

## ***Atman as a scientific notion, and its relation to physics and mathematics***

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**Abstract:** The notions of आत्मन and मोक्ष are central to Hinduism, and at its philosophical core: the Upanishads.

Hence, these notions ought to have been seriously studied by Indian scholars. However, आत्मन involves a notion of life after death commonly rejected as a superstition today, and even 2500 years ago by e.g. Payasi.<sup>1</sup> However, Payasi's experiments refuted only a naïve<sup>2</sup> belief in rebirth *immediately* after death. The notion of life after death in Hinduism is a different one: *rebirth takes place after a cosmic cycle of billions of years*. Further, not only are individuals reborn, but the whole cosmos recurs.

Whether or not the cosmos recurs is a scientific question which has to be answered scientifically,<sup>3</sup> and not by philosophical discourse, or mere allegations of superstition. Unfortunately, Indian scholars have completely avoided this scientific question. Nietzsche, despite his wrong arguments, reached the right conclusion that, on Newtonian physics, cosmic recurrence is inevitable in a closed cosmos, a result later known as the Poincaré recurrence theorem.<sup>4</sup>

However, this kind of “eternal recurrence” or “supercyclic time” is NOT appropriate for Hinduism, since it offers no मोक्ष. That requires (a) first a clear distinction between various *types* of “cyclic” time<sup>5</sup> (b) a rejection of mechanistic Newtonian physics (which anyway failed long ago due to its intrinsic conceptual confusion about time), and (c) a tilt in the arrow of time,<sup>6</sup> which permits creativity and quasi-cyclic time. The chief obstacle here is the influence of church ideology (on Western science and mathematics) which e.g. forces time to be superlinear like the “real” line, because “real” numbers are wrongly regarded in the West as essential for the calculus, needed for the very formulation of physics. “Real” numbers are, however, not needed for the calculus as it originated in India,<sup>7</sup> nor used for any physics.

This new understanding impacts ethics,<sup>8</sup> as already explained.

- 1 Digha Nikaya, Payasi sutta. Hindi trans. Rahul Sankrityayan and Jagdish Kashyap, Parammitra Prakashan, Delhi, 2002, pp. 199-201. Eng. trans. T. W. Rhys-Davids, *Dialogues of the Buddha*, vol. 2, London, 1910, pp. 346–74.
- 2 C. K. Raju, *The Eleven Pictures of Time: The Physics, Philosophy and Politics of Time Beliefs* (Sage, 2003) chp. 1 ‘Life after death’.
- 3 C. K. Raju, ‘Ancient and Modern Cosmology’, in *Proceedings of the Tenth Annual Meeting of the Indian Association for General Relativity and Gravitation*, 1982, 83–104; also, ‘Ancient and Modern Cosmology’, Technical Report No. P&E/E/12-79 (Kolkata: Indian Statistical Institute, 1979).
- 4 For a generalized version of the theorem see C. K. Raju, ‘Thermodynamic Time’, in *Time: Towards a Consistent Theory* (Dordrecht: Kluwer Academic, 1994), 79–101.
- 5 Raju, *The Eleven Pictures of Time: The Physics, Philosophy and Politics of Time Beliefs*.
- 6 C. K. Raju, *Time: Towards a Consistent Theory* (Dordrecht: Kluwer Academic, 1994). Fundamental theories of physics vol. 65.
- 7 C. K. Raju, *Cultural Foundations of Mathematics: The Nature of Mathematical Proof and the Transmission of Calculus from India to Europe in the 16th c*, CE (Pearson Longman, 2007); C. K. Raju, ‘Calculus’, in *Encyclopedia of Non-Western Science, Technology and Medicine* (Springer, 2016), 1010–15, <http://ckraju.net/papers/Springer/ckr-Springer-encyclopedia-calculus-1-final.pdf>; C. K. Raju, ‘Calculus Transmission’, in *Encyclopedia of Non-Western Science, Technology, and Medicine* (Springer, 2016), 1016–22, <http://ckraju.net/papers/Springer/ckr-Springer-encyclopedia-calculus-2-final.pdf>; C. K. Raju, ‘Zeroism’, in *Encyclopedia of Non-Western Science, Technology and Medicine* (Springer, 2016), <http://ckraju.net/papers/Springer/zeroism-springer-f.pdf>.
- 8 C. K. Raju, ‘The Harmony Principle’, *Philosophy East and West* 63, no. 4 (2013): 586–604; C. K. Raju, ‘The Harmony Principle’, in *Samvād and Svarāj*, ed. Shail Mayaram (Sage, 2014), 232–50.