19

NATURE OF REALITY IN SCIENCE AND SIKH RELIGION

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Introduction

What is real? What is the universe made up of? How does it work? What is the origin of life in this universe? Who created this universe? Physicists and philosophers have been asking these questions since the dawn of civilization. The concept of Reality has undergone a revolutionary change ever since the time of Greek Philosophers. It was from the observation of celestial motions, of the regularity of the planetary motions and change of seasons that the ancient astronomers came to the profound message of the order of the Universe. The philosophical quest for the ultimate Reality, using reason and speculation, transcended the boundaries of physical Reality. Recent developments in physics have turned out to be a boomerang experience for the physicist's conception of Reality. Today many scientists explore the "metaphysics" of physics with their powerful instruments. The new insights of the modern physics into the mystery of the universe have prepared the stage for a

dialogue between science and religion. Our aim in this study is to probe analogical parallels that exist between physics and mysticism for a new understanding of Reality, with special reference to *Sri Guru Granth Sahib*, the holy book of the Sikh religion.

Classical Notions about Reality

Aristotle introduced many metaphysical principles in physics. In his system, everything had a natural place and every object had its own nature. He made a sharp distinction between celestial and terrestrial world, the latter being imperfect, corruptible, and prone to constant change; while the former perfect, incorruptible and immutable. Aristotle's philosophy of nature was comprehensive and highly appealing to the common sense wisdom of the day. It gave birth to monotheistic conceptions of God and a dualistic vision of Reality. The germs of an anthropocentric worldview were inherent in Aristotle's philosophy of science.

Newtonian mechanics gave birth to a mechanical philosophy of nature. It claimed that everything could be explained in terms of matter in motion and the interaction between the material particles. This meant that all things could be explained in terms of just four fundamental concepts: space, time, mass and force. A mechanistic worldview or the clockwork universe was the immediate consequence of Newtonian physics. The divine hand, having set it right in the beginning, left it undisturbed. There was not scope for divine intervention, chance and indeterminacy in a deterministic worldview. Reality can be known by using mathematical tools and all events become predictable in future.[1]

In the beginning of 20th century, the advent of special theory of relativity dealt a death blow to mechanical philosophy of nature. Newtonian mechanics held space, time and mass to be absolute, but relativity theory showed them to be relative.

Quantum mechanics introduced the concept of indeterminacy and chance in physical measurements. It gave a serious jolt to the mechanical philosophy of nature.

Scientists of Vienna circle, better known as Logical Positivists, believed that knowledge of Reality should be based on sense experience. All valid statements must have an empirical basis, otherwise they are meaningless. Logical positivists opposed the use of metaphysics in science. However, mechanical philosophy of nature seems to be an internally inconsistent, experientially unrealistic and philosophically unreflective approach to Reality. Einstein had a dig at mathematical approach to Reality: "As far as the laws of mathematics refer to Reality, they are not certain, as far as they are certain, they do not refer to Reality."[2]

Newtonian mechanics was extremely successful in the growth of technology. For the general public, science became a worldly "Almighty." Modern technological "explosion" has blindfolded our inner realms. Society and culture necessitates a new vision of holistic Reality which can bring in a humanisation of science. Scientific descriptions of the enigma of Reality may cause a re-mystification of our universe. Einstein realized a new vision of the universe. His theory of relativity has altered the long-held scientific assumptions of Newtonian mechanics and changed radically the way we look at the world. Relativity shows that our knowledge of Reality is not limited to sense perception, but brings home to us that Reality is often much deeper than what can be perceived by our senses. Materialism which refuses to go beyond what is observable by the senses has been shown to be an inadequate philosophy of nature.

Quantum Nature of Reality

The Copenhagen interpretation[3] of quantum mechanics was the first and the most prevalent response to the quantum Reality question. Neils Bohr and Werner Heisenberg were the founding fathers of Copenhagen interpretation which was not acceptable to Einstein, the father of Relativity theory. The key idea in the Copenhagen denial of deep Reality was that the quantum entities did not have dynamic attributes of their own; it was only in the act of measurement that they received dynamic attributes. Principles of Uncertainty and Complementarity were the corner stones of Copenhagen interpretation, proposed by Heisenberg and Bohr, respectively.

The discovery of Uncertainty principle is the most significant development in the history of science. It puts a natural limit to the precision attainable in the quantum world. It must be noted that this limitation is imposed not by practical difficulties of measurement but by theoretical considerations, by the very nature of Reality itself. There will always be a finite inaccuracy and uncertainty; this is a law of nature. Since precise knowledge of the present state of affairs of a phenomenon is not possible, precise prediction of its behaviour also becomes impossible. Hence the quantum world and its Reality are indeterminate.

Principle of Complementarity highlights the linkage between different aspects of Reality. For instance, the particle nature and wave nature of light are mutually exclusive in the sense that the presence of one excludes the other. Thus this principle argues that even items which appear incompatible are united at a deeper level. What appear opposites need not be contradictory, but may be two poles of the same deeper reality. The principles of Complementarity and Uncertainty show the unbreakable link between the act of observation and our picture of Reality. Bohr sums up his outlook on quantum Reality.[4] "There is no quantum world. There is only an abstract quantum physical description. The task of physics is not to find out how

nature is; Physics concerns what we can say about nature." In the Copenhagen interpretation, there is no Reality in the absence of observation, or in the other words, observation creates Reality. The conceptual weakness of the Copenhagen interpretation is that it regards both the measuring device and the measurement acts as ultimately unanalysable.

