Origins of Vedic Civilization

Kenneth Chandler, Ph.D.

(Three chapters from a book in progress)

The Indus-Saraswati Valley Civilizations spread over more than 250,000 square miles, and included over 1600 sites. Most of the villages and cities were laid out on an exact north-south grid on sites west of the river, and were built with kiln-fired brick of uniform size. Sites have been found dating from 6,500-7,000 BC.

Origins of Vedic Civilization

Did Aryan Invaders of India Create the Vedic Tradition?

HOW ANCIENT IS THE VEDIC TRADITION and how did it begin? Was it the creation of a people who invaded India from outside, as many European scholars believed for centuries? Or did it arise among an indigenous people of northern India? In this chapter we will ask where the Vedic tradition originated, and in the next chapter, we will consider when it came into existence. In the third chapter, we will consider its relation to European civilization.

According to the Vedic tradition, the Veda is eternal. It exists within the eternal fabric of consciousness itself. As such it is uncreated. But even so, we can ask, when was the Veda first cognized? And when did the tradition of reciting the Veda begin?

Did Invaders of India Create the Vedic Tradition?

Many myths about the Veda and Vedic tradition have formed that must be dispelled before we can get an accurate picture of its origins. One myth is that a race of light-skinned Aryan peoples invaded India from outside, pushing the dark-skinned natives, called Dravidians, into the south. According to this theory, the lighter-skinned race invaded India in an incursion that took place, some scholars project, around 1,500 BC.

This myth persisted long after an overwhelming body of scientific evidence, and a consensus of archeologists, showed that it is completely untenable. It must be discredited before we can get an accurate picture of the character of Vedic Civilization.

As we will see, the Veda was first "cognized," not by invading races from outside India, but by a people who had lived continuously in India for thousands of years. Also, the dates commonly ascribed to the origin of the Vedic tradition are probably off by many thousands of years. Archeologists at Harvard, Oxford, and other top universities in the US and Europe are now widely agreed that there was no invasion of India from outside that displaced the peoples of the Saraswati and Iudus river valleys. This civilization arose within northern India and there is also evidence, which we will

consider in the next chapter, that Vedic civilization was either a precursor to the Indus-Saraswati civilization or an early contributor to its cultural and spiritual heritage. Vedic civilization arose in India many millennia before the speculative mythologies of the past suggest.

Origins of the Indo-European Hypothesis

Linguistic similarities between Indian and European languages were recognized by the earliest European scholars. In the late eighteenth century, it was observed that Sanskrit, Iranian, and most European languages share many common words and grammatical structures. Early linguists classified Vedic Sanskrit and the majority of European tongues in the same "family of Indo-European languages."

Sir William Jones was the first to show that there are many common cognate words shared by Sanskrit and European languages. Speaking to the Asiatic Society in Calcutta on February 2, 1786, Jones made a statement which was soon to become quite famous:

> …the Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident; so strong, indeed, that no philosopher could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists.[1]

A quick glance at some of the common cognate words of English and Sanskrit shows definite family resemblances that Jones spoke about:

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[1] Quoted in the *American Heritage Dictionary of the English Language*, ed. William Morris (Boston and New York: Houghton Mifflin, 1969), article by Calvert Watkins, p. XIX.

Common Cognate Words Shared by English and Sanskrit

advocate, adhivaktr	immortal, amrta
agri, ajira	kalon, kalyana
bind, bandhi	mega, maha
bright, bharajat	man, manu
brother, bhatr	mind, manas
candle, chandra	mortal, mrta
cardio, hrd	mother, matr
come, gam	same, sama
deity, devata	three, tri
eight, ashta	vivi, jiva
end, anta	voice, vaca
genus, janus	wind, vata
gnosis, gnana	wit video, vid
idea, vidya	yoke, yoga
identity, idamta	young, yuvan[2]

In nineteenth century, the German linguist Friedrich Schlegel suggested that the main body of European languages were derived from Sanskrit. Schlegel's suggestion was widely rejected, mainly because European scholars did not like to think that their language and culture derived from India. But the early nineteenth century it was widely recognized that all European languages and the Indic languages belonged to a common "family," distinct, for example, from Chinese, African, and American Indian language families and groups. All but a few of the European languages, such as Basque for example, belong to this distinct family of Indo-European languages. Thus, the idea that an Indo-European language was at the root of the family of the main body of European languages came into prominence.

To many European scholars of the nineteenth century (characterized more by their Euro-centrism than by scientific attitudes towards peoples of other cultures), the idea that the family of European languages family could have originated in India was unthinkable. It was just not culturally acceptable to think that the roots of European language and culture could be traced to darker-skinned peoples indigenous to India. So European thinkers began to speculate about a pre-historic "proto-Indo-European" race who had migrated from somewhere in Western Asia, perhaps around the Black Sea, Eastern Europe, or Russia, to settle in India and in Europe. This, as we will see, was a purely racial and cultural bias, with no basis in archeological fact.

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[2] G. S. Rayall, *English and Sanskrit: A Common Heritage of Words*, (Patiala: Punjab University Press, 1996).

Many European scholars immediately bought in to the "Indo-European hypothesis," which was the stimulus to develop the discipline of historical linguistics. European scholars like Max Muller, Thomas Young, Joseph de Goubinau, Dwight Witney, Sir Mortimer Wheeler, A.L. Basham, George Cox, and John Fiske all adopted the theory of Indo-European origins. They commonly proposed that a people speaking "proto-Indo-European" came from somewhere in central or Western Asia or southeaster Europe, invaded India from the northwest, overran the local culture, and settled in the north of India.

These Indo-Europeans were said to be "Aryans" in race and language, which meant primarily fair-haired and light-skinned people. By the twentieth century they were conceived, mainly by German scholars, as a blue-eyed, blond race that was the stock of the Germanic people—all nicely fitting the cultural-political-racial agendas of Western Europe—and Nazi Germany in particular.

In spite of the large number of scholars of the late nineteenth and early twentieth century who believed the invasion theory, it turns out, as we see below, that there is almost no shred of evidence to support it. It is one of the great myths formed by European scholars to support their bias that outside invaders created early Indian civilization. Anthropologist today find all evidence points to an origin of the Vedic tradition that is indigenous to northern India.

Scientific Archeology: The End of the Invasion Theory

In the 1990s, a new wave of scientific evidence, coming partly from satellite photos, geological study, archeological digs, and other anthropological finds began to seriously discredit the old myth. Once the rubble of false assumptions was cleared away, a far more simple scientific picture of the origins of ancient north Indian civilization began to emerge.

Professor Colin Renfrew, professor of archeology at Cambridge University, in his *Archeology and Language: The Puzzle of Indo-European Origins*, (1988) gives evidence for Indo-Europeans in India as early as 6,000 BC. He comments:

> As far as I can see there is nothing in the Hymns of the Rigveda which demonstrates that the Vedic-speaking population were intrusive to the area: this comes rather

> from a historical assumption about the 'coming' of the Indo-Europeans.[3]

Professor Schaffer at Case Western University writes in "Migration, Philology and South Asian Archaeology" that there was an indigenous development of civilization in India going back to at least 6000 BC. He proposes that the Harappan or Indus Valley urban culture (2600-1900 BC) centered around the Saraswati river described in the Rig Veda and states that the Indus Valley culture came to an end, not because of outside invaders, but due to environmental changes, most important of which was the drying up of the Saraswati river.

Schaffer holds that the movement of populations away from the Saraswati to the Ganges after the Saraswati dried up in about 1900 BC, is reflected in the change from the Saraswati-based literature of the *Rig Veda* to the Ganges-based literature of the Itihasa and Puranic texts. He also states that the Aryan invasion theory reflects a colonial and Euro-centric perspective that is quite out of date. He concludes:

> We reject most strongly the simplistic historical interpretations…that continue to be imposed on south Asian culture history…Surely, as south Asian studies approach the twenty-first century, it is time to describe emerging data objectively rather than perpetuate interpretations without regard to the data archaeologists have worked so hard to reveal.[4]

Anthropologist Brian Hemphill of Vanderbilt University has been studying the human remains of the northern Indian subcontinent for years. He states categorically that his analysis shows no indication of population replacement or large-scale migration.[5]

Archaeologist Mark Kenoyer, associate professor of anthropology at the University of Wisconsin at Madison, and co-director of the Harappa Archeological Research project, holds that the invasion theory is completely unsupported by archeological, linguistic, or literary evidence. He writes in an article on the Indus valley civilization:

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[3] Colin Renfrew, Professor of Archeology at Cambridge University, in his famous work, *Archeology and Language: The Puzzle of Indo-European Origins*, (Cambridge: Cambridge Univ. Press, 1988) Renfrew also sees evidence that the Indo-Europeans were in Greece as early as 6,000 BC.

[4] in *Aryan and Non-Aryan in South Asia: Evidence, Interpretation and History*, ed. by Bronkhorst and Deshpande, University of Michigan Press.

[5] See Jonnathan Mark Kenoyer, "Birth of a Civilization." *Archeology*, January/February 1998, 54-61, p. 61.

> If previous scholars were wrong about the origin of the Indus people, they also missed the boat when it came to explaining their downfall, which they attributed to an invasion by Indo-Aryan speaking Vedic tribes from the northwest.[6]

Archeological evidence simply does not support the thesis of an outside invasion. Kenoyer argues, "it's likely that the rivers dried up and shifted their courses, altering trade routes and undermining the economy." Kenoyer holds that the Indus valley script can be traced to at least 3,300 BC—making it as old or older than the oldest Sumerian written records.

Archaeologist Kenneth Kennedy writes that no Aryan skeletons have been found in the Indus valley that differ from the skeletons of indigenous ethnic groups.

> All prehistoric human remains recovered from the Indian subcontinent are phenotypically identifiable as south Asians. Furthermore their biological continuity with living peoples of India, Pakistan, Sri Lanka and the border regions is well established across time and space.[7]

Scientific archeology, it is now safe to say, no longer gives the invasion theory a grain of credibility. It has lost its supporters among serious scientists.

Also, as professor Renfrew argues, there is no internal evidence from the ancient Vedic literature that Vedic civilization originated outside India. The verses of the *Rig Veda*, the most ancient songs of Vedic tradition, detail many aspects of daily life of the people. There is no hint in this vast literature of a migration or of a history that lies in a homeland beyond the mountains of northern India. All evidence from archeology, anthropology, and Vedic literature indicate that Vedic civilization was indigenous to northern India. Geological data now explains the demise of the Indus and Saraswati valley civilizations in terms of climactic change, bringing an end to the outside-invasion theory.

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[6] Mark Kenoyer, "Indus Valley: Secrets of a Civilization" in *Wisconsin*, Fall 1998. See also E.J.H. Mackay, *Further Excavations at Mohenjo-daro*, 1938, p. 222.

[7] Kenneth Kennedy, "Have Aryans Been Identified in the Prehistoric Skeletal Record from South Asia" appearing in The Indo-Aryans of South Asia (Walter de Gruyter, 1995) Kennedy writes, "Assumptions that blondism, blue-grey eyes and light skin pigmentation are physical hallmarks of either ancient Aryans or of members of Brahmin and other social groups in modern south Asia, find their origins in the improper marriage of excerpts from Vedic texts with nineteenth century Germanic nationalistic writings."

Causes of the Decline of the Indus-Saraswati Civilization

Geological and archeological evidence, it turns out, give strong evidence that a long and devastating drought followed by devastating floods led to the abandonment of the settlements along the banks of the Indus and Saraswati rivers in western India, ending an urban civilization that had flourished, archeologists now surmise, sometime between 2,600 BC and 1,900 BC. The Indus and Saraswati valley civilization was vast and widespread, and covered over 250,000 square miles, from north central India in the east all the way to the eastern edge of Iran in the west. There is no evidence to suggest that this vast civilization was destroyed by Indo-European Aryan invaders, but rather, it is now virtually certain that its demise came as a result of widespread climatic changes that occurred in 1,900 BC.

