The Greatness of Ancient India's Developments*

Stephen Knapp

When we talk about the planet's earliest civilization, we are talking about the world's earliest sophisticated society after the last ice age. This means that according to the Vedic time tables, various forms of civilization have been existing for millions of years. But the first record of an organized and developed society was the Vedic culture that arose in ancient India with the Indus Sarasvati civilization, and then spread out from there in all directions around the world.

Often times we see that students, even in India's academic system, have not studied or encountered the contributions that were made by early civilization in the area of ancient India. Not only are they not aware of such developments that had been given from India, but there is often a lack of such knowledge to be studied. Therefore, this book is to help fill that gap of information and to show how this area of the world, indeed, had a most advanced civilization, but was also where many of society's advancements originated.

It can be found that what became the area of India and its Vedic culture was way ahead of its time. This can be noticed in such things as industry, metallurgy, science, textiles, medicine, surgery, mathematics, and, of course, philosophy and spirituality. In fact, we can see the roots of these sciences and metaphysics in many areas of the world that can be traced back to its Indian or Vedic origins.

Furthermore, we often do not know of all the progress that had been made during the ancient times of India, which used to be called Bharatvarsha or Aryavrata. Nor do most people know all that ancient India gave to the world. So let us take a serious look at this.

From the Preface of *Indian Tradition of Chemistry and Chemical Technology*, the authors relate most accurately: "Hindus are a race who have dwelled on the most fundamental questions about life (& death), about nature and its origins. The bold questioning by Hindus gave birth to theories, axioms, principles and a unique approach to and a way of life. The approach to life and the way of life led to the evolution of one of the most ancient and grand cultures on the face of the earth. The spiritual aspects of Hindu culture are more commonly known, the fact that science, technology and industry were a part of their culture is little known."

* Excerpt from Advancements of Ancient India's Vedic Culture. Reproduced from the original text; figures are not included.
Source: Stephen Knapp. 2012. The greatness of ancient India's developments. Bharatiya Pragna, August 2012, pp. 29–38. (www.stephenknapp.com)

"For historical reasons, the achievements of ancient Hindus in various fields of science and technology are not popularly known to Indians. The recent research by Sri Dharmpal and others has shown that the colonial invaders and the rulers had a vested interest in distorting and destroying the information regarding all positive aspects of Hindu culture. The conventional understanding today is that Hindus were more concerned about rituals, about spirituality, and the world above or the world after death. That Hindus were an equally materialistic people, that India was the industrial workshop of the world till the end of 18th century, that Hindus had taken up basic questions of the principles of astronomy, fundamental particles, origins of the universe, applied psychiatry and so on, are not well documented and not popularly known. That ancient Hindus had highly evolved technologies in textile engineering, ceramics, printing, weaponry, climatology and meteorology, architecture, medicine and surgery, metallurgy, agriculture and agricultural engineering, civil engineering, town planning, and similar other fields is known only to a few scholars even today. There are about 44 known ancient and medieval Sanskrit texts on a technical subject such as chemistry alone. The information about the science and technological heritage of India is embedded in the scriptures, the epics and in several of the technical texts. The information needs to be taken out of these and presented."

"Facts like Hindus had the knowledge that the sun is the center of the solar system, about the geography of the earth, the way the plants produce food, the way blood circulates in the body, the science of abstract mathematics and numbers, the principles of health, medicine and surgery and so on at a time in history when the rest of the world did not know how to think, talk and write has to be exposed to people. This can draw the attention of these communities, especially the future generation towards 'ideas' that are essentially Indian."

"There are several published works on the history of India. Such works are written by Indian scholars as well as western researchers in oriental and Indological studies. Many of these works are highly scholastic and are not amenable to the common man. There is a need to make the knowledge of science heritage of India known to one and all. Further, there is need for studying scriptures, epics, and other ancient literature (in Sanskrit as well as other regional languages) to unearth the wealth of knowledge of our ancestors. Reports of such studies also need to be published continuously."[1]

This is the goal of the present volume, to easily and simply convey this knowledge for the benefit of everyone, for the correct view of history, and to give credit where credit is due.

