Notes on "Indian Philosophy and Nuclear Physics"

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Indian philosophical systems present a bewildering number of schemes of approach to the concept of reality and its relation to the perceived world. Yet monistic thought is the common thread that runs through much of it. In the 10th mandate of Rig veda it said: "In the beginning there was neither being nor nonbeing. That One breathed calmly, self sustained". This undifferentiated One had within it the latent power of which the entire creation unfolded. This ability to evolve, to manifest, to diversify is inherent in the One. Movement including creation is inherent in it. The concept of the ultimate is as a dynamic One; and while the created universe is part of it it is not exhausted by it. As the purusha sukta put it, "having covered the world on all sides, it extended beyond it the length of ten fingers".

The second point to note is that the conceptions of the all prevading reality (brahman) and the cognizing self (atman) remain grand hypotheses and convenient ways of explaining the world unless an experimental domain is included in it. Philosophy is to be experimental rather than only theory. Brahman is to have the aspects of being (sat), sentience (cit) and harmony (ananda). Realization of brahman is therefore both self realization, science and aesthetics.

In much of Indian philosophical thought it has been argued that reality from one standpoint is inscrutable. The conventional predications of every-

day world are not necessarily applicable to reality itself. A particularly graphic way is the sevenfold (saptabhangi): (1) Maybe, is; (2) Maybe, is not; (3) Maybe, is and is not; (4) Maybe, inexpressible; (5) Maybe, is and expressible; (6) Maybe, is not and inexpressible; (7) Maybe, is, is not and inexpressible. I mention this not to admire the inscrutable Jain Kiew but to point to a richer concept of reality and the recognition of the limitations of usual linguistic expression.

It is sometimes frustrating to disentangle the naturalistic study of the protescientific vaisesika school from what we could normally consider psychological categories; and the budhist ideas of causation freely intermingles physical phenomena and the Karma doctrine. Yet inherent in all of them is the essential unity of all experience and the importance of relating philosophy with life.

Much of our contemporary linguistic modes has been shaped by Newtonian physics, not only with regard to simple notions of time, causation and motion but also of the entailment in natural law and the notion of multiple entities. But the progression from Newtonian particle mechanics to continuum mechanics and the physics of waves is a progression towards coherence and harmony. Already Newton's first law of motion contained the radical idea that motion is a physical category not having to be "explained"; and that in motion there are conserved quantities which do not change. But in the revolution of this century and the advent of quantum and subatomic physics the models of reality changed substantially. When dealing with the statements concerning physical quantities and their measurement in quantum physics the Saptabhangi appears not so remote.

But it is in nuclear and subnuclear physics that the revolutionary concepts of matter compel a revision of our language itself. Not only are the subnuclear particles created and destroyed in the process of measurements but

the nature of the forces acting between them is best described in terms of the creation and destruction of particles. Thus nuclear forces are described in terms of the species of mesons which are emitted and absorbed by the nuclear particles. At a deeper structural level one deals with the particles responsible for radioactivity forces (weak interactions) and the existence of the nuclear particles themselves (strong interactions). Since the particles themselves are not necessarily surviving all the time greater emphasis is placed on conservation laws and the underlying symmetries.

The recognition of the global (as distinct from the local) harmonies of a quantum system have been important in the understanding of modern gauge theories which are believed to underlie the structure of matter as we now understand it. The nature of reality as studied by physics seems not to be very different from that studied by most Indian philosophic systems.

The role of the individual observer, the modes of observation of the system and the epoch in which the observations are made: these are as much of interest to contemporary physics as well as to traditional Indian philosophy. The notion of acceptance of theory based on observation and experiment is also common.

There are however points of essential differences in the methodologies and the content. By and large a physical theory is detailed and public; it is mathematical and quantitative. In contrast Indian philosophical concerns seem to be with the principles and is custom-made; but most distressingly non-mathematical and not easily subjected to quantification. Even the systems like vaisesika and lokayata do not show quantitative physics.

But on the other side we must recognize that contemporary physics (and hence all natural sciences) lack a definite category: that of choice (as distinct from deterministic evolution or chance). Modern science like much of the lokayata system is unable to deal with happiness, anxiety and enlighten-

ment. It usually tends to deny the validity of these. In contrast almost all of the Indian systems are most interested in this nonentailed mode of awareness. Nonattachment (vairagya) and "laboratory" isolation (kaivalya) are but the elementary steps to a full enquiry into the nature of reality and the ideal of self-knowledge.