राय  
 गायत ॥ सुतपात्रे सुता इमे शुचयो यन्ति वीतये । सोमासो दध्याशिरः ॥ ९ ॥ त्वं सुतस्य  
 पीतये सद्यो वृद्धो अजायथाः । इन्द्र ज्यैष्ठ्याय सुक्रतो ॥ आ त्वा विशन्त्वाशवः सोमास  
 इन्द्र गिर्वणः । शं ते सन्तु प्रचेतसे ॥ त्वां स्तोमां अवीवृधन् त्वामुक्था शतक्रतो । त्वां वर्धन्तु  
 मे गिरः ॥ अक्षितोतिः सनेदिमं वाजमिन्द्रः सहस्त्रिणम् । यस्मिन् विश्वानि पौंस्या ॥

मा नो मर्ता अभि ब्रुहन् त्रूनामिन्द्र गिर्वणः । ईशानो यवया वधम् ॥ १० ॥

युञ्जन्ति ब्रध्नमरूपं चरन्तं परि तस्थुषः । रोचन्ते रोचना दिवि ॥ युञ्जन्त्यस्य काम्या

हरी विपक्षसा रथे । शोणा धृष्ण नृवाहसा ॥ केतुं कृण्वन्नकेतवे पेशो मर्या अपेशते ।

समुषन्दिंरजायथाः ॥ आदह स्वधामनु पुनर्गर्भत्वमेरिरे । दधाना नाम यज्ञियम् ॥

वीढ्य चिदारुजलुभिर्गुहां चिदिन्द्र वह्निभिः । अविन्द उस्त्रिया अनु ॥ ११ ॥ देवयन्तो

यथा मतिमच्छा विदहसुं गिरः । महामनूपत श्रुतम् ॥ इन्द्रेण सं हि दृक्षसे संजग्मानो

अविभ्युषा । मन्द्र समानवर्चसा ॥ अनुवधैरभिद्युभिर्मखः सहस्वदर्चति । गुणैरिन्द्रस्य

काम्यैः ॥ अतः परिज्मन्ना गहि दिवो वा रोचनादधि । समस्मिन्वृञ्जते गिरः ॥ इतो

वा सातिमीमहे दिवो वा पार्थिवादधि । इन्द्रं महो वा रजसः ॥ १२ ॥ इन्द्रमिद्राथिनो

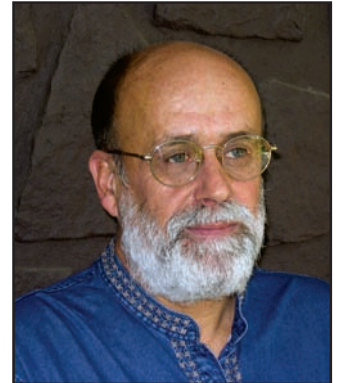
बृहदिन्द्रमर्केभिरर्किणः । इन्द्रं वाणीरनूपत ॥ इन्द्र इन्द्रयोः सचा संमिश्ल आ वचो-

युजा । इन्द्रो वज्री हिरण्ययः ॥ इन्द्रो दीर्घाय चक्षस आ सूर्य रोहयद् दिवि । वि

गोभिरद्रिमैरयत् ॥ इन्द्र वाजेषु नोऽव सहस्त्रप्रधनेषु च । उग्र उग्राभिरूतिभिः ॥

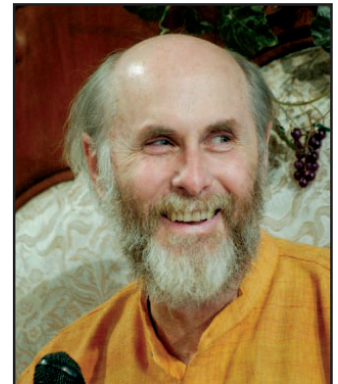
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