Recent studies by Louis Flam of H. H. Lehman College of the City University of New York have shown that the course of the Indus river changed dramatically around 1,900 BC, probably flooding many settlements along the river and disrupting the Indus valley civilization. Jim Schaffer of Case Western University has found impressive evidence that settlers of the Indus valley migrated at this time east to the plane of the Ganges.[8]

Mortimer Wheeler, the anthropologists who excavated Mohenjo-Daro in the in the 1920s , one of the most well-preserved cities of the Indus Valley civilization, brought to the project an "outside invasion theory." He found unburied skeletons in the most recent layers of the city which led him to think that he had evidence that the civilization was overrun by invaders from outside. More reliable recent evidence has shown that the people of the Indus valley were not victims of invasion and massacre, but that their civilization withered as a result of various climactic changes, including prolonged droughts and extensive flooding, and possibly also earthquakes that changed the course of the rivers.

It was not outside invaders of India who brought an end to the Indus-Saraswati civilization, but a series of climactic changes and natural disasters. The biases of European scholarship caused them to see invaders where there were none. They existed only in the imagination of European scholars.

Historical Linguistics and Migrations of Early Civilization

The other issue that needs to be considered is language origins. Historical linguistics appears to detect patterns of language change which some think may imply patterns of

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[8] See Jonnathan Mark Kenoyer, "Birth of a Civilization." *Archeology*, January/February 1998, 54-61, p. 60.

migration of early peoples, and which may therefore provide a clue to the origins of Vedic civilization.

The original theory proposed by the early historical linguistics who considered these issues was that Vedic Sanskrit conserved the original sound system of the "proto-Indo-European" language most closely, and that Iranian and European languages underwent a systematic sound shift, creating break-away or daughter languages spoken by the people who populated India and Europe.[9] According to this theory, Vedic Sanskrit was put at near the trunk of the proto-Indo-European language tree, if not the trunk itself.

This theory has been challenged and hotly debated in recent years, most especially by computer linguists.[10] Since the 1990s, it is now common for computer linguists to hold that Sanskrit is not so near the root of the Indo-European language tree, but a subsequent branch. A currently dominant theory is that the original Indo-European language stemmed from an Indo-European proto-language that has since been lost.

The first languages to break off from the proto-Indo-European root, according to the dominant contemporary linguistic theories, was Anatolian (the language of what is now central Turkey), followed by Celtic (a language found in nearby Thrace in northeastern Greece, and also Ireland suggesting that there was a commerce or colonization between Ireland and early Thrace), then Greek, and then Armenian.[11] According to these theories, the Indian and Iranian language groups are still later branches off the proto-Indo-European "root."

The linguistic evidence appears to imply migrations of people from the Black Sea area into India, and yet there is no anthropological evidence to support either a migration into northern India, or an invasion. Evidence from skeletal remains, as we saw, as well as pottery and other artifacts, show no cultural replacement at any time in north Indian

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[9] Thomas V. Gamkrelidze and V. V. Ivanov, "Family Tree of the Indo-European Languages," *Scientific American*, March, 1990, p. 110 and following.

[10] Dr. Don Ringe and Dr. Ann Taylor, two linguists at the University of Pennsylvania, with the help of computer scientist Dr. Tandy Warnow, developed a computer algorithm to sift through the Indo-European languages and look for grammatical and phonetic similarities between them. Their work, published in 1996, has thrown up four possible family trees. "We have come up with a favorite," says Dr. Warnow. The tree shows that the first breakaway language was Anatolian, an ancient group of languages once spoken in Turkey. Celtic was quick to follow, spawning Irish, Gaelic, Welsh and Breton. Armenian and Greek then developed from proto-Into-European. Strangely enough, one of the later branches to emerge, according to the runs of the computer programs, was Sanskrit.

[11] It is interesting that the Celts settled in Thrace in northern Greece, just a short distance from Anatolia. Thrace was the birthplace of the Orphic mysteries which swept into Greece in the sixth century BC. Celtic is one of the earliest languages, along with Anatolian and Greek, to break off from the Indo European proto-language. The technique for self-knowledge described by Socrates were said to have come from Thrace. The Anatolians of central Turkey occupied the area near where the pre-Socratic tradition sprang up in the sixth century BC. This suggests that a technique was passed from India into the Celtic language.

history. This makes it difficult to conclude that a people speaking a proto-Indo-European root language migrated to India from outside, resulting in a language shift to the daughter language of Sanskrit. The hard anthropological evidence just does not support such a view. How else, then, can we account for the apparently late evolution of Sanskrit from the proto-Indo-European root language?

Eminent computer linguists caution against drawing conclusions from computer-simulated language programs—which may reflect the assumptions of the programmers more than the branches of the linguistic tree.[12] They caution that computer linguists tend to program in assumptions that reflect their own biases and expectations, and therefore the outcomes cannot be any more accurate than the assumptions. Computer linguistics does not necessarily mean unbiased, objective linguistics, but may, on the contrary, program in distinct biases of the linguists. If linguists start with a theory of an outside invasion, they will naturally bring those biases into their work, and it is not unthinkable that such biases have colored computer and historical linguistic theories.

It also needs to be pointed out that if a false assumption is programmed in, then anything at all can come out. Anything at all can be derived from a false assumption. If the assumption that Sanskrit is *not* the proto-Indo-European language root be false, then anything follows.

More on the Indo-European Proto-Language

In 1990, Thomas V. Gamkrelidze and V. V. Ivanov, authors of the two volume *The Indo-European Language and the Indo-Europeans*,[13] published an article in *Scientific American*, in which they state, “The landscape described by the reconstructed Indo-European proto-language is mountainous—as evidenced by the many words for high mountains, mountain lakes and rapid rivers flowing from mountain sources.” They note also that, “the [proto-Indo-European language] has words for animals that are alien to Europe, such as “leopard,” “snow leopard,” “lion,” “monkey” and “elephant.””[14] The authors suggest, on the basis of this and other linguistic evidence, that the homeland of the proto-Indo-Europeans was somewhere in the Caucasian mountains of western Asia near the Black Sea in around 4000 BC.

These same words could be used to make the case that the mountainous terrain, and more especially the elephant, monkey, and snow leopard are more commonly found in

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[12] Personal communication with several faculty of the linguistics department at the University of North Carolina at Chapel Hill.

[13] Thomas V. Gamkrelidze and V. V. Ivanov, *The Indo-European Language and the Indo-Europeans*, (published in Russian in 1984)

[14] Thomas V. Gamkrelidze and V. V. Ivanov, “Family Tree of the Indo-European Languages,” *Scientific American*, March, 1990, p. 110 and following.

the region of northern India and the Himalayas.[15] If the words for elephant, monkey, snow leopard, and mountains are in fact more abundant in the Indo-European proto-language, this would most likely put the proto-Indo-European home somewhere in the Himalayan region of northern India, rather than in the Mountains to the east of the Black Sea. This would tend to support the hypothesis that the Indo-European proto-language originated in the region of the Himalayas of northern India and Tibet, rather than in the area of central Turkey, where there are few monkeys and elephants.

At present, there is simply not enough evidence to discern the early patterns of migration and language shift that brought about the different language groups. We can say with relative certainty, however, that the Vedic people did not migrate into India from outside, so it is relatively unlikely that the Vedic language came from outside India. Thus the origins of Vedic Sanskrit remain obscure.[16]

Many linguists stress that our "linguistic heritage, while it may tend to correspond with cultural continuity, does not imply genetic or biological descent. There is no more reason to suppose that we, as speakers of an Indo-European language, are descended biologically from the speakers of proto-Indo-European, than that the English speaking population of Nigeria is Anglo-Saxon."[17] It is necessary to be very careful in drawing conclusions about migration patterns and racial origins from linguistic evidence.

Rules of Language Transformation

A main tool of historical linguistics is the set of rules of sound and grammatical transformation governing the language change. One language evolves into another due to cultural or geographic separations of peoples due to migrations or other cultural displacements, such as conquest. Using the rules of historical linguistics, it appears to

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[15] Thomas V. Gamkrelidze and V. V. Ivanov, "Family Tree of the Indo-European Languages," *Scientific American*, March, 1990, p. 110 and following. The authors argue that more "recent evidence now places the probable origin of the Indo-European language in western Asia." They hypothesize that the proto-Indo-Europeans originated sometime around 4,000 BC in the region around the Black Sea.

[16] Radio-carbon dating of skeletal remains of the "Kennikut man" found in the late 1990s in the Columbia river gorge on the west coast of north America shows that caucasoidal men inhabited Oregon more than ten thousand years ago. Some words of the Klamath Indians of that region of Oregon are also of apparent Indo-European origin. The Klamath word which means "to blow" is "pniw" and may be linked to the Greek "pneu" which means breath or to blow, and ultimately to the Sanskrit "prana" which means breath. Linguists assume this was mere accident before the discovery of Caucasoid remains in the area. This would suggest that a migration into the Americas took place 10,000 years ago or more—and the immigrants brought with them an Indo-European language, putting the dates of the proto-European root at before 10,000 BC. The Rig Veda civilization, like the American Indians, had a bow and arrow technology. Rig Vedic civilization can be placed in time as more advanced than the Indian culture of 10,000 years ago.

[17] *American Heritage Dictionary of the English Language*, ed. William Morris (Boston and New York: Houghton Mifflin, 1969), article by Calvert Watkins, p. XX.

be possible to discern patterns of change and to determine which language has shifted into the other.

One such rule is the softening of consonants over time. Thus, for example, the “v” in the Sanskrit “Veda,” meaning knowledge, is transformed into the softer English “w” in “wit,” “witten,” “wisdom” and the German “wissen,” which also means knowledge, and derives from the more ancient Sanskrit root. The Sanskrit “deva” is transformed into the softer Latin “deus,” Greek “theos,” Lithuanian “dewas,” Irish “dia,” and Old Prussian “diews.”

Using such transformation rules, linguists attempt to reconstruct which languages are earlier and which broke off later in the transmutation of language. Historical linguists assume that these rules are constant over time and that they apply to early transformations as well as later ones.

If we assume that the basic rules of language transformations are constant and do not mutate over time, then these conclusions follow. But could there have been sound shifts in the opposite direction at much earlier times in history? Perhaps different laws applied at the time when Vedic Sanskrit changed from and to other languages.

Consider that there are also changes in the reverse direction. For example, the “g” in the Sanskrit “go,” (meaning cow) is transformed into the harder consonant “k,” to make the German word “kuh” for cow. The English word “cow,” pronounced with a hard “k,” is a harder, guttural form than the “g” in the Sanskrit “go.”

Also, in the case of the Vedic tradition, we have a people who were highly conscious of language and sound and the rules of sound transformation, even from the early Vedanga period. The Vedangas give elaborate theories of sound and its relation to meaning. Ancient Sanskrit grammar has its own rules for the transformation of consonants, internal rules for change, codified in ancient texts on phonology and grammar (Nirukta and Vakaran), both of which express elaborate theories of sound. Such self-reflective theories at an early date may have influenced the direction of language shift and may be anomalous to the rules applied in later linguistic theory.

Other hypotheses may explain why Vedic Sanskrit appears to not be the proto-Indo-European root language. One might propose, for example, that an early form of Sanskrit arose in northern India, and that some north Indian peoples migrated west to the Black Sea area, where their language mutated into Anatolian, Armenian, Celtic, and Greek. Then language change within Vedic Sanskrit, due to self-reflective grammatical theories, have mutated this earlier form of Sanskrit in a direction contrary to the typical rules of linguistic transformation.