The advanced nature of ancient Indian sciences

Achievements in the sciences of ancient India were known all over the world, even in Arabia, China, Spain, and Greece, countries in which medieval scholars acknowledged their indebtedness to India. For example, the Arab scholar Sa'id ibn Ahmad al-Andalusi

(1029–1070) wrote in his history on science, called *Tabaqat-al'umam*:

"The first nation to have cultivated science is India ... India is known for the wisdom of its people. Over many centuries, all the kings of the past have recognized the ability of the Indians in all the branches of knowledge. The kings of China have stated that the kings of the world are five in number and all the people of the world are their subjects. They mentioned the king of China, the king of India, the king of the Turks, the king of the Persians, and the king of the Romans. ... they referred to the king of India as the 'king of wisdom' because of the Indians' careful treatment of *'ulum* [sciences] and all the branches of knowledge."

"The Indians, known to all nations for many centuries, are the metal [essence] of wisdom, the source of fairness and objectivity. They are people of sublime pensiveness, universal apologues, and useful and rare inventions. ... To their credit the Indians have made great strides in the study of numbers and of geometry. They have acquired immense information and reached the zenith in their knowledge of the movements of the stars [astronomy]. ... After all that they have surpassed all other people in their knowledge of medical sciences ..."

This means that according to the Vedic time tables, various forms of civilization have been existing for millions of years. But the first record of an organized and developed society was the Vedic culture that arose in ancient India with the Indus Sarasvati civilization, and then spread out from there in all directions around the world.

Often times we see that students, even in India's academic system, have not studied or encountered the contributions that were made by early civilization in the area of ancient India.

Furthermore, "Whether it was astronomy, mathematics (specially geometry), medicine or metallurgy, each was a pragmatic contribution to the general Hindu ethos, viz., Man in Nature, Man in harmony with Nature, and not Man and Nature or Man Against Nature, that characterizes modern science. The Hindu approach to nature was holistic, often alluding to the terrestrial-celestial correspondence and human-divine relationship. Hindu and scientific and technological developments were an integral part of this attitude that was assiduously fostered in the ancient period."[2]

In his article, *Indic Mathematics: India and the Scientific Revolution*, Dr. David Grey lists some of the most important developments in the history of mathematics that took place in India, summarizing the contributions of luminaries such as Aryabhata, Brahmagupta, Mahavira, Bhaskara, and Madhava. He concludes by asserting, "the role played by India in the development (of the scientific revolution in Europe) is no mere footnote, easily and inconsequentially swept under the rug of Eurocentric bias. To do so is to distort

It can be found that what became the area of India and its Vedic culture was way ahead of its time. This can be noticed in such things as industry, metallurgy, science, textiles, medicine, surgery, mathematics, and, of course, philosophy and spirituality.

history, and to deny India one of its greatest contributions to world civilizations."

Lin Yutang, Chinese scholar and author, also wrote that: "India was China's teacher in trigonometry, quadratic equations, grammar, phonetics ..." and so forth. Francois Voltaire also stated: "... everything has come down to us from the banks of the Ganges."

Referring to the above quotes, David Osborn concludes thus: "From these statements we see that many renowned intellectuals believed that the *Vedas* provided the origin of scientific thought."

The Syrian astronomer/monk Severus Sebokhy (writing CE 662), as expressed by A.L. Basham in his book *The Wonder That Was India* (p. 6), explained, "I shall now speak of the knowledge of the Hindus ... Of their subtle discoveries in the science of astronomy – discoveries even more ingenious than those of the Greeks and Babylonians – of their rational system of mathematics, or of their method of calculation which no words can praise strongly enough – I mean the system using nine symbols. If these things were known by the people who think that they alone have mastered the sciences because they speak Greek, they would perhaps be convinced, though a little late in the day, that other folk, not only Greeks, but men of a different tongue, know something as well as they."

There have been many scholars, both old and new, who readily agree and point out the progressive nature of the early advancements found in ancient India's Vedic tradition. So let us take a quick overview of some of what was known and developed in earlier times in the Vedic culture of the East.

