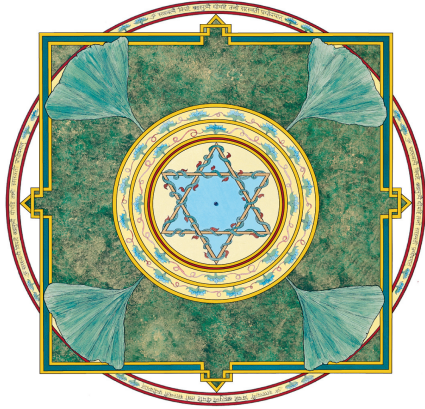


American Sanskrit Institute



Sarasvati Yantra by PennyLea Morris

Sanskrit and the Age of Computers

The mentality of mankind and the language of mankind created each other. If we like to assume the rise of language as a given fact, then it is not going too far to say that the souls of men are the gift from language to mankind. The account of the sixth day should be written:

"He gave them speech, and they became souls."

— Alfred North Whitehead, *Modes of Thought*

The quote of Whitehead may have created in the readers as many different responses as there are readers. One may perceive it as a noble and inspiring truth. Another may react to the notion that a "soul" could depend on language. Still another may be completely in the dark about what Whitehead is saying.

The quote will actually take on meaning according to context. And the context is largely determined by the meanings we attribute to words, especially in this quote the word "soul". "Soul", according to Webster can mean "the immortal part of human being" or "the seat of emotional sentiment and aspiration" or simply "a human being."

In addition to or apart from these definitions, each of us may bring our own religious or philosophical beliefs or experiences into the context, "the soul is this", or "the soul is that."

The point is this: wherever we go in our interpretation of Whitehead, we use language. So the question arises "where does the soul exist other than in language?"

Suppose we were to continue to challenge Whitehead in his implication that only human beings, by having speech, became souls. We say

"animals have souls." But again the question occurs, where does the animal's soul exist other than in our describing it with language? Even if we were to have a vision of the soul of an animal, still we would have to return to language to report what we saw. The soul of the animal would continue to exist for us in memory as language.

Through language we could even recreate a picture of the animal's soul.

Perhaps we should recreate North's recreation of creation and say "He gave speech, and they became souls, and in turn some of them gave souls to all creatures, to all life."

It's conceivable that for a few rare and inspired geniuses, mathematics can reach the point of becoming music or music becoming mathematics. The extraordinary thing about Sanskrit is that it offers direct accessibility by anyone to that elevated plane where the two, mathematics and music, brain and heart, analytical and intuitive, scientific and spiritual become one.

All of this is not to in any way invalidate the sanctity and perfection of creation but only to point out that we have greatly underestimated the sacred power of language. When the power of language to create and discover life is recognized, language becomes sacred. In ancient times, language was held in this regard. Nowhere was this more so than in ancient India. It is evident that the ancient scientists of language were acutely aware of the function of language as a tool for exploring and understanding life, and in the process of using language with greater and greater rigor discovered Sanskrit or the “perfected” language.

This along with the example of Whitehead’s quote points out what is perhaps the most important distinction we can make in the fulfillment of our lives: either language uses us or we use language. Either we think that Whitehead is right or wrong based on what our already established definition of “soul” is or we discover the relation of his use of words, to our own use of words. This opens the possibility of seeing something that lies beyond both. Only in the latter do we actually communicate, free from the domination of unconscious memory dictating meaning.

In ancient India the intention to discover truth was so consuming, that in the process, they discovered perhaps the most perfect tool for fulfilling such a search that the world has ever known — the Sanskrit language.

Of all the discoveries that have occurred and developed in the course of human history, language is the most significant and probably the most taken for granted. Without language, civilization could obviously not exist. On the other hand, to the degree that language becomes sophisticated and accurate in describing the subtlety and complexity of human life, we gain power and effectiveness in meeting its challenges. The access to modern

technology which has been designed to give ease, efficiency and enjoyment in meeting our daily needs did not exist at the beginning of the century. It was made possible by accelerated advancement in the field of mathematics, a “language” which has helped us to discover the interrelationship of energy and matter with a high degree of precision. The resulting technology is evidence of the tremendous power that is unleashed simply by being able to make the finer and finer distinction that a language like mathematics affords.

At the same time humankind has fallen far behind the advancements in technology. The precarious state of political and ecological imbalance that we are now experiencing is an obvious sign of the power of technology far exceeding the power of human beings to be in control of it. It could easily be argued that we have fallen far behind the advancements in technology, simply because the languages we use for daily communication do not help us to make the distinctions required to be in balance with the technology that has taken over our lives.

Relevant to this, there has recently been an astounding discovery made at the NASA research center. The following quote is from an article which appeared in AI Magazine (Artificial Intelligence) in Spring of 1985 written NASA researcher, Rick Briggs:

In the past twenty years, much time, effort, and money has been expended on designing an unambiguous representation of natural languages to make them accessible to computer processing. These efforts have centered around creating schemata designed to parallel logical relations with relations expressed by the syntax and semantics of natural languages, which are clearly cumbersome and ambiguous in their function as vehicles for the transmission of logical data. Understandably, there is a widespread belief that natural languages are unsuitable for

the transmission of many ideas that artificial languages can render with great precision and mathematical rigor.

But this dichotomy, which has served as a premise underlying much work in the areas of linguistics and artificial intelligence, is a false one. There is at least one language, Sanskrit, which for the duration of almost 1000 years was a living spoken language with a considerable literature of its own. Besides works of literary value, there was a long philosophical and grammatical tradition that has continued to exist with undiminished vigor until the present century. Among the accomplishments of the grammarians can be reckoned a method for paraphrasing Sanskrit in a manner that is identical not only in essence but in form with current work in Artificial Intelligence. This article demonstrates that a natural language can serve as an artificial language also, and that much work in AI has been reinventing a wheel millennia old.

The discovery is of monumental significance. It is mind-boggling to consider that we have available to us a language which has been spoken for 4000 - 7000 years that appears to be in every respect a perfect language designed for enlightened communication. But the most stunning aspect of the discovery is this: NASA, the most advanced research center in the world for cutting edge technology, has discovered that Sanskrit, the world's oldest spiritual language, is the only unambiguous spoken language on the planet.

In early AI research it was discovered that in order to clear up the inherent ambiguity of natural languages for computer comprehension, it was necessary to utilize semantic net systems to encode the actual meaning of the sentence. Briggs gives the example of how a simple sentence would be represented in a semantic net:

John gave the ball to Mary.
give, agent, John
give, object, ball
give, recipient, Mary
give, time, past

He further comments, "The degree to which a semantic net (or any unambiguous nonsyntactic representation) is cumbersome and odd-sounding in a natural language is the degree to which that language is 'natural' and deviates from the precise or 'artificial.' As we shall see, there was a language (Sanskrit) spoken among an ancient scientific community that has a deviation of zero."
Considering Sanskrit's status as a spiritual language, a further implication of this discovery is that the age old dichotomy between religion and science is an entirely unjustified one.

It is also relevant to note that in the last decade physicists have begun to comment on the striking similarities between their own discoveries and the discoveries made thousands of years ago in India which went on to form the basis of most Eastern religions.

Because of the high level of collaboration required in uncovering the nature of energy and matter, it is inconceivable that it ever could have taken place without a common language, namely mathematics. This is a perfect example of using a language for discovering and designing life. The language of mathematics, being inherently unambiguous, minimizes personal interpretation and therefore maximizes opportunity for exploration and discovery. The result of this is a worldwide community of scientists working together with extraordinary vitality and excitement about uncovering the unknown.

It can also be inferred that the discoveries that occurred in India in the first millennia

B.C. were also the result of collaboration and inquiry by a community of spiritual scientists utilizing a common scientific language, Sanskrit. The truth of this is further accented by the fact that throughout the history and development of Indian thought, the science of grammar and linguistics was attributed a status equal to that of mathematics in the context of modern scientific investigation. In deference to the thoroughness and depth with which the ancient grammatical scientists established the science of language, modern linguistic researchers in Russia have concluded about Sanskrit, "The time has come to continue the tradition of the ancient grammarians on the basis of the modern ideas in general linguistics."