Computer simulated models of language change may be simply wrong or misleading. In other words, the transformation “rules” of historical linguistics may not apply to changes as early as Vedic Sanskrit. Or they may reflect more the racial and cultural biases of the programmers. Rather than assume a migration from the Black Sea area into India, which is not supported by anthropological evidence, we must simply acknowledge that we do not have enough knowledge to discern the early patterns of migration of the people who wrote the Vedic literature. The simplest hypothesis to account for the data may be that Vedic Sanskrit is itself is the mother tongue of the proto-Indo-European peoples.

Summary: Euro-centrism and Objective Science

For years, theories of the origins of the Indo-European people were based on small bits of evidence that were used to make sweeping generalizations. The Euro-centric perspective so heavily biased the discussion that it became necessary for scientists of the later twentieth century to re-examine and re-balance the perspectives in order to remove long-standing misconceptions formed by two centuries of speculative myth-making. When these misconceptions are eliminated by objective science, no evidence remains that the Veda tradition came to India from outside.

Now we come to our second main question, How long ago was the Veda first cognized? When did the Veda first come to be known in the civilization of India? How far back in time does the Vedic tradition go?

How Ancient is the Vedic Tradition?

New Light on the Cradle of Civilization

A SECOND MYTH that dies hard is that Vedic civilization came into existence as recently as 1000 to 1200 BC. Many scholars today have come to think that these dates are ridiculously recent and that the Vedic tradition, meaning the tradition of reciting the Rig Veda and the Vedic literature, is far more ancient. Scholars of the nineteenth century, the highly venerated Max Muller for one, give dates as recently as 1,000 to 1,200 BC.[18] These dates, like the Aryan invasion theory, are products of a Euro-centric bias. They were rooted in unsustainable religious, cultural, and ethnic assumptions that were not based on scientific evidence.

Max Muller, one of many Christian missionaries to India, was firmly committed to the Biblical account of creation. Muller accepted the date of creation given in the Bible at 4004 BC and the great flood at 1500 BC. This compelled him to date the Rig Veda much later in time than an impartial scientist would have done. Muller had to fit the entire Vedic tradition into a time-frame following the great flood, which Biblical scholars held took place in 1500 BC.

Muller wrote a letter to his wife, dated 1886, in which he said "The translation of the Veda will hereafter tell to a great extent on the fate of India and on the growth of millions of souls in that country. It is the root of their religion, and to show them what the root is, I feel sure, is the only way of uprooting all that has sprung from it during the last 3,000 years." These are hardly the words of an unbiased scientist. No matter how great Muller's scholarly reputation, we have to examine his reasons for setting the dates around 1000 to 12000 BC.

Muller recognized that the Vedic tradition had to exist (n part) before Buddha, who lived in about 500 BC and who reacted against the Vedic tradition. Muller and other Germanic scholars also noticed that the *Agni Purana* (16) and other Vedic texts refer to

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[18] These dates were given by Max Muller. For a recent discussion of Muller's projected dates, which were meant as a minimum of time, not an actual dating, see Maurice Winternitz, *A History of Vedic Literature*, Vol. 1, (New Delhi: Motilal Banarsidass, 1981), pp. 270-288, especially p.273.

Buddha, so they felt justified in thinking that the Vedic tradition was just a little more ancient than Buddhism, and they put the dates of the Vedic period roughly two-thirds of way between the great flood (the Biblical limit they accepted) and the time of Buddha. Muller thus set the dates of the Vedic period at 1000 to 1200 BC. Muller reasoned that if Buddha rejected the Vedic tradition, the Rig Veda must have preceded him by at least several centuries, but it had to have started (in his opinion as a Bible scholar) after the great flood.

Even Muller, however, recognized that this was an estimate of a *bare minimum* of time that lapsed between the beginning of the Vedic tradition and the time of Buddha. However, it became commonplace for textbooks to give the dates of the Vedic tradition as 1,000 to 1200 BC, based on Muller's minimum estimate. Soon these were known as *the dates* of the Rig Veda. This fixed Muller's estimate of a bare minimum into an absolute date in the popular imagination.[19] The mud of speculation had become sedimented into the brick of common belief. Current evidence shows that the Veda did not began so recently in human history. The references to Buddha occur in very late additions and have no bearings on the far more ancient origins of the Vedic tradition.

Satellite Photographs and Geological Evidence: Dates of the Saraswati River and the Rig Veda

More recent scholars, such as David Frawley, Dr. B.G. Siddharth, Dr. S.B. Roy, Professor Subhash Kak, Dr. N.R. Waradpande, and Bhagwan Singh have made a case for much more ancient dates of the Rig Veda. Also B.G. Tilak, P.C. Sengupta, Pargiter, Jagat Pati Joshi, Dikshit, K.N. Shastri, Sri Aurobindo, Hermann Jacobi, Dayananda Saraswati, B.G. Sidharth, among many others, have argued for its greater antiquity.

David Frawley and N.S. Rajaram, in *Vedic "Aryans" and the Origins of Civilization*, put forward an interesting and compelling theory of the origins of Vedic civilization. Drawing upon a large array of evidence from anthropology, satellite mapping, geology, historical linguistic, and literary study, they have helped discredit the old "Aryan invasion theory" to establish that the Rig Veda was of much greater antiquity than Muller had estimated.

One of the strongest bits evidence comes from satellite pictures of an ancient and dried riverbed that is now taken to be the former bed of the Saraswati river. This great

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[19] There is strong evidence that Max Muller mistakenly judged the antiquity of the Indian literature by thousands of years or more (see below). His arbitrary and most unconvincing placement of Alexander's visit to India to coincide with Chandragupta Maurya is widely disputed today by many scholars. According to the evidence of the Purunas, Buddha lived approximately 1,800 BC., and Chandragupta/ Tekshasila (Taxila) was about 1700 BC. The university at Nalanda probably flourished around 1,400 BC.

river, described in the Rig Veda as a "mighty river flowing from the mountains to the sea," has long since disappeared from the maps of modern India, until satellite pictures revealed the bed of an ancient river running from the Himalayas to the western gulf of the Indian ocean, roughly paralleling the course of the Indus, but lying to the east of the Indus.

Satellite photos and geological field studies show that the Saraswati ceased to be a perennial river and flowed only seasonally, sometime before 3,000 BC. Also, since approximately 1,900, the Saraswati riverbed has been completely dry. This, as we will see, is a key piece of the scientific evidence to establish dates of the Rig Veda.

The Saraswati was fed by melt from Himalayan glaciers, after the receding of the last ice age, about 8,000 BC. As the melting glacial waters ceased to feed the river, it changed its course, became a seasonal river, perhaps went underground, and eventually dried up in its former riverbed. Some, like Subhash Kak, hold that the change in the course of the river was due to an earthquake.

This event left the many settlements along the banks of the Saraswati to their fate. As the river dried, without water the agricultural settlements and villages were no longer sustainable. After this time, the towns and cities were re-located to the Indus river valley nearby and still later, after the droughts and flooding that came to the Indus and Saraswati valleys around 1,900 BC, settlers migrated further east to the Ganges river plain.

The Rig Veda mentions the Indus river quite often, and it mentions the Saraswati no less than 60 times. Its reference to the Saraswati as a "mighty river flowing from the mountains to the sea" shows that the Rig Vedic tradition must have been in existence long before 3,000 BC when the Saraswati ceased to be a "mighty river" and became a seasonal trickle. Frawley and Rajaram drew the conclusion that the Rig Veda must have been composed long before 3,000 BC.

Rajaram writes that the "Saraswati described in the Rig Veda belongs to a date long before 3,000 BC." He concludes that, "All this shows that the Rig Veda must have been in existence no later than 3,500 BC."[20] He thus places the beginning of the Vedic tradition "long before 3,000 BC" and its end before 2,000 BC.

The *Mahabharata*, the great epic of classical Sanskrit, describes the Saraswati as a seasonal river. Since the Saraswati dried up by 1900 BC, the *Mahabharata* would have to be dated at least before 1,900 BC. Since it was still a seasonal river in 3,000, Rajaram and Frawley put the date of the *Mahabharata* in 3,000 BC.

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[20] N.S. Rajaram, *Hindustan Times*. N.S. Rajaram, *Aryan Invasion of India: The Myth and the Truth*.

Evidence from French SPOT satellite and the Indo-French field study have changed this conception of history. By showing that the Saraswati ceased to be a mighty river long before 3,000 BC, they showed that the Rig Vedic civilization must have begun long before the Saraswati became a seasonal trickle sometime long before 3,000 BC. If the Rig Vedic tradition began before 3,500 BC, this would date it earlier the civilizations of Egypt, Harappa, or Mesopotamia.

Other Approaches to Dating the Vedic Tradition

In an article entitled, "Birth of a Civilization," in *Archeology*, January/February 1998, anthropologist Mark Kenoyer sums up decades of scientific research on the archeology of India and argues that the Rig Veda verses were known on the subcontinent sometime *before* 1500 BC, by communities in the northwest area of the subcontinent.[21] This is, again, a *minimal* date, not an attempt to fix the time of the Vedic period at 1,500 BC.

Maurice Winternitz, a German scholar and author of the two volume *History of Indian Literature*, extensively re-examined the evidence for Muller's dates in 1981, a decade before the movement to push back the dates of Vedic civilization that started in the 1990s. Winternitz estimated how long it would have taken for the vast body of Vedic literature to form and develop before the Buddhist revival in 500 BC. He considered each of the major periods of Vedic literature and estimated a bare minimal time for the incubation of each. His estimate of 1900 years put the beginning of the Vedic tradition at sometime before 2,400 BC *as a bare minimum*.

The vast literature of the Rig Veda, the Brahmanans, the Aranyakas, the Upanishads, the Vedangas, the Upangas, the Puranans, the Itihasa, the systems of Ayur-Veda, Winternitz argued—each a huge body of literature—required a sustained incubation period that must have taken an extended period of time. Winternitz could not imagine that this had taken place in the short span of time that had been assigned for it to happen between 1,500 BC and 500 BC when Buddha lived. This, it must be emphasized again, was Winternitz's estimate of a *minimum* time, and was not meant to fix the date of the Rig Vedic beginning.

The City Under the Sea: Dwarka

Undersea exploration of an ancient city about half a mile off the coast of Gujarat in India, in 1981, lead to the discovery a city that had been submerged since 1,600 BC. The city is well established to be Dwarka, an ancient city mentioned in the *Mahabharata*, the great epic of the late Vedic period of Itihasa. The *Mahabharata*

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[21] Jonnathan Mark Kenoyer, "Birth of a Civilization." *Archeology*, January/February 1998, 54-61, p. 61.

describes Dwarka as built on land reclaimed from the sea. Boulders have been found under the fortified city walls, showing that it was the result of land reclamation. The *Mahabharata* also mentions that Krishna warned the residents of Dwarka that the city would be reclaimed by the sea. The discovery of a seal engraved with a three-headed animal at the Dwarka site corroborates a reference made in the *Mahabharata* that such a seal was given to the city. Seven nearby islands described in the *Mahabharata* have also been discovered.

Since archeological research shows that the city was submerged around 1,600 BC, this would date the *Mahabharata* at least before 1,600 BC. Again this is a minimum time. Pottery found at the site, inscribed with the script of the Indus valley civilization, has been established by thermoluminescene tests to be about 3,530 years old.