American professor Jabez T. Sunderland (1842–1936), President of the India Information Bureau of America, spent many years in India. He was the author of *India in Bondage*, wherein he wrote, "India created the beginnings of all sciences and she carried some of them to a remarkable degree of development, thereby leading the world. India has produced great literature, great arts, great philosophical systems, great religions, and great men in every department of life – rulers, statesmen, financiers, scholars, poets, generals, colonizers, skilled artisans and craftsmen of every kind, agriculturalists, industrial organizers, and leaders in far reaching trade and commerce by land and sea."

Sunderland went on to say, "India was a far greater industrial and manufacturing nation

The recent research by Sri Dharmpal and others has shown that the colonial invaders and the rulers had a vested interest in distorting and destroying the information regarding all positive aspects of Hindu culture.

than any in Europe or than any other in Asia. Her textile goods – the fine products of her loom, in cotton, wool, linen, and silk – were famous over the civilized world; so were her exquisite jewelry and her precious stones, cut in every lovely form; so were her pottery, porcelains, ceramics of every kind, quality, color and beautiful shape; so were her fine works in metal iron, steel, silver, and gold. She had great architecture – equal in beauty to any in the world. She had great engineering works ... Not only was she the greatest ship-building nation, but she had great commerce and trade by land and sea which extended to all known civilized countries."[3]

In *India in Bondage*, Sunderland also quotes Lord Curzon, the British statesman who was viceroy in India from 1899 to 1905, as saying in his address delivered at the great Delhi Durbar in 1901: "Powerful empires existed and flourished here [in India] while Englishmen were still wandering, painted in the woods, while the English colonies were a wilderness and a jungle. India has left a deeper mark upon the history, the philosophy, and the religion of mankind, than any other terrestrial unit in the universe."

That ancient Hindus had highly evolved technologies in textile engineering, ceramics, printing, weaponry, climatology and meteorology, architecture, medicine and surgery, metallurgy, agriculture and agricultural engineering, civil engineering, town planning, and similar other fields is known only to a few scholars even today. There are about 44 known ancient and medieval Sanskrit texts on a technical subject such as chemistry alone.

The Hindu approach to nature was holistic, often alluding to the terrestrial-celestial correspondence and human-divine relationship. Hindu and scientific and technological developments were an integral part of this attitude that was assiduously fostered in the ancient period."

Lord Curzon had also stated: "While we [the British] hold onto India, we are a first rate power. If we lose India, we will decline to a third rate power. This is the value of India."

Similar to this, Beatrice Pitney Lamb, former editor of the *United Nations News*, first visited India in 1949 on an assignment for the Carnegie Endowment for International Peace, writes in her book, *India: A World in Transition*: "In addition to the still visible past glories of art and architecture, the wonderful ancient literature, and other cultural achievements of which educated Indians are justly proud, the Indian past includes another type of glory most tantalizing to the Indians of today – prolonged material prosperity. For well over a millennium and a half, the Indian subcontinent may have been the richest area in the world."[4]

Many other writers and scholars had commented on their high regard for what

There have been many scholars, both old and new, who readily agree and point out the progressive nature of the early advancements found in ancient India's Vedic tradition.

had been developed in India. For example, to recognize a few, General Joseph Davey Cunningham (1812–1851) author of *A History of the Sikhs*, writes: "Mathematical science was so perfect and astronomical observations so complete that the paths of the sun and moon were accurately measured."

There was much admiration even of the language of India. William Cooke Taylor (1800–1849), author of *A Popular History of British India*, stated in *Journal of the Royal Asiatic Society, Vol. II*: "It was an astonishing discovery that Hindusthan possessed, in spite of the changes of the realms and changes of time, a language of unrivaled richness and variety; a language, the parent of all those dialects that Europe has fondly called classical – the source alike of Greek flexibility and Roman strength."[5]

French scholar Buffon presented a coherent theory that scholars of ancient India had preserved the old learning from the creators of its sciences, arts, and all useful institutions. Voltaire had also suggested that sciences were more ancient in India than in Egypt. Russian born philosopher Immanuel Kant placed the origin of mankind in the Himalayas and stated that our arts like agriculture, numbers, even the game of chess, came from India.

