Numbers and their Cultural Significance: A General Survey of Some Prime Numbers

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Abstract: Number is very fundamental entities in matheamtics. It is considered that the number is one of the first matheamtical knowledge known to primitive mankind. It is developed with the advancement of human culture and different societies. Different human civilizations developed their own number system in order to solve their everyday activities compatible to them. This paper intended to explore some prime numbers and its significant in hindu culture. From the discussion from cultural, religious perspective and when examining the phenomenon rooted in specific culture, it lead to conclude that the prime numbers are sacred and holy in Hindu culture.

Keywords: Culture, Even numbers, Odd numbers, Prime numbers, Symmetry

1. Introduction

The number is a symbolic representation of objects. Probably, it was first mathematical ideas used by the primitive mankind. In this connection, the concept of number is almost always the first thing that comes to mind when mathematics is mentioned [3]. It is commonly accepted that mathematics originated with the practical problems of counting and recording numbers. The birth of the idea of number is so hidden behind the veil of countless ages that it is tantalizing to speculate on the remaining evidences of early humans' sense of number [2]. A number is a mathematical object used for counting, measuring, comparing, levelling and describing the magnitude of the phenomenon. Besides their practical uses, numbers have cultural significance throughout the world. Humanity has had a love-hate relationship with numbers from earliest times. For example, the number 13 is regarded as an unlucky number in the Western culture. The number 13 is hated number for them and to the extent that the hotels omit it from their floors, aeroplanes do not have a row 13, and the numbers for racing cars skip from 12 to 14.

Robson and Stedall mentioned that "every known human language has some means of expressing quantity, and in virtually all languages this includes two or more words for specific integers (oral only in non-literate societies, oral or written in literate ones)" (p. 496) [7]. The enormous ranges of symbolic roles that numbers have played in various cultures, religions and another system of human thought. The number is very fundamental concepts of mathematical ideas rooted in every human culture. Different numbers have distinctive cultural significance. The discussion of the symbolic representation of numbers helps to understand the numbers from cultural perspectives. This heading depicted the importance to explore how Hindu culture used numbers to organize

the information from the hidden symbolic representations. It facilitated and created important opportunities for teachers and students to mediate the teaching and learning in the classroom. It also helps to realise the hidden symbolism of the numbers in the socio-cultural settings of Hindu culture.

Very few number words naturally develop useful synonyms like 'dozen' for 'twelve' or 'kori / ek bisa' for 'twenty' or 'century'/ 'ek bita' (one bundle)/ pancha bias (five twenties) for hundred in everyday interaction in our context. Pre-classical Sanskrit appears to have been no exception in this regard. In ancient verses like the one quoted above from the *Rigveda*, the words for 'hundred', 'thousand', and so on are almost all unique and follow a standard linguistic pattern resembling that of their cognates in other Indo-European languages. Alternatives like 'thrice seventy' may sometimes replace the equivalent standard constructions like 'two hundred and ten', but the range of ways to express a particular number remains very limited. While it may be possible to insert a few number words here and there in a verse hymn dealing mostly with non-mathematical subjects, the task of constructing usable verses becomes impossible when the content is heavily numerical. Indian mathematicians got around this problem as they had finessed the more general problem of mathematical vocabulary, by deliberately creating synonyms for common number words, as well as by finding ingenious ways to represent numerals by letters. The method employing verbal synonyms is the simplest to use and seems to have been devised somewhat earlier than the alpha-numeric method. It works by permitting a number word to be replaced by any word signifying any object that is physically or conventionally associated with that number. Thus any word meaning 'hand' or 'eye' can be used to mean 'two', while a word for 'nail' (as in finger- or toenail) indicates 'twenty'.

2. Some Prime Numbers and Cultural Significant

A natural number is called prime number if it has exactly two different positive factors. For example, 2, 3, 5, 7 etc., are prime numbers because each of these has 1 and number itself as only two positive factors. On the other hand, the natural numbers which have more than two positive factors are called composite number. Hence 1 neither met any one of above definitions and hence 1 is neither prime nor composite. Numbers have special meaning in different culture. In Hindu culture, prime numbers are found in the various activities and situations. The depth of the cultural connection between prime numbers and artefacts reveals itself more clearly when examining the phenomenon of the inclusion of specific prime numbers in the different design, arts and artefacts.

2.1 The Number Two

The number 2 has symbolic meanings. The pair of number has significant importance in Hindu culture. It is believed that the cotton candle should burn in pair (*jor batti matra balnu parchha*). However, the people whom I met did not have any reasoning why a pair of the cotton candle is burned. The number 2 as an even prime number are taking sanctified numbers in the different situations. Pair number is considered as the harmonious between two things Purusha (male) and Prakriti (female), and Aatma and Pramaatma [4]. Every number is associated with something sacred and culturally significant to it for a different culture. Pythagoreans characterised two is the first even number or female number [1].

2.2 The Number Three (Teen)

Three is the first true male number, the number of harmonies, being composed of unity and diversity

[1]. In Hinduism, number 3 is also sacred. Number three represents the *Trimurti* called three Gods Brahma, Vishnu and Maheshwar in Hinduism. They are also characterized as the creator, the protector, and the destroyer. The number three also represents *Trisandhya* means three times in a day. The *Trisandhya* are the morning, day and evening. The number three is also associated with the *Trikaal* as past, present, and future and *Trilok* as Satya lok, Martya lok and Patal lok. The number three is an associate of different activities ……Trisanku…Trikosh. From the various situations, the first odd prime number 3 is very sacred. The number three is also associated with the cultural taboo of rotating a temple in thrice a time. It shows that the prime number and its significance is deeply rooted in the Hindu culture and religion. In our culture, the pledge in thrice and taking oath in three times has cultural meaning and they are observing through three eyes of Lord Shiva whether they are doing according to what they said or not.

The number three has mathematically and scientifically significant. The three different points determine three-line segments and three lines determine a triangle. The triangle has fixed area property. It is the most stable geometric form, even slightly more so than the square. The number three is considered as the viable number in the production of different often used with large (tall), medium, and small (short). The area of any plane region can be obtained by using the Archimedes formula where the symbol s, a, b, c represents the semi-perimeter, the opposite sides of angles A, B, C of the triangle ABC. The majority of Sioux tribes use the tripod foundation or three-pole foundation of the *tipi*. The word *tipi* refers to a conical skin tent or dwelling in the Sioux language. The majority of Sioux people use tripod foundation of tipi because it is stronger and offers a more firm-foundation than a quadripedal or four-pole tip foundation [5], [6], [8]. Further, [8] explained an ethnomodel of why a tripod is more flexible than a quadripedal or four-legged structure. In this regard, imagine three points, A, B, and C that are not collinear. There is an infinite number of planes that pass through points A and B that contain the straight line AB. Only one of these planes also passes through point C, therefore, we can say that three points are not collinear, determine one plane. This means that given any three non-collinear points, there is only one plane to which exist these same three points. This can be explained using the postulate for the determination of a plane.

"*Ek kan, due kan, maidan*" is a common proverb in our context to communicate the concepts of diffusion of ideas if three people are involve in the dialogue. This proverb has mathematical significant as three points determine a plane of infinite surface. In other words, given any three non-collinear points, there is only one plane to which exists these same three points. For example, in the 4-legged table, it has the possibility of the extremity of one of the legs that do not belong to the same plane. A table that has 3 legs, therefore, is always balanced. Similar to a three-legged table, the structure of the tipi appears to be perfectly adapted to the harsh environment in which it was used.

It had the advantage of providing a stable structure, was lightweight and portable.

2.3 The number Five

According to the Pythagorean, the number 5 is the number of marriage, union of the first true male and female numbers [1]. The number 5 is very sacred as it is taken as the *Panch Tatwa* the five elements (iron, gold, silver, diamond…); the five organs of senses; five organs of perceptions; five organs of action. *Pancha Devata*, there are five important categories of Devatas and the Pancha Kanya. Pancha Dhatu, Panchamrit, and so on are associated with the number five. The number five also practices in the cultural and religious activities in Hinduism. The five pillars is used in the

construction of mandap, a village Palika and Nagar Palika has only five members. In Hinduism, the number 5 is love in various activities and so it is very sacred. Each corner of the five-point star and their meaning are Sprit, Air, Water, Earth and Fire. The combination of these elements represents the life of the organism.

2.4 The Number Seven (*Saat*)

The number seven has been singled out for special awe, presumably on account of the seven wandering stars or planets from which the name for the days of the week is derived [1]. The number seven has cultural significance associated with the cultural taboo of rotating seven times during the marriage ceremony. In Hindu culture, wife rotates seven times to her husband by taking the oath of staying every second in seven days. The number seven is also associated with *Saptabeej* or *Satbeej* (the holy seeds) are sown at the area of Lord Shiva's shrines on *Bal Chaturdashi*. There are different myths regarding the cultural values of *Satbeej*. According to the Hindu mythology, *Pandit Govinda Rimal* said that, the family members, particularly the sons and daughters, squirt *Satbeej* in the name of deceased praying for eternal peace with the belief that the departed soul of their ancestors will have a place in heaven if such seeds are sown in the shrines of the Lord Shiva in the name of the deceased persons.

2.5 The Number Eleven

Every number has some significance, some glory attached to it. Eleven is another number associated with most cultural activities. Number eleven is associated with the eleventh incarnation of the deity Siva called 11 *Rudras*. The eleven-fold of Lord Siva incarnation are *Mahendra*, *Siva*, *Rudra*, *Sankara*, *Neelalokhita*, Easaana, *Vijaya*, *Bheema*, *Devada*, *Bhavodbhava*, and *Aaditya*. The ritual associated with the number 11 is that the eleventh day is the day of naming ceremony of the newly born child.

2.6 The Number Thirteen

Around the world, there are umpteen stories, myths and superstitions are prevalent surrounding the number 13. It is considered to be extremely unlucky in most of the cultures in Western beliefs because Jesus was crucified on 13th the Friday, so the westerners are superstitious on this day. However, in the Eastern culture, the number 13 is considered to be a lucky number and a lucky day on the calendar. The 13th day of any month is an extremely auspicious day according to Hinduism. The 13th day is Trayodashi according to the Hindu calendar. This day is dedicated to Lord Shiva. The *Pradosh brata* (fasting) observed in the honour of Lord Shiva usually falls on the 13th day of the month. The person who worships *Lord Shiva* on this day is blessed with wealth, children, happiness and prosperity. Hence, 13th is considered one of the most fruitful days of the month according to Hindu beliefs. Also, *Maha Shivaratri* is also celebrated on the 13th night of the *Magha* month which is considered very sacred and holy for everyone.

3. Even Numbers and Symmetry

Even number depicts special geometrical properties and one of them is symmetry. The line of reflection of symmetry of any geometric object requires even number for its symmetricity. Thus, the even number creates symmetry. A man has one hand, one eye, one ear and so one is the non-example of symmetry. It is obvious that oddness of the object does not reflect the same image on the other side of the reflection. Most of the artefacts involve the two objects with respect to the

line of reflection on it. The symmetry is seen in the various constructions of arts and artefacts. The number two is first even and one of the even prime number in the number system.

4. Concluding Remarks

The development of the number concept was as old as human civilization. At various times and places, different groups of people have developed compatible to solve their everyday problems regarding counting and quantifying. Each number has special meaning for different groups of people in different culture setting. The cultural significant of prime numbers are rooted in the Hindu culture. From the discussion from cultural and religious perspective, it leads to conclude that the prime numbers are sacred and holy in Hindu culture. It can be also concluded that the when examining the phenomenon rooted in Hindu culture include specific prime numbers in the different design, arts and artifacts.

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