Sanskrit is the most ancient member of the European family of languages. It is an elder sister of Latin and Greek from which most of the modern European languages have been derived. The oldest preserved form of Sanskrit is referred to as Vedic. The oldest extant example of the literature of the Vedic period is the Rig-Veda. Being strictly in verse, the Rig-Veda does not give us a record of the contemporary spoken language.

The very name Sanskrit meant "language brought to formal perfection" in contrast to the common languages, Prakrits or "natural" languages.

The form of Sanskrit which has been used for the last 2500 years is known today as Classical Sanskrit. The norms of classical Sanskrit were established by the ancient grammarians. Although no records are available of their work, their efforts reached a climax in the 5th century B.C. in the great grammatical treatise of Panini, which became the standard for correct speech with such comprehensive authority that it has remained so, with little alteration until present times.

Based on what the grammarians themselves have stated, we may conclude that the Sanskrit grammar was an attempt to discipline and explain a spoken language.

The NASA article corroborates this in saying that Indian grammatical analysis "probably has to do with an age old Indo-Aryan preoccupation to discover the nature of reality behind the impressions we human beings receive through the operation of our senses."

Until 1100 A.D., Sanskrit was without interruption the official language of the whole of India. The dominance of Sanskrit is indicated by a wealth of literature of widely diverse genres including religious and philosophical; fiction (short story, fable, novels, and plays); scientific literature including linguistics, mathematics, astronomy, and medicine; as well as law and politics.

With the Muslim invasions from 1100 A.D. onwards, Sanskrit gradually became displaced by common languages patronized by the Muslim kings as a tactic to suppress Indian cultural and religious tradition and supplant it with their own beliefs. But they could not eliminate the literary and spiritual-ritual use of Sanskrit.

Even today in India, there is a strong movement to return Sanskrit to the status of "national language of India." Sanskrit being a language derived from simple monosyllabic verbal roots through the addition of appropriate prefixes and suffixes according to precise grammatical laws has an infinite capacity to grow, adapt and expand according to the requirements of change in a rapidly evolving world.

Even in the last two centuries, due to the rapid advances in technology and science, a literature abundant with new and improvised

vocabulary has come into existence. Although such additions are based on the grammatical principles of Sanskrit, and mostly composed of Sanskrit roots, still contributions from Hindi and other national and international languages have been assimilated. For example: The word for television, *dūradarśanam*, meaning “that which provides a vision of what is far away” is derived purely from Sanskrit.

Furthermore, there are at least a dozen periodicals published in Sanskrit, all-India radio news broadcast in Sanskrit, television shows and feature movies produced in Sanskrit, one village of 3000 inhabitants who communicate through Sanskrit alone, not to mention countless smaller intellectual communities throughout India, schools, as well as families where Sanskrit is fostered. Contemporary Sanskrit is alive and well.

The discussion until now has been about Sanskrit, the language of mathematical precision, the world’s only unambiguous spoken language. But the linguistic perfection of Sanskrit offers only a partial explanation for its sustained presence in the world for at least 3000 years. High precision in and of itself is of limited scope. Generally it excites the brain but not the heart. Sanskrit is indeed a perfect language in the same sense as mathematics, but Sanskrit is also a perfect language in the sense that, like music, it has the power to uplift the heart.

It’s conceivable that for a few rare and inspired geniuses, mathematics can reach the point of becoming music or music becoming mathematics. The extraordinary thing about Sanskrit is that it offers direct accessibility by anyone to that elevated plane where the two, mathematics and music, brain and heart, analytical and intuitive, scientific and spiritual become one. This is fertile ground for revelation. Great discoveries occur, whether

through mathematics or music or Sanskrit, not by the calculations or manipulations of the human mind, but where the living language is expressed and heard in a state of joy and communion with the natural laws of existence.