German scholar Friedrich Schlegel also had a high regard for India, stating that everything of high philosophy or science is of Indian origin. French scholar and judge Louis Jacolliot, in his *Bible in India*, writes: "Astonishing fact! The Hindu Revelation (*Vedas*) is of all revelations the only one whose ideas are in perfect harmony with modern science, as it proclaims the slow and gradual formation of the world." Of course, we can see the videos in which the astrophysicist Carl Sagan says, "The Hindu religion is the only one of the world's great faiths, dedicated to the idea that the cosmos itself undergoes an immense, indeed, an infinite number of deaths and births. It is the only religion in which the time scales correspond to those of modern cosmology."

The point is that all science of the Vedic tradition was developed with or in continuation of the ancient Vedic or spiritual knowledge that was a central point in understanding life. It was part of the Absolute Truth, or *Sanatana-dharma*, by which we could understand how to function in this world, and what is the purpose of both this world and our life in it. From this point, so many other developments took place, not as a means to control the environment, but as a means to know how to work holistically with nature for our material and spiritual progress and growth.

People like the Nobel Prize winner Maurice Maeterlinck wrote in *The Great Secret*: "... This tradition attributes the vast reservoir of wisdom that somewhere took shape simultaneously with the origin of man, or even if we are to credit it, before his advent

upon this earth, to move spiritual entities, to beings less entangled in matter."

The popular American author Mark Twain also had a high opinion of India, and wrote in *Following the Equator*: "This is India ... cradle of the human race, birth place of human speech, mother of history, grandmother of legend, great-grandmother of tradition, whose yesterdays bear date with the moldering antiquities of the rest of the nations ... India had the start of the whole world at the beginning of things. She had the first civilization; she had the first accumulation of material wealth; she was populous with deep thinkers and the subtle intellects; she had mines, and woods, and a fruitful soil."[6]

Even in scientific discoveries, there are those who acknowledge the knowing that has taken the rest of the world ages with which to catch up. For example, Fredric Spielberg writes in *Spiritual Practices of India*, with an introduction by Alan Watts: "To the philosophers of India, however, relativity is no new discovery, just as the concept of light years is no matter for astonishment to people used to thinking of time in millions of *kalpas* [days of Brahma]. The fact that the wise men of India have not been concerned with technological applications of this knowledge arises from the circumstance that technology is but one of innumerable ways of applying it. It is, indeed, a remarkable circumstance that when Western civilization discovers relativity, it applies it to the manufacture of atom bombs, whereas, Oriental (Vedic) civilization applies it to the development of new states of consciousness."

Lord Curzon had also stated: "While we [the British] hold onto India, we are a first rate power. If we lose India, we will decline to a third rate power. This is the value of India."

Another simpler example is when Dick Teresi, author of *The God Particle* and co-founder of *Omni* magazine, writes in *Ancient Roots of Modern Science*, "In India, we see the beginnings of theoretical speculations of the size and nature of the earth. Some 1,000 years before Aristotle, the Vedic Aryans asserted that the earth was round and circled the sun."

Dick Teresi also acknowledges how much of the knowledge we understand today did not necessarily come from the Greek civilization, but actually existed much earlier in the Vedic traditions of India. He again writes in *Ancient Roots of Modern Science*: "Two thousand years before Pythagorus, philosophers in northern India had understood that gravitation held the solar system together, and that therefore the sun, the most massive object, had to be at its center. Our Western mathematical heritage and pride are critically dependent on the triumphs of ancient Greece. These accomplishments have been so greatly exaggerated that it often becomes difficult to sort out how much of modern math is derived from Greece and how much from ... the Indians and so on. Our modern numerals 0 through 9 were developed in India. Mathematics existed long before the Greeks constructed their first right angle."[7]

Russian born philosopher Immanuel Kant placed the origin of mankind in the Himalayas and stated that our arts like agriculture, numbers, even the game of chess, came from India.

The Antiquity of Vedic Culture

Many are those who have mentioned the antiquity of the Vedic tradition, but how far back does it go? Traditionally, it was there since the beginning of time. However, even archeologically we can ascertain its very early dates.

