

# *The Science of the* **Rishis**

The Spiritual and Material Discoveries  
of the Ancient Sages of India



## **Vanamali**

*Foreword by*

*Pujya Swami Bhoomananda Tirtha Maharaj*





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# *The* Science *of the* Rishis

The Spiritual and Material Discoveries  
of the Ancient Sages of India

Vanamali



Inner Traditions

Rochester, Vermont • Toronto, Canada



*Dharmaaya Namaha!*

Salutations to the Eternal Law!



*Dedicated to*

*My dearest brother, friend, and companion, Mohan—*

*With deep gratitude for the innumerable ways  
he has served Vanamali for so many years.*

*Without him Vanamali Ashram would not function.*

# ***The Science of the Rishis*** \_\_\_\_\_

“Vanamali’s writing is a *Pancajanya*, inviting all *bharatas* to bask in the luminous wisdom of their venerable heritage. Mataji’s writing is a divinely inspired, ecstatic pilgrimage to the feet of India’s great *rishis*. Vanamali passionately illuminates the rishis liberating revelations as the Himalayan summit of human consciousness, with an unparalleled power to transform men and women into gods and goddesses!”

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“*The Science of the Rishis* is informative, inspirational, and a compelling read. I would recommend it to any serious student of Hinduism as well as a casual reader who is trying to broaden his knowledge.”

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“Vanamali is an outstanding teacher of Vedanta and an eminent scholar having dedicated her entire life for the cause of Sanatana Dharma. The book is a treasure for posterity.”

RAMA NARAYANAN, PRIVATE SECRETARY TO CHAIRMAN, PUBLIC ACCOUNTS  
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# Contents

[Title Page](#)

[Dedication](#)

[Epigraph](#)

[Bharat Mata](#)

[Foreword: Essentials of Hinduism](#)

[COMPREHENSIVE SCRIPTURAL VISION ABOUT LIFE AND SOCIETY](#)  
[KNOWLEDGE—THREE CATEGORIES](#)  
[WHY HINDUS WORSHIP SO MANY GODS](#)  
[THE PRESENT WORK](#)

[Introduction: The Scientific Vision of the Rishis](#)

[Chapter 1: The Rishis](#)

[\*Spiritual Scientists at the Dawn of Time\*](#)

[WHO WERE THE RISHIS?](#)  
[LIVING IN BRAHMAN](#)

[Chapter 2: The Vedas](#)

[\*Royal Road to Knowledge\*](#)

[THE AGE OF THE VEDAS](#)  
[THE BREATH OF BRAHMAN](#)  
[THE ONE AND THE MANY ARE THE SAME](#)  
[STRUCTURE OF THE VEDAS](#)  
[YAJNAS AND THE ENERGY FIELD](#)  
[THE PERFECT LANGUAGE FOR SCIENCE](#)  
[THE SIX SYSTEMS](#)

[Chapter 3: Brahman and Atman](#)

[\*The Wave Is the Ocean\*](#)

[EXPRESSING THE INEXPRESSIBLE: SAT-CHIT-ANANDA](#)  
[KNOWING THAT](#)  
[THE GREAT MANTRAS](#)

[HERE AND NOW LIBERATION](#)

## [Chapter 4: The Upanishads](#)

### [\*Revelations of Timeless Truth\*](#)

[ISHAVASYA UPANISHAD](#)

[KENA UPANISHAD](#)

[KATHA UPANISHAD](#)

[PRASNA UPANISHAD](#)

[MUNDAKA UPANISHAD](#)

[MANDUKYA UPANISHAD](#)

[TAITTIRIYA UPANISHAD](#)

[AITAREYA UPANISHAD](#)

[CHANDOGYA UPANISHAD](#)

[BRIHADARANYAKA UPANISHAD](#)

[SCIENCE APPROACHES THE UPANISHADIC REVELATION](#)

## [Chapter 5: The Puranas and Itihasas](#)

### [\*Legendary Sources of History, Psychology, and Science\*](#)

[THE NEED FOR DEVAS AND AVATARAS](#)

[RECORDS OF ANCIENT HISTORY](#)

[VISIBLE SIGNS OF THE INVISIBLE](#)

[CREATION, MAINTENANCE, AND DESTRUCTION](#)

[THE MEANING OF MYTHS](#)

[QUANTUM SCIENTIST RISHIS](#)

## [Chapter 6: Bhakti](#)

### [\*The Science of Devotion\*](#)

[THE KITTEN PATH](#)

[THE METHODOLOGY OF DEVOTION](#)

## [Chapter 7: Karma](#)

### [\*The Science of Action\*](#)

[NONJUDGMENTAL JUSTICE](#)

[MAINTAINING BALANCE](#)

[VEDIC GUIDEBOOK](#)

## [Chapter 8: The World of Maya](#)

### [\*Reality Is Not What We Think It Is\*](#)

[GOING BEYOND QUANTUM PHYSICS WITH SHANKARA](#)  
[CONSCIOUSNESS IS KEY](#)  
[CHITTA AND THE ZERO POINT FIELD](#)  
[NOT REAL; NOT UNREAL](#)  
[BURSTING OF THE COSMIC EGG](#)  
[LIBERATION FROM MAYA](#)

## [Chapter 9: Desha and Kaala](#) [\*Exploring Space and Time\*](#)

[THE IMPORTANCE OF MOTION](#)  
[THE MEANING OF NOW](#)  
[CYCLES OF ILLUSION](#)  
[CALCULATIONS OF TIME](#)  
[THE IMPORTANCE OF THE STARS](#)

## [Chapter 10: Vedic Astronomy, Astrology, and Mathematics](#) [\*Vedic Astronomy, Astrology, and Mathematics\*](#)

[THE POWER OF PRATIBHA](#)  
[EARLY MATHEMATICS](#)  
[NAKSHATRAS: SEEING STARS](#)  
[UNPARALLELED VARAHAMIHIR](#)  
[ARYABHATTA, INDIA'S GREATEST ASTRONOMER](#)  
[BHASKARACHARYA](#)  
[PLANETARY ENERGIES](#)

## [Chapter 11: Scientists of Hinduism](#) [\*Revealers of the Secrets of Creation\*](#)

[GREAT PHYSICIANS](#)  
[THE PSYCHOLOGY OF PATANJALI](#)  
[PANINI THE GRAMMARIAN](#)  
[OTHER SCIENCES](#)

## [Chapter 12: Mantras and Yantras](#) [\*The Power of Sounds and Symbols\*](#)

[SOUND ENERGY](#)  
[SYMBOLS FOR THE FORMLESS](#)  
[TANTRA: COMBINING MANTRA AND YANTRA](#)  
[SACRED SCIENCE OF DAILY LIFE](#)



[Chapter 13: The Goals of Sanatana Dharma](#)

[\*Experiential Science of Truth, Goodness, and Peace\*](#)

[THE BRITISH COLONIAL ASSAULT ON SANATANA DHARMA](#)

[THE SPIRITUAL BASIS OF SURVIVING AND THRIVING](#)

[LIVING TRUTH AND NONVIOLENCE](#)

[A UNIQUE VISION](#)

[AUM PEACE! PEACE! PEACE!](#)

[Appendix: Poems to India](#)

[Glossary of Sanskrit Terms](#)

[Footnotes](#)

[Bibliography](#)

[About the Author](#)

[About Inner Traditions • Bear & Company](#)

[Books of Related Interest](#)

[Copyright & Permissions](#)

[Index](#)



*Sri Ganeshaaya Namaha!*

Salutations to Lord Ganesha!  
Who removes and overcomes all obstacles,  
And grants success in every endeavor.

*GANASHTAKAM*

## ***Bharat Mata***

*Awake O Mother!  
The time has come to assert your rights!  
To open the veil of ages,  
To disclose your eyes,  
Filled with the wisdom of the ages,  
Your children are crying to Thee,  
Why are you silent?  
Queen of Beauty!  
Queen of Wisdom!  
Queen of the World!  
Uplift us who have fallen so low  
As to put artha before dharma,  
Who have renounced moksha  
And embraced kama.  
Help us, O mother!  
Deliver us from the greed that seems to bind us,  
Allow us to raise our heads once again  
And proclaim to the world,  
This is our land!  
The Holy Land!  
The land of the sages!  
The land of martyrs!  
The land that has given the world  
The knowledge of our Immortal Self,  
The knowledge to free us  
From the thrall of ignorance.*



# FOREWORD

## Essentials of Hinduism

Is Hinduism or Sanatana Dharma a religion, as such? Religion generally denotes a system of morality based on the concept of God. Sanatana Dharma is not something exclusively like that. It evolved in the Gangetic plains in prehistoric times, when the world had not seen or heard the word *religion* at all. To speak then of Hinduism or Sanatana Dharma as a religion is, to say the least, preposterous. But sometimes such references and statements do creep into the minds of people, and it becomes difficult to correct them.

This does not mean that no efforts should be made to amend such misperceptions. In fact, any society remains vibrant and creative only when it hosts thinkers who examine the misunderstandings and delusions of people from time to time and effectively administer corrective measures. We cannot blame any society for its wrongs. But it is inexcusable indeed if its thinking members do not take stock of the situation and strive to remedy them.

The word *dharma* does not have an English equivalent, although *righteousness* can be an approximate word to convey what *dharma* stands for. *Dharma* denotes the power or process of sustaining human life in all situations, in fortune and misfortune, favor and disfavor, prosperity and adversity. This power is truly applicable to the mind and intelligence, not to anything else in the human personality.

The word *Hindu* also calls for a discreet analysis and assessment. Barhaspatya Samhita (a section of the *Rig Veda*) defines it as the land lying between the Himalayas to the north and Indusarovara (the Indian Ocean) to the south. The relevant verse reads thus:

हिमालयात्समारभ्य यावदिन्दुसरोवरम् ।  
तद्देवनिर्मितं देशं हिन्दुस्थानं प्रचक्षते ॥

Beginning from the Himalayas extending to Indusarovara, the land created by the Lord is called Hindusthanam, the word being derived from the first

letter of “Himalaya” and the last letter of “Indu.” Those who belong to Hindusthanam are called “Hindu.”

Hindu, thus, is not a religious name. It is a territorial or geographical reference, denoting the people who lived and still live in a specific area of the earth. Whatever new religion or cult they belong to does not matter at all. They are all ethnically Hindus, having been born in and continuing to live in this blessed land.

The concept, process, and pursuit of righteousness were evolved by the dwellers in Hindusthanam, who lived and spread in the plains, graced by the perennial flow of the holy river. We cannot say when the thought process and culture first began. As we are not able to trace any point of time when this transpired, it has naturally come to be regarded as *anadi*, or beginningless.

It also can be said to be without end. Over the ages, an amazing assortment of literature has evolved on the theme of dharma. Even now all the scriptural writings on Sanatana Dharma have not been traced. The fact that these are too numerous to be identified is clearly revealed by a proverbial statement:

अनन्तशास्त्रं बहु वेदितव्यं  
स्वल्पश्च कालो बहवश्च विघ्नाः ।  
यत्सारभूतं तदुपासितव्यं  
हंसैर्यथा क्षीरमिवाम्बुमिश्रम् ॥

Scriptural compositions are endless. There is a great deal to be known. The obstacles are many, but the time available is short. Therefore, the essence of all these must be discerned and pursued vigorously, like swans separating milk mixed with water.

Swans reputedly have the unique capacity to separate milk from water and drink it exclusively. Such is the art and process of discrimination the dharmic votary must have, in approaching the countless scriptures Sanatana Dharma encompasses.

The dharmic thoughts and practices of this land have been presented in various forms to guide people to navigate the ocean of Hindu scriptures and understand the relevance of their fundamental tenets and pursuits. Sage Valmiki’s *Ramayana*, Vyasadeva’s *Mahabharatam*, *Srimad Bhagavatam*, and many other such writings have been evolved to serve the purpose of presenting the thoughts



with a renewed concern and relevance to life. Sanatana Dharma has continued to be a subject of wide exposition. Spiritual and philosophical discourses form part of the Hindu culture and tradition. Enlightening discourses are widely attended by both the erudite and common people, young as well as old. Efforts like these should continue. Only then will the newer generations have the opportunity to know the continuing relevance of this most ancient spiritual-philosophical analysis of human life and the resultant guidance as to how it leads to success, peace, and fulfillment.

## **COMPREHENSIVE SCRIPTURAL VISION ABOUT LIFE AND SOCIETY**

The uniqueness of Sanatana Dharma is that the same basic spiritual and philosophical notes can be found in every form of its practice and exposition. At the same time, it is also empirical in every way. The whole dharma is phased in a very effective manner to facilitate progress and evolution. It has two phases, *achara* and *vichara*. *Achara* denotes various kinds of practices relating to individual, family, society, and the administration that governs them. *Vichara* denotes truthful introspection on these and allied matters. The intention is to begin with *achara*, which alone will be possible for children and young people. Then, the maturing adult should turn to meaningful introspection, or *vichara*, and elevate the practices from the sensory level to the mind and intelligence. In the human, the mind and intelligence are the causal factors in all activities, and they are the highest. If the sensory practice has, for example, 1 unit effect, an oral practice has 100 units, while those of the mind and the intelligence have 1,000 units and 100,000 units, respectively. Progress from one to the other is facilitated by the right exposure and guidance. People generally lack this. All the dharmic exponents strive to bridge this gap.

Despite the vast nature of Hindu literature on the subject of dharma, the concept as well as pursuit of the whole Sanatana Dharma can be condensed in three sets of four words each—a total of twelve words:

1. Four *varnas*—*braahmana*, *kshatriya*, *vaishya*, and *shudra*
2. Four *purusharthas* (human pursuits)—*dharma*, *artha*, *kama*, and *moksha*
3. Four *ashramas*—*brahmacharya*, *garhasthya*, *vanaprastha*, and *sannyasa*

### ***Four Varnas***

*Varnas* refer to a fourfold inner classification of the activities and proclivities of

humans. Each is necessary for the society's cohesion and welfare. The varna variety is an inevitable expression of Nature. We have no option in the matter. Instead, we should understand, assess, and be governed by it to properly lead our life and aspirations to the destined goals.

Because these are invisible, each is explained with its identification marks. For instance, regulation of desire, control of senses, austerity, cleanliness, tolerance, and straightforwardness are the traits that make the *braahmana* group. Braahmanas are generally calm and given to a life of self-restraint, inner excellence, and joy.

*Kshatriyas* are extrovert in nature, but chivalrous. They have such qualities and inspirations that keep societal behavior under check and balance. Heroism, valor, will, skillfulness, not retreating from battle, being given to ample charity, gifting, the feeling of lordliness—these are the traits of the kshatriya or warrior group.

Agriculture, rearing cows, dealing in trade, commerce, and industry are the predilections of the *vaishya* group. And the fourth group, *shudras*, has the predilection to be ready and willing to serve others, using their bodily resources and skill.

### ***Fourfold Purusharthas***

What should be the goal to be achieved by members of each of these groups during their tenure upon earth? Sanatana Dharma has very clear thoughts and assessments. Our dharmic proponents have evolved the fourfold human pursuit: *dharma*, *artha*, *kama*, and *moksha*.

By *dharma* is meant the code of righteousness, which should govern the life and activities of everyone. It is all the disciplines, inspirations, restraints, and obligations necessary to blend and fuse individual life with the societal one, to make a beautiful whole.

In such a righteous life, everyone should find and develop their own monetary resources. Thus the second object is *artha*, meaning financial sufficiency. Wealth earned by one's own effort is the best, most desirable. That gained from patrimony comes next. That derived from marriage in the form of dowry and the like is derogatory.

By self-earned wealth, one must try to fulfill his legitimate desires, *kama*. Stinginess or miserliness is detestable. Frugality is the ideal, the right option. The true objective of wealth is to gain dharma, for that alone will lead to inner

spiritual enlightenment, bestowing peace, wisdom, and freedom in the end.

When dharma, artha, and kama are pursued in their right order and measure, the fourth object, *moksha*, becomes relevant, facile, and meaningful. *Moksha* denotes the release from the suffocating shackles of the mind and intelligence. With such release, or redemption, one becomes heir to immortality and inner ecstasy. This is to be achieved while living here and now. Everything about dharma is thus relevant to our life, to be pursued wholesomely here and now. It enriches, empowers, enlightens, and fulfills human life.