Consciousness and Quantum Reality

David Bohm explains the limitation of Copenhagen interpretation by introduction of a new concept: the implicate order. [5] The implicate order is a process of enfoldment in a multi-dimensional space. The entire universe with all its fields and particles is an unfoldment of this implicate order. It implies an organic vision of the universe unlike the classical emphasis on fragmentation.

Another important aspect of the quantum revolution is that it highlights the role of consciousness in creating Reality. According to Eugene Wigner, "It is not possible to formulate the laws of quantum mechanics in a fully consistent way without reference to the consciousness. It will remain remarkable that the very study of the external world led to the conclusion that the content of the consciousness is an ultimate Reality."[6]

John Stewart Bell developed a model of Reality known as Bell's theorem: Reality must be non-local, which means that at a fundamental level, the different isolated objects of our experience are connected in an intimate and immediate way.[7] Where quantum physics revealed the inadequacy of our common sense ideas to deal with the microscopic world, Bell's theorem showed the inadequacy of the same to deal with the macroscopic phenomena.

EPR (Einstein, Podolsky and Rosen) Paradox aims to show that quantum theory was incomplete since it fails to give a full

description of nature. The key idea of EPR is the assumption of locality or the principle of local causes. According to this principle, what happens in one place is in no way dependent on an experimenter or an event at another place, where the distance between the two places are 'space-like' separated. EPR effect seems to indicate a super-luminal (faster than light) communication.[8]

Bell's theorem resolves the contradictions of EPR Paradox. Bell stated that either the statistical predictions of quantum mechanics or the principle of local causes must be wrong. Experimental proof of Bell's theorem established that the assumption of locality collapses while statistical assumptions on which Bell based his theorem are correct. To show that the principle of locality is false, it should be shown that what happens in one area is dependent on the changes that an experimenter makes in a distant space-like separated area. Thus, in Bell's theorem, non-locality imposes itself as a fundamental Reality against our common sense idea of the world as consisting of different parts.

Einstein believed that quantum theory was incomplete and hence inadequate to describe the nature of Reality. As a whole, there seems to be contradictions, logical paradoxes and speculative jumps inherent in quantum theory in explaining the physical Reality. Bell and some of his supporters share the view that the quantum mechanical description of natural phenomena will be superseded in future. [9] Each model of Reality of the physicists is thus also indicative of the unexplored regions of Reality. Concept of Reality has undergone a sea of change since the times of Aristotle. Let us probe the metaphysical and mystical roots of Reality and explore the possibilities of a dialogue between Science and Religion.

Metaphysical Nature of Reality

Metaphysics is a systematic and sustained inquiry into the nature of ultimate reality. It is an attempt to know the reality as against mere appearance. Metaphysics is the bridge between science and religion. Religion relies both on reason and revelation in its attempt to study the nature of Reality. In the *Mâṇḍūkya Upanicad,* the method of inquiry into the states of experiencing, waking, dreaming and deep sleep is frequently adopted. To the Indian philosopher, experience is the ultimate test of truth.[10] Since the reality is trans-empirical, it cannot be known through sense experience in the way in which empirical objects are known. It is known through intuitive experience *(anubhūti),* it is the experience of the highest level, for it transcends both the rational and the sensory aspects of human experience with which we are normally acquainted.

Since the ultimate reality is trans-empirical, the Hindu philosophers rely on scripture *(śruti)* for obtaining the knowledge of the real. Discursive reasoning functions at the relational level. Since the ultimate reality is distinction-less, reason is not competent to comprehend it. So the proper ground of rational knowledge is immediate experience, which differs from experimentation in science.

The truth, which the scripture speaks about, is the direct outcome of the intuitive or mystic experience of the ancient seers. It contains what is borne out by their direct and authentic experience. Though the scripture is authoritative, the knowledge which one derives from it is only mediate. The knowledge, which is revealed by the scripture, must become a matter of experience; only then revelation would have fulfilled its mission. A man who has realised the integral experience, there is no need for him to depend on any external authority in the form of a scripture. His wisdom is self-certifying or self-revealed.

According to the *Upaniṣads, Brahman or Ātman,* which is the ultimate Reality, is of the nature of existence *(sat),* consciousness *(cit),* and bliss *(ānanda).* It is one only and non-dual. The pluralistic universe is only an appearance of *Brahman* or *Ātman* due to *māyā* (illusion) or *avidyā* (ignorance). There are two views of reality in the *Upaniṣads,* the cosmic view and the acosmic view. These two views serve as the bases for the theistic and absolutistic schools of Vedanta. Hindu Philosophy of Vedanta considers this word as *maya* and lays stress on Reality beyond appearance in the phenomenal world.

Mystical Vision of Reality

In contrast to scientific knowledge, mysticism is concerned with a direct experience of Reality. It is by transcending intellectual knowledge and sensory perception that we come to the "absolute knowledge" of the Reality. According to Fritjof Capra: "The knowledge of Reality in mysticism is the direct experience of undifferentiated, undivided, