PARALLELS IN PHYSICS AND PHILOSOPHY

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[The internal quest to know about the essential and ultimate nature of the thing or the world perceived has been the favourite task of Indian philosophy. Since the reality lies behind the realms of the sense-perceptions and intellect, it can never be grasped completely through intellect. So the interpretation of reality communicated by words seems to become paradoxical and contradictory. Philosophically, it transcends even the most fundamental concepts of existence and non-existence and remains indefinable and indescribable.

On the other hand, the twentieth century atomic physics began to tackle the fundamental questions reaching the transcendental realm never done before. The ultimate particle (wavecle) of physics seems to manifest a strange kind of physical reality between existence and non-existence. The deterministic physics with the entry of Indeterminacy Principle by Heisenberg in 1927 seems to speak the language of uncertainty, indeterminacy, probability and transcendence. Physics reaches its final conclusion that the 'hidden variable' responsible for this uncertainty is the subjective consciousness of the physicist as the quantum world is now no more pure objective. This is what our scriptures declare where the Knower and Known, subject and object not only become inseparable but indistinguishable.]

There has been an unending enquiry and quest in the human mind to know about the essential and ultimate nature of the world. This search is processed for the essence of the things – what is real and what is beyond? Whatever we experience with our sense perception is not ultimately real. We experience a lot of things in our dreams yet it is refuted when we simply wake up. So the burning question is – what is the exact nature of the thing perceived?

Answers obtained are based either on direct spiritual insight into the nature of reality through internal investigation or on the observation of natural phenomena through external investigation

of experimentation. Our scriptures declare– 'Yathā Piṇḍey Tathā Brahmāṇḍey'. The microcosm contains the whole macrocosm. The microcosm preserves in it all the knowledge and entire potentialities of the macrocosm. The world is homogeneous, and modern science shows beyond doubt that each atom is composed of the same material as the whole universe.... Man is the most representative being in the universe, the microcosm, a small universe in himself.[1]

The whole process aimed at a grand synthesis in which the gross and the subtle, the macrocosm and the microcosm lost their separate existence. This simple, yet tremendous assertion of establishing the identity of microcosm and macrocosm is the cardinal principle of Vedānta– तत् त्वम असि सोऽहम्, अहं ब्रह्मास्मि।

Hence there must be striking parallels in the observations of internal investigation as well as external investigation. Since the ultimate reality lies beyond the realms of the sense– perceptions and the intellect from which our words and ideas are derived, it can never be grasped completely or adequately by intellect or reasoning. Therefore the interpretation of reality which is communicated by words always becomes paradoxical and contradictory.

Īśa Upaniṣad declares– 'It is unmoving, one and faster than the mind. The senses could not overtake It, since It had run ahead. Remaining stationary, It outruns all other runness.[3]

That moves, That does not move; That is far off, That is very near; That is inside all this, and That is also outside all this.[4]

There is no inconsistency despite such contradictory statements that It is constant and motionless, and yet faster than the mind for this is possible from the standpoint of the states of being conditioned and unconditioned.[5]

Furthermore, Katha Upaniṣad declares the same thing–

The Self that is subtler than the subtle and greater than the great...[6]

While sitting, It travels far away; while sleeping, It goes everywhere[7]

Such a strange description is given by the great Buddhist thinker Ashvaghosha too–

Suchness is neither that which is existence, nor that which is non-existence, nor that which is at once existence and non-existence, nor that which is not at once existence and non-existence.[8]

Transcendence of the narrow framework of opposite concepts is the essential feature of reality that is indefinable and indescribable. Words are unable to capture the real nature of reality which transcends even the most fundamental concepts of existence and non-existence.

The quest of this transcendence has been the favourite task of the Indian philosophy. What is strange is that the modern physicists too have begun the search of reality through a completely new way of seeing the world.

The nineteenth century classical physics was not at all concerned with the fundamental question of what is the reality behind matter. Only the properties of matter– the hard, indestructible atom with its movements and interactions were discussed. But at the end of the nineteenth century, experimentation began to tackle the fundamental questions about the ultimate nature of matter. This was the most creative period of atomic physics when it reached the transcendental realm and probed deeper and deeper into nature, uncovering one layer of matter after the other in search for its ultimate „building blocks". Thus the existence of atoms was verified, then their constituents were discovered- the nuclei and electrons – and finally the components of the nucleus– the protons and neutrons– and many other subatomic particles.[9]

According to Einsteinean theory of relativity, we must know the mass, i.e. space dimension and the velocity, i.e. time dimension in order to know a thing in its real nature. Since, the mass of a particle increases with the increase in its velocity and particles move at incredible high speed in the subatomic world, it is must that we know the velocity and position of an electron to know it. And here comes the eternal block in the progress of quantum physics.

These two things can never be known together. If we try to determine the momentum or the velocity of the electron its position is bound to remain unknown and vice-versa.[10] This epoch making discovery about the uncertainty in our knowledge of the ultimate particle of the matter is known as the Indeterminacy Principle by Werner Heisenberg in 1927.

This uncertainty is distinctly prevalent in the subatomic world where being a probability pattern, the particle manifests a strange kind of physical reality between existence and non-existence, between being a wave and being a particle. Noble physicist Robert Oppenheimer comments, "If we ask, for instance, whether the position of the electron remains the same, we must say "no"; if we ask whether the electron is at rest we must say "no"; if we ask whether it is in motion, we must say "no".[11]

The first conclusion that can be derived from the Uncertainty principle of Heisenberg is that the Newtonian laws of cause and effect are not applicable in the quantum world of subatomic particles. And secondly, a pure objective description of the subatomic world is impossible; hence we cannot observe anything without changing it. 'The act of observation by the scientist alters the condition of the quantum particles observed – Einstein refused to accept it. In 1933 Einstein propounded that there must be a 'hidden variable' somewhere which is responsible for this uncertainty. As a rule, Einstein believed, there cannot be any indeterminacy in the world of physics.... In 1961 Nobel physicist Wigner proposed that it is the consciousness of the scientist which is itself the hidden variable.[12]

In John A. Wheeler's words the detached observer– scientist of classical physics is no more a detached observer looking through a microscope at something separate from himself. As James Jeans expressed, he is both the actor and participator in the quantum drama of existence. Hence, the reality in the quantum world is now no more pure objective but is connected with the subjective consciousness of the observer–physicist.

In deep meditation too, an extreme point is arrived, as the mystics express, where the subject and object, observer and object not only become inseparable but become indistinguishable. It is a state of consciousness, describes Brhadaranyaka Upanisad–

Because when there is duality, as it were, then one sees another; one smells another; one tastes another; one speaks another; one thinks another.... But where everything has become just own self then whereby and whom would one see, smell, taste, speak, hear, touch?.... Through what should one know that owing to which all this is known? Through what, one should Know the Knower?[13]

Physicists conclude, man has become his own greatest mystery as he is playing the role of being a spectator and actor both in the drama of existence and having the ability to transcend himself and perceive himself in the act of perception.[14]

The unknown and uncertain content found in the physical world must surely be the stuff of our consciousness, as analyses Eddington in 'Space, Time and Gravitation'. "... We have found a strange footprint on the shores of the unknown. We have devised profound theories, one after another to account for its origin. At last, we have succeeded in reconstructing the creature that made the footprint. And lo! It is our own.[15]

References :

1 The Complete Works of Swami Vivekananda, Vol. IV Advaita Ashrama, Calcutta, 1990, p. 49.

2 That which is this subtle essence, all this has got That as the Self. That is Truth, That is the Self, Thou art That, O Svetaketu' – Chandogya Upanisad [VI. 8.7]

3 अनेजदेकं मनसो जवीयो नैनद्येवा आनुबन्पूर्वमर्षत्। तद्धावतोऽन्यानत्येति तिष्ठत्तस्मिन्नपो मातरिश्वा दधाति।।4।। ईशोपनिषद

4 तदेजति तन्नैजति तद्दूरे तदु सर्वस्यास्य बाह्यतः।।5।। ईशोपनिषद

5 Eight Upanishads, Vol. I (with the commentary of Sankaracarya), trans. By Swami Gambhirananda, Advaita Ashrama, Calcutta, 2000, p. 10.

6 अणोरणीयान्महतो महीयानात्माऽस्य [I.ii.20] कठोपनिषद्

7 आसीनो दूरं व्रजति शयानो याति सर्वतः [I.ii.21] कठोपनिषद्

8 Asvaghosha, The Awakening of Faith, translated by D.T. Suzuki, Open Court, Chicago, 1900, p. 59.

9 Fritjof Capra, The Tao of Physics, Flamingo, London, 1991, p. 59.

10 Swami Jitatmananda, Modern Physics and Vedanta, Bhartiya Vidya Bhawan, Bombay, 1992, p. 31.

11 Quoted in Fritjof Capra, *op. cit.*, p. 166.

12 Swami Jitatmananda, *op. cit.*, p. 35.

13 यत्र हि द्वैतमिव भवति तदितर इतरं पश्यति, तदितर इतरं जिघ्रति, तदितर इतरं रसयते, तदितर इतरमभिवदति, तदितर इतरं श्रृणोति, तदितर इतर मनुते, तदितर इतरं स्पृशति, तदितर इतरं विजानाति, यत्र त्वस्य सर्वमात्मैवाभूत्, तत्केन कं पश्येत्, तत्केन कं जिघ्रेत्, तत्केन कं रसयेत्, तत्केन कमभिवदेत् तत्केन कं शृणुयात्, तत्केन कं मन्वीत, तत्केन कं स्पृशेत्, तत्केन कं विजानीजात्? येनेदं सर्व विजानाति तं केन विजानीयात्? .... विज्ञातारमरे केन विजानीयात् ... इ॒श॒ज.६.१५ट बृहदारण्यक उपनिषद

14 Lincoln Barnett, The Universe and Dr. Einstein, Dover Publications, New York, 1985, p. 117.

15 Quoted from : Swami Atmananda, Gita Tattva Chintan, Bhag I, Khand II, Bhilwara Sanskriti Prakashan, Calcutta, 1984, p. 129.