Hindu dharma is called *sanatana* or eternal for two reasons. *Sanatanam karoti iti sanatanah*. It makes its votary feel and realize that his personality is, in truth, immortal. He is not the body. He only *has* his body, like he has his house or car. The “presence and power” that animate the body are not physical but spiritual. Different from matter and energy, which constitute the body, he is actually unborn, undying, eternal, and everywhere present. The inner consciousness that he verily is makes him immortal.

Equally so, Hindu dharma is eternal because it relates to the mind and intelligence of the human, which have not changed over ages. The ancient human had the same emotional mind and rational intelligence as his modern counterpart. Values that relate to these changeless constituents of the human personality are naturally eternal.

The scientific nature of Sanatana Dharma rests upon the observations our senses make, and the inferences the mind and intelligence arrive at on the basis of such observations. In fact, these are the two canons on which all objective sciences also rely. That objective science uses instruments like the telescope and microscope makes no difference to the fundamental nature and validity of both science and spirituality. The parts of a person that employ the instruments are one’s senses. And it is the mind and intelligence within that employ the senses. Thus the grounds on which objective science and Sanatana Dharma, the subjective science, rest are exactly the same.

Sanatana Dharma lays down a set of common disciplines for all people, despite their bodily or inner differences. They are:

अहिंसा सत्यमस्तेयं शौचमिन्द्रियनिग्रहः ।

एतत्सामासिकं धर्मं चातुर्वर्ण्येऽब्रवीन्मनुः ॥

Nonhurting, not to mention nonkilling, truthfulness, nonstealing, cleanliness, and sensory control are the common disciplines and values meant for all

categories of people.

### ***Four Ashramas or Stages in Life***

To gain the fourfold purusharthas, our dharmic exponents evolved a four-phased life-pattern. *Brahmacharya*, celibacy and being solely devoted to learning, is the first phase, where the student lives in the residence of the teacher and pursues learning wholesomely. At the end of this phase, he has the freedom to return home, get married, and raise a family to perpetuate the lineage. He has also the choice, depending upon the degree of dispassion and earnestness he gains, to pursue spiritual wisdom exclusively, to take directly to ascetic life, *sannyasa*.

But the second phase, household life or *garhasthya*, is not a lifelong pursuit. At the age of 55 or 60, when one's children become adults, one should entrust the household to them and adopt the *vanaprastha* way of life, the third phase, devoted to truthful introspection leading to inner refinement and expansion. This can be done along with one's wife, if she so desires and is ready to take up the same mission of inner refinement.

If one succeeds in fulfilling this phase, he can adopt the last phase called *sannyasa*, renunciation, which is the climax and crowning glory of human life. Sannyasa is a sequel to realizing one's own Imperishable Self. *Jnanadeva kaivalya praptih*, so goes the aphorism: "From wisdom alone dawn the joy and fulfillment of inner spiritual freedom."

Thus the twelve words, taken together, become the synopsis of Sanatana Dharma. No matter what tendencies one has, there is a way of changing them for the better, by adopting and practicing the higher disciplines and values. Practice makes one perfect. In fact, the sole object of human will and ingenuity is to change, correct, and improve oneself, so as to become what one verily aspires for.

All four varnas have equal freedom and opportunity to adopt the four-phase life and reach the climax of fulfillment, though by nature all do not do so. Failure does not invalidate the concept of fourfold purushartha and the sure way of achieving it.

## **KNOWLEDGE—THREE CATEGORIES**

The school of Indian philosophy known as Vedanta ascertained ages ago that knowledge is of three kinds—*pratyaksha*, *paroksha*, and *aparoksha*. *Pratyaksha*

is that knowledge gained by the sensory organs. *Paroksha* is what is arrived at by the intelligence, through inference. In these, either senses work or the mind and intelligence work.

There is another level and kind of knowledge called *aparoksha*, a concept unique to Sanatana Dharma. It is beyond the realm of senses (*pratyaksha*) or intelligence (*paroksha*). Yet there is full comprehension. For instance, how do we know that we slept and did not know anything at all? In sleep, we are unaware of the body, mind, intelligence, and even the ego. Yet we wake up to say we were, and we slept. Naturally that knowledge is beyond and different from that perceived through senses, mind, and intelligence.

It is always good to remember the fundamental principle, namely rationality, which governs Sanatana Dharma, in every step.

युक्तियुक्तं प्रगृहणीयात् बालादपि विचक्षणः ।  
अन्यत्-तु तृणवत्याज्यं-अप्युक्तं पद्मयोनिना ॥

The wise one should accept whatever is reasonable, told even by a child. Anything otherwise, even if stated by Brahma, the Creator, is to be summarily rejected like a blade of grass.

If this is the basic premise governing Sanatana Dharma, is there a question or doubt as to whether it is rational, scientific, and logical? In fact, there are three tests for any dharmic statement or revelation. It should be enunciated in the ageless scriptures (*shruti*); it must have the support of reason ( *yukti*); and it should also be experienced by oneself (*anubhava*). Only when these three together confirm a proposition can it be accepted and followed.

## WHY HINDUS WORSHIP SO MANY GODS

Though Sanatana Dharma is primarily and ultimately philosophical and spiritual, it does comprehend religious thoughts and the assorted needs of humanity and caters to varied tendencies and predilections. As in the matter of food, dress, and residences, in religious and devotional relish also there is need for ample variety. On this basis, the Hindu pantheon also arrays a variety of gods and goddesses, each of whom is imbued with a specific set of qualities, which are, in fact, the desires, choices, and affinities of the human mind. Nevertheless, Sanatana Dharma clarifies, emphasizes, and confirms in unambiguous terms that God is but one, omnipresent, having no physical form or shape.



Such a God naturally becomes unthinkable and inaccessible to ordinary minds. At the same time, no one can be denied the freedom and scope to worship God and derive the resultant benefits. This is how various deities, together with the specific qualities associated with them, have come to be evolved, sought, and spread among the people. It is more a sociopsychological compulsion than otherwise!

To give one instance, Hanuman is a pet lord of a large multitude. The *Hanuman Chaleesa*, forty hymns on Hanuman, is sung daily by millions of people. When reciting this composition with fervor and piety, the singer is infused with the qualities of Hanuman—courage, resolve, fidelity to the Master, wisdom, robust health, sensitivity, dexterity in speech, and the like. Those seeking these qualities piously sing the *Chaleesa*, thereby imbibing the essence of what they sing. In fact, all devotional practices are like this, self-enriching and self-empowering!

The best explanation about worship and its scientific background is in *Srimad Bhagavatam*, a full authority on devotion and God, where young Prahlada praises Lord Narahari, after he encountered Hinranyakashipu (Prahlada's father) and killed him. This is one of the most cherished hymns of the great holy text (7.9.11):

नैवात्मनः प्रभुरयं निजलाभपूर्णो  
मानं जनादविदुषः करुणो वृणीते।  
यद्यज्जनो भगवते विदधीत मानं  
तच्चात्मनः प्रतिमुखस्य यथा मुखश्रीः ॥

You, the Lord of entire creation, are always all-fulfilled by virtue of your own nature and glory, and hence do not need any adoration, praise, or offering from anyone. Those who praise and make offerings to you do so out of their own ignorance. And you seem to accept all this solely because of your own mercy. Whatever praise, worship, or adoration is showered on you, all that conduces to the worshipper's own development, as is the case with the anointment done to the reflected face on oneself, whom the mirror reflects.

A question may arise as to why then so much worship of the Lord is done. Whatever the ignorant people do in the nature of adoration and offering brings about their own enrichment and elevation. By looking into an actual mirror we

can see our face and decorate it, but what is done to the face in the mirror does not touch the mirror at all. Likewise, any praise, worship, or similar acts done to God verily enrich, empower, and elevate the worshipper himself, not God!

An impersonal, formless presence cannot be accessed by the ordinary human mind. At the same time, the mind wants to give vent to its feelings and affinity for the Lord. Hence the idol and various methods of worship are evolved. It is significant that at no time or place does the worshipper address the stone idol or the painted picture. Sitting before it, he thinks about, speaks to, and tries to interact with the Lord, the omnipresent. “O Lord, the omnipresent,” is how the devotees think, speak, and address.

## THE PRESENT WORK

Swamini Vanamali, the author of this book, is an ascetic who has been living in the Himalayan slopes in Rishikesh for many years. Hinduism always insists upon and exhorts people to take up austerity and asceticism as a natural culmination of spiritual life and pursuit. Generally the ascetic and the austere alone have lived the true spiritual life and disseminated spiritual wisdom in this holy land. True philosophers have always been ascetic and austere.

Naturally when someone like this speaks and writes about Sanatana Dharma, it will have an additional note of experiential vision and maturity. Such writing will always be distinct from the rest. Swamini Vanamali is not a new writer. Her earlier books are there to speak about her and her writing. Against the background of her earlier publications, this book on the science of the rishis has its distinct place and relevance. May this be well understood and the effort bring its destined fruition.

Society always will need enlightenment and hence the efforts toward this should be consistent in every generation. May Swamini Vanamali’s effort have its distinct contribution and effectiveness in this direction.

My love, appreciation, and blessings for the author as well as her readers.

*ANTARAATMA—THE INNER DWELLER, WHICH IS THE ATMAN*  
SWAMI BHOOMANANDA TIRTHA  
NARAYANASHRAMA TAPOVANAM

Swami Bhoomananda Tirtha is a sannyasin belonging to the Tirtha lineage of

Adi Sankaracharya. He is widely revered as a spiritual master and scholar and is particularly well versed in the *Bhagavad Gita*, the *Srimad Bhagavatam*, and the Upanishads. A social reformer, he is well known for his teachings on the application of Vedanta to the challenges of everyday life.



*Bhutatmaaya Namaha!*

Salutations to the Self in Every Creature!

# INTRODUCTION

## The Scientific Vision of the Rishis

*After a study of some forty years and more of the great religions of the world, I find none so perfect, none so scientific, none so philosophic, and none so spiritual as the great religion known by the name of Hinduism. The more you know it, the more you will love it; the more you try to understand it, the more deeply you will value it.*

ANNIE BESANT

*Satyam eva jayati naanrutam.*

Truth alone shall prevail, not falsehood.

MUNDAKA UPANISHAD

What is truth and how is it to be known? Time alone is the touchstone of truth. The universe exists on truth and anything that is not founded on truth is automatically deleted by time. India has maintained the longest, unbroken continuity of civilization in the world. The ideas and beliefs of Hinduism—based on the eternal verities, *satyam*, *ahimsa*, and *dharma*, truth, nonviolence, and righteousness—have existed from time immemorial.

There was no antagonism between science and religion in India as there was in the West, since the religion is based on scientific truths. One ancient Hindu scripture, the *Ishavasya Upanishad*, says that there are two types of understanding, *vidya* and *avidya*. The interpretation given in the Upanishad is that *vidya* is eternal, experiential, spiritual knowledge or *para vidya*, while *avidya* is external, experimental, material knowledge or *apara vidya*. We should make use of the second to guide our lives so that we are led to the first. Unless both these types of knowledge are integrated into our lives, we will end up being

blind or lame, as Einstein put it.

One who believes that science alone can take away all the miseries of life is like a blind man entering a dark room. However, one who believes that escaping the miseries of life can only be achieved by chanting mantras in the solitude of a cave is also entering blinding darkness. Hinduism has never held that blind faith can lead to liberation or that science alone can give you a utopian life. Both science and faith are necessary for a fulfilled life.

Most of the Westerners who came to India in the early part of the last century were totally incapable of appreciating the wonders of this ancient knowledge. This is because Hinduism is a most obscure and difficult religion to understand. What is generally exposed to the common eye is only the surface of a deep pond, which contains a treasure of gems that are not easily revealed to the cursory glance. Hinduism is as difficult for the uninitiated to understand as quantum physics for the layperson.

Actually, the word Hinduism is a misnomer. It was the name given by Westerners to those who lived below the Indus River. The actual name of Hinduism is Sanatana Dharma or “the way of eternal righteousness.” This is the ancient law by which this cosmos has been created, sustained, and destroyed.

People have asked me how I dared to write about physics, which is an alien subject for me. My answer is that my in-depth knowledge of Hinduism has made it easy for me to understand quantum physics. The first time I read *The Tao of Physics* by Fritjof Capra, I was struck with wonder, for I instinctively understood what the physicist was trying to say. At the same time, many of the abstruse points in the *Bhagavad Gita* suddenly became crystal clear to me. Later, when I went through the Puranas (stories of gods written by the sage Vyasa), I was again struck at the amazing ways in which the great saints of the Puranas—Vyasa and Valmiki—had woven great scientific truths into their stories. These scientific truths are not what the ancient Western world believed to be true but the truths of the most modern kind—that of quantum physics.

One fact hit me like a sledgehammer—that right from the Vedas (the most ancient scriptures) to the Puranas, everything was completely scientific. For obvious reasons the sages did not expose this fact to the common eye. If we of the modern age, who are quite used to so many technical facilities, which we accept as commonplace, find it impossible to understand quantum physics, how much more would it have been impossible for people to understand what the sages were trying to say at a time when even things like ordinary matches were



unheard of!

Sanatana Dharma is a living relic of the ancient past of not just India but the past of the whole history of humanity. Many of the forms of Hindu culture today are the same as they were more than ten thousand years ago. The ancient world never died in India. It still remains and can be contacted everywhere. The scientists of this culture were known as rishis. The credit for ensuring that this culture never died goes to them. They were both philosopher-saints and scientists and existed from the dawn of the Indian civilization, which is the dawn of time. The sages desired that humanity should progress materially as well as through a constant inner renewal of the cosmic law of righteousness, guided by the wisdom embedded in our scriptures.

What exactly is science? Science is something that tries to discover the different laws of nature. The ancient rishis who were the custodians of our culture were the greatest scientists ever known. There was nothing that they didn't know about Nature. She did not hide any of her abstruse wisdom from them. The rishis had extraordinary powers or *siddhis*. They could control the elements, travel with ease in the astral worlds, cover vast distances rapidly through the sky without any aircraft, catch sound and light waves in their minds and discern what was happening miles away. Their look could penetrate rocks and drill holes in metals, and they could have anything they wanted just by formulating a wish in their minds. No other civilization except the present one has reached such heights of knowledge as they had achieved.

Their knowledge of science in many fields, like mathematics, geometry, astrology, astronomy, and physics, was immense. Without the use of modern instrumentation, they were able to discover more things about this universe than what was discovered up to the nineteenth century by Western scientists. They knew that the earth went around the sun, that we are living in an expanding universe, and that matter is only energy in motion. They calculated the distance of stars and planets and could foretell the coming of the different comets. They even wrote predictions about the lives of people who would come after them. They could conjure up cities and palaces and wondrous meals and aerial vehicles even though they did not choose those things for their own lifestyle.

Unlike this culture that craves material wealth, they deemed that all knowledge of the external world was inferior knowledge and the highest knowledge was that of the true Self or Brahman. The experience of Brahman reveals the unity of life that underlies all living things. From this is born a tremendous love for all

creatures and a deep desire to see human beings free themselves from the illusions and limitations in which they are involved. Love always wants to share what it gets and thus the rishis did everything in their power to unfold this Reality to the rest of humankind. They have opened our eyes to a world of mystery and beauty, not one of arid facts. If we could only behave in the way that they have taught us, we would certainly have made a heaven on earth. However, the rishis were aware of human limitations and sought methods to surmount them. As Reality can only be known by direct experience, they tried many types of methods called yogas in order to share this truth with the masses.

They were a special type of scientists, which we can call spiritual scientists. They realized that the foundation of the universe as well as of the human being is spiritual, not material. All the gross objects we see in the world actually have their source in the subtle, and not vice versa, as Western science would have us believe. Like Western scientists, the rishis also looked at the world and sought to find out the basic constituents of everything. However, unlike Western scientists, they realized that they would never find the meaning of anything in the world if they did not know the laws governing the functioning of their minds. So psychology—which is such a baby science in the West—was the first science that the rishis explored. They realized that the world existed because of the human mind and unless they learned to control the mind, they would never be able to find the meaning of anything in the universe, far less control it.

The intellect is the most powerful and versatile instrument known to us. Scientists make use of it to prize open the mysteries of the universe. It has led us to split the atom and reach the moon, but when it comes to discovering the truth of our innermost self, the intellect is confounded. It is capable of analyzing any object. It is a highly efficient instrument for objective study, but the rishis realized that it is sadly inadequate when it comes to subjective analysis.