Why has Sanskrit endured? Fundamentally it generates clarity and inspiration. And that clarity and inspiration is directly responsible for a brilliance of creative expression such as the world has rarely seen. No one has expressed this more eloquently than Sri Aurobindo, the 20th century poet philosopher:

The Ancient and classical creations of the Sanskrit tongue both in quality and in body and abundance of excellence, in their potent originality and force and beauty, in their substance and art and structure, in grandeur and justice and charm of speech and in the height and width of the reach of their spirit stand very evidently in the front rank among the world’s great literatures. The language itself, as has been universally recognized by those competent to form a judgment, is one of the most magnificent, the most perfect and wonderfully sufficient literary instruments developed by the human mind, at once majestic and sweet and flexible, strong and clearly-formed and full and vibrant and subtle, and its quality and character would be of itself a sufficient evidence of the character and quality of the race whose mind it expressed and the culture of which it was the reflecting medium.

Sanskrit after all is the language of mantra — words of power that are subtly attuned to the unseen harmonies of the matrix of creation, the world as yet unformed. The possibility of such a finely attuned language is only conceivable by drawing upon sounds so inherently pure in combinations so harmoniously blended that the result is as refreshing and pure as the energy of creation forming into mountain streams and lakes and the flawless crystal structures of natural gems, while at the same time wielding

the power of nebulae and galaxies expanding into the infinitude of space.

But from the perception of Rishis, the source of language transcends such conceptions. In Sanskrit, vāk, speech, the “word” of Genesis, incorporates both the sense of “voice” and “word”. It has four forms of expression. The first, parā, represents cosmic ideation arising from the original and absolute divine presence. The second, paśyantī (literally “seeing”) is vāk as subject “seeing,” which creates the object of madhyamā vāk, the third and subtle form of speech before it manifests as vaikhari vāk, the gross production of letters in spoken speech.

Sanskrit is a language whose harmonic subtlety mysteriously sources the successive phases of creation all the way to origination. This implies the possibility of having speech oriented to a direct living truth which transcends individual preoccupation with the limited information available through the senses. Spoken words as such are creative living things of power. They penetrate to the essence of what they describe. They give birth to meaning which reflects the profound interrelatedness of life.

It is a tantalizing proposition to consider speaking a language whose sounds are so pure and euphonically combined. The mere listening or speaking inspires and produces joy and clarity. And yet it has been precisely the tendency of humanity as a whole to merely be tantalized by happiness, but not actually to choose it. It's as though we had been offered the most precious gem and we answered, “No, I'd rather be poor.” The only possible background for such a choice is the unconscious belief that, “I can't have it. I can't be that.”

Interestingly enough, this is exactly what is triggered in people who are faced with the opportunity to learn Sanskrit. A basic attitude

one often hears with regard to learning Sanskrit today is, “It's too difficult.” Actually Sanskrit is not difficult. On the contrary, there are few greater enjoyments. The first stage, experiencing the individual power of each of the 49 basic sounds of the Sanskrit alphabet is pure discovery, especially for Westerners who have never paid attention to the unique distinctions of individual letters such as location of resonance and tongue position. The complete alphabet was worked out by learned grammarians on phonetic principles by long before it was codified by Panini around 500 B.C. It is arranged on a thoroughly scientific method, the simple vowels (short and long) coming first, then the complex vowels (diphthongs), followed by the consonants in uniform groups according to the relative location in the palate, always from back to front.

The unique organization of the Sanskrit alphabet serves to focus one's attention on qualities and patterns of articulated sound in a way that occurs in no other language. By paying continuous attention to the point of location, degree of resonance and effort of breath, one's awareness becomes more and more consumed by the direct experience of articulated sound. This in itself produces and unprecedented clarity of mind and revelry in the joy of language. Every combination of sound in Sanskrit follows strict laws which essentially make possible an uninterrupted flow of the most perfect euphonic blending of letters into words and verse.

The script used to depict written Sanskrit is known as Devanaagari or that “spoken by the Gods.” Suitably for Sanskrit, it is a perfect system of phonetic representation. According to linguists, the phonetic accuracy of the Devanaagari compares well with that of the modern phonetic transcriptions.

