

## CONFERENCE/SEMINAR

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### *The Concept of Sunya*

**An International Seminar on the concept of Sunya was jointly organised by the IGNC and the Indian National Science Academy (INSA),**

**from 12 to 14 February, 1997 at New Delhi**



The three-day seminar on *Sunya* was jointly hosted by IGNC and INSA. About fifty scholars from India and abroad of varied disciplines exchanged their views and participated in the deliberations. The seminar was inaugurated by Prof. Varadarajan, President of the INSA. In his inaugural address Prof. Varadarajan said, "the interaction with the IGNC has played a role in shaping our own understanding, our perception on the value of our science. At a juncture when science is being viewed as an important input in the development of our society, we have ventured into an area of combination of science and philosophy".

He further said that, "though the area might be new to us, the founders of the Indian science had a perfect understanding of this combination. Dr. Kapila Vatsyayan, in the convenors address said that, "the concept of *Sunya* contains both, rational understanding of our world and the irrational or intuitive perception of the universe which are complementary". She added, "*Sunya* is a major metaphor in all forms of Arts, which are manifestations of integrated versions of diverse domains of knowledge."

The Seminar deliberated on the concept of *Sunya* in, (i) mathematical system; (ii) speculative thought; and (iii) Temple Art, Tantra and Agama, Mysticism and their ramifications in other fields. The notion of *Sunya* is as pervasive as problematic. Many debates have been held on the notion in the context of growth of civilization. The Sanskrit term *sunya* which is of obscure etymology, is used both as substantive and adjective, with diverse connotations, such as void, either (*akasa*), blank, absence, etc. The concept of *sunya* in India has a long history and varied manifestations in different dimensions, in Mathematics, in Philosophy and in mysticism. In mathematical literature it is used in the sense of zero having no substantial numeral value of its own but playing the key role in the system of decimal notation, to express all numbers with nine digits, one to nine and the *sunya* as the tenth. The application of *sunya* in this system of notation was discovered in India, some time in the pre-Christian era. Its concretization in the form of a dot or a small circle and its use in decimal place value first replaced the *abjad* system of numeration of the Arabs and then through them travelled to medieval Europe to supplant the Greek and Roman systems, and the whole world slowly recognized it as the most scientific system of numeration. Though erroneously called by the westerners as the Arabic numeral system, now the entire world knows that the credit for discovery of *sunya* goes to India. Medieval Central Asian scholars such as Al-Kharizmi (9th cent.AD) and Al-Baruni (11th cent.AD) as well as George Sarton of modern time bear testimony that the system consisting of nine numeral digits and one *sunya* (zero) was invented by the Hindus, i.e. Indians.

It is sometimes contended that the use of zero in Arithmetic was earlier known to the Babylonians. Though the Babylonian records of about 200 B.C. show the use of a character to denote the absence of a number, it did not form the basis of their system of numeration as the Indian *sunya* does. The question of

Indias indebtedness to the Babylonians in this respect can be safely ruled out.

The treatment of all the fundamental operations with *sunya* in Mathematics and Astronomy in a logical and systematic way was developed by subsequent authorities from Brahmagupta of the seventh century to Ranganatha of the seventeenth century. In this way *sunya* (zero) is defined as infinitesimal, and this is exactly the same as the modern conception of zero in arithmetic.

Besides Mathematics and Astronomy, the term *Sunya* has been widely used to denote diverse concepts of Indian philosophical and mystical traditions. Swami Jitatmananda of the Ramakrishna Mission, Rajkot delivered a special address on the occasion. *Sunya* in Indian literary and cultural tradition is the embodiment of *purna* (full), *lopa* (absence), *akasa* (universe), *bindu* (dot), *vrta* (circle). The notion of *Sunya* is pervasive as well as problematic. It denotes Brahman on one side and void or absence of all phenomena, both material and abstract, on the other. It is the kernel of Sunyavada philosophy of the Madhyamika Buddhists, where *Sunya* is equivalent to Emancipation (*Nirvana*), transcending all four dimensions of existence and non-existence along with their permutations and combinations. In Tantra-Agama traditions, particularly in the Saivagamas, the concept of *Sunya* and *sunyata* have several levels, starting from void or emptiness in place and time, to ultimate and absolute bliss. In the Vedantic view *Sunya* or *nirguna* are collinear terms which negate empirical reality of the phenomenal world.

It is also true that the philosophical conceptualization of *sunya* and *sunyata* as developed by *Nagarajuna* and of the *akasa* (which is a synonym of *sunya*) lent support to and left an impact on the concretization of *sunya* of the mathematicians. At the same time the concept of *sunya* in philosophy and Tantra has been symbolized in the temple architecture and iconography.

**V.S. Shukla**



### **ABOUT THE LOGO**

Zero is the embodiment of *purna* (full), *lopa* (absence), *akasa* (universe), *bindu* (dot), *sunya* (circle), in Indian literary and cultural traditions. The concept got concretized in the form of a symbol like dot or circle to fill up the empty space created in Indian decimal place-value concept. These ideas were represented in the *logo* of the seminar formulated by Shri P.T. Deshpande of the IGNCA.