

Gods of Zero and Infinity

- Devdutt Pattanaik

If you travel to the North Indian state of Uttar Pradesh, and visit a place called Deo-garh, which literally means citadel of the gods, you will find the ruins of a Hindu temple, one of the oldest, at least 1500 years old, built by the kings of the Gupta dynasty. On its walls, there is the image of a man reclining on the coils of a serpent with many hoods, surrounded by his wife and many warriors and sages. Its clearly inspired by a scene from the royal court. But it is clearly a celestial scene, visualisation of the moment when the world was created.

For Hindus, the world is created when Narayana awakes. Narayana is the god reclining on the serpent with multiple-hoods. When he is in dreamless slumber, the world does not exist. When he awakens, the world comes into being. Narayana is thus a visual representation of human consciousness, which awakening heralds the creation of our world.

What is interesting is the serpent on whose coils Narayana reclines. Its name is: Adi-Ananta-Sesha, which literally means Primal-Limitless-Residue, which is numerically visualised as One-Infinity-Zero. For with consciousness, we become aware of the first moment of beginnings, of limitless possibilities, and of nothingness that existed before the first moment.

The Hindu worldview has always been obsessed with infinity (everything-ness) and zero (nothingness) and with the number one (the beginning). More than Hindu, it is the Indic worldview, the substratum of thought which gave rise to three major ideas: Hinduism, Buddhism and Jainism, all of which speak of rebirth, cyclical time, and a world where there are no boundaries. Buddhism came up with ideas such as nirvana (oblivion) and shunya (which literally means zero). Jainism spoke of a world of endless possibilities (an-ekanta-vada).

This is in stark contrast to the Greek worldview where the world begins as chaos until the gods create order. And with order comes definitions, boundaries, certainty, and predictability. It is also different from the Abrahamic worldview where God creates the world out of nothingness and the world he creates in seven days has a definite expiry date: the Apocalypse. The Greek and Abrahamic worldviews inform what we call the Western worldview today that is obsessed with organisation, and is terrified of disorder, and unpredictability, something Indians are used to and rather comfortable with, even thriving in it.

The story goes that when Alexander, the Great, after having conquered Persia, visited India, he met a sage on the banks of the river Indus, who he referred to as a gymno-sophist or naked wise man, in Greek. This sage sat on a rock and spent all day staring at the sky. Alexander asked him what he was doing and the sage replied, "Experiencing nothingness." The sage asked Alexander what was he doing. Alexander replied, "I am conquering the world." Both laughed. Each one thought the other was a fool. For Alexander, the sage was wasting his one and only life doing nothing. For the sage, Alexander was wasting his time trying to conquer a world that has no limits, with a sense of urgency that made no sense when one lives infinite lives. Belief in one life, which is the hallmark of Greek worldview, and later Abrahamic, results us in valuing achievements. But belief in rebirth, hence infinite lives, which is the hallmark of Indic worldview, makes achievements meaningless, and puts the focus on wisdom and understanding. When the denominator of life is one, the world is different from when the denominator of life is infinity.

India's philosophical obsession with infinity and zero led to mathematicians not just conceptualising the idea of zero, but also giving it a form (a dot), and finally using it in a decimal system. This happened around the same time that the Gupta kings built the temple in Deogarh. The mathematician Brahmagupta, 638 AD, is associated with giving form to the number zero, and formulating the first rules with its usage. The rise of the decimal system enabled the writing of vast numbers, of huge value, a practice that has been traced to even Vedic texts written around 1000 BCE, values that are not seen in any other parts of the world.

The Arab sea-merchants who frequented the coasts of India, and who dominated the rich spice and textile trade then (before the European sea-farers took over in the 16th century) saw value in this system and took it with them to Arabia. The Arab mathematician Khwarizimi suggested use of a little circle for zero. This circle was called 'sifr' which means 'empty', which eventually became 'zero'. Zero travelled from Arabia through Persia and Mesopotamia to Europe during the Crusades. In Spain, Fibonacci found it useful to do equations without using the abacus. Italian government was suspicious of this Arabic numbering system and so outlawed it. But the merchants used it secretly, which is why 'sifr' became 'cipher', meaning 'code'.

It comes as a shock to many people that the modern use of the number zero is less than thousand years old, and that it became popular less than 500 years ago. Had it not been for the arrival of zero, neither would the Cartesian coordinate system nor calculus have developed in the 16th century. Zero enabled people to conceptualize large numbers and helped in book keeping and accounting. In the 20th century, came the binary system which forms the foundation of modern computing. All because some wild Indian sages conceptualised the universe and their gods in terms of zero and infinity.

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