Because of its inherent logic, systematic presentation and adherence to only the most clear and most pure sounds, the Sanskrit alphabet in its spoken form, is perhaps the easiest in the world to learn and recall. Once the alphabet is learned, there is just one major step to take in gaining access to the Sanskrit language: learning the case and tense endings. The endings are what make Sanskrit a language of math-like precision. By the endings added onto nouns or verbs, there is an obvious determination of the precise interrelationship of words describing activity of persons and things in time and space, regardless of word order. Essentially, the endings constitute the software or basic program of the Sanskrit language.

The rigor of learning the case endings is precisely the reason why many stop in their pursuit of Sanskrit. Yet by an effective immersion method, fluent reading of the Devanagari script, accurate pronunciation, and the inputting of the case and tense endings can easily be accomplished. Such a method must take advantage of the fact that Sanskrit grammar is structured by precise patterns, and once a pattern has been noted it is a simple exercise to recognize all the individual instances that fit the pattern; rather than see the pattern after all the individual instances have been learned. Color coding provides a tremendous support in this regard.

Learning the case endings through the chanting of basic pure sound combinations in musical and rhythmic sequences is a way to overcome learning inhibitions, attune to the root power of the Sanskrit language and access the natural computer efficiency, speed and clarity of the mind.

Although learning Sanskrit in some ways presents challenges similar to those of learning calculus or music, it also induces a lubrication

and acceleration of mental function that actually makes such a process exciting and enjoyable. Perhaps the greatest immediate benefit of learning Sanskrit by this method is that it requires participants to relinquish control, abandon prior learning structures and come into a direct experience of the language.

The actual simplicity and enjoyment of the sounds of Sanskrit provides everyone with an opportunity to learn a subject which is technically precise with fluidity and ease. This tends to produce a complete reversal of the inhibiting competitive environment in which most life education traditionally took place, by creating an atmosphere in which mutual support generates personal breakthrough and vice-versa.

One thing is certain, Sanskrit will only become the planetary language when it is taught in a way which is exciting and enjoyable. Furthermore it must address individual learning inhibitions with clarity and compassion in a setting which encourages everyone to step forth, take risks, make mistakes and learn. Already we have outstanding examples of this approach in the work of teachers such as Jaime Escalante, whose remarkable achievements in teaching advanced calculus to underprivileged high school students in East Los Angeles were featured in the Academy Award nominated movie, "Stand and Deliver."

Another hope for the return of Sanskrit lies in computers. Sanskrit and computers are a perfect fit. The precision play of Sanskrit with computer tools will awaken the capacity in human beings to utilize their innate higher mental faculty with a momentum that would inevitably transform the world. In fact the mere learning of Sanskrit by large numbers of people in itself represents a quantum leap in consciousness, not to mention the rich

endowment it will provide in the arena of future communication.

Sanskrit has always inspired the hearts, mind and souls of wise people. The great German scholar Max Muller, who did more than anyone to introduce Sanskrit to the West in the latter part of the 19th century, contended that without a knowledge of the language (Sanskrit), literature, art, religion and philosophy of India, a liberal education could hardly be complete — India being the intellectual and spiritual ancestor of the race, historically and through Sanskrit.

Max Muller also pointed out that Sanskrit provides perfect examples of the unity and foundation it offers to the Celtic, Teutonic, Slavonic, Germanic and Anglo-Saxon languages, not to mention its influence on Asian languages. The transmission of Buddhism to Asia can be attributed largely to the appeal to Sanskrit. Even in translation the works of Sanskrit evoked the supreme admiration of Western poets and philosophers like Emerson, Whitman, Thoreau, Melville, Goethe, Schlegel and Schopenhauer.

The fact is that Sanskrit is more deeply interwoven into the fabric of the collective world consciousness than anyone perhaps knows. After many thousands of years, Sanskrit still lives with a vitality that can breathe life, restore unity and inspire peace on our tired and troubled planet. It is a sacred gift, an opportunity. The future could be very bright.

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