When the Self itself becomes the object of study, the intellect is unable to surmount its inherent weakness and analyze itself. The Self is the torch that lights up the intellect, so how can it see itself? In other fields of investigation, the investigator is different from the object of investigation, but here the investigator is being investigated by himself! Sugar can never know the taste of tea. It can only dissolve in it and become one with it. The rishis devised a means by which the intellect could become so subtle that it could be dissolved. They found that in the state of deep meditation the intellect becomes so subtle that it dissolves like sugar into the object of investigation, which is the Self itself. Thus, the intellect's search for the Self ends in a glorious experience of the Divine

rather than a comprehension of it.

The Divine of the Sanatana Dharma is a Universal Being or Paramatma, who transcends all boundaries of time, space, and causation. This Being is not bound to just the Hindus or even human beings but is available to the whole of creation. It has existed always and will continue to exist even if no one believes in It. It is the ultimate truth of everything and everyone. That being its foundation, Hinduism is the most tolerant religion in the world. As a goal-oriented religion, it offers us many paths of approach to God, which cater to different types of personalities. It does not insist that there is only one path and one way to approach the Paramatma or the Supreme. There are many paths and many ways.

Hinduism is accused of being pluralistic but pluralism means freedom—freedom of choice. It has no overall authority that dictates what every Hindu should or should not do. The first charter of human rights and liberties was given by Hinduism to every human being. The rishis have catered to every type of person. No one is cast out of the loving arms of this Divine Mother. Everyone is given freedom to worship god in his or her own way as suited to his or her own personality. We can take as many lives as we want but eventually every soul will be liberated. This is the beautifully consoling clarion call of Hinduism. Krishna tells Arjuna in the *Bhagavad Gita*, *Kaunteya pratijanihi, na me bhakta pranasyati*—“O Arjuna I give you my solemn promise that my devotee will never perish.”

Anything that is static and stagnant will eventually decay and die. Just as water has to flow in order to keep itself free of impurities, so also a religion must have the ability to grow. Many of the highly evolved ancient religions of countries like Egypt and Mesopotamia have been wiped off the face of the earth with the passage of time, whereas Hinduism has had the ability to evolve with the changing times. It can be compared to a banyan tree, which has spreading branches reaching out with ever more new shoots. That is why we find more religions within the Hindu faith than there are in the rest of the world put together. Though its fundamental concepts are ancient, it is capable of accepting and even welcoming all new ideas that are consistent with dharma or righteousness.

In keeping with the Vedic injunction that a guest should be treated with as much hospitality as one would treat a visiting divinity, Hinduism has always been gracious to the followers of other religions, and respectful of their gods, scriptures, and customs. The tolerance and openness of Hinduism has been

historically unprecedented in the community of world religions and has been universally acclaimed. Unfortunately, in our headlong rush to devolve Hinduism of anything that might seem to even remotely resemble the closeminded sectarianism sometimes found in other religions, we tend to forget the obvious truth that Hinduism is itself a systematic and self-contained religious tradition in its own right. It is true that Hinduism is not an organized religion. It has no hierarchy of priests or popes or cardinals who impose orders that are obligatory on everyone.

However, like every other religion, Hinduism has a distinct and unique tradition, with its own built-in beliefs, worldview, traditions, rituals, concept of the Absolute, metaphysics, ethics, aesthetics, cosmology, cosmogony, and theology. The grand, systematic philosophical edifice that we call Hinduism today is the result of the extraordinary efforts and spiritual insights of the rishis, yogis, *acharyas*, and great gurus of our religion, guided by the transcendent light of the Vedic revelations, which has stood the test of time and withstood the onslaught and challenges of countless other cultures.

The time has come to allow the whole world to realize their inheritance, for the rishis did not intend the great secrets of the Vedas to be confined to India alone but wanted everything to be shared by all. In order to honor their desire, this book introduces the foundational texts, concepts, and profound insights bequeathed to us by the rishis, revealing their scientific knowledge, now being confirmed by the latest scientific discoveries, as well as conveying the depth and beauty of their transformative vision.

I conclude this introduction by offering my total and wholehearted prostrations at the feet of those rishis—Vasishta, Vishvamitra, and many others—who were the great gurus of our land as well as to the sages, Vyasa and Valmiki, who alone have inspired and given me the courage to write this book.

*The Creator is perfect,  
He possesses perfect power,  
Whence is created perfect Nature.  
The perfect universe derives life  
From the perfect Creator.  
Let us comprehend this perfect power  
That bestows life on all beings.*

ATHARVA VEDA

*Loka Samasthath Sukhino Bhavantu!*

Let the whole world be happy, healthy, and contented!





*Vishvakarmaaya Namaha!*

Salutations to the Maker of All Things!

## 2

# The Vedas

## Royal Road to Knowledge

*In the great teaching of the Vedas, there is no touch of sectarianism. It is of all ages, climes and nationalities, and is the royal road for the attainment of the Great Knowledge.*

THOREAU

*India was the motherland of our race and Sanskrit the mother of Europe's languages. India was the mother of our philosophy and much of our mathematics, of the ideals embodied in Christianity, of self government and democracy. In many ways Mother India is the mother of us all.*

WILL DURANT (AMERICAN HISTORIAN 1885–1981)

The two primary factors that distinguish the individual uniqueness of the great world religious traditions are: the scriptural authority upon which the tradition is based and the fundamental religious tenets that it espouses. Thus a Jew, for example, can be understood as someone who accepts the Torah as his scriptural guide and believes in the monotheistic concept of God espoused in those scriptures. A Christian can be understood as a person who accepts the Gospels as his scriptural guide and believes that Jesus is the only son of God who incarnated himself in order to save humankind from its sins. Similarly, a Muslim is someone who accepts the Quran as his scriptural guide and believes that there is no God but Allah and that Mohammed is his only prophet.

The determination of being a follower based on accepting and attempting to live by a religion's scriptural authority is no less true of Hinduism. By definition, a Hindu is an individual who accepts the Vedas as the authoritative guide to his

religion, and who strives to live in accordance with dharma, God's divine laws as revealed in the Vedas and explained in easy language in the Puranas. In keeping with this standard definition, the great exponents of the six traditional schools of Hindu philosophy (*shad darshanas*) insisted on the acceptance of the scriptural authority (*shabda pramana*) of the Vedas as the primary criterion for distinguishing a Hindu from a non-Hindu, as well as distinguishing Hindu philosophical positions from non-Hindu ones. The historical standard for being a Hindu has been acceptance of the Vedas (meaning the complete canon of the Vedic scriptures, such as the four Vedas, the Upanishads, and the *Bhagavad Gita*, the *Mahabharata* and *Ramayana* epics, the Puranas, and so on) as the scriptural authority, and living in accordance with the dharmic principles as embedded in these scriptures. Thus, any Indian who rejects the authority of the Veda is obviously not a Hindu—regardless of their birth. On the other hand, an American, Canadian, Russian, Brazilian, Indonesian, or Indian who accepts the authority of the Veda obviously is a Hindu, not by race, but by commitment.

The Vedas are the sacred heritage not only of India but of all humanity. However, until recently, translations and interpretations of these sacred books have been made by Western historians and scholars who had little or no concept of such lofty ideals and ideas. Our own Indian historians blindly copied what was said by the Westerners and therefore this great heritage of divine knowledge has been obscured.

## THE AGE OF THE VEDAS

All other religions have been able to fix a date for their sacred books. The teachings of the Buddha can be dated to 500 BCE when the Buddha lived. There is no argument about the date of the New Testament, which was 2,000 years ago. Everyone agrees that the Quran was enscribed 1,200 years ago. But so far no one has been able to fix the age of the Vedas. This is because of the unique way in which the Vedas have come down to us. They were first heard by some great rishis who imparted them orally to their disciples. Then the knowledge was handed down orally through the ages, only being written down much later.

It is a fundamental belief of the Sanatana Dharma that the Vedas are sanatana (eternal) and apaurusheya (not composed by any human being). However, most Westerners and Western-educated Indians cannot accept the fact that the Vedas are without beginning. Much time and money have been spent on research on this subject and people have fixed the time of their composition at 6000 BCE,

since certain planetary positions mentioned in the Vedas took place at that time. While it is easy to fix dates by planetary positions for cultures that have existed only for a few centuries, this is not possible for cultures that have existed for millennia, for the same type of planetary position could have existed many times within the course of that length of time. Therefore, such calculations cannot be used to calculate the age of the Vedas.

Another method used in attempts to determine the age of the Vedas is to examine the language used. All the scripts used in India today owe their origin to what is called the Braahmi script. Of course, in the case of edicts engraved by kings on metal and stone, this would be a great help to confirm their age. However, the Vedas were never at any time engraved on metal or stone, so how could their age be determined by the script?

Still another method of determining age is by the style of talking. Spoken languages change tremendously over time. For example, the original Anglo-Saxon language, which is less than a thousand years old, cannot be easily understood by the modern Englishman. But the Vedic language is not a spoken language, even though the Vedas are chanted every day in all parts of India. So this method cannot be used with the Vedas, since they are still being chanted as they were from the dawn of time. The reason why the Vedic sounds have been maintained in their pristine purity is because the desired effect can be produced only by the correct intonation of the mantras. The rishis took great pains to see that the sounds would not suffer any mutations as words in everyday use.

The vast amount of knowledge in the Vedas was compiled into the four books known as *Rig Veda*, *Yajur Veda*, *Sama Veda*, and *Atharva Veda* by the great sage Vyasa. Because of the invaluable work he did, he has been called Veda Vyasa, and he is regarded as Hinduism's first guru. Each of the four divisions was given to one of his disciples to memorize, since with the passage of time there was no one who was capable of memorizing all four Vedas. Thus each Veda has come to be associated with the disciple through whom it has come down to us.

In their thirst for dating everything, modern Western researchers declare the *Rig Veda* to be the oldest, whereas our *shastras* (scriptures) say that all four Vedas are without beginning, available to the world from the dawn of creation. The *Rig Veda* itself contains references to the *Yajur* and *Sama Vedas*. So how can some be labeled as earlier and some later? All the dates and periods attributed to the Vedas by Western scholars are an attempt to ridicule the sacred

and eternal heritage of India. In fact, the Vedas reckon time as existing before the time of our current universe, so how can we fix their age?

## THE BREATH OF BRAHMAN

At the beginning of every cosmic cycle, Paramatma (the Absolute) breathes the divine words into the mind of Brahma (the Creator) and these sound vibrations result in the creation of the world. Later, through divine grace, certain rishis hear these words known as *shruti* (that which is heard). The crown and glory of the human race, these rishis were fit to receive and impart the words of the Supreme to enlighten human beings so that we might live happily in this world and become aware of our innate divinity.

If the rishis were not the authors of the Vedas, can we then conclude that God created them? This is also not true because in Hinduism, we do not believe that God created the world one fine day. Creation is seen as cyclical and not linear as in Western theology. One creation or *shrishti* is followed by a *laya* or dissolution, after which another creation or *shrishti* takes place. This is an endless process. At the end of every Brahma's cosmic period, the Vedic knowledge in its gross form disappears, only to reappear in Brahma's next cycle of creation.

Brahman, the one eternal and unchanging Being, has existed always. It is the time continuum from which the universe of matter appears and disappears from time to time. The Veda itself says that the Vedas are the very breath of Brahman (Paramatma or the Supreme Self). Just as our breath is an essential part of us, the Vedas are an essential part of Brahman; as Brahman has always existed, so have the Vedas. That is why they are termed *anadi* or without beginning.

Modern science defines sound as vibration. The rishis became aware of the cosmic breath in the form of vibrations, due to their *tapas* or austerity. Just as electromagnetic waves are converted into sonic waves, which can be captured and heard by us via a radio or TV, the cosmic vibrations became audible to the rishis who used only their internal apparatus. They decoded them and gave them to all humanity in the form of the Vedic mantras. Just as some type of life-giving serums are preserved with greatest care in laboratories, so the rishis took infinite pains to see that the Veda mantras, which are for universal benefit, were preserved without resort to writing.

The Vedas were passed from generation to generation in the ancient method of learning by listening, in the master-disciple tradition. Why were the Vedas not

written down? The first reason is that writing was unknown at the time when the Vedas were arranged by Veda Vyasa. Another equally and perhaps more important reason is that some sounds do not lend themselves to be accurately reproduced phonetically. To get a desired station on the TV or radio, perfect tuning is necessary. So it is with the Vedic mantras. The *svara* or pitch and amplitude of sound should be perfect. Just as a small change in wavelength brings us a different TV station, so also any change in the chanting of a Vedic mantra produces a different effect. It is because of this that it has been stipulated that the Vedas should only be learned by ear from a competent guru. The Vedanga called *siksha* provides guidance for perfect pronunciation.

The Vedic seers were experts in phonetics who knew that the Vedic mantras had extraordinary powers. When they are chanted with the correct intonation the sound of the mantras activates our nerve centers and affects the atmosphere, resulting in individual as well as collective well-being. Collective does not refer only to humanity. No other religious text emphasizes the well-being of the animal and plant world as much as the Vedas, which say, “Let four-legged and two-legged creatures prosper”—*sham no astu dvipade sham chaturpade*. The same verse goes on to pray for the well-being of shrubs, trees, mountains, and rivers—in fact the whole of creation.

Modern research has demonstrated the effect of music on the growth of plants—increasing yields, and so on. Similarly, the outstanding feature of the Vedas lies in the fact that, apart from the actual meaning of the words, the sound of the mantras has great effect, so listening to them will give us great benefit even if we do not understand the meaning.

The science of phonetics, so recent in the West, was highly advanced in Vedic times. There are many sounds in the Veda that fall in between two syllables. These can only be transmitted orally. Moreover, the Vedic mantras have to be recited in a certain specified rhythm to produce the correct vibrations. Some sounds have to be in a high chromatic scale, some medium, and others low. However much we try to aid the pronunciation by text notations, improper accent, intonation, and pronunciation can all creep in. This leads to a lessening of the intended effect or can even produce an opposite effect. It is easy to imagine the different impact on us of a sound produced in a high or low pitch. Our emotional response and even the cosmic forces that regulate the orderliness of Nature change with the differences in intonation.

Knowing the Vedas to be of supreme importance and a perfect treasurehouse

of inexhaustible and infallible wisdom, the rishis took infinite pains to ensure that the purity and perfection of the sound and vibrations were preserved for posterity. In order to do this, they created a caste called the brahmins (knowers of Brahman), whose only duty was to memorize and pass on this knowledge to the future generations. They were the custodians of this supreme wisdom and the kings had the responsibility of seeing to their welfare. This had both a good and bad side. It certainly ensured the purity of the knowledge and even today the Vedas are recited exactly as they were recited ten thousand years ago; this is a remarkable phenomenon and would never have taken place had the brahmin caste not been created. In a similar way, the Jews have designated rabbis for the purpose of preserving their scriptures. In Israel, for example, the rabbis and those who take to a religious life are exempt from military duty and other governmental duties, just as the ancient brahmins were. However, the creation of a special caste had the disadvantage of making the Veda unavailable to the common people.

Most of the research on the Vedas has been done by Westerners who have unearthed much of our ancient wisdom and have been struck by its greatness. In fact, we owe a lot to these Westerners who have taken the trouble to find out some of our ancient scripts and preserve them. However, they did not realize that the essential purpose of the Vedas was to ensure the well-being of the whole universe, not just of human beings, by spreading the sound of the Vedic mantras and encouraging the performance of the Vedic rites. The Veda, which is a living force intended for the betterment of the universe, has been decoded and incarcerated into voluminous tomes to lie idle on library shelves!

In addition to being without a beginning the Vedas also claim to be endless. Actually the Vedas are a vast ocean of endless knowledge. What has come to us is only a portion, which was revealed to the rishis. As mentioned, the Vedas are the breath of Brahman or Paramatma. The vibrations caused by that breath always exist in space, through all the destructive deluges that have taken place from time to time in the universe. Those vibrations have no decay or death and are always available to those who are attuned to them.

## **THE ONE AND THE MANY ARE THE SAME**

The Vedas taught worship of the gods of Nature, such as the sun, sky, wind, and fire, but they emphasized the fact that behind the facade of these many gods, there is but one Supreme God. The Veda talks of that Paramatma or Supreme

Soul as manifesting itself through the various divinities. This concept was originally expressed in the *Rig Veda* itself:

*Ekam sat vipra bahudha vadanti.*

Only One exists; sages call it by various names.

Vedic theism is pure and simple and is a most natural monotheism invoking the One mighty force behind all forces and the divine light behind all effulgences. The existence of the Supreme Reality in the cosmos can be realized by the purposeful dynamism of the Lord's creation. Hence, the Vedic verses worship the Lord by invoking Nature's bounties known as devas. The hymns of the Vedas invoke the Supreme Being who is the sole master of creation. This Supreme Reality is not merely an abstract philosophical concept but a dynamic reality, which we have to invoke every minute for our personal fulfillment. Vedic theism is a vibrant concept. Even though we might not know the Supreme, even though we might deny It, the fact is that It is intimately connected with us at every moment. We might forget It, we might ignore It, but It will not neglect us. That Supreme, though unmanifest, is manifested through Its divine manifestations. It is the effulgence of the sun; It is the mighty force behind Nature; It is the light of all lights, terror of all terrors, sweetness of everything that is sweet, and the actor behind every activity. The Vedas try to contact It through Its creation.

In Vedic poetry our tiny self and the Supreme Self are described as two birds that are mutual friends and companions and who live on the same branch of a tree. The *jivatma* or the embodied soul tastes the fruits of the tree (of life). When they are sweet, the *jivatma* rejoices; when they are sour or bitter, it feels despondent and sad. The *Paramatma* or Supreme Lord (the other bird on the same tree) watches the joys and sorrows of Its companion with compassion but will not interfere. When the first bird is replete with all the sense pleasures offered by the world, it loses its taste for sensual pleasures and turns toward the other bird, which has been its constant companion, realizing that in the Supreme lies joy without sorrow and love without any expectation of return.

The hymns of the Vedas are grouped into worship offered to the different devas such as Agni, Indra, Varuna, Soma, Rudra, and so on, representing the various powers and attributes of the Divine. The Vedas have definitely stated that these devas are only aspects of the One Supreme. The importance given to these devas can be understood only when one sees the same Supreme Divinity

behind the splendor of all Its manifestations in Nature.

Although the four Vedas may appear to be different in some aspects like the method of recitation, all of them have a common goal—to ensure the well-being of the universe and to help everyone toward spiritual progress. Another singular feature of all the Vedas is that none of them say, “This is the only way,” and “this is the only God.” They all say that any path followed with faith and devotion to any deva will lead to the same goal since the goal is one. No other holy book in any other religion advocates the pursuit of different paths. Every religion insists that only its own doctrine will lead to salvation. The Vedas alone have such a breadth of vision that all four of them say that the same truth can be realized in many ways, since truth is One and the same for all!

## STRUCTURE OF THE VEDAS

The Vedic hymns can be grouped into six types—hymns on creation, devotional hymns, hymns on revelation, hymns for certain types of action, hymns on the splendor of the Lord, and hymns on the positive sciences.

Each of the four Vedas—*Rig*, *Yajur*, *Sama*, and *Atharva*—has four portions, known as the Samhitas, Braahmanas, Aranyakas, and Upanishads. Generally, when we speak of mastering the Vedas, we mean only the mastering of the Samhita portion. This is because the Samhitas are the foundation of each Shaakha or branch; these are the hymns that were seen or heard by the rishis.

## Rig Veda

The *Rig Veda* appears in the form of riks or “hymns of praise” to the various deities. It contains an astonishing stock of 35,000 words in 10,170 verses (mantras or riks), which have the intrinsic potentiality for coining new words. The most astonishing thing about this is that these verses were chanted by the rishis at a time when language as we know it did not exist. Since the *Rig Veda* talks of Agni both at the beginning and at the end, it has been mistakenly said to advocate only the worship of Agni. Actually Agni or fire should be taken to mean the light of the soul or consciousness (*atma chaitanya*)—the glow of the soul’s awakening. The final *sukta* (hymn) of the *Rig Veda* says:

Let all meet and think as with one mind. Let all hearts unite in love. Let the



goal be common. May all live in happiness with a common purpose!

## Yajur Veda

The word *yajus* is derived from the root *yaj*, which means “worship” or “sacrifice.” The word *yajna* is also derived from it. The chief purpose of the *Yajur Veda* is to show us how to use the mantras in the *Rig Veda* in a practical way in the yajnas or sacrificial rituals. Almost all the mantras in the form of hymns in the *Rig Veda* are also to be found in the *Yajur Veda*. In addition, it describes in prose the details for the performance of the different yajnas. While *Sama Veda* teaches us how to chant the hymns in a poetic way, *Yajur Veda* teaches us the actual performance of the yajnas using these hymns and mantras. There are two branches of the *Yajur Veda*, known as *shukla* (white) and *krishna* (black).

If we want to perform any of the great yajnas of the Vedas, we have to go the *Yajur Veda*. Many great yajnas, such as Somayaga, Vaajapeya, Rajasuya, Ashvamedha, and many others, are found only in this Veda. It also contains some mantras and hymns not found in the *Rig Veda*. The most famous of these is the Sri Rudram or the hymn in praise of Lord Shiva.

## Sama Veda

*Sama* means *shanti* or “peace.” In the *Sama Veda*, many of the hymns of the *Rig Veda* are set to music. Sama Gaana or the music of the *Sama Veda* can be said to be the basis and source of the seven notes that are fundamental to all music, the source from which both the Hindustani music of the north and the Carnatic music of the south derived its inspiration. It is said that all the gods can be propitiated by singing the Sama hymns. In all yajnas one of the priests has to chant the *Sama Veda* in order to keep the gods happy. Thus in the *Bhagavad Gita*, Lord Krishna proclaims that among the Vedas, he is *Sama Veda*. In the *Lalita Sahasranaama*, or the Thousand and One Names of Lalita, the Divine Mother is said to be Samagaana Priya—one who loves the music of the *Sama Veda*.

# Atharva Veda

Atharva was the name of a great rishi, who was the one to bring the hymns of the *Atharva Veda* to our knowledge. The Atharva mantras are in prose as well as in verse. In this Veda many esoteric secrets as well as cures for various ailments are revealed. The mantras are meant to ward off evil, bestow perfect health, destroy enemies, and so on. It also has hymns to some devas that are not mentioned in the other three Vedas. It has a famous hymn to Nature called Prithvi Sukta. Book 11 of this Veda has a hymn devoted to every little thing concerning the human body, starting from the outer covering to the innermost complex. Countless hymns report on medicines and cures for a number of diseases. The *Atharva Veda* is actually a storehouse of esoteric secrets on health but very little of this is available to us now.

Many sciences found in this Veda were discovered by the modern world many centuries later. Physics, chemistry, geology, medicine, astronomy, astrology, and so on are all discussed. It has a lot of information on filtration, solution, crystallization, distillation, and sublimation, all of which were used for medical purposes. Everything concerning what are now known as oxides of copper, iron, and zinc, and sulphates of iron, copper, gold amalgam, and white lead, and how to make dyes with a variety of vegetable products were fully dealt with.

What is most important about these scientific facts given in all the Vedas is that science was not merely a theoretical subject found only in laboratories. It was a living, throbbing study, which found its utility in all aspects of human life, leading to a fuller and happier life for humans, animals, and plants. Chemistry was used to help find medical remedies. Astrology also had a definite bearing on chemistry and medicine, since the planets—sun, moon, Saturn, Jupiter, Mars, Venus, and Mercury—were associated with different metals used in gem therapy like gold, silver, lead, tin, iron, copper, and mercury. Many references to this are given in this Veda.

Vedic mathematics is now seen to be of a superior quality. Consecutivity of numbers from 1 to 10 is found in the eleventh book of the *Atharva Veda*, addition of numbers with multiples of 10 in the fifth book, and multiplication by 11 in the nineteenth book. Notation by decimal value was well known in India even from those ancient times.

Unfortunately, this Veda, which was once prevalent in north India, seems to

have vanished from most areas. Even in south India there are no pure Atharva Vedins left. A few families of Atharva Vedins can still be found in Gujarat, Saurashtra, and Nepal. But from the few mantras and hymns of this Veda that are available to us now, we can understand that this Veda is a veritable storehouse of scientific information. Unfortunately no one in this modern world has the enormous spiritual and intellectual capacity capable of capturing these vibrations.

### ***The Interplay of Action and Wisdom***

While the mantras or hymns of the Samhitas are the most important part of the Vedas, each of the other portions has an important role. The Braahmanas act as a guide to explain how each of the mantras should be understood. They also explain how the Vedic rituals or yajnas are to be performed. Aranyaka is derived from the word aaranya or forest. According to the Aranyakas, it is important to understand the reasons why yajnas are to be performed.

Yajnas and other rituals are prescribed for those who live in homes and lead the life of a householder. But it must be understood that Vedic rituals are intended not only for material benefits but also for mental purity. Only those who have attained mental purity should take to the solitude of the forests for further concentration and meditation. All other practices are only a preparation for the ultimate goal of life, which is to meditate and find out the true nature of the Self.

The Braahmanas and the Aranyakas contain a vast amount of scientific knowledge, which has only been discovered in very recent times by the modern world. As has been mentioned, chemistry, physics, geometry, mathematics, astronomy, astrology, botany, geology, anatomy, and medicine are fully dealt with in these two portions of the Vedas. All the arts were touched upon, as well as agriculture, architecture, and transportation. Ample advice is given in these portions to enable human beings to live long, healthy, and happy lives, profitable both to themselves and to the world.

The Upanishads contain the ultimate message and purpose of the Vedas. They are therefore known as Vedanta—firstly because they are placed at the end of the Vedas, coming after the Aranyakas, and secondly because they are the goal or end to which the Veda points.

The Vedas thus recognize the existence of two worlds and give methods by which both can be satisfied. The difference between modern science and Vedic science is that modern science totally ignores the existence of another world in

which the dualities of this world do not exist. The Vedas, on the other hand, always understood this. The instructions for leading a good and dharmic life given in the Braahmana and Aranyaka portions of the Veda, together called *karma kanda* (portion pertaining to action), are the preparation for understanding the *jnana kanda* (portion pertaining to wisdom), the Upanishads, which deal with the transcendental reality.

At times the karma kanda and the jnana kanda of the Vedas have been interpreted as being at variance with each other. In order to understand this apparent discrepancy, we have to understand what life is about. Even though the rishis realized that the goal of life was to discover the Self within and establish oneself in that unity, they also realized that for most people duality alone was real and unity just a dream. The Vedas say *brahma satyam jagat mithya* —“Brahman alone is real and the world an illusion”—yet the rishis were fully conscious of the fact that for the majority of humans the reverse is true. In their compassion they did not want to reject anyone; thus the second part of the Vedas teaches all the rituals by following which one can have a good and auspicious life in the world.

Modern science also gives us many techniques and devices by which we can live in comfort and affluence, but it considers the human being, Nature, and God to be totally disconnected. That has led to a lifestyle achieved at the cost of defiling Nature and plundering her resources. Many of the modern innovations do not take into consideration the fact that Nature is actually a living entity, throbbing with life; we think nothing of wresting from her whatever we want. This is what has led to the unhappiness that we suffer despite the fact that we have more gadgets and so-called materialistic comforts than any generation preceding us.

The method of the rishis was quite different. They wooed the devas or the subtle beneficial forces of Nature and maintained their balance. This brought prosperity to humankind as well as to animals and plants. As long as we think the world to be real, we have to propitiate these devas so that we can continue to live in comfort and prosperity. This is what the karma kanda guides us to do.

The scientific and other knowledge detailed in the karma kanda is known as *apara vidya*, or that knowledge that is verifiable through experiments. But, as has been pointed out, the inner essence of the Vedas always directs us toward the unity of life, the discovery of which is the goal of life. That was called *para vidya*, or Supreme Knowledge, which is verifiable only through personal

experience. The jnana kanda portion of the Vedas gives us that Supreme Knowledge by knowing which everything else is automatically known.

The Braahmanas deal with the world as seen by classical physics whereas the Upanishads deal with the quantum world. When the latter becomes a matter of actual experience, the so-called real world experienced by the majority of humanity is seen to be an illusion, which modern-day quantum physicists have found to their astonishment.

With the dawn of this quantum age, scientists have even begun to think that there may be something called a life current flowing through the universe, variously referred to by religions as the Divine Consciousness or God or Brahman or other terms. They are trying to give proof for what humankind has had faith in, but no solid evidence for, from the dawn of time. Scientists have proved in the laboratory that the dualistic world that we think we can see is a myth, a shadow cast on the wall. The only reality is that higher collective consciousness, which exists for all time and in all places. You may call it God or whatever else you choose to call it. The Vedas called it Brahman.

## **YAJNAS AND THE ENERGY FIELD**

The most important of the Vedic rituals is known as yajna, “worship” or “sacrifice.” Yajna involves the performance of certain prescribed rituals with the aid of Agni (the god, Fire). The Vedas describe small and big yajnas that can be done by human beings. There is also reference to the cosmic yajna, which goes on incessantly in Nature, producing sunshine, clouds, rainfall, vegetation, and the different natural cycles.

The fire yajnas were conducted in huge open-air enclosures known as *yajna shalaas*, and they were really the very first scientific laboratories. Here the sages examined the flora and fauna of the land, surveyed organic and inorganic resources, and laid the foundations of a welfare state. The domestication of animals, the science and craft of agriculture, and the utilization of all types of resources for food, clothing, and housing were some of the earliest undertakings of the Vedic age. They praised Nature, the universal mother, with lovely hymns. They did not defile or desecrate her or assume that her riches belonged to them. The following passage from the *Atharva Veda* typifies their attitude.

Rightly I am the son of the Earth. The Earth is my mother. May the earth goddess who bears her treasure stored in many places, gold, gems, and riches, give opulence, grant great happiness to us, bestowing them with love.

When many things are offered to Agni or the god of fire in a yajna, to the accompaniment of chanted Vedic mantras, this is known as *homa*. Offerings to many gods are made through Agni, who is the mediator. Even though many divinities are mentioned, it would be wrong to label the Vedas as postulating polytheism. The Vedas emphatically proclaim that there is only one God and That has manifested as the different deities.

Performing any rite or ritual with a feeling of devotion as an offering to the Supreme can be termed a yajna, which is the meaning made clear in the *Bhagavad Gita*. Lord Krishna says that any activity of the human being that is intended to contribute something to the society with a selfless intention can be called a yajna. The entire eighteenth chapter of the *Yajur Veda* deals with this type of yajna, which is not a fire ritual. Rather, it refers to the human being's dynamic activity to explore and utilize Nature's resources for the benefit of all. Any coordinated, well-planned effort for the common good can be called a yajna. This is a sacred act and hence is known as a sacrifice or a selfless act.

The immortal soul assumes a human form for benevolent purposes. Man is not an individual. He is a social organism. God loves those who serve other beings, whether human beings, animals, or plants. An individual's glory lies in being a member of a big family. Though we have our personal blood relationships, we are in fact linked with every individual, whether near or far. The human being thus lives, works, and dies for society. We are expected to develop our craft, sciences, and technology and lead society from poverty to prosperity. Through a series of such lives, we are expected to attain our fullness, or liberation. In that state we shall revert to our self-effulgent form and enjoy divine bliss.

When a mantra for a certain deity is chanted, it calls forth that particular deva or deity. Spiritually evolved persons can see the deities or feel their presence when the mantras are chanted. These subtle divine forces that exist in Nature help humans to conduct their lives in the proper way and also fulfill their desires. The Vedas teach that they will be more inclined to help us if we worship them and offer libations to them. Thus, Lord Krishna says in the *Bhagavad Gita*:

Do thou worship the devas through yajnas and let them bring you prosperity by giving rains and such things. Thus helping each other, you will both prosper.

Every breath we take is part of the universal breath and every breath we give out is our contribution to universal life. This *prana*, this life force, is the same in

everything and everyone and is spread everywhere simultaneously. Our lives can only become perfect if we participate in this great interchange with the universe. As the *Bhagavad Gita* tells us in the third chapter, *sahayajna praja srishtva purovacha prajapati*: “The Creator created all of us and instilled the idea of yajna or selfless action in us.” No man is an island and no one can live without some sort of dependence on others and on Nature. *Ahamtva* and *mamatva* (“me” and “mine”) have always been considered to be the two knots that alienate us from God. There is no “me” and “mine” as we think; rather, all things are connected in an amazing way to the unified field.

Similarly, quantum physicists have observed that subatomic particles have no meaning by themselves in isolation but only in relationship with everything else. Matter, at its elemental level, which is the quantum level, cannot be chopped up into intelligible units but is completely indivisible. If we want to understand the universe, we have to see it as a dynamic web of interconnectedness.