The *Mahabharata* was written toward the end of the classical Vedic period. If we accept Winternitz's estimates a minimum of 1,500 years lapsed from the beginning of the Vedic period to the *Mahabharata*, then since Dwarka was submerged by 1,600, this would set the date of the Rig Veda back to before 3,100 BC. This again marks the minimum date of the Rig Veda, and should not be construed as a fixed date.

The body of literature produced by Greece and Rome from Homer to Proclus spans roughly 1,300 years. The Vedic tradition produced an even larger body of literature from the beginning of the Rig Veda to the end of the classical period, so it would probably require at least 1,300 years for the Vedic tradition to generate a larger amount of literature. If we take 1,600 BC as the minimum date of the *Mahabharata*, this would put the beginning of the Vedic tradition sometime before 2,900 BC. If we take Wintenitz's estimate of at least 1,900 years, this would put the beginning of the Rig Veda before 3,500 BC.

Frawley and Rajaram, as well as many others, now put the date of the *Mahabharata* war at about 3,000 BC (Maharishi Mahesh Yogi also gives this date in his commentary on the *Bhagavad Gita*). If we add 1,900 years incubation time as Winternitz estimates, this would put the dates of the Rig Veda back before 4,900 BC.

Astronomical References in the Rig Veda and Other Evidence

Evidence from other sources known since the late nineteenth century also tends to confirm the great antiquity of the Vedic tradition. Certain Vedic texts, for example, refer to astronomical events that took place in ancient astronomical time. By calculating the astronomical dates of these events, we thus gain another source of evidence that can be used to place the Rig Veda in a calculable time-frame.

A German scholar and an Indian scholar simultaneously discovered in 1889 that the Vedic Brahmana texts describe the Pleiades coinciding with the spring equinox. Older texts describe the spring equinox as falling in the constellation Orion. From a calculation of the precision of the equinoxes, it has been shown that the spring equinox lay in Orion in about 4,500 BC.

The German scholar, H. Jacobi, came to the conclusion that the Brahmanas are from a period around or older than 4,500 BC. Jacobi concludes that "the Rig Vedic period of culture lies anterior to the third pre-Christian millennium."[22] B. Tilak, using similar astronomical calculations, estimates the time of the Rig Veda at 6,000 BC.[23]

More recently, Frawley has cited references in the Rig Veda to the winter solstice beginning in Aries. On this basis, he estimates that the antiquity of these verses of the Veda must go back at least to at least 6,500 BC.[24] The dates Frawley gives for Vedic civilization are:

Period 1. 6500-3100 BC, Pre-Harappan, early Rig Vedic
Period 2. 3100-1900 BC, Mature Harappan 3100-1900, period of the Four Vedas
Period 3. 1900-1000 BC, Late Harappan, late Vedic and Brahmana period

Professor Dinesh Agrawal of Penn State University reviewed the evidence from a variety of sources and estimated the dates as follows:

- Rig Vedic Age - 7000-4000 BC
- End of Rig Vedic Age - 3750 BC
- End of Ramayana-Mahabharat Period - 3000 BC
- Development of Saraswati-Indus Civilization - 3000-2200 BC
- Decline of Indus and Saraswati Civilization - 2200-1900 BC
- Period of chaos and migration - 2000-1500 BC
- Period of evolution of syncretic Hindu culture - 1400-250 BC

The Taittiriya Samhita (6.5.3) places the constellation Pleiades at the winter solstice, which correlates with astronomical events that took place in 8,500 BC at the earliest. The Taittiriya Brahmana (3.1.2) refers to the Purvabhadrapada nakshatra as rising due east—an event that occurred no later than 10,000 BC, according to Dr. B.G.Siddharth of India's Birla Science Institute. Since the Rig Veda is more ancient than the Brahmanas, this would put the Rig Veda before 10,000 BC.

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[22] Maurice Winternitz, *A History of Vedic Literature*, Vol. 1, p. 277.
[23] B.G. Tilak, *The Orion, or Researches into the Antiquity of the Vedas* (Bombay: 1893).
[24] For example, Rig Veda, verses 1.117.22, 1.116.12, 1.84.13.5.

Attempts to date the Rig Veda based on astronomical evidence have some merit, but the conclusions are hotly debated, and probably not entirely free of conjecture. Some contemporary scholars take them quite seriously as a method of dating the Rig Veda, but the evidence is inconclusive at present.

Evidence from Sthapatya Veda Architecture: Relation of Vedic Civilization to the Indus/Saraswati Civilizations

Perhaps the most interesting evidence for the antiquity of the Vedic tradition comes from architectural remains of towns and cities of the ancient Indus-Saraswati civilization. The Indus Valley Civilization flourished, according to the most reliable current scientific estimates, between 2,600 and 1,900 BC—but there are cities, such as Mehrgarh, that date back to 6,500-7,000 BC. These dates are based on archeological fieldwork using standard methods that are commonly recognized in the scientific community today. Over 1600 settlements have been found in the vast Indus/Saraswati region that extended over 25,000 square miles.

The most well known cities of the Indus valley civilization, Mohenjo-Daro and Harappa, were built of kiln-fired brick and laid out on an exact north-south axis. This means that the main streets of the city ran north-south, *and the entrance of the homes and public buildings faced east.* The cities were also built to the west of the rivers, so that they were on land that sloped east to the river.

These facts, which may seem trivial on first glance, turn out to be highly significant. The ancient architectural system of Sthapatya Veda prescribes detailed principles of construction of homes and cities. One of the main principles of Sthapatya Veda is that cities be laid out on an exact north-south grid, with all houses facing due east. Another is that the buildings be oriented to the east with a slope to the east and any body of water on the east. Most of the cities of the Saraswati and Indus valley followed these principles exactly.

These early cities were planned and constructed according to exact principles that align the microcosm of human dwelling to the larger cosmos. They applied laws of nature that are set out in Sthapatya Vedic architecture. When the principles were codified into a system is open to question, but since the building and city planning were done according to Sthapatya Vedic principles, it is reasonable to conclude that Sthapatya Veda was known and practiced during the ancient period of Indus-Saraswati valley civilizations. The system called Sthapatya Veda architecture may have preceded this period, or may have been codified later, but the cities were built according to Sthapatya Vedic architecture.

Since these cities were constructed as early as 6,500 to 7,000 BC, this would suggest that Sthapatya Veda may have been known as early as that. This gives another reason to put the origins of Rig Vedic tradition even before that time. This is another bit of evidence, which is not noted in previous literature, that may establish the great antiquity of the Rig Vedic tradition.

Archeological research has shown Indus Valley civilization was an outgrowth of an earlier agrarian civilization. Richard H. Meadow of Harvard University has shown for instance a gradual shift from the hunting of game to the raising of sheep, goats, and cattle called the humped zebu, which were apparently domesticated in the Indus valley.[25]

The city of Mehrgarh, lying to the West of the Indus river near the Bolan Pass, between ancient India and Afghanistan, was first inhabited from 6,500 BC to 7,000 BC by a largely agrarian people who cultivated barley and cattle.[26] The Rig Veda frequently mentions barley and milk cattle, and may have come from this agrarian period that was precursor to the Indus-Saraswati valley civilization.

Yoga in the Ancient Indus Valley

There are still other reasons to think that the ancient city of Mohenjo-daro was home to a civilization that knew the Vedic tradition. One artifact from Mohenjo-daro is a seal with a figure of a seated deity, pictured here in lotus posture:

[25] See Jonnathan Mark Kenoyer, "Birth of a Civilization." *Archeology*, January/February 1998, 54-61, p. 56.

[26] Jonnathan Mark Kenoyer, "Birth of a Civilization." *Archeology*, January/February 1998, 54-61, p. 56.

Picture of a king seated yoga posture with Pipili Leaf, found in the ancient city of Mohenjo-daro in the Indus valley.

Mark Kenoyer, the University of Wisconsin anthropologist mentioned earlier, describes this figure as “seated in a yogic posture.” Kenoyer characterizes it as a deity with three faces, his feet in a yogic posture extending beyond the throne, with seven bangles on each arm, and a pipili plant adorning his head.

Here is further evidence that the Indus valley civilization was not pre-Vedic. Rather than being overrun by “Indo-Europeans” who composed the Rig Veda, the Indus valley was apparently intimately linked to the Vedic tradition, and its kings practiced yoga. If the practice of yoga was known at the time of Indus valley civilization, yoga must have been practiced in India before 1,900 when the Indus Valley settlements were withered by drought.

If the Indus valley civilizations practiced Sthapatya Veda architecture and Yoga, then the Vedic tradition was well established in India during the Indus valley civilization which flourished, archeologists think, around 2,600 BC. The Indus Valley civilization is thus either contemporaneous with the Vedic tradition, or the Vedic tradition was its predecessor; but in no case was the vast Indus Valley civilization, extending over 2,500 square miles and 1,600 settlements, destroyed by outside invaders. The Indus-Saraswati civilization may have been a successor to, or late remnant of, an earlier Vedic civilization, which built their towns and cities on Sthapatya Vedic principles in the Indus valley and introduced yoga. It was the drying up of the Saraswati in around 1900 BC that ended Indus-Saraswati civilization, not Aryan invaders.

The Devanagri Script:
Is the Vedic Tradition Pre-Indus-Valley?

Now we consider the Devanagri script in which Vedic Sanskrit is written. For years after Mohenjo-Daro and other settlements of the Indus valley were excavated, the only evidence of a writing script were a few artifacts that were inscribed with characters that appeared to be pre-Devanagri. Devanagri is the language in which both Vedic and Classical Sanskrit are written, so if the script of the Indus valley was indeed an earlier and more primitive script, as it appears to be, this led many archeologists to speculate that the Vedic tradition belongs to a post-Indus valley civilization and that the period came after the end of the Indus-Saraswati civilization. Thus some scholars felt that the Vedic tradition must belong to a period more recent than 1900 BC, when the peoples of Indus and Saraswati settlements apparently abandoned their homelands and migrated east to the Ganges river valley.

This speculation, it turns out, is completely unfounded. Recent digs in western India have unearthed stone inscriptions in Devanagri, that date from 3,000 BC. This is an extremely important finding. For one thing, we know that the Vedic tradition began as an oral tradition. Recitation of the Vedic hymns employed, as we mentioned, elaborate methods to perpetuate the oral tradition. The Vedic tradition existed before the advent of a written script, and was passed on in an oral tradition long before the advent of a written script.

The Rig Veda was memorized by heart and recited in teams of two pundits, who sang in unison to preserve its purity, precisely because there was no script in which to write it down and preserve it over time. Preservation depended on memorization and passing it on in a formal method of oral recitation.

Since the oral tradition of recitation was a phenomenon that belonged to the period before the advent of a written script, and, since the Devanagri script existed in the Indu-Saraswati valley by 3,000 BC, this would place the origins of the Vedic tradition long before 3,000 BC. The Vedic literature in its entirety is a body of oral literature, passed on first in recited songs, and only later written down, after the advent of a script. If we take Winternitz's estimated time for the incubation of the Vedic period, which is 1,900 years, this would put the beginnings of the Vedic oral tradition sometime before 4,900 BC.

New Light on the "Cradle of Civilization"

Textbooks on the origins of civilization commonly state, even today, that the "cradle of civilization" was in Mesopotamia, in the flood plane between the Tigris and

Euphrates rivers. Mesopotamian artifacts have been dated as far back possibly as 4,500 BC, and Egyptian, Assyrian, and other ancient civilizations extend back possibly as far as the early fourth millennium BC..

The discovery of cities such as Mehrgarh in the Indus valley, which dates from 6,500 to 7,000 BC, puts the Indus valley settlements much further back in time. Exactly how long ago the Rig Vedic tradition began remains unfathomable, but there are far more ancient cities in the Indus-Saraswati valley than have been found in the middle-eastern civilizations of Mesopotamia.