For example, archeologists have found 7000-year-old rock paintings in the Aravalli mountain range near Benari dam in the Kotputli area of Jaipur district in Rajasthan in 1991. These paintings are adjacent to the site of the famous Indus Valley Civilization. Such 7000-year-old (5000 BCE) paintings were also found in Braham Kund Ki Dungari and Budhi Jeengore in Rajasthan. This discovery makes the Vedic civilization more ancient than the Egyptian and Greek and Mesopotamian civilizations. This also negates the Aryan Invasion Theory, the hypothesis that the Vedic Aryans were not indigenous, but established themselves after invading the area, which is completely wrong as we will show later in the book.[8]

Along these same lines, further verification was also supplied by the *Times of India* (May 30th, 1992, New Delhi edition) wherein it was reported that the Department of Archaeology and Museums in the city of Jaipur, Rajasthan discovered as many as 300 prehistoric paintings on Kanera rocks in an area of 400 square miles near the town of Nimbahera in Chittorgarh district. These paintings are dated between 50,000 to 60,000 years old. That pushes the earliest reaches of Vedic civilization to at least 50,000 years back.

Additional finds such as these are discovered on a regular basis. Another one is reported in the publication called *Science* (February 23, 2010). It was reported therein that newly discovered archeological sites in southern and northern India have revealed how people lived before and after the colossal Toba volcanic eruption 74,000 years ago.

The international, multi-disciplinary research team, led by Oxford University in collaboration with Indian institutions, unveiled to a conference in Oxford what it calls "Pompeii-like excavations" beneath the Toba ash.

According to the team, a potentially ground-breaking implication of the new work is that the species responsible for making the stone tools in India was *Homo sapiens*. Stone tool analysis has revealed that the artefacts consist of cores and flakes, which are classified in India as Middle Palaeolithic and are similar to those made by modern humans in Africa. "Though we are still searching for human fossils to definitively prove the case, we are encouraged by the technological similarities. This suggests that human populations were present in India prior to 74,000 years ago, or about 15,000 years earlier than expected based on some genetic clocks," said project director Dr Michael Petraglia, Senior Research

Fellow in the School of Archaeology at the University of Oxford. This exciting new information questions the idea that the Toba super-eruption caused a worldwide environmental catastrophe.

An area of widespread speculation about the Toba super-eruption is that it nearly drove humanity to extinction. The fact that the Middle Palaeolithic tools of similar styles are found right before and after the Toba super-eruption, suggests that the people who survived the eruption were the same populations, using the same kinds of tools, says Dr Petraglia. The research agrees with evidence that other human ancestors, such as the Neanderthals in Europe and the small brained Hobbits in Southeastern Asia, continued to survive well after Toba.

The team has not discovered much bone in the Toba ash sites, but in the Billasurgam cave complex in Kurnool, Andhra Pradesh, the researchers have found deposits which they believe range from at least 100,000 years ago to the present. They contain a wealth of animal bones such as wild cattle, carnivores and monkeys. They have also identified plant materials in the Toba ash sites and caves, yielding important information about the impact of the Toba super-eruption on the ecological settings.

Dr Petraglia said: "This exciting new information questions the idea that the Toba super-eruption caused a worldwide environmental catastrophe. That is not to say that there were no ecological effects. We do have evidence that the ash temporarily disrupted vegetative communities and it certainly choked and polluted some fresh water sources, probably causing harm to wildlife and maybe even humans."[9]

In this way, recent discoveries show that the area of ancient India was one of the locations for the oldest civilizations the world has known.

Conclusion

The greatness of India and Vedic culture

History certainly proves that India was also one of the wealthiest countries on the planet in its earlier days. Not only did she have vast treasures of knowledge and developments, but ancient India also had great wealth, such as sapphires, rubies, emeralds, pearls, and other gems, along with sunny climate, great fertility, and much more that was exported to various parts of the world, but the deep levels of knowledge and development was another of her greatest assets. For this reason, the ambition of all conquerors was to possess the area of India.

The pearl presented by Julius Caesar to Servilia, the mother of Brutus, as well as the famous pearl ear-ring of Cleopatra, were obtained from India. The Koh-i-noor diamond, weighing at 106.5 carats, one of the most fabled of diamonds, was taken to England from India. In fact, when Alexander left Persia, he told his troops that they were now going to "Golden India" where there was endless wealth, which made the beauty and riches of Persia look puny.

When the Sultan Mahmud of Ghazni destroyed the famous Somnath temple, he found astonishing wealth in diamonds

and jewels. He also sacked Mathura and gathered numerous Deities in gold and silver. Thereafter he went to Kanauj which astonished the tyrant and his followers to such a degree in its wealth and beauty at the time that they declared that Kanauj was only rivaled in magnificence by heaven itself.