As Lynne McTaggart says in her book *The Field*:

Human beings are a coalescence of energy in a field of energy which is connected to every other thing in this universe. This energy field is the central engine of our being. We can never be estranged from the other aspects of this universe since we are all bound fundamentally to this field!

This was indeed the teaching of the Vedas, which they endeavored to establish in the life of the individual in a practical way through yajnas and rituals.

## THE PERFECT LANGUAGE FOR SCIENCE

Another important point about the Vedas is the language in which they were written. Just as Hinduism is the oldest of all religions, Sanskrit is the oldest living language in the world. No one knows how it came into being or who made it. All languages have their origin in time and space and keep changing with the changing times and places in which they are spoken. But right from the first verse of the *Rig Veda*, the Sanskrit language has not changed: there has been no sound shift, no addition, no inspiration, and no change in import. The word Sanskrit means “perfect” and it was perfect from the time it came into being. It has not evolved from some initial imperfection. It exists now as it did before the dawn of history. It has mathematical precision and therefore zero deviation.

The question about its origin cannot be answered since its beginning is shrouded in mystery as with the Vedas. The scriptures say that Sanskrit came

from the primary sound called *pranava* or *Aum* through which the Divine descended in order to create the world of the seen and the heard. The primary concern of other languages is communication through the *vaikhari* (spoken) medium. This is considered to be an inferior mode of communication in the Sanskrit-Vedic tradition. Sanskrit sounds are not merely meant for verbal communication but for removing the gross wrapping of materialism and exposing us to the vibrations of the divinity underlying all creation. It is most lyrical and poetic; it stirs the divine chords within us and helps us to align ourselves to the positive vibrations of Nature.

In other languages, words are not properly defined and are therefore ambiguous. Those languages are not natural since they are human based. Sanskrit, however, is precise, totally free of all ambiguity, and therefore most suited for computers, as was reported in *Forbes Magazine* (July 1987): “Sanskrit is the mother of all the European languages. It is the most suitable language for computer software.”

Sanskrit is the most phonetic language in the world. The meaning of many Sanskrit words can be known through the sound they produce. Innumerable words are created with the help of seed sounds called *dhatus*. The Sanskrit language represents the thoughts, traditions, and cultural heritage of the whole of India. It is not the language of a community or a special region, but it has been the golden thread that has connected the whole of India into a single unit. As such the government has a duty to see that it is kept alive and taught in all schools. Scholars abroad have discovered that the learning of Sanskrit aids the growth of memory in children and there are many schools in the UK which teach Sanskrit to their students.

## THE SIX SYSTEMS

Traditional Hindu philosophers continually emphasized the crucial importance of clearly understanding what Hinduism proper was. Two Sanskrit terms they repeatedly employed were *vaidika* and *avaidika*. The word *vaidika* (or “Vedic” in English) means “one who accepts the teachings of the Veda.” It refers specifically to the unique stand taken by the traditional schools of Hindu philosophy, known as *sabda pramana*, meaning employing the divine sound current of the Veda as a means of acquiring valid knowledge. In this sense the word *vaidika* is employed to differentiate those schools of Indian philosophy that accept the epistemological validity of the Veda as a perfect authoritative spiritual



source, eternal and untouched by the speculations of humanity, as against the avaidika schools that do not ascribe such validity to the Veda. In pre-Christian times Buddhism, Jainism, and the atheistic Charvaka schools were all known to be avaidika—not accepting the Veda. These three schools were unanimously considered non-Vedic, and thus non-Hindu. Though they are geographically Indian religions, they are not Hindu religions theologically and philosophically.

Historically speaking, there are six systems of Hindu philosophy that accept the Veda as their main source of valid knowledge about spiritual matters. These systems are known as *darshanas*. In Sanskrit, *darshana* means a “point of view” or “a method of looking.” It is interesting to see how scientific many of these ancient systems were. The founders of these systems were great rishis in their own right, who had a deep insight into the workings of nature; hence they can be called scientists. They photographed truth from various angles as it were, accepting the fact that truth is many-faceted.

1. The Sage Gautama is the founder of the Nyaya philosophy, which deals with logic and reasoning. In fact, all Hindu logic is derived from his work.
2. Kanada is the founder of the Vaisheshika school, the first ancient school in the world to deal with atomism. He decreed that the world is composed of atoms long before the atomic theory was even thought of. He talks of *anus* (atoms) and *paramanus* (molecules). Vaisheshika makes use of Nyaya logic, and these two schools are closely connected.
3. The great sage Kapila is the founder of the Samkhya philosophy, which postulates Reality as being dual, Prakriti and Purusha or Nature and Spirit. He postulates that the world is made up of the five great basic elements. To these were added many others, making up a total of twenty-four cosmic principles. The basics of the Samkhya system were later used by both Yoga and Vedanta.
4. Patanjali, the founder of the Yoga school, was the greatest psychologist known to the world. He taught the various methods of mind control like meditation and breath control, which are still used by all those who wish to attain liberation. Samkhya and Yoga are always connected.
5. Mimamsa is differentiated into two schools, one of which is known as Purva Mimamsa, which was founded by the sage Jaimini. It stresses the efficacy of that portion of the Vedas that advocates yajnas and other rituals.
6. Uttara Mimamsa is another name for Vedanta, the path of wisdom taught in

the Upanishads. There are three schools of Vedanta, each having its own teacher or guru. Adi Shankara is the founder of Advaita Vedanta, which is the most famous of all the schools. He says that Reality is One alone and is called Brahman. This is known as monism. Ramanuja is the founder of the Visishtadvaita school of qualified monism. Madhvacharya is the founder of the school known as Dvaita or dualism.

*Knowledge, scriptures, and discourses cannot disclose the cause of life. Do thou search for the wisdom of existence in the eternal reality that unites life.*

MUNDAKA UPANISHAD

*When the earliest of mornings dawned, the Great Eternal was manifested as the path of light. Now the commands of the devas shall be revered. Great is the One source of energy of the cosmic forces.*

RIG VEDA 3.55.1

*Beyond all senses, mind, intellect, and ego is the essence of existence, the ultimate cause. One who realizes that endless entity is relieved from the cycle of birth and death. The unborn Supreme Self is beyond all descriptions. Scriptures and speculation give us no clue. The right path alone can take us to the wisdom that reveals its undeniable presence in all mortal beings.*

KATHA UPANISHAD

*Loka Samasthath Sukhino Bhavantu!*





*Achintyaaya Namaha!*

Salutations to the One beyond Thought!

## 10

# Vedic Astronomy, Astrology, and Mathematics

## From the Speed of Light to Leaves on a Tree

*I seem to have been only a boy playing on the sea shore diverting myself now and again by finding a smoother pebble or a prettier shell while the great ocean of truth lay before me.*

ISAAC NEWTON

*The evolutionary energy of the Supreme Self created the universe, life, and the mind. Its infinite intelligence has enchained us to the endless conundrum of cause and effect.*

MUNDAKA UPANISHAD

*In the solitary regions of green valleys,  
And the confluence of the rivers,  
The sages obtain divine intuition.*

RIG VEDA

Modern astrophysics and astronomy tell us that our galaxy called the Milky Way, or Akasa Ganga in Vedic terminology, contains approximately 100,000 million stars. Each star is like our sun, having its own planetary system. We know that the moon moves around the earth and the earth moves around the sun along with the moon. All planets in our solar system move around the sun. Each of the above bodies revolves on its own axis as well. Our sun, along with its family, takes one round of the galactic center in 225 million years. All galaxies including ours are moving apart at a terrific velocity of 20,000 miles per second.

The total kinetic energy generated by the galaxies moving at this speed creates an amazing sound, which acts as an umbrella and balances the total energy consumption of the cosmos.

The great fourteenth-century scholar, Sayana, in his commentary on a passage in the *Rig Veda* says, “With deep respect, I bow to the sun, which travels 2,202 *yojanas* in half a *nimisha*.” What exactly does this imply? A *yojana* is about nine miles. A *nimisha* is 16/75 of a second. How much does this give us?  $2,202 \text{ yojanas} \times 9 \text{ miles} \times 75/8 \text{ nimishas} = 185,794 \text{ miles per second}$ . Thus, Sayana, a Vedic scholar who died in 1387 CE, calculated that sunlight travels at the rate of 186,000 miles per second, based on information he gleaned from a hymn in the *Rig Veda* written at a time that we cannot even imagine. The amazing fact is that this happens to be the speed of light as calculated by modern physicists in the last century! Western scholars might say that this is a coincidence. If so, the Vedic tradition is filled with such coincidences!

Some Western scholars have claimed that the Babylonians invented the zodiac of 360 degrees around 700 BCE, perhaps even earlier. Many claim that India received the knowledge of the zodiac from Babylonia or even later from Greece. However, in the *Rig Veda*, the oldest Vedic text, there are clear references to a chakra or wheel of 360 spokes placed in the sky. The number 360 and its related numbers like 12, 24, 36, 48, 60, 72, 108, 432, and 720 occur commonly in Vedic symbolism.

For example, many Hindus use a *mala* or rosary of *rudraksha* seeds or *tulasi* beads containing 108 beads in order to do their *japa* (mantra repetition). There is a scientific reason for using this particular number as there is in everything prescribed by Hinduism. The diameter of the sun is about 108 times the earth’s diameter. The distance between the earth and sun is approximately 108 times the sun’s diameter. The distance between the earth and the moon is 108 times the moon’s diameter. Incredible as it may seem, the rishis were well aware of these facts and that is why they declared the number 108 to be sacred. Had they given scientific reasons for this in those ancient times, nobody would have been capable of believing them. It is only now with the progress of modern science that we of the modern age can recognize these facts and marvel at the unbelievable intelligence of those amazing beings.

There is another reason why the number of beads in the Hindu rosary has 108 beads instead of 100. This mala represents the ecliptic, the path of the earth and moon across the sky. Hindu astronomy divides the ecliptic into four equal

sections called *paadas* or steps. These paadas contain 27 stars called *nakshatras*. When you multiply 27 with 4, you get 108, and these mark the steps that the earth and moon take through the heavens. Each of these steps is associated with a particular planet and deity with which you align yourself as you turn the beads.

The 109th bead is known as the *meru* or guru bead and it comes in the very middle of the mala. After repeating the mantra and turning the mala around in your hand until you reach the central or guru bead, you stop, turn the mala around, and continue reciting the mantra while moving the beads in the opposite direction. The meru bead represents the summer and winter solstices, when the sun appears to stop in its course and reverse its direction in a dramatic fashion. By using a mala in this way we are actually connecting ourselves with the cosmic cycles governing our universe! The rishis were well aware of the fact that the macrocosm (solar system) is mirrored in us (the microcosm). Actually it is said that there are 108 steps between our ordinary human awareness and the divine consciousness at the center of our being. Each time we chant a mantra, we are taking another step toward our own inner sun!

## THE POWER OF PRATIBHA

The *Surya Siddhantha* is the oldest surviving astronomical text in Hinduism. It is dated to the fifth or sixth centuries by Western scholars, though of course the text itself claims to come from a much older tradition. It says that the earth is shaped like a ball and on the very opposite side from India is a great city where the sun is rising at the same time as it sets in India. It claims that a race of *siddhas* or spiritual adepts live in this city. Mexico lies exactly opposite to India on the globe. The ancient rishis were obviously well aware of the great astronomers of Central America many centuries before the so-called discovery of America by Columbus. Today, we know that the Mayans and Incas had a highly developed astronomy.

Vedic astronomers were also able to describe the different planets and stars and had names even for Uranus, which is only a relatively recent discovery in the West. They even predicted the length of time until Hailey's comet would reappear.

The star called Antares is said to be the fifteenth brightest in the solar system. However, Hindus call it *jyestha*, meaning "biggest" or "eldest." Astronomers only recently discovered that it is fifty times bigger than other stars! Indian astronomers had identified it seven thousand years ago!

Arundhati and Vasishta are the names of two stars found in the constellation known as the Big Bear. They were considered to be just one star by Western astronomers. Hindu astronomers had found that they were actually two stars revolving round each other. They named the two stars after the great sage Vasishta and his wife Arundhati, who were supposed to be an exemplary couple. On the first night of their wedding, south Indian couples are asked to go and take a look at these stars so that they can also have a perfect marriage.

Now the question arises regarding how these people found out so much about the planets without any instruments. The reason is simple: the rishis were in perfect control of their minds. Instruments are only the extensions of a human being's inherent powers—the power to see, to hear, or to accomplish things he or she wants done. For example, a telescope allows us to see distant objects like the planets; a microscope allows us to see tiny objects. Unless we have eyesight, neither of these instruments will work. When these powers are highly developed in oneself, then one has them at his or her command by the mere power of thought without the need for instruments. So if the rishis wanted to find out about the planets or about anything else, all they had to do was to concentrate on that object and they were able to find out everything they wanted. This, of course, is an infallible method; that is why their findings have never been refuted up to the present day, whereas in the West one person discovers something and another later refutes it.

These ancient scientists were not just intellectuals; they were practicing yogis who had sharpened their intuitive intellect to hitherto unknown heights. The very first lines of the *Surya Siddhanta* say: “In the Golden Age a great astronomer named Mayan desired to learn the secrets of the heavens, so he first performed rigorous tapas. Then the answers to his questions appeared in his mind in an intuitive flash.” In his *Yoga Sutras*, Patanjali Maharishi, the foremost of the great psychologists of India and the world, states that through *samyama* (concentration, meditation, and unbroken mental absorption) on the sun, moon, and pole star, we can gain all knowledge of the planets and stars. The next *sutra* (couplet) he wrote clarifies this by saying, “Through keenly developed intuition, everything can be known.”

Highly developed intuition is called *pratibha* in Sanskrit. It is available to those who have completely stilled their minds and are capable of focusing their attention on one object with laser-like intensity. Since their minds are totally under control, they are not limited to the fragments of knowledge supplied by the five senses. All knowledge then becomes accessible to them. The traditional

Hindu view is that pure consciousness contains all knowledge—past, present, and future—and thus it is the very source of universal knowledge.

The rishis were also able to intercept electromagnetic waves and tune in to things happening in other places without using a radio or TV. They could also explore other planets in their astral bodies, without the need for rockets and spaceships. As has been said, the microcosm is only a reflection of the macrocosm and thus everything that takes place anywhere in the cosmos can be known by the human being. The sciences of parapsychology and telepathy are all very new to the modern mind, but these phenomena were well known to the rishis.

## EARLY MATHEMATICS

The discovery of zero is one of the greatest contributions of India to the world. In one of the Vishnu temples inside the Gwalior Fort, the figure of “0” is seen for the first time. The deep calculations made by Indian astronomers would have been impossible without the use of zero. This is an abstract concept and Hindus were experts in abstractions. The concept of Brahman is purely an abstract one. Therefore, they were quick to realize the need for something that was absolutely nothing, on which the whole edifice of the universe as well as of mathematics could be constructed.

India was the first to start using the digits from 1 to 9. From India their use traveled to Arabia; then, when it went to the West, they called them Arabic numerals. However, they actually came from India, as the Arabs themselves admitted. Europe was still using the heavily structured Roman numerals, which made arithmetic very clumsy and difficult. When these Indian numerals came to Europe in the third century, the Roman Catholic Church denounced them as being the work of the devil; as a result, they did not come into vogue in Europe until a couple of centuries later. This is an example of the deep distrust and dislike the Church had toward anything new. This is why Western science lagged so far behind India in those days.

The method of graduated calculations was documented in the *Pancha Siddhantika* (five principles), in the fifth century, but the technique is said to have come from the Vedas. In fact, the first reference to astronomy is found in the *Rig Veda*.

The value of  $\pi$  was also calculated by Budhayana (sixth century). He also explained the concept that is now known as the Pythagorean Theorem.

Quadratic equations were explained by Sridaracharya in the eleventh century.

The largest number used by the Greeks and Romans was 10 to the power of 6, whereas Indians used numbers as big as 10 to the power of 53, with specific names, as early as 5000 BCE. Even now the largest number used in mathematics is tera, 10 to the power of 12.

## **NAKSHATRAS: SEEING STARS**

Since the rishis were so good in astronomy, it follows that they were also very good in astrology. Astrology or *jyotisha* is one of the oldest sciences and has its roots in the Vedas. Our great seers could see into the future and make many predictions. The earth is the recipient of impact from other planets. The planets under which we are born have given us all our characteristics, both physical and mental. Apart from this, every moment of our lives we are under the domination of some planet or other, even though we may not know it. This is what makes us display erratic patterns of behavior at certain times. Very often we are unable to account for the changes in our “moods” as we say.