How long ago did urban civilization begin in India? The most reliable answer is that we don't know. More importantly, the Vedic tradition may have begun before the advent of the written languages and the building of brick towns and cities. The appearance of a written script and building of cities may have come after the decline of the oral Vedic tradition. Moreover, there is evidence of a long period of human activity in India long before the earliest appearance of towns in the Indus-Saraswati valley around 7,000 BC

Archeological evidence shows that at 40,000 BC, during the last ice age, groups of hunter-gatherers lived in central India in painted shelters of stacked rocks. There are also sites with rock windbreaks in northern Punjab in India dating from this time.

As early as 100,000 BC, there were humans with 20th-century man's brain size (1,450 cc), and as early as 300,000, Homo Sapiens roamed from Africa to Asia. Evidence of human use of fire dates to 360,000 BC. There is also evidence that hominids occupied the Punjab region of northern India as early as 470,000 BC. Stone hand axes and other primitive chopping tools found in northern India have been dated to 500,000 BC. Other stone artifacts found in India have been found dating from two million years ago. Remains of the genius "Homo" were found in Africa that are dated between two and a half to three million years ago.

How far back in time, then, does the Vedic tradition go? The most sure answer is still at this point in time that we simply do not know. At present there is not enough evidence to determine, except we can venture that it is far more ancient than has been commonly supposed. The Rig Vedic civilization almost certainly dates from long before 3,000 BC, and possibly before 6,000 BC.

However, in dating the Rig Veda, the range of possibilities must not be considered too narrowly. We must not arbitrarily assume that Vedic tradition originated at any given date. Its origins may go back in time tens of thousands of years, or even longer. Since it is an oral tradition, it left no footprints in stone. What is certain is that the Aryan invasion myths and the dates given by Muller and other nineteenth century

scholars came from wild speculations that served nationalist, religious, and racist agendas, not from scientific considerations.

India and the West

The Flow of Science and Mathematics from India to Arabia and Europe

THE EUROPEAN SCHOLARS who postulated the Aryan invasion theory were biased, unscientific—and ultimately wrong. The Rig Veda was cognized by a people indigenous to India, probably sometime long before 3,000 BC. So we move on to the next question. How did the Vedic Civilization of India influence the civilizations of the Middle-East, Egypt, and Europe?

Evidence from a variety of sources shows that an influence of Vedic civilization flowed west to the continent of Europe. As we will see, science and mathematics originated in India and came to Greece centuries later. Science and mathematics were probably introduced into Europe and Egypt from India, possibly through Persia, Arabia, and Mesopotamia, although possibly also directly.

Vedic and Indic Influences on Persian and Greek Civilization

The Zend-Avesta of Persia took many names of deities from the Rig Veda, most notably Indra, and included Vedic deities in its pantheon. An archeological excavation in 1907 found clay tablets from early fourteenth century BC in Boghazköi, near the site of the ancient city of Troy on the eastern edge of the Mediterranean, in what is now northwest Turkey. These tablets invoke the names of four Vedic deities—Indra, Mitra, Varuna, and Nasatyau—in sealing a treaty between the Hittites and the Mitani.[27] A Vedic influence was definitely in eastern Mediterranean prior to the Trojan war, which occurred about a century later. This site is just up the coast from the Greek city states where the Pre-Socratic philosophers of Greece sprang up about eight hundred years later.

Indications of a Vedic influence in the Zend-Avesta in Persia are found earlier than 1,600 and a Vedic influence was in Greece as early as 1,400 BC. But there is much evidence of a link between the early Greeks and the more ancient Vedic civilization of India, suggesting that Vedic culture flowed west to Persia and Europe.

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[27] Maurice Winternitz, *A History of Vedic Literature*, Vol. 1, pp. 282-283.

Many of the Greek gods and goddesses are highly similar to those of the and those of Vedic civilization, suggesting a strong historical connection. Both Vedic Indra and the Greek Zeus, called king of the gods, were associated with the unbounded and called by the appellation "Thunderbolt." Saraswati and Athena, female goddesses of sacred wisdom, both had similar roles as representing wisdom and nurturers of the creative arts.[28] The Vedic Pushan and Greek Dionysus were both associated with youth, goats, and wine. Pushan was described as "goat-born," Bacchus "half-goat." The tenth Mandala of the *Rig Veda* relates that the young god Pushan stole the cattle of Indra, herded them backwards into a cave, and hid them somewhere inside in a mountain. Homeric hymns from the ninth century BC attribute exactly the same feat to the young god Dionysus, who put false feet on the cows, pointed backwards, and then herded them into a mountain cave, so the gods could not find them.[29]

The *Katha Upanishad* of the Vedic tradition relates a metaphor in which the self is the lord of the chariot, the intellect the charioteer, the body the chariot, the horses, and the senses. "He who has no understanding…" the *Upanishad* say, "his senses are out of control, as wicked horses are for a charioteer."[30] Exactly same metaphor is found in Plato's *Phaedrus,* which uses the image of a chariot moving through heaven and falling to earth when the self, the charioteer, allows the horses, representing sense and appetite, to get out of control.[31]

The Vedic practice of performing sacrificial rites also has echoes in the religious practices of Greece and Israel. In the Odyssey, Odysseus makes sacrificial offerings of a bull to the gods, and in Israel, in the Old Testament, there are many descriptions of burnt offerings of animals to the gods. These practices have their roots in more ancient Vedic rites.

Fragments from Empedocles' book on *Purification* give the same definition of health that the *Charaka Samhita* of the Vedic tradition did more than two thousand years earlier. Heraclitus defines "health" as a *balance* of the fundamental elements

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[28] There is also a link between the "angirasas" of the Rig Veda, who were higher beings-intermediates between gods and men and attendants of Agni, who is often described as a messenger between heaven and earth. They personify flames of fire as messenger to heaven. This view is borne out by the etymological connection of Sanskrit "angiras" with the Greek "angelos" (messenger).

[29] The cow symbolizes the senses in the *Rig Veda*, so the backward movement of the cows appears to be a metaphor for retiring from the outer senses to go within the self.

[30] See *The Principal Upanishads*, ed. S. Radhakrishnan, p. 624. The line quoted is from section 3, no. 5.

[31] See *The Principal Upanishads*, ed. S. Radhakrishnan, (New Delhi: Harper Collins, 1994) The metaphor of the chariot is given in the *Katha Upanishad*, pp. 623-625. Plato's metaphor in the *Phaedrus* is used to talk about the experience of the eternal.

(earth, air, fire and water[32]) in all parts of the body, each part having the proper proportion that is right for it. Plato's *Timaeus* defines health in the same way. This is how it is defined in *Charaka Samhita*.

Ancient legends in Greece speak of the early Pre-Socratics as traveling to India. Thales, Pythagoras, Empedocles, Democritus, and Plato were all fabled to have made the journey (although the legends are rarely given credibility). Commentators on the early Greeks from around the first and second century passed BC on these legends. While these journeys may or may not have taken place, it is not unthinkable, for there were well established commercial routes between India and Greece along the Silk Road, protected by Persian king, as well as between ports on the Red Sea that linked Greece with India in a thriving spice trade.

Plotinus in the third century AD set out from Alexandria (a city famed for its esoteric knowledge) on an expedition to India to gain more experiential knowledge of the transcendent. The expedition never completed the journey, so that Plotinus never arrived in India, but Plotinus believed that it was the place to learn about the transcendental unity of Being.

If anything specifically Vedic brought the Greek awakening that occurred in the early sixth century BC, it was not ideas or concepts from India, but the introduction of a technique of transcending to experience pure consciousness. Plato writes about a "fair word" that a physician of Thrace gave to Socrates to enable him to become immortal and gain self-knowledge.

Ancient India:
A Lighthouse for Scientific and Mathematical Discovery

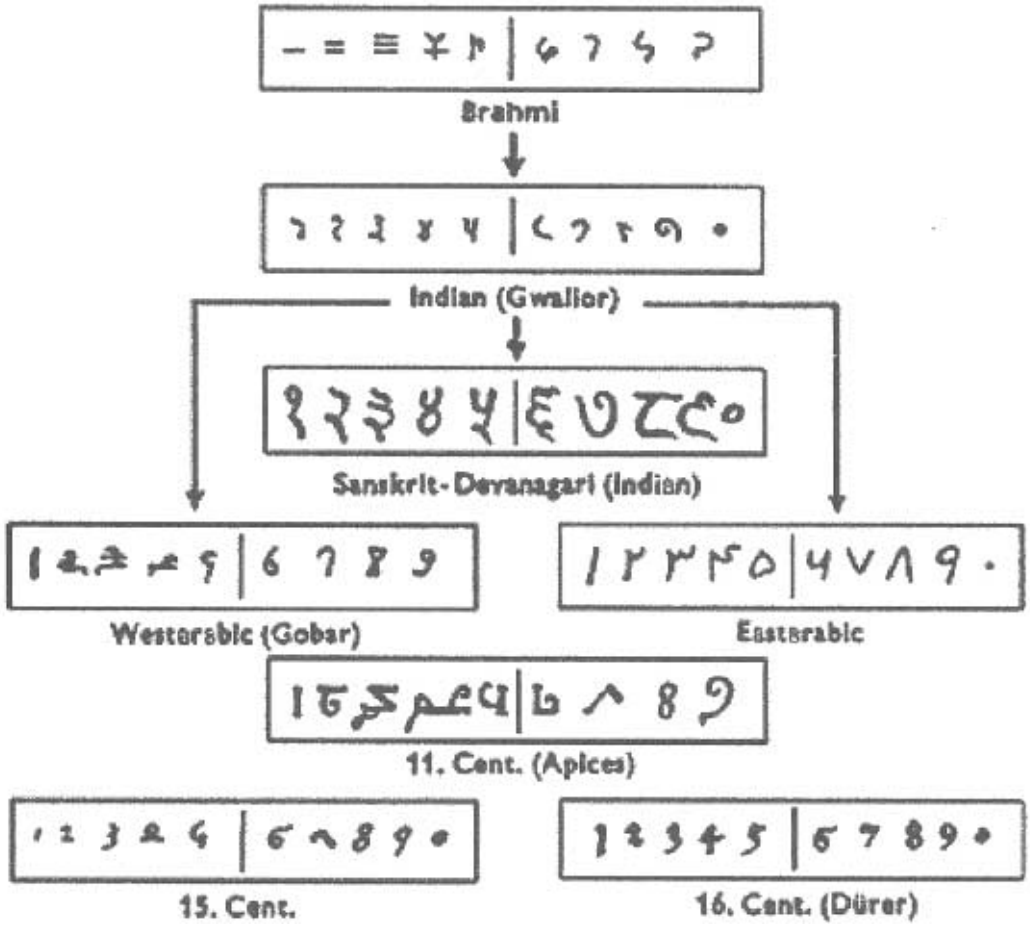
India remained a lighthouse for the advance of civilization long after the classical Vedic period. Our modern zero-based number system (the place-value number system) was first developed in India. Called 'Arabic numerals' in the West, they actually originated in India and were passed into Europe through Arabia, whence they derived their name in the West.

In Arabia, mathematics was called the "Indian Art," and the numerals used in Arabia were called "Indian numerals." Arabic scholars knew that mathematics had come into Arabia from India and not *vise versa*. It was also in India that the counting numbers were first invented. This inspired Albert Einstein to say, "We owe a lot to the Indians,

[32] See Plato, *Timaeus*, see §82 and following. The Greeks had four elements, earth, air, fire, and water and the Vedic tradition the same four plus space.

who taught us how to count, without which no worthwhile scientific discovery could have been made."

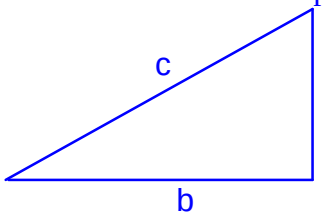
The following chart shows the evolution of the numerals from the early Indus-Saraswatic valley script to Devanagri to the Arabic to the present:



Evolution of the "numerals" which are mistakenly called "Arabic numerals" in the West. In fact they came into Arabia from India. In ancient Arabic, these numerals were called "Indian numerals" and mathematics was called the "Indian art."

The value of "pi" was first calculated in India by Budhayana (conservative scholars put him at least in the sixth century BC) long before it was known in Europe. Budhayana was also first to introduce a mathematical way to calculate the hypotenuse of a right triangle. The *Shulba Sutra* (the Budhayana) written prior to the eighth century BC in India, used the theorem about two centuries before it was introduced by Pythagoras into Greece in the sixth century BC. The wording of the theorem in the

Shulba Sutras is exact: “The diagonal chord of the rectangle makes both the squares that the horizontal and vertical sides make separately.”[33]



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

[33]Saraswati Amma, *Geometry in Ancient and Medieval India*, (Motilal Banarisdas, 1979), p. 18. For a discussion of mathematics in ancient India, see also Herbert Meschkowski, *Ways of Thought of Great Mathematicians*, (San Francisco: Holden-Day Inc., 1964), and Saraswati Amma, *Geometry in Ancient and Medieval India*, (New Delhi: Motilal Banarisdas, 1979), p. 18. For an update on the scientific understanding of the Rig Veda, see Raja Ram Mohan Roy, *Vedic Physics: Scientific Origin of Hinduism*, with a Foreword by Subhash Kak, Toronto, Canada: Golden Egg Publishing, 1999.

The *Shulba Sutra* are among the most ancient of mathematical texts known to man. In the valley of the Indus River of India, the world's oldest civilization had developed its own system of mathematics. The Vedic Shulba Sutras (fifth to eighth century BC), meaning “codes of the rope,” show that the earliest geometrical and mathematical investigations among the Indians arose from certain requirements of their religious rituals. When the poetic vision of the Vedic seers was externalized in symbols, rituals requiring altars and precise measurement became manifest, providing a means to the attainment of the unmanifest world of consciousness. “Shulba Sutras" is the name given to those portions or supplements of the Kalpa sutras, which deal with the measurement and construction of the different altars for religious rites. The word shulba refers to the ropes used to make these measurements.

Although Vedic mathematicians are known primarily for their computational genius in arithmetic and algebra, the basis and inspiration for the whole of Indian mathematics is geometry. Evidence of geometrical drawing instruments from as early as 2,500 BC. has been found in the Indus Valley. The beginnings of algebra can be traced to the constructional geometry of the Vedic priests, which are preserved in the Shulba Sutras. Exact measurements, orientations, and different geometrical shapes for the altars and arenas used for the religious functions (yagyas), which occupy and important part of the Vedic religious culture, are described the Shulba Sutras. Many of these calculations employ the geometrical formula known as the Pythagorean theorem.

This theorem (c. 540 BC.), equating the square of the hypotenuse of a right angle triangle with the sum of the squares of the other two sides, was utilized in the earliest Shulba Sutra (the Baudhayana) prior to the eighth century BC. Thus, widespread use of this famous mathematical theorem in India several centuries before its being popularized by Pythagoras has been documented. The exact wording of the theorem as presented in the Sulba Sutras is: “The diagonal chord of the rectangle makes both the squares that the horizontal and vertical sides make separately.” The proof of this fundamentally important theorem is well known from Euclid's time until the present for its excessively tedious and cumbersome nature; yet the Vedas present five different extremely simple proofs for this theorem. One historian, Needham, has stated, “Future research on the history of science and technology in Asia will in fact reveal that the achievements of these peoples contribute far more in all pre-Renaissance periods to the development of world science than has yet been realized.”

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

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

Major centers of learning operated in ancient India. The World's first major university and trade school was in Taxila (Takshila) then in northwestern India, around 700 BC (some scholars estimate). It boasted a thousand students from all over the known world who studied 60 disciplines taught there. The University of Nalanda, established in the forth century BC, was also a major center of learning in the ancient world.

The Indian astronomer and mathematician Bhaskaracharya in the 5th century BC (this is an estimated date that may be too recent), calculated the time taken by the earth to orbit the sun to nine decimal places.[34] Algebra, trigonometry, and calculus were first set forth in ancient India. Aryabhata the Elder (476-550 AD) gave a summary of Indian mathematics that covers astronomy, spherical trigonometry, arithmetic, algebra and plane trigonometry. Aryabhata also gives a formula for finding the areas of a triangle and a circle. His main work, the *Aryabhatiya*, contains continued fractions, quadratic equations, sums of power series and a table of sines. Aryabhata gave an accurate approximation for "pi" of up to 3.1416 and was one of the first to use algebra.[35] His most important achievement was the invention of the "0," which enabled the development of the place number system.

Aryabhata also wrote an text on astronomy, the *Siddhanta*, which taught that the apparent rotation of the heavens was due to the rotation of the Earth on it axis. Aryabhata gives the radius of the planetary orbits in terms of the radius of the Earth/Sun orbit as essentially their periods of rotation around the Sun. He believed that the Moon and planets shine by reflected sunlight, and he taught, incredible though it may seem, that the orbits of the planets around the sun are ellipses. This was a thousand hundred years before Copernicus and Kepler came up with the same discovery in Europe. He also correctly explained the causes of the eclipses of the Sun and the Moon and calculated the value for the length of the year at 365 days 6 hours 12 minutes 30 seconds. This is a slight overestimate since the true value is less than 365 days 6 hours. His work, written in 121 stanzas, gives a remarkably accurate view of the structure of the solar system.

Brahmagupta (598-670 AD, again an estimated date that may off), head of the astronomical observatory at Ujjain, the foremost mathematical center of ancient India, developed algebraic notation and gave remarkable formulas for finding the area of a cyclic quadrilateral and for the lengths of the diagonals in terms of the sides.

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[34] According to Bhaskaracharya's calculations, which were made in the 5th century BC, the time taken by earth to orbit the sun is 365.258756484 days (slightly larger than the correct time).

[35] Aryabhata also introduced the versine (versin = 1-cos) into trigonometry.

Brahmagupta also studied arithmetic progressions, quadratic equations, theorems on right-angled triangles, surfaces and volumes, and calculated the length of the year at 365 days 6 hours 12 minutes 36 seconds.

Quadratic equations were first discovered by Sridharacharya in the 11th century. Then Bhaskara (1114-1185 AD) reached an understanding of the number systems that solved equations which were not solved in Europe until several centuries later. Like Brahmagupta before him, Baskara was head of the astronomical observatory at Ujjain, where he developed a sophisticated understanding of 0 and the negative numbers.

The art of navigation was invented 6,000 years ago by navigators of the Indus river. The English word navigation is derived from the Sanskrit word 'Navgatih' and the word navy from the Sanskrit 'Nou.' The first known reservoirs and dams for irrigation were also built in India.

Ayur-Veda, the earliest known system of medicine and surgery, was developed in the Vedic period in India. Sushrut, the father of surgery, developed surgical procedures including cesareans, cataract removals, setting fractures, removing urinary stones and even plastic and brain surgery. Over 125 surgical tools are named in the ancient Sushrut medical texts. Anesthesia was also well known. Detailed texts on anatomy, physiology, etiology, embryology, digestion, metabolism, genetics, and immunity date from Vedic times.

Sometime around 444 BC, Empedocles introduced a medical system into Greece modeled on the then ancient Ayurvedic system of India. Empedocles' book on *Purification* gives, as we saw, the same definition of health as the *Charaka Samhita*. It bears repeating: health is the *balance* of the fundamental elements (earth, air, fire and water[36]) in all parts of the body, each part having the proper proportion of each that is right for it. Empedocles adopts this definition from the Vedic tradition. Plato's *Timaeus* defines health in the same way.

Joseph Needham, the eminent physicist and cultural historian, comments that, "Future research on the history of science and technology in Asia will in fact reveal that the achievements of these peoples [of India] contribute far more in all pre-Renaissance periods to the development of world science than has yet been realized."[37] The first pioneer of wireless communication was Jagdeesh Bose—not Marconi as commonly taught in the West.

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[36] See Plato, *Timaeus*, see §82 and following. The Greeks had four elements, earth, air, fire, and water and the Vedic tradition the same four plus space.

[37] Quoted in V. Raghavan, Presidential Address, Technical Sciences and Fine Arts Section, XXIst AIOC, New Delhi, 1961.

India's most substantial gift to world civilization was, however, the discovery of pure consciousness and the mapping out of the architectonic structure of pure knowledge. All other achievements derive from this great awakening of knowledge that took place in ancient Vedic India.

Summary and Conclusion

The Vedic heritage of India has been grossly miscalculated, misunderstood, and under-appreciated. The light of Vedic knowledge burned brilliantly in Vedic India long before is spread into Iran, the middle-east, and Europe.

It appears that Rig Vedic civilization originated in northern India, definitely before 1,900, and probably before 3,000 BC. The Vedic tradition may have originated before 6,500 BC. Passed on from father to son in unbroken tradition of pundits who recited the Vedic verses, it is still sung by pundits in India today. Imagine if Homeric bards were found today who could still chant the Iliad and Odyssey according to the oral tradition handed down from Homeric times! This would be heralded as a monumental event. Yet the Vedic tradition was possibly as ancient to Homer when he lived as Homer is to us today.

The Vedic tradition lives in the songs softly chanted by pundits today that may have originated ten thousand or more year ago, or even further remote in time. The Rig Veda and the Vedic literature were preserved by a tradition of chanting, with self-correcting feedback methods, always involving two pundits reciting the verses together. Other methods of self-correction were used, so the authenticity of the tradition is well preserved. The written Veda did not emerge until the Devanagri script was invented, and that was post-Indus-Saraswati civilization.

The Vedic civilization, far more ancient than the Greek, spread from India to Europe, via Anatolia, Thrace, and Greece, and from there into Western Europe. The direction of the flow was from India into Arabia and then to Europe. Evidence shows that the Vedic tradition entered into Europe sometime before the early fourteenth century BC.

The Rig Vedic tradition and its literature almost certainly came into existence sometime long before the earliest civilizations of Mesopotamia, Sumeria, and Egypt. These were relatively late events in the history of civilization and probably owe their existence to the earlier civilization of Vedic India.

It is necessary to reiterate that the origins of the Vedic tradition are still obscured in the fog of time, but it is necessary to shift it much further back than Muller's contingent of scholars put it. A more balanced view of the Vedic tradition might place it as follows:

1. Before 6,500 to around 3,000 BC—early Rig Veda to Itihasa period[38]
2. 2600-1900 BC, Mature Harappa civilization
3. 1900-1000 BC, late Vedic and Brahmana period
4. 500 BC, Shankara's revival

Because we don't know yet how ancient the earliest verses of the Rig Veda are, we have to abstain from any dogmatic pronouncements, but we have seen reason to think that they are far more ancient than Europeans scholars previously estimated. The ancient Vedic tradition was indigenous to the land of India, possibly overlapping the Indus and Saraswati valley civilizations and extending into the Himalayas, where the tradition continued unbroken for perhaps tens of thousands of years.

The Rig Veda extols the Indus rivers in the oft repeated refrain, "Flow Indus to Indra"—a metaphor for the flow of individual awareness into unbounded universal awareness. The whole tradition, as we see in the following chapters, is about the experience of awakened consciousness, or enlightenment.

The refrain, "flow Indus to Indra" is also a reference to the Indus civilization that lived along the banks of the Indus river since 6,500 BC. It was this awakening of consciousness that cradled the ancient Vedic civilization of Vedic India—long before civilization emerged in Europe. As the river of civilization flowed from India westward, one of its main tributaries was the civilization of ancient Greece and Asia Minor.[39] Greek civilization possibly resulted from the spread of techniques that passed on the enlightenment tradition from India into the Eastern Mediterranean basin.

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[38] Mesopotamian, Sumerian, and Egyptian civilizations cannot, according to traditional archeology, extend much past 3,300 BC. Recent research has suggested that the pyramids were constructed as early as 12,500 BC.

[39] One of the great puzzles of early history is to understand why sometime around 500 BC a great awakening of knowledge occurred simultaneously in India, China, and Greece. Lao Tzu and Confucius in China, Buddha in India, and Heraclitus and Parmenides in Greece all flourished around that time. Lao Tzu as well as several early Greeks, according to legend, made a journey to India. The possibility exists that the awakening came from India, where for thousands years before, the Vedic tradition flourished.

This was also the time of a great re-awakening of the Vedic tradition in India. Shankara's teaching of transcendental meditation in India began, according to ancient records, contrary to what is currently taught in Western scholarship, sometime in the late sixth century BC. Shankara did not live in the ninth century where he was misplaced by modern scholars unfamiliar with the Vedic tradition.

Modern scholars have traditionally placed Shankara in the ninth century AD. This results from a confusion of an illustrious successor of Shankara with the original Shankara who lived about 500 BC. "Shankara" had become a title, so in the long succession of Shankaracharyas, or masters of the Shankara tradition, there were many Shankaras. It was a natural confusion but the first Shankara lived in the mid to early sixth century BC. (See Maharishi's discussion of this in his *Bhagavad Gita, A New Translation and Commentary*, Livingston Manor, NY: MIU Press, 1967, p. 186.) There are historical records of the Shankarcharya tradition that link it back to the original Shankara in the sixth century BC, mentioning each of the Shankaracharayas in the long succession.

According to recent archeological and anthropological research, the Vedic tradition began probably sometime well before 3,500 BC. This would put the origin of the Vedic tradition at least 2,400 years

The Vedic tradition gives a much deeper meaning to the word "tradition" than has been known before. Nothing in the West approximates it. For thousands of years, the Vedic tradition expanded, and grew richer in detail, commenting on itself and expanding by knowledge of itself. Each contributor built on what the previous had done, cumulating in a systematic exposition of the structure of pure consciousness. Techniques to gain enlightenment were developed, cultivated, and passed on generation after generation. The techniques sustained the tradition and gave it substance through making the experience available.

Vedic civilization centered around the discovery of pure consciousness and the delineation of its structure. The Rig Veda and the Vedic literature gave a monumental depiction of this structure of eternal consciousness. These remarkable works give a

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prior to the battle of Troy, the event that marks the mythological beginning of the early Greek literary tradition, and 3,000 years before the earliest Pre-Socratic philosophers.

For a fuller discussion of this new wave of scholarship, see David Frawley and N.S. Rajaram *Vedic "Aryans" and the Origins of Civilization: A Literary and Scientific Perspective*, 1995. See also George Feuresein, Subhash Kak, and David Frawley, *In Search of the Cradle of Civilization: New Light on Ancient India*, 1995. Also, David Frawley, *Gods, Sages Kings*, (Morson Publishing, 1991). See also, N.S. Rajaram *The Hindustan Times* (Nov. 28, 1993). Rajaram writes, "It is now recognized by scholars that the Aryan invasion theory of India is a myth that owes more to European politics than anything in Indian records or archaeology." Frawley writes. "the rationale behind the late date for the Vedic culture given by Muller was totally speculative. Max Muller, like many of the Christian scholars of his era, believed in Biblical chronology. This placed the beginning of the world at 400 BC and the flood around 2500 BC. Assuming to those two dates, it became difficult to get the Aryans in India before 1500 BC." See also Colin Renfrew, Professor of Archeology at Cambridge University, in his famous work, *Archeology and Language: The Puzzle of Indo-European Origins*, (Cambridge: Cambridge Univ. Press, 1988). See also Mark Kenoyer, "Indus Valley: Secrets of a Civilization" in *Wisconsin*, Fall 1998 and Kenneth Kennedy, "Have Aryans Been Identified in the Prehistoric Skeletal Record from South Asia" appearing in The Indo-Aryans of South Asia (Walter de Gruyter, 1995) Kennedy writes, "Assumptions that blondism, blue-grey eyes and light skin pigmentation are physical hallmarks of either ancient Aryans or of members of Brahmin and other social groups in modern south Asia, find their origins in the improper marriage of excerpts from Vedic texts with nineteenth century Germanic nationalistic writings." Also N.S. Rajaram, *Hindustan Times*. N.S. Rajaram, *Aryan Invasion of India: The Myth and the Truth*. Also, Maurice Winternitz, *A History of Vedic Literature*, Vol. 1, (New Delhi: Motilal Banarsidass, 1981), pp. 270-288. Winternitz writes, in 1981, that it is imprudent to try to fix the dates of the Vedic civilization any earlier than 2,000 or 2,500 BC. Max Muller had argued in 1859 in his *History of Ancient Sancrit Literature*, that the Rig Veda could not have been written before 1,200 or 1,000 BC. Later scholars often took this as the date of the *Rig Veda* and attributed this date to Muller. However, Muller did not attempt to fix the date at 1,200 or 1,000 BC, but only held that it must be earlier than that. Winternitz gives compelling reasons to think that the date of the *Rig Veda* cannot be before 2,000 or 2,500 BC. Even this is not, as he says, a legitimate attempt to set a date, but only to set the latest possible beginning of the *Rig Veda*. There is no reason whatever, as he points out, to think that it began in 2,000 to 2,500 BC—only that this is the latest date at which the hymns of the *Rig Veda* can reasonably be supposed to have begun. One must be very careful not to take these as dates of the *Rig Veda*, only as the lower limits of a date, before which the *Rig Veda* must have been written.

Many put the Rig Vedic tradition at 6,000 BC or before. See A. Ludwign, *Der RigVeda*, III, Prag, 1878, pp. 183 ff. and B.G. Tilak, *The Orion or Researches into the Antiquity of the Vedas*, Bombay, 1893. Also see Abinas Chandra Das, *Rig-Vedic India*, I, Calcutta, 1922; discussed in Maurice Winternitz, *A History of Vedic Literature*, Vol. 1, pp. 275 and 287 and following.

For further reading, see also A.L. Basham, *The Wonder That Was India*, Calcutta: Rupa & Co., 1967.

complete science of the structure of pure knowledge that exists within the self of everyone. It was from this cognition of the structure of Veda and the Vedic literature that the civilization was born.

In the West, by comparison, there was no sustained theme of enlightenment remotely comparable to the Vedic tradition. There was no sustained tradition of knowledge based on the experience of consciousness. The early history of western Europe, including the glory of ancient Greece, are sparks, brilliant though they be, from the great fire of knowledge of Vedic India.

Preview of More to Come:

What is the Veda and the Vedic Literature?

THE NEXT QUESTION IS, *what* is the Veda and the Vedic tradition? Since the Veda and the Vedic tradition have extremely ancient roots going back at least to the third millennium BC and probably much further, we now want to ask, what is this Rig Veda and the Vedic literature? What is the Vedic tradition really about?

It is as if we have been on an archeological dig on an ancient site in the Indus valley and we find a treasure room of vast extent, filled with books that are about an ancient science. As we decipher these ancient codes, we discover an ancient body of knowledge more advanced than any science known today. This is the excitement of the rediscovery of the Veda.

If the European scholars got the dates of the Vedic tradition and the invasion theory entirely wrong, neither did they understand anything of what was going on in the Vedic tradition. Again, we cannot expect that they can give an penetrating answers to the question of what the Veda is. The answer must come from those who know the Veda from direct experience.

The Veda itself is said to be knowledge. Veda means knowledge. It refers to the kind of knowledge that comes from transcending activity to experience the knowledge structured within the inner silence of consciousness itself. Veda is the self-knowledge consciousness of itself, consciousness knowing its own nature. This knowledge exists deep within everyone, deep within our own consciousness, but we are out of touch with it because we have lost the ancient knowledge of how to go within. By diving deep within the self, and beyond our own individual consciousness, to the universal all-pervading consciousness, when consciousness is still and deeply silent, we too can experience the Veda. It is this experience from which all Vedic knowledge comes. On the basis of this experience, we can know the structure of the Veda that exists eternally in consciousness.

The Veda is the expression of the knowledge gained during transcending, or going beyond active mind and finite mind, to experience the infinite consciousness that lies at the basis of all created things. This experience gives knowledge of the eternal consciousness that pervades all creation. It is not localized to individual awareness. It is universal all-pervading consciousness. Anyone can gain access to this consciousness by transcending activity to experience the infinite, unbounded silence at the basis of creation.

The infinite silence is not seen, as one sees an object separate from the self. Infinite silence is what the seer becomes when he or she is deeply silent. The Vedic seers discovered that when the mind is deeply silent and still, it expands from individual mind to infinite mind. One becomes infinite mind and the structure of this infinite mind is what one experiences when one sees the Veda.

The greatest Vedic scholar and seer of all ages is undoubtedly Maharishi Mahesh Yogi. Maharishi is a great genius who has brought to light the deeper meaning of the Veda on the basis of the direct experience of the Veda itself. Since the Veda is structured in consciousness, the consciousness which is not individual but universal and all-pervading, it exists within everyone. Every individual consciousness grows out of the vast ocean of universal consciousness which is the Veda. By diving within our individual consciousness, and beyond, to the infinite sea of universal consciousness, we can experience the eternal, all-pervading sea of consciousness and its self-interacting dynamics by which the world is created within the eternal sea of consciousness. This is to witness the mechanics of creation. Veda is this mechanics of creation.

The Vedic tradition grew out of a discovery of a way to go within consciousness and directly experience the Veda which exists deep within consciousness. It is only through this experience that there can be genuine knowledge of the Veda at all. It is for this reason that Maharishi brought out a technique to directly experience the silent level of consciousness within everyone. This technique makes the eternal Veda accessible to everyone on the basis of personal experience. It is the foundation of the knowledge of the Veda. The name of the techniques is the Transcendental Meditation technique. It is the method that opens the direct experience of universal consciousness and the Veda to anyone. It is thus the method of knowledge that makes universal knowledge of the eternal field of pure consciousness accessible to everyone. It is the method of exploration of consciousness by which anyone can gain access to the silent, unconditioned, universal consciousness that underlies and pervades all manifest objects in the physical world.

Thus, the only solid foundation for knowledge and understanding the Veda is the exploration of the fundamental level of inner silence, the inner silence of pure consciousness itself, where the Veda is structured. Only through experience of this level of reality—the silent foundation of universal consciousness—can anyone be prepared to know and understand the Veda. The Veda is the reality of consciousness and the knowledge of consciousness that is accessible through this experience; the Vedic tradition is the tradition that carries that knowledge over time; and Vedic civilization is the civilization that was built on this knowledge that existed in India at least three thousand years and probably more before the Christian era began.

As we will see, the Rig Veda and the Vedic literature are a systematic expression of consciousness and the knowledge of consciousness. The Veda tells us something about our own consciousness, about our human potential to be in and to experience a universal field of consciousness that underlies all created things. The essential meaning of the Veda escaped Western scholars for two centuries, but we now are rediscovering its meaning and coming to directly experience and know the Veda through direct experience through the guidance of Maharishi. This method brings knowledge more advanced than any other approach available in the world today, and as we will see, it has practical applications far greater than any other method of knowledge. In this and the following chapters, we will see that the Veda is a lasting expression of deep knowledge that has survived over many thousands of years in virtually perfect condition, and that it holds the secret to unlocking new knowledge and a new approach to knowledge that will enhance our own civilization more than any other discovery in history.