Ultimately, it was the wealth of India that drew the barbaric Arabs to the country, and then let the half-civilized Tartars to overrun it. It was the wealth of India that attracted Nadir Shah to ancient India, and from where he captured immense booty, which motivated the Abdali chiefs to renew their attacks on the country.

The people of India were actually not so barbaric as the invaders that forced their way into the country, but rather some of the most civilized in the world, primarily because of their sophisticated level of consciousness and gentleness towards one another caused by their training in the principles of the Vedic spiritual culture.

The character of the Hindus of the day had been described by some of those Europeans who had traveled there back in the 19th century, such as Max Müller, wherein he said: "Warren Hastings thus speaks of the Hindus in general: They are gentle and benevolent, more susceptible of gratitude for kindness shown them, and less prompted to vengeance for wrongs inflicted than any people on the face of the earth; faithful, affectionate, submissive to legal authority."

"Bishop Heber said: The Hindus are brave, courteous, intelligent, most eager for knowledge and improvement; sober, industrious, dutiful parents, affectionate to their children, uniformly gentle and patient, and more easily affected by kindness and attention to their wants and feelings than any people I ever met with."

"Sir Thomas Munro bears even stronger testimony. He writes: If a good system of agriculture, unrivaled manufacturing skill, a capacity to produce whatever can contribute to either convenience or luxury, schools established in every village for teaching reading, writing, and arithmetic, the general practice of hospitality and charity amongst each other, and above all, a treatment of the female sex full of confidence, respect, and delicacy, are among the signs which denote a civilized people – then the Hindus are not inferior to the nations of Europe, and if civilization is to become an article of trade between England and India, I am convinced that England will gain by the import cargo."[10]

Besides all these considerations, Max Müller also once related: "I wished to point out that there was another sphere of intellectual activity in which the Hindu excelled – the meditative and transcendent – and that here we might learn from them some lessons of life which we ourselves are but too apt to ignore or to despise."[11]

Finally, in what could be a conclusive statement made by a European who had spent many years living and studying the Vedic culture and Sanskrit literature of early India, Max Müller said, "If I were to look over the whole world to find out the country most richly endowed with all the

wealth, power and beauty that nature can bestow – in some parts a very paradise on earth – I should point to India. If I were asked under what sky the human mind has most fully developed some of its choicest gifts, has most deeply pondered on the greatest problems of life, and has found solutions of some of them which well deserve the attention even of those who have studied Plato and Kant – I should point to India. And if I were to ask myself from what literature we, here in Europe, we who have been nurtured almost exclusively on the thoughts of Greeks and Romans, and of one Semitic race, the Jewish, may draw that corrective which is most wanted in order to make our inner life more perfect, more comprehensive, more universal, in fact more truly human, a life not for this life only, but a transfigured and eternal life – again I should point to India."[12]

Chapter notes

1. Prof. A.R. Vasudeva Murthy and Prasun Kumar Mishra, *Indian Tradition of Chemistry and Chemical Technology*, Samskrita Bharati, Bangalore, India, August 1999, pp. i–v.

2. *Science and Technology in Ancient India*, by Editorial Board of Vijnan Bharati, Mumbai, August 2002, Foreword by B.V. Subbarayappa.

3. Niranjan Shah, *Indian Tribune* Newspaper, December 8, 2007.

4. Ibid.

5. Ibid.

6. Niranjan Shah, *Indian Tribune* Newspaper, December 1, 2007.

7. Niranjan Shah, *Indian Tribune* Newspaper, December 9, 2005.

8. *India Tribune*, June 1, 1991, Atlanta edition.

9. http://www.ox.ac.uk/images/maincolumn/9440

10. Max Müller, *India: What can it teach us?*, first published in 1883, published by Rupa & Co., New Delhi, 2002, pp. 46–47.

11. Max Müller, *India: What can it teach us?*, Longmans, Funk & Wagnalls, London, 1999, p. 22.

12. Max Müller, *India: What can it teach us?*, first published in 1883, published by Rupa & Co., New Delhi, 2002, p. 5.