Vedic calculations are based on the moon because the moon is the closest planet revolving around the earth and draws all planetary energies toward the earth’s environment. This system is totally different from that adopted by Western astrology, which bases its calculations on the sun. The sun takes thirty days to move from one zodiac zone to another and thus can give only limited information. The moon moves faster and has greater impact on life. Hence, Vedic astrology is more precise and goes into greater detail.

It takes fourteen days for the new moon to reach its fullness. This phase is known as the bright phase (*shukla paksha*). It then takes another fourteen days to proceed to the new moon state, which is the waning phase known as the dark phase (*krishna paksha*). There is an overlap of a day as the new moon and full moon appear on the fourteenth day. This double counting is overcome by subtracting one day to get a total of twenty-seven days in a lunar month. The moon thus takes twenty-seven days to circle the 360 degrees of the zodiac.

Each of these twenty-seven points of the moon is represented by a star or *nakshatra*, beginning with Asvini and ending with Revathi. These provide the moon with a different constellation for every day of the lunar month. This is a more scientific system and easier to compute than the twelve signs of the zodiac of the Western astrological system, in which there is a change of sign for the moon every two-and-a-quarter days. While each of the twelve signs of the



zodiac consists of a thirty degree section of the heavens, the nakshatras cover an area of thirteen degrees and twenty minutes.

Each month of the Vedic calendar is named after one of these lunar constellations or nakshatras in which the full moon occurs. If we examine the nakshatra chosen to rule the month we find that they mark the beginning of their sign. These nakshatras begin with the one that marks the vernal equinox. The nakshatra marking the full moon of the winter solstice is thus mentioned as the first month of the year (Asvini).

Everyone is born under a particular nakshatra or star. These stars have also been broadly delineated as possessing god-like, demonic, or human tendencies. Of course these are only broad characteristics and our natures also undergo changes with the changing of the planets during our lifetime and even during the day or week or month. Based on the moon's movement around the earth and the earth's movement around the sun, the astrologer can predict with amazing accuracy the experiences that will occur in the lives of people living on earth. Likewise each planetary movement causes definite changes in the earth's environment as well as in the lives of those who live on this planet. The astrologer can identify the dynamic movements of energies by observing the position of the planets at the time of birth in the zodiac.

Using the Vedic astrological system and the data available at the time of your birth, an astrologer can determine your birth star and ruling planetary periods. Such periods will bring specific experiences. The sum of these periods is 120 years, which is supposed to be the lifespan of a human being. The astrologer identifies all the energies inhaled by you with your first breath, which determines the qualities of your physical, mental, and astral systems and thus predicts the highlights of your life. He then casts your horoscope from which he or any other astrologer can predict with a fair degree of accuracy the broad facts about your birth, the number of siblings that you have, your parents' status, academic status, marriage, career, success, health, accidents, and death. Of course, the experience of the astrologer who reads the horoscope is also of great consequence.

The time of manifestation of a baby from the mother's womb will determine its inborn characteristics, based on how the planets are positioned in the zodiac at the time of birth. Great importance is given in astrology to identifying the very first inhalation to determine the effects of all subsequent inhalations. But it is very difficult to get the exact four seconds of the time of a baby's birth. So the

astrologer has to work around the time given by the parents.

A horoscope can only give broad outlines of the things that will happen to a person. Even though the astrologer can predict the future of a person, he cannot say why it is so and certainly he cannot control it. Hinduism says that the time of birth as well as everything concerning a person is determined by his or her past karmas. In fact, we come into this world to work out the effects of our karmas. The universal intelligence is what is always in control. Similarly, we can predict the weather but we cannot control it. However, by knowing the type of weather to expect it is possible for us to take necessary precautions, such as an umbrella if it is going to rain or a sun hat if it is going to be sunny. This is the way in which astrological predictions can help us in our lives.

There is a form of Indian astrology in which our past, present, and future lives are recorded. It is called Nadi Shastra and was written on leaves by great saints called *siddhas*. The history of Nadi astrology can be traced back more than two thousand years. It is said that the siddhas were perfected beings who could appear in different forms at different places. Most of them were great lovers of God, especially in his form as Shiva. Lord Shiva, pleased with their devotion, granted them incredible powers. The siddhas wrote their predictions on palm leaves, called “*nadi* leaves.” Known as Brighu Patrikas in north India and Agastya Nadis in south India, they predict, with an amazing degree of accuracy, the whole life history of any person who consults one of the people who deciphers them. People are astounded to see that everything about them was written on that particular leaf thousands of years ago.

It might seem miraculous that siddhas who lived hundreds of years ago could have known about our lives. However, these great sages obviously connected themselves with that unified field in which everything exists—past, present, and future. These leaves are not only found for Indian residents but also for foreigners and other nationals belonging to different religions and creeds. Still, not everyone has a nadi leaf predicting his life. Only those who were related to these saints in a *poorva janma* (previous life) will have a nadi leaf.

These leaves were written in Sanskrit. The king of Tanjore, Serfoji II, was a true patron of art and sciences. So he stored these palm leaves in his palace library, called the “Sarasvati Mahal.” He also had them translated into the ancient Tamil script, called Vattelzuthu. It so happened that the British acquired possession of these leaves during their rule and later sold them to a few families through auctions. These families have carefully preserved the nadi leaves,

awaiting their moment of rendezvous with the intended recipients. These can be found in Tamil Nadu near the temple of Vaideesvaran and a few other places.

This raises another interesting question: are we capable of controlling our future? When our mind connects to the universal mind, which we call *chitta* in Hinduism, we are actually capable of controlling our future. Modern science has offered us the explanation of how this can be so. The chitta or unified field provides a holographic blueprint of the world for all time, past, present, and future. As our scriptures tell us, everything in the future already exists in the realm of pure potential. When we look into the future or the past, we help to shape it and bring it into being by the simple act of observation, just as we do with a quantum entity in the present. Information transferred through subatomic waves does not exist in time or space but in the ever present. The past and present blur into one vast here and now and our brain picks up these signals and forms our own future. Our future exists in some nebulous state that we may begin to actualize in this very present. This field is the field of all possibilities and what actually happens, happens because we will it to happen, either consciously or subconsciously.

## UNPARALLELED VARAHAMIHIR

In the history of Indian astrology, Varahamihir stands unparalleled. He was the son of a brahmin called Adityadas and lived in Avanti (Ujjain). Both father and son were ardent devotees of the sun, as their names, which are themselves names of the sun, imply. Varahamihir was born in 499 CE and passed away at the age of eighty-eight in 587 CE. He wrote many books, including the *Pancha Siddhantika*, which deals with five principles of ancient astronomy. Had it not been for him, the details of the five ancient systems would have been lost. The *Vivahapatal* and *Yogayatra* deal with the auspicious times for marriage and journeys, which their names imply as *vivaha* means marriage and *yatra* means journey. The *Bruhajataka* deals with individual horoscopes and is still regarded as the most authoritative work on the subject.

The *Bruhat Samhita* is his last work, and the most celebrated. It has 106 chapters and 4,000 *shlokas*; it includes everything pertaining to planets, asterisms, and the signs of the zodiac. One portion deals with architecture, sculpture, geography, iconography, econometrics, auspicious signs in human beings and animals like horses, elephants, cows, dogs, goats, and so on. It also deals with omens, water divining, and methods of making swords, perfumes, and

cosmetics. It has chapters dealing with the science of precious stones, with botany, and other topics. Varahamihir was the first to construct a simple ingenious water clock, as described in the previous chapter. He is the earliest authority on Vaastu Shastra, the science of architecture. He describes in great detail the many ways in which to build houses and temples and make sculptures. He gives the types and dimensions of dwellings for different members of society, from palaces for kings to officers, royal astrologers, preceptors, physicians, and laypeople. He details twenty types of temples and even suggests auspicious types of flowers and trees to be grown near dwellings and temples. His genius is brought out in these details.

He had a profound knowledge of astronomy. He was the first who declared the shape of the earth to be spherical. He wrote, “All things that are perceived by the senses are witness to the fact of the globular shape of the earth and refute the possibility of its having any other shape.” The famous Arab Indologist Al-Beruni frequently referred to two Indian astronomer-astrologers—Varahamihir and Brahmagupta—as excellent astronomers who spoke only truth.

When acute water scarcity hit Gujarat in 1980, scholars went through the *Bruhat Samhita* and discovered a few simple methods given by Varahamihir to detect underground water.

1. If there is a termite hill in the east, near a Jambu tree, then sweet water will be found two head's deep to the right of the termite hill.
2. Sweet water that will not dry will be found three and a quarter head's deep and three arm lengths in the south from a Nagoda tree, shading an anthill.

Many such methods are given in the book, which has been found to be absolutely correct. He also gives details on the method of constructing tanks and ponds for storing water for long periods! His uncanny methods of locating groundwater veins could not possibly have been discovered in a human lifetime, solely by physical digging. It is much more likely that his revelations sprang from the insight he acquired through meditation and other *sadhanas* (or forms of spiritual practice).

## **ARYABHATTA, INDIA'S GREATEST ASTRONOMER**

Aryabhatta was the greatest astronomer and mathematician of ancient India. He was described by the later astronomer Bhaskaracharya:

Aryabhatta is the master who, after reaching the furthest shores and plumbing the inmost depths of the sea of ultimate knowledge of mathematic, kinematics, and spherics, handed over the three to the learned world.

He developed theories that were “discovered” many centuries later by Western scientists. He was the first to gift algebra to the world. He cites his date of birth with astonishing accuracy in his famous work, *Aryabhatiya*: “When sixty times six years and three-quarters of a yuga had elapsed of the current yuga, I had passed twenty-three years since my birth.” This means that in the year of Kali Yuga 3600, he was twenty-three years old. The Kali year 3600 corresponds to 499 CE. So he was born in the year 476 CE in Pataliputra, modern Patna in Bihar, where the famous university of Nalanda was located.

Aryabhatta was designated as the head of this university where a special observatory existed for studying astronomy. He was known as Ardubarius in Europe in the Middle Ages. Though he wrote two books, only the *Aryabhatiya* has survived. It deals with astronomy and mathematics and is the first Indian text to record the most advanced astronomy in the history of ancient science. Some of his findings:

- The value of  $\pi = 3.1416$ ; this is the same as we use today. Yet even this value he calls *aasaana* or approximate.
- Two methods of computing the sine table.
- The theory of solving indeterminate equations.
- The earth is spherical and it rotates. The period of one sidereal rotation of the earth in *Aryabhatiya* is given as 23 hours, 56 minutes and 45.1 seconds. The modern value is 23 hours 56 minutes and 45.091 seconds.
- He determined the length of the solar year from the heliacal risings of some bright stars at an interval of 365 and 366 days. According to him the year is 365 days, 6 hours, 11 minutes, 29.64 seconds! This value of the solar year is nearer to the modern value than that of Ptolemy. Based on his own observations, his astronomical constants differ from those of other astronomers and are more accurate than those of previous astronomers. The epicycles of the planets given by earlier astronomers, including Ptolemy, are fixed in value. Those given by Aryabhatta vary from place to place and yield better results.
- He gave the correct method for calculating the celestial latitude of both superior and inferior planets.

- His book is perhaps the earliest text on astronomy to use the radian measure of 3438 units for the radius of the circle.
- He was the first to describe the true cause of lunar and solar eclipses—that they were due to the shadow of the earth and moon. He also said that the moon was inherently without light but was illuminated by the sun.
- His theory of the earth's rotation and orbit round the sun was expressed a thousand years before Copernicus put forward his heliocentric theory.

There is no doubt that Aryabhatta was a genius in both astronomy and mathematics. According to Georges Ifrah, at the beginning of the sixth century CE, Aryabhatta had perfect knowledge of zero and the place value system to calculate the square root and cube root, since these two operations could only be carried out by using the place-value system with nine distinct numbers and a tenth sign, which performed the function of zero.

## **BHASKARACHARYA**

The period between Aryabhatta and Bhaskara is considered to be the golden age of astronomy in India. Bhaskara, son of Maheswara, was born in 1114 CE. It was his father who taught him mathematics. From the time of Aryabhatta, mathematics came to be incorporated into astronomy, which also required knowledge of geometry, trigonometry, arithmetic, and algebra. Bhaskara's son, Lakshmidhara, and grandson, Chanagadeva, also became renowned astronomer-mathematicians. However, Bhaskara's works are unparalleled. He was so thorough that he left no room for improvement.

Bhaskara's first work, which he wrote at the age of thirty-six, was *Siddhanta Shiromani*; it is divided into four sections called *Bijaganit*, *Grahaganit*, *Goladhyaya*, and *Lilavati*, this last book named after his daughter. He was the first to discover gravity, five hundred years before Newton. His last work at the age of sixty-nine was *Karanakutuhel*. This is used even today to make calendars. However, his *Lilavati* is the most acclaimed of his works. It is said that a person adept in the *Lilavati* can even compute the exact number of leaves on a tree!

The *Lilavati* deals with mathematics, addition, subtraction, division, squaring, cubing, extraction of square and cube roots. He gives names to all the main numbers in this work.

His *Bijaganit* is a systematic and complete treatise on Hindu algebra. His greatest contribution was the method of solving problems of indeterminate

equations of the second degree. For these he gave both algebraic and geometrical solutions.

The *Grahaganit* and *Goladhyaya* deal with the astronomy of heavenly bodies based on the *Surya Siddhanta*. In the third chapter, he describes the situation of the earth, unsupported in space, and how beings exist on the surface of this spherical earth. He deals also with the circumference, surface area, and volume of the earth, using  $\pi$  as 3.1416. He calculates the length of the sidereal year, the time taken for the earth to revolve round the sun, as 365.2588 days. The modern value is 365.2563, with a difference of only 3.5 minutes!

The fifth chapter looks at the mean motions of the sun, moon, and planets. The sixth and eighth chapters show how to calculate sunrise by calculating the lunar crescent, how to find out the relative lengths of days and nights in different seasons and latitudes. It also teaches how to find the latitude of a place.

The next three chapters deal with eclipses and another chapter deals with astronomical instruments used for observing heavenly bodies. At the end he concludes that intelligence is a better tool than all instruments!

There is an interesting story in connection with his daughter Lilavati. When he made his daughter's horoscope, he found a bad omen in it. If her marriage did not take place at a certain specified time, she would become a widow. At the time of her marriage, he made a water clock to know the exact time. He floated a small vessel with a hole at the bottom in a vessel filled with water, telling her that the small vessel would sink at the auspicious moment. He placed the device in a room and warned her not to touch it. However, curiosity prompted her to go near and look into it. A pearl from her nose-ring fell into the cup and caused it to sink. Hence, the marriage took place at an inauspicious time; as he had foreseen in the horoscope, Lilavati became a widow. Bhaskara realized that, however brilliant an astrologer may be, he can only predict the position of the stars. He cannot control them! They are controlled by the law of karma. However, to console his daughter and give her eternal fame, he named his masterpiece after her.

Bhaskara was the last of the great astronomer-mathematicians of ancient India. After his time, wave after wave of foreign hordes started invading and desecrating and destroying the land. Such a war-torn land was not the place for genius to flourish. But by this time Bhaskara's fame had spread to all parts of the then-known world including Arabia and Persia.

## PLANETARY ENERGIES

When we look at the history of the world and the stories of our epics, and so on, we will see that aggressive forms of life seem to exceed optimistic and peaceful life-forms in number and intensity. This shows in our lives also. Negative and dominant thoughts seem to overwhelm optimistic feelings all too often. The reason for this can be found in the organization of the planets in our solar system. There are nine planets in the zodiac—the sun, moon, Mars, Mercury, Jupiter, Venus, Saturn, Rahu (Uranus), and Ketu (Neptune). Of these only Mercury, Jupiter, and Venus discharge positive energy. The moon can be positive or negative depending on its position in the zodiac. The remaining five planets discharge negative energy. This is why we find negative forces easily overcoming the positive in both our external life and inward life.

No matter how much modern science may deny the effect of planets on our lives and scorn the astrologer as old-fashioned and unscientific, these facts cannot be denied. The only way we can overcome these evil forces is to increase the positivity in our own lives and begin to show compassion for everyone and every creature. This is the lesson of the Vedas. Of course the highest method is what is given in the Upanishads—to align yourself to the highest force in the universe—Brahman; then the planets can never harm you. The planets all exist in the level of space and time and the one who has gone beyond and become one with the Absolute will be above all the effects of the planets!