What is Vedic Cognition and How is it Passed On?

The Rig Veda was not “created” out the human imagination, as works of poetry or literature are created. Unlike poetry or literature, the Veda is experienced and then the experience of the Veda is recited in hymns that directly express the experience of the Veda. This is called *Vedic cognition*.

Cognition means that the Vedic *rishis* or seers heard what is there in the universal field of consciousness and they sang out the sounds that they heard. They were not making up poems, hymns, theories, or world-views, but they heard the sounds in the field of pure consciousness and saw the flow pure knowledge within it. Their experience came from being established in the deepest level of the mind.

This experience is what the recited sounds of the Veda express. But the hymns of the Rig Veda are not about the Veda, as if the expression were something different from

the Veda itself, which they were describing. The rishis heard the Veda and saw its structure, and this sound itself is expressed in the hymns of the Rig Veda. The experience of the Rig Veda flowed through the rishis into the hymns of the Rig Veda. The hymns of the Rig Veda sought out those rishis who were fully awake and made themselves known to them, and the rishis passed on these hymns in a long unbroken tradition that endures to the present.

The Rig Veda, the most ancient hymns of the Vedic tradition, has been preserved over time by a method of memorization and recitation passed these hymns on from father to son in an unbroken sequence over vast stretches of time. By two pundits chanting the hymns (and by chanting them forwards and backwards) a method of ensuring their purity was established that allowed these hymns to be passed on over thousands of years without loss. The Veda we possess today, unbelievable as it may seem, is thus an expression of the sounds heard many thousands of years ago.

It was only in relatively recent times, probably around 3000 BC, that the Veda and Vedic literature, were committed to writing. Before that Veda was an oral tradition.

The Vastness of the Veda and The Vedic Literature

Maharishi identifies 40 distinct branches of the Veda and the Vedic literature. These forty branches include, first and foremost, the Rig Veda samhita, and of equal importance, the Sama Veda, Yajur Veda, and Atharva Veda. These four bodies of sound are what is meant by the Veda.

In addition to the Veda, the Vedic literature includes 36 branches, all based on the Veda itself. These include the six branches of Vedanga, six branches of Upanga, and six branches of Ayur-Veda, for example. All branches of Vedic literature are considered, like the Veda itself, uncreated or eternal structures of knowledge.

The extent of the Veda and the entire Vedic literature is vast, huge—much larger, for example, than the remaining body of literature of all of ancient Greece and Rome. There are ten volumes of the Rig Veda alone in one of the best editions available in English (the Wilson translation). There are 54 books of Kalpa, just one of six branches of the Vedangas. There are 18 books of Puranas. The Itihasa includes the Ramayana and the Mahabharata, the later of which is printed in an English edition which has 20 volumes. There are thus, for example, over a hundred volumes in just these four branches of the Veda and the Vedic literature.

Maharishi sees this vast body of the Veda and the Vedic literature as a systematic body of literature that has a detailed, intricate structure in every part, and all systematically related in a whole. It is systematic in the sense that is not a random

collection of books that were written over vast stretches of time, but it forms a complete whole, with a comprehensive organization and structure. Each of the books of Vedic literature relates in a systematic way to all the others and each forms an essential part of the whole of Vedic literature.

Where is the Veda and How is it Known?

The Veda is expressed in sounds that are recited and heard, but the Veda itself exists in the unmanifest field of unbounded pure consciousness, called *parame vyoman*. This is a universal silent field of consciousness that pervades everything in the universe. Since it is all-pervading, it pervades the body and mind of every individual. It exists on the most subtle, or fine scale, of activity. It is smaller than the smallest particle of the atomic nucleus. It is on a scale smaller than the smallest quark and lepton. It is the field of consciousness in its least excited state. Everything in nature is an excitation of this field. All particles of matter and force are excited states of this one all-pervading field.

To know the Veda, which is everywhere at the most subtle foundation of the world, we have only to take our awareness from the excited states of consciousness to the least excited state of consciousness. By taking our awareness from the active, gross level of activity to the silent field of pure consciousness, we allow our individual mind to become settled and stilled and in that state of wakeful silence, and in that state, the mind spreads out to identify with the all-pervading field of consciousness. On that level of awareness, the entire Veda and Vedic literature can be directly experienced as the fabrics of our own consciousness. We simply dive from the surface level of activity to the silent all-pervading depth where consciousness is eternally awake within itself. On that level of all-pervading nature, consciousness is eternally interacting within itself. This self-interaction of consciousness as its flows from unity into diversity is the Veda. It is the eternal reality at the foundation of everything that exists in the observable manifest world.

Structure of the Veda

The Veda has a structure. It is structured in the form of mandalas, or circles. The structure of the Veda and the Vedic literature is a flow of knowledge, not a static, frozen structure. As the eternal consciousness flowing within itself and knowing itself, it flow, and creates within itself a structure that is dynamic and flowing. This flowing structure of Veda is an eternal flow of pure knowledge of the self as it unfolds knowledge of itself. It is the flow of consciousness as it knows itself and flows from unity to diversity. It is the flow of self-knowledge within consciousness, giving rise to the entire diversity of creation. It is the flow of the oneness of eternal pure

consciousness into the many formed unity of the Veda, and from there to the forms and phenomena of the manifest universe, the visible material world.

The first flow of knowledge of the Veda is the flow from the One into the many. The eternal oneness of pure Being or pure consciousness knows itself. And in knowing itself, it breaks itself into many. The infinite One collapses into a point, and into infinitely many points. These points of consciousness are finite, separate, isolated points of individual consciousness. But they are all ultimately points of the one infinite whole of consciousness. Each is a collapsed point of the infinite whole, and in the process of returning to wholeness, the finite points of consciousness expand back into the infinite One from which they began. This is the fundamental process of creation that is expressed in the Rig Veda and in the Vedic literature.

The Rig Veda expresses this process in sound. The Rig Veda is essentially this sequence of vibrations that manifest as the process of consciousness knowing itself. It unfolds out of the process of consciousness knowing itself. This entire process is a necessary sequence of sounds that unfold the pure knowledge of consciousness to itself. It is the eternal murmuring of consciousness to itself.

The Rig Veda does not describe the process in articulate language, using descriptive terms, the way a scientist might describe an object of nature. The vibrations of consciousness as it moves within itself create unmanifest sounds in the unmanifest field of pure consciousness, which manifest as the sound of the Veda, and these sounds within the infinite field of pure consciousness become the vibrations that manifest in the forms and phenomena of physical creation.

Collapse of Infinity to a Point: The *Apaurusheya Bhashya* Structure of the Veda

The basic process of consciousness knowing itself takes the form of a collapse of the infinite whole of pure consciousness into infinitely many finite points of consciousness. This process of infinity collapsing to a point, and the points expanding into infinity, is the basic process that structures the Veda. It is the process by which the eternal Oneness of pure consciousness knows itself. Infinite wholeness collapses to a point and the point expands to infinity. Out of this process all creation comes.

Maharishi has discovered that this process and its structure is expressed in the first syllable of the Rig Veda, in the first line, in the first verse, and in the first mandala, each expression being a more elaborate commentary on the collapse of infinity than the previous. This structure Maharishi calls the *Aparasheya Bhasha* structure of the Rig Veda. Maharishi was the first to discover and bring it to light.

Maharishi discovered that the Rig Veda has a marvelous structure in which each of the parts reflects the structure of the whole. Thus, for example, the First Mandala of the Rig Veda, which gives the meaning of the Veda as a whole, has 192 suktas. The Tenth Mandala has the same number of suktas, mirroring the gaps between the suktas of the First Mandala. This is not an accidental structural parallel, but an indication of the intricately interlocked structure of the Veda as a whole. This kind of structural identity is reiterated in many places throughout Vedic literature.

Maharishi sees the first syllable of the Rig Veda, *Ak*,[40] as containing the whole Rig Veda within itself. It represents the collapse of the continuum of flow of infinite wholeness to its own point. The "A" sound represents flow or continuum, and the "k" sound represents the stop, or collapse of the flow. This sound is actually the process of the infinite whole of consciousness collapsing to its point values.

This first syllable of the Rig Veda is elaborated and commented on in the first 24 richas (verses), which are further elaborated in the corresponding 24 padas (phrases) of the next eight richas, giving 192 of the meaning of the syllable *Ak*. These all emerge from the 24 sandhi (gaps) of the first richa. From the 192 gaps between the 192 akshara (syllables) of richa 2-9, emerge the 192 suktas of the First Mandala of the Rig Veda.

The 192 sandhi between the 192 suktas of the first Mandala give rise to the 192 suktas of the Tenth Mandala, a circular structure that precisely fills the gaps of the First Mandala. Similarly, the gaps between the nine richas of the first sukta are elaborated in Mandala 2-9 of Rig Veda, unfolding the total Rig Veda with all its ten Mandalas.[41]

The whole of the Rig Veda has a marvelous and intricately interwoven structure that is beyond the capacity of the human mind to create. It was not created, but cognized by the seers of ancient India. This is part of the reason that Maharishi recognizes the tradition that the Veda and the Vedic literature "eternal" or uncreated.

The Three-in-One Structure of Pure Knowledge: The flow of Rishi, Devata, and Chhandas in the Structure of the Veda

There is one other structure of the Veda that is basic to understanding the Veda. In the process of knowing itself, the infinite pure consciousness, which is eternal knows itself. In knowing itself, pure consciousness creates a division within itself of knower, known, and process of knowing. This is necessary for it to know itself. It is both eternally one, and yet it is eternally three—knower, knowing, and known—making a three-in-one structure of self-knowing consciousness.

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[40] "Ak" is a transformed expression of the first word of the Rig Veda, "Agnim."

[41] See Tony Nader, *The Human Physiology: Expression of Veda and the Vedic Literature*, (Vlodrop, Holland: Maharishi Vedic University Press, 2000), p. 57.

This is another fundamental feature of pure consciousness that it is both eternally one and eternally many. From the threefold structure of knower, known, and process of knowing, consciousness continues to reflect on itself, giving rise to many more reiterations of itself, until the one has evolved into the diversity of the entire Veda.

This threefold structure of pure knowledge, that it is one and three at the same time, Maharishi calls the three-in-one structure of pure knowledge. It is expressed in the Veda in the terms *rishi* (knower), *devata* (process of knowing) and *chhandas* (known). Every sukta of the Rig Veda has a structure of *rishi*, *devata*, and *chhandas*, which is announced at the beginning of the hymn. There are infinitely many values of rishi, infinitely many values of devata, and infinitely many values of chhandas. These provide the basic key to understanding the structure of the Rig Veda, as well as Sama, Atharva, and Yajur Veda.

Not only the Veda but all of Vedic literature reflects this structure of knower, knowing, and known. Each branch of the Vedic literature flows out of the mechanics of self-knowing consciousness. The Vedic literature, with its six-fold organization, reflects the process of movement from rishi, to devata, to chhandas, and from chhandas back to devata and rishi. This process is the basic process that structures the entire Rig Veda and the entire Vedic literature. It is the process of self-knowing consciousness.

In the following chapters, we will rediscover the structure of the entire Veda and Vedic literature. This is an immense voyage of discovery into a new world of knowledge that has been lost for thousands of years. It is a journey into the fabric of our own consciousness. It is regaining lost knowledge of our own infinite Self.