It is to be hoped that modern science will eventually come to realize that the planets are indeed emitting invisible energies, both positive and negative, which pass through our bodies and give certain directions to our minds. If science accepted these facts then scientists would start to concentrate their minds on how to increase or decrease these energies in order to bring about a peaceful atmosphere both in the individual and the world. The ancients, however, discovered these facts and have given us certain methods for protecting ourselves. These will be dealt with in the next chapter.

*The aforesaid constellations in the heavens, the mid-regions, observed in waters and on earth, on the mountains and in all quarters as the moon passes by them, revealing them, may they all be peaceful to me.*

ATHARVA VEDA 8.9.2

*The all-controlling, immortal wheel of the UniverseIs revolving in infinite space,Ten, yoked together, draw it in this wide world.The*



*wisdom of God, united with Cosmic Energy,Manages the whole  
Universe,On this Energy rest and dependAll regions and planets.*

ATHARVA VEDA

*You grope in the darkness of ignorance seeking the elusive goal of  
your spiritual quest. But it lies deep in your own mind and becomes  
visible only to those who care to look inward.*

YAJUR VEDA

*Loka Samasthath Sukhino Bhavantu!*



# APPENDIX

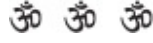
## Poems to India

### Verses Composed by Vanamali

How fortunate am I to be born a Hindu on this holy soil, Breathing the perfumed  
air, saturated by the breath of countless sages, Drinking in the sight of this  
sacred river, This incredible mountain,  
Listening to the chants of the ages, Washed down the river of time,  
Floating across the Ganga,  
Bells ringing, conches blaring, The sound of Aum, echoing down the corridors  
of time, Thrilling me to the very core,  
Urging me not to waste even a small precious moment, Charging me to go  
forward,  
Searching for my ephemeral self, Which all the time resides in me, My constant  
companion,  
My lover of a thousand ages,  
My child, my father, my mother, my beloved, My one and only Me,  
The eternal Me,  
Nothing else exists,  
There is no Thou,  
Only I, I, and again I.



O to be in India when the monsoons come, To feel the rain on your face, the mist  
in your eyes, To smell the earth with heaving bosom, To bow before the  
lashing waters, To laugh with the thunder and gurgle with the stream, To  
flinch when the lightning hits your eyes, To listen bemused to the orchestra of  
the night, To be in India—to be an Indian!



When will I be able to roam over the Himalayas, The cradle of our culture,  
To be young and free and clamber over the snowy mountains, To feel my  
Mother's pulse rushing in my veins, To feel her spirit raising me to the  
heights, To plumb the depths of her beauty, To unveil the secret of her  
eternity, To roam wild over her mountainside, To plunge into the depths of her  
waters, To rejoice that the eternal spirit of the rishis Courses through my veins,  
To be free, to be a seeker,  
To be an Indian!

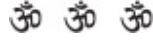


Himalaya!

Thy name is a blessing and a boon, Walking through the forest of Devatarus—  
the trees of the gods, I sit sometimes immobile, meditating on thee O mighty  
Himalaya!

To think of thee is to be blessed!

To live in thee is grace supreme, To die on thy chest is liberation!



O Ganga!

Thou art not a river,

Thou art a goddess,

Coursing through the Milky Way of stars, Washing the feet of Vishnu,

Falling on the matted locks of Shambu, Beguiled by Bhageeratha,

Gushing down the gorges of the Himalayas, Rushing through the plains,

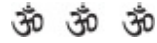
To defile the purity of your waters in the salty ocean, In order to bless this land,  
the land of your choice.

O Ganga! Thou ethereal goddess, Blessed am I to have thy darshana every  
morning!



How fortunate am I to be born on this holy land, Where countless sages and gods  
have trod, Where the very air is fragrant with the perfume of their holy feet,  
Where sacred rivers and streams gush in ecstasy to reach the ocean, Where  
every stone is a linga in disguise, Where every cow is a holy animal, Where

one can lie on the earth and say, This is my land, the holy land.



Love lies in the heart of the sun, You cannot see it but you can feel its heat,  
Soaking through you, filling you with warmth, It reveals itself in the eyes of  
the person before you, Even though you might never have seen him before.

It shines through the twinkling gaze of your child, Who looks at you as if you  
were the end and the all.

It enters your heart unattended, Ready to reveal itself, ready to care for you, If  
you allow it.

All the love you get in the world is the love of god for you, The love of you (the  
human) for god!

There is no other love—there is no other love.



However many births I might take, May I still be born a Hindu,

As a tulsi leaf or lotus flower, On the soil of India,

How many births have I gone through, As leaf and worm and reptile—animal  
and brute man, Before being born a Hindu on this sacred soil.

My Mother, Supreme!

I take thy sacred dust and place it reverently on my head, I am replete with thy  
love, thy compassion.

Mother allow me to serve you till the end of my life.

Take my hand Mother and lead me to liberation.



There is a divine romance flowering in the hearts of all, An aroma of the spirit,  
creeping into our souls, A mystic sound emanating from our hearts, Prepare  
yourselves O daughters and sons of this soil, The dawn is about to break!

# Glossary of Sanskrit Terms

- aranya:** Pertaining to the forest **acharya:** Teacher  
**adharmic:** Unrighteous  
**Aditi:** Mother of the gods  
**advaita:** Nondual  
**agni:** Fire  
**ahamtva:** Ego sense of I  
**ahara shuddhi:** Purity of food  
**ahimsa:** Nonviolence  
**ajna chakra:** The chakra between the brows **akasa:** Sky (space)  
**amavasya:** New moon day  
**anadi:** That which has no beginning **ananda:** Bliss  
**anandamaya kosha:** The sheath of bliss **ananta:** That which has no end  
**annamaya kosha:** The sheath of food **anu:** Atom  
**apah:** The element of water  
**apana:** The breath that is exhaled **apara vidya:** Scientific knowledge **apas:** Water  
**apaurusheya:** Not the work of human beings **aranya:** Pertaining to the forest  
**aric:** Wise man; sage  
**artha:** Wealth  
**asaana:** Approximate  
**asana:** A seat  
**asat:** Nonexistence  
**ashrama:** Spiritual retreat  
**ashtanga yoga:** The yoga of eight limbs, of Patanjali **asti:** Beingness  
**asura:** Demonic being  
**atma(n):** The divine spirit in the human being **Aum:** The initial sound of the cosmos **avaidika:** Contrary to the Veda  
**avatara:** Incarnation of God  
**avidya:** Ignorance  
**avyakta:** That which is not clear **bhakta:** Devotee

**bhakti marga:** The path of devotion **bhakti yoga:** The yoga of devotion  
**bilva/vilva:** Type of leaf important in the worship of Shiva **bindu:** Dot

**braahmana:** A brahmin; a member of the highest class **brahamanda:** A supergalaxy

**brahma muhurtam:** Time between 3 and 4 am **brahmacharya:** Celibacy

**brahmajnana:** Knowledge of Brahman **brahmanishta rishi:** Sage who is established in Brahman **brahmarishi:** Sage who is a knower of Brahman  
**briha:** Large

**chaitanya:** light of divine consciousness **chakra:** wheel

**chandas:** Meter used in hymns

**Chandogya:** One of the Upanishads **chikitsa vijnana:** Knowledge of treatments  
**chit, chitta, chid:** Highest level of the mind; consciousness **chitta shuddhi:** Purification of the mind **chitta vritti nirodha:** To steady the wavering mind  
**Daksha:** One of the patriarchs; he was born out of the right thumb of Brahma, the Creator **dama:** Self-restraint

**dana:** Charity

**darshana:** Point of view

**daya:** Compassion

**desha:** Country

**deva:** Shining one (god)

**dhamanis:** Veins and nerves that supply food to the body **dharma:** Universal law of life and righteousness **Dharma Shastra:** Book describing the duties of a human being **dharmic:** Pertaining to dharma

**dhatu:** Nerve

**dhruva:** A type of grass used in worship of Ganesha **doshas:** The three problems of the body **dravya vijnana:** Pharmacology

**dvaita:** Duality

**gada:** Mace

**gayatri:** Name of a meter; famous hymn to the sun god **gotra:** Lineage coming from a rishi **gotra pravartakas:** Founders of the brahmanical clans **gotra rishi:** Rishi whose name was given to a lineage **gunas:** The three strands of Nature **guru:** Spiritual preceptor

**homa:** Fire ceremony

**ishta deva:** Favorite deity

**Itihasa:** Epic

**jadaragni:** Fire of digestion

**jagat:** World

**jagrita:** Waking state of consciousness **japa:** Repetition of god's name

**japa yoga:** The yoga of the repetition of a mantra **jijnasu:** Inquirer on the path of truth **jiva:** The life principle

**jivatma:** The embodied soul

**jnana:** Wisdom

**jnana kanda:** Volume or portion pertaining to wisdom **jnana marga:** The path of wisdom **jnani:** Person of wisdom

**jyestha:** Elder

**jyotisha:** Astrology

**kaala:** Time

**Kali Yuga:** Name of the present epoch **kalpa:** Lifetime of Brahma, the creator  
**kama:** Passion; pleasure; desire **kapha:** Phlegm; one of the three doshas  
**karma:** Action; bonds accruing from action **karma kanda:** Volume or portion pertaining to action **karmic:** Pertaining to the bonds created by action  
**krimis:** Germs; parasites; worms **krishna paksha:** Dark half of the lunar month **kurma:** Tortoise

**laya:** State of dissolution

**lila:** Play

**loka:** World

**lokasamgraham:** For the maintenance of the world **mahakashayas:** Herbal concoctions used in Ayurveda **maharishi:** Great sage

**mahavakyas:** The great sayings of the Upanishads **mala:** Necklace

**mamatva:** Sense of mineness

**mandala:** Mystic drawing

**mandukam:** Frog

**mantra:** A spiritual formula

**mantra drashta:** The person to whom a mantra was revealed **manvantara:** An

epoch ruled by a Manu **matsya**: Fish

**matsya yantra**: An instrument using the fish symbol **maya**: The illusion of a separate world; appearance; the phenomenal world **meena**: An astrological sign

**meru**: Mythical peak

**mesha**: Astrological sign and the name of a month **mesha sankranthi**: The day preceeding the month called Mesha **mesha sankranthi rekha**: The Alpha Aries point from which the earth starts its rotation around the sun **mesha vishuvath**: Hindu new year **mithya**: That which does not exist **moksha**: Liberation from mortal coils **mudra**: Mystic sign made by joining the thumb to one of the fingers **muladhara chakra**: Energy whorl found at the base of the spine **Mundaka**: Name of one Upanishad

**nadi**: A nerve

**Nadi Shastra**: A form of Indian astrology in which people's horoscopes are recorded on palm leaves **nakshatra**: Star

**nama**: Name

**namaste**: Folding the palms together as a salutation; verbal greeting, meaning "I bow to you or my greetings or prostrations to you"

**Narasimha**: The incarnation of Vishnu as half-human and half-lion **nav**: Boat

**navagatih**: Navigation

**neti, neti**: Not this, not this

**nimisha**: Second

**nimitta**: Cause

**nirukta**: Etymology

**ojas**: Physical splendor

**padaas**: Steps

**pakayantras**: Laboratory instruments **pancha bhutas**: The five elements in Nature **pancha karmas**: The five types of cleansing in Ayurveda **pancha mahabhutas**: The five great elements **papa**: Sin

**para vidya**: Knowledge of the Absolute **paramanu**: Molecule

**Paramatma**: The Supreme Soul

**patrika**: Palm leaves on which horoscopes were written **pitta**: Bile; one of the



three doshas **poorna**: Totally full  
**poorva janma**: Previous birth  
**prajnanaghanam**: Filled with consciousness **Prakriti**: Nature  
**pralaya**: Flood  
**pramaana**: Infallible knowledge  
**prana**: Vital breath; life-force **pranamaya kosha**: The sheath of breath around the body **pranava mantra**: The mantra Aum  
**pranava svaroopam**: The form of Aum **pranayama**: The technique of breath control **pranic**: Pertaining to the prana or life-force **prarabdha karma**: Results of action done in a previous life **prasad**: Leftover of offerings to God  
**prasna**: Inquiry  
**pratibha**: Highly developed intuition **prithvi**: The earth  
**puja**: Ritualistic worship of God **punya**: Spiritual merit  
**punya kaalam**: Auspicious time  
**puranic**: Pertaining to the Puranas **puranic rishis**: The sages responsible for writing the Puranas **Purusha**: The Supreme Person  
  
**rajas**: Activity, passion; one of the three modes of Nature **renu**: Particle  
**rik**: Hymn from the Rig Veda  
**rishi**: Great sage  
**rudraksha**: Seed of a tree that is important to Shiva **rupa**: Form  
  
**sabda pramana**: Vedic hymns (refers to the samhita portion of the Vedas)  
**sadhana**: Spiritual practice  
**samadhi**: Superconscious state  
**samans**: Hymns of the Sama Veda  
**samhara**: Dissolution  
**samyama**: Unbroken mental absorption **samyoga**: Union of the jivatma with the Paramatma **Sanatana Dharma**: The real name for Hinduism; the ancient or eternal law of righteousness **sandal**: Sandalwood  
**sandhya**: That time when day changes to night and night to day **sannyasins**: Renunciates who wear ochre robes **saptarishis**: The seven sages  
**sat**: Existence  
**sat-chit-ananda**: Existence-consciousness-bliss; explanation for Brahman

**sattva:** Quality of purity; one of the three modes of Nature **satyam:** Truth  
**sauvastika:** Left-handed form of the svastika **shad darshanas:** Six schools of Hindu philosophy **Shakti:** Force, power of the goddess **shalya tantra:** Surgical procedures **shastra:** Scripture  
**shloka:** Couplet in a poem  
**shrishti:** Creation  
**shruti:** That which was heard (refers to the hymns or Samhita portion of the Vedas) **shruti siras:** The head of the Vedas (refers to the Upanishads) **shukla paksha:** Bright fortnight of the lunar month **shunya:** Zero; nil  
**siddha:** Perfected being  
**siddhi:** Supernormal power  
**smriti:** That which is recollected, the second and third portions of the Vedas  
**sthiti:** Status quo  
**sushupti:** State of deep sleep  
**svapna:** Dreaming state  
**svara:** Pitch  
**svasti:** Auspiciousness; well-being **svastika:** A symbol of auspiciousness  
**svayamvara:** Marriage by choice of the bride **tamas:** Sleep; inertia; one of the three modes of Nature **tantra:** An esoteric type of yoga **tantric:** Pertaining to tantra  
**tapas; tapasya:** Austerity  
**tejas:** Spiritual effulgence  
**tulasi:** The holy basil  
**turiya:** State of superconsciousness **upadhis:** Conditionings of the mind (space time and causation) **vac:** Sound; speech  
**vaidika:** Pertaining to the Vedas **vaidika dharma:** Rules of behavior given by the Vedas **Vamana:** Incarnation of Vishnu as a dwarf **Varaha:** Incarnation of Vishnu as a boar **vata:** Element of wind in the body (one of the three doshas) **vayu:** Air  
**Veda:** The four holy books of the Hindus **Veda Vedy:** That which is to be known through a study of the Veda (referring to Brahman) **Vedic:** Pertaining to the Vedas  
**vel:** Spear (weapon used by Lord Subramania) **vidya:** Knowledge  
**vijnanamaya kosha:** The intellectual sheath of the human being **vishuvath:** The

start of the Hindu year **vyakarna:** Grammar

**vyakta:** Perceivable to the senses **vyoma:** Transcendental space

**yaj:** To worship

**yajna shalaas:** Places where yajnas are held **yajnas:** Fire ceremonies

**yakrut:** Liver

**yam:** To control

**yantra:** Instrument, spiritual design **yoga:** Spiritual practices to attain union with the Divine **Yoga Sutras:** Aphorisms given by the sage Patanjali **yogi:** One who practices yoga

**yojana:** About a mile

**yuga:** An epoch

**yuj:** To unite

## Footnotes

[\\*1](#) The word *panchagni* means “five fires.” This is a ritual that is practiced during Uttarayana, or the course of the sun toward the north—from January 14 to July 14. The person who wants to practice it has to sit in the middle of four fires, which are lit in all four directions. The blazing sun above is the fifth fire. This form of *tapas* is done for many days or months, as necessary, in order to subdue the five fires or passions of the mind. These are *kama* (lust), *krodha* (anger), *lobha* (greed), *moha* (desire), and *mada/matsara* (jealousy). These can also be overcome by practicing other forms of *tapas* (austerity), *dhyana* (meditation), and *dana* (charity).

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# Index

All page number are refer to the print edition of this title.

Achar, Narhari, 87  
action, 109–17  
Adi Shankara, 43, 90  
Aditi, 134  
advaita, 45, 78  
Advaita Vedanta, 43, 51, 89, 90, 123,  
129, 132–33, 141–42  
Agastya, 14  
Agni (fire), 20, 30, 31–32, 37–38, 135  
ahamtva, 39  
Aitareya, 69–70  
*Aitareya Upanishad*, 69–70, 132  
akasa, 134–35  
ananda, 47, 67  
anandamaya kosha, 67  
anandarasa, 75  
Ananta, 92  
Angiras, 14  
annamaya kosha, 67  
annihilation, 61  
apah, 133, 134–35  
apas, 135  
apaurusheya, 10  
Aranyakas, 15, 34–35  
architecture, 182–83  
Arjuna, 6, 84, 102  
arrow of the mind, 64–65  
artha (wealth), 83, 206–7  
Arthashastra, 17  
arts, 35  
Arundhati, 153–54  
Aryabhatta, 147, 162–64

Aryan invasion, 12  
asana, 178  
asat, 128–29  
ashtanga yoga, 178–79  
Ashvamedha, 16, 32  
astrology, 33, 156–62  
astronomy, 151–55, 162–67  
*Atharva Veda*, 16, 25, 33–34, 37,  
176–77  
atmaivedam sarvan, 50  
atman, 19  
atma sakshatkara, 50  
Atri, 14  
*Aum*, 40, 45, 63, 66, 96, 136, 188,  
209–10  
*Aum Tat Sat*, 49  
avaidika, 41  
avatars, 82–83, 92–93  
avyakta, 48  
Ayurveda, 17, 170–71  
  
Babylonians, 151–52  
Backus, John, 182  
Bailey, Alice, 146  
balance, 114–16  
*Bhagavad Gita*, 6, 23, 38, 38–39, 48, 51–52, 62, 102  
bhakti marga, 81, 101–8  
bhakti yoga, 105  
Bharadwaja, 14  
Bhaskaracharya, 162, 164–66  
bhuh, 99  
big bang theory, 133  
Big Dipper, 14  
bilva leaf, 170  
bliss, 47, 67  
Braahmanas, 15, 34–35, 45  
braahmanas, 18

Braahmi script, 25  
Brahma, 10, 45, 91  
brahmacharya, 175  
brahmaivedam sarvan, 50  
brahmajnana, 17  
Brahman, 4, 36–37, 45  
    breath of, 26–29  
    expressing the inexpressible, 45–47  
    expressions of, 82–83  
    living in, 17–21  
    nature of, 47–49, 128–31  
brahma sakshatkara, 50  
brahmins, 45  
Brighu, 68  
Brighuvalli, 68  
*Brihadaranyaka Upanishad*, 74–78  
British domination, 204–6  
*Bruhajjataka*, 161  
*Bruhat Samhita*, 161  
Brunton, Paul, 54  
Buddha, 24  
Buddhism, 41  
  
Capra, Fritjof, 3, 130  
celibacy, 175  
Chandas, 17  
*Chandogya Upanishad*, 71–73  
chaos, 124–25  
Charak, 173–76  
Charvaka schools, 41  
chemistry, 33  
chit, 46–47, 48  
chitta, 126–28, 160  
Christianity, 23  
collective well-being, 27  
conch seal, 86–87  
consciousness (chit), 46–47, 65–66,

123–25, 127–28  
copper, 34  
cosmic egg, 131–36  
creation, 26, 90–97, 120, 131–36  
  
daily life, sacred science of, 198–201  
Daksha, 134  
darkness, 124  
darshanas, 41–43  
Darwin, Charles, 132–33  
death, 73  
desires, 19  
destruction, 90–97, 133  
devas, 82–83  
*Devi Purana*, 99  
devotion, 81, 101–8  
Dhanur Veda, 17  
Dhanvantari, 171–72  
dharana, 179  
dharma, 2, 81, 83, 206–7  
Dharma Shastras, 17  
dhruva grass, 170  
dhyana, 179  
Divine Consciousness, 36–37  
dualism, 43, 78–79  
Dvaita, 43  
Dwapara Yuga, 14–15, 16  
Dwaraka, 86–87  
  
Eddington, Arthur, 121, 130  
Einstein, Albert, 120–21, 128, 137  
electrons, 98–99  
elements, 69–70  
Eliade, Mircea, 89  
embodied soul, 69–70, 114  
energy field, 37–39, 134–35  
enlightenment, 52–53  
ethics, 111

evolution, 132–33  
existence (sat), 46  
  
faith, 67  
*Field, The*, 39  
fire, 20, 31–32, 37–38  
food, 68–69, 170–71  
formless, 89  
freedom of choice, 6, 89–90  
Freud, Sigmund, 181  
  
Gaandharva Veda, 17  
galaxies, 99  
games, 185  
Gandhiji, 113  
Ganesha, 84, 88–89, 96  
Gargi, 75, 76  
Garuda, 92  
gaseous matter, 135  
Gautama, 14, 42  
Gayatri mantra, 187–88  
gem therapy, 33–34  
germs, 174  
gnats, 94  
goals, 206–7  
God, 36–37, 90–91, 93  
Goddess, 60  
God particle, 132  
Godse, 113  
gold, 34  
golden ratio, 189–90  
good of the world, 19  
gotra pravartakas, 18  
grammar, 181–82  
Guadapada, 128  
guests, 7  
gunas, 135–36  
guru parampara, 54



gurus, 53–54

Hanuman, 88–89

Heisenberg’s principle of  
indeterminacy, 122

herbs, 170

Higgs-boson particle, 132

Himalayas, 12, 15

Hinduism, ix–xix, 2–3, 24  
creation, maintenance, and  
destruction, 90–97  
freedom of choice, 89–90  
scientists of, 168–85  
spiritual goals of, 202–10  
Vedas and, 22–24

Hiranyaharbha, 133–34

honey, 74

illusion, cycles of, 144–45

Indra, 30

instruments, 190–92

intellect, 5

intuition, 153–55

iron, 34

*Ishavasya Upanishad*, 2, 58–59

Isvara. *See* God

Itihasas, records of ancient history,  
83–87

jagrita, 65–66

Jainism, 41

Jamadagni, 14

Jantar Mantar, 146

japa, 93, 106

jijnasus, 137

jiva, 69–70, 114

jivanmukta, 60–61

jivatma, 66, 114

jnana kanda, 35  
jnana marga, 81, 105  
Judaism, 23, 28  
judgment, 111–13  
Jupiter, 33–34, 166–67  
justice, 111–13  
Jyotisha, 17  
  
Kali Yuga, 14–15, 146–47, 162  
Kalpa, 17  
kama, 83, 206–7  
Kannada, 42  
Kapila, 42, 180  
karma kanda, 35, 36, 109–17  
Kartikeya, 96–97  
Kartayayani, 75–76  
Kashyapa, 14  
*Katha Upanishad*, 60–62  
*Kena Upanishad*, 49, 59–60  
Ketu, 166–67  
kitten path, 104–5  
knowledge, 81, 103  
Kratu, 14  
Krishna, 6, 38–39, 51–52, 62, 83, 84,  
85–87, 102, 104–5, 115  
  
Lakshmidhara, 164  
language, 25, 40–41  
lead, 34  
liberation, 51–55, 67, 69–70,  
136–38  
life current, 36–37  
light, 124  
Lilavati, 165–66  
lineage, guru, 54  
listening, 27  
lokas, 99  
lokasamgraham, 19

love, 4, 101–2

“Madhu Kanda,” 74

Madhvacharya, 23, 209

*Mahabharata*, 23, 83–87, 93

Mahadeva, 94

Maharishi, Sri Ramana, 54

maintenance, 90–97, 133

Maitreyi, 75–76

mala, 152–53

mamatva, 39

*Mandukya Upanishad*, 65–66

mantra drashtas, 10, 17

mantras, 27–28, 38, 49–51, 186–88

Manu, 98–99

Marichi, 14

Markandeya, 12

Mars, 33–34, 166–67

mathematics, 155–56

matsya yantra, 189

matter, 121

Maya, 116–17

- beyond quantum physics, 121–23
- bursting of the cosmic egg,  
131–36
- consciousness and, 123–25
- liberation from, 136–38
- meaning of, 119–21
- nature of, 128–31
- zero point field, 126–28

McTaggart, Lynn, 39

medicine, 170–71

Mercury, 33–34, 166–67

mercury, 34

metallurgy, 182–83

Milky Way, 151

Mimamsa, 17, 42

minima, 143  
missionaries, 84–85  
mithya, 144  
moksha, 51–55, 67, 69–70, 83,  
136–38, 206–7  
monism, 43  
moon, 33, 157, 166–67  
morality, 111  
motion, 142–43  
mudras, 196  
muladhara chakra, 96  
Muller, Max, 12  
*Mundaka Upanishad*, 63–65  
music, 27  
myths, meaning of, 97–98  
  
Nachiketas, 60–61  
Nadi Shastra, 159  
nakshatras, 152  
Narada, 72  
Narayana, 133–34  
Nataraja, 95–96  
Nature, 36, 39, 77, 88, 110–11  
navigation, 184  
negativity, 112  
Neptune, 166–67  
New Testament, 24  
Newton, Isaac, 120  
Nirukta, 17  
niyama, 178  
nonexistence, 128–31  
nonviolence, 2, 207–8  
now, meaning of, 143–44  
Nyaya, 17  
Nyaya logic, 42  
Nyaya philosophy, 42  
  
pancha bhutas, 135

Pancha Karma, 174  
*Pancha Siddhantika*, 160  
Panini, 181–82  
Paramatma (the Absolute), 6, 26,  
29–30, 66. *See also* Universal  
Being  
parasites, 174–75  
para vidya (Supreme Knowledge), 36  
Parmenides, 143  
Parvati, 95  
Patanjali, 42, 177–81  
peepul tree, 13  
phonetics, 27–28, 40–41  
physical vacuum, 130  
physicians, 169–77  
physics, 141–43. *See also* quantum  
physics  
pi, 156, 163  
planetary energies, 166–67  
plants, 27  
pluralism, 6  
Prakriti, 42  
pralaya, 61, 135–36  
prana, 38–39, 134–35  
pranamaya kosha, 67  
pranava, 188  
pranava mantra, 66  
pranava svaroop, 96  
pranayama, 178  
prarabdha karma, 114  
*Prasna Upanishad*, 62–63  
pratibha, 153–55  
pratyahara, 179  
prithvi, 135  
pronunciation, 27  
psychology, 5, 177–81  
puja, 196–97

Pulaha, 14  
Pulastya, 14  
Puranas, 3, 17, 80–100  
    importance of motion, 142–43  
    meaning of myths, 97–98  
    need for devas and avataras, 82–83  
    as path of devotion, 81  
    scientific truths of, 98–100  
    visible signs of the invisible, 87–90  
Purusha, 42  
purushaarthas, 206–7  
Purva Mimamsa, 42  
quantum physics, 123–25, 130–31,  
    134–35  
Quran, 24  
  
rabbis, 28  
Rahu, 166–67  
Raivathan, 142  
rajas, 135–36  
Rajasuya, 16, 32  
Raja Yoga, 178–79  
Rama, 16, 85  
Ramana Maharishi, 138  
Ramanuja, 43  
*Ramayana*, 23, 83–87, 102  
Rao, S. R., 86–87  
Reality, 4–5, 29–30, 45–47. *See also*  
    Maya  
Rees, Martin, 131–32  
relativity, 123  
*Rig Veda*, 16, 25, 31–32, 151–52  
riks, 14  
rishis, 9–21  
    chronological age, 14–17  
    dawn of time and, 10–11  
    description of, 11–17

living in Brahman, 17–21  
scientific vision of, 3–8  
seven sages, 14  
Rudra, 30  
  
sabda pramana, 41  
sacred geometry, 189–90  
samadhi, 18, 127, 179  
*Sama Veda*, 16, 25, 32–33  
samhara, 91–97, 133  
Samhitas, 15  
Samkhya school, 42  
Sanatana Dharma. *See* Hinduism  
Sanatkumara, 72–73  
sannyasins, 64  
Sanskrit, 40–41, 181–82  
saptarishis, 14, 18  
Sarasvati, Sri Chandrashekharendra, 54  
Sarasvati River, 13  
sarvam khalvidam brahma, 50  
sat, 46, 128–29, 144  
*sat-chit-ananda*, 19, 45–47  
sattva, 135–36  
Saturn, 33–34, 166–67  
Satyakama, 72  
satyam, 2, 94  
Satya Yuga, 14–15  
Sayana, 151  
science, 2, 3–5, 36  
    perfect language for, 40–41  
    Puranas and, 98–100  
scriptural authority, 23  
seals, 13  
Self, 4, 5–6, 71–72, 74  
self-delight, 19  
seven sages, 14  
shabda pramana, 23

shad darshanas, 23  
Shaivism, 95  
Shakti, 78  
Shankaracharya, Adi, 57, 121–23  
Shatarupa, 98–99  
sheaths, 67  
Shiksha, 17  
Shiva, 93–97, 191  
shivam, 94  
shrishti, 26, 91–97  
siddhas, 153, 159  
siddhis, 4  
silver, 34  
Somaveda, 15–16, 30  
Somayaga, 32  
sound, 26–27, 40, 186–88  
space, 141–42  
spiritual instruments, 190–92  
Sri Chakra, 192–93  
*Srimad Bhagavad Gita*, 62, 84, 115  
srishti, 133, 135–36  
stars, 147–49, 151, 156–60  
sthati, 91–97, 133, 135–36  
sun, 33, 166–67  
sundaram, 94  
sundials, 145–46  
supergalaxies, 99  
Supreme Consciousness, 19  
Supreme Knowledge, 36  
*Surya Siddhantha*, 153, 154, 165  
Sushrut, 172–73  
sushupti, 65–66  
svapna, 65–66  
svastika, 13  
svayam jyoti, 48  
Svetaketu, 71–72  
symbols, 188–94



Tagore, 57  
*Taittiriya Upanishad*, 66–69, 133  
tamas, 135–36  
Tanjore, 183–84  
tantra, 194–97  
*Tao of Physics, The*, 3  
Thar Desert, 13  
time, 141–42, 145–47  
tin, 34  
Treta Yuga, 14–16  
Triveni, 13  
truth, 1–2, 29–31, 207–8  
tulasi beads, 152–53  
tulasi plant, 170  
turiya, 65–66  
  
Uddalaka Aruni, 71–72  
Ultimate Reality, 45–47. *See also*  
    Brahman  
Universal Being, 6  
Upangas, 17  
Upanishads, 20–21, 35, 52–53,  
    56–79  
Uranus, 166–67  
Uttara Mimamsa, 42–43  
  
Vaajapeya, 32  
Vaastu, 183  
vaidika, 41  
vaikhari, 40  
Vaisheshika school, 42  
Vaivasvata Manu, 14  
Valmiki, 3, 8, 81, 84–85  
Vamadeva, 70  
Vanamali, 211–15  
Varahamihir, 160–62  
Varuna, 30, 65  
Vasishta, 8, 14, 144, 153–54

vayu, 135  
Vedangas, 16–17  
Vedanta, 35, 74  
Vedas, 3, 12–13, 22–43  
    age of, 24–25  
    breath of Brahman, 26–29  
    different approaches to truth,  
        29–31  
    as guidebook, 116–17  
    relationship to Hinduism, 22–24  
    six systems, 41–43  
    structure of, 31–37  
Vedic calendar, 157  
Venus, 33–34, 166–67  
vibration, 26–27  
vignanamaya kosha, 67  
Vishnu, 91–93, 100  
Vishvamitra, 8, 14  
*Vivahapatal*, 160  
Vivekananda, 61–62  
voids, 130  
Vyakarna, 17  
Vyasa, 3, 8, 25, 81–82, 84, 88, 102,  
    103–4  
  
wisdom, 105  
without beginning, 10  
  
yajnas, 15–16, 34, 37–39  
yajna shalaas, 37  
Yajnavalkya, 75–77  
*Yajur Veda*, 16, 25, 32, 49  
Yama, 60–61, 178  
yantras, 189–94  
*Yoga Vasishta*, 16  
*Yogayatra*, 160  
yogis, 7  
yugas, 14

zero point field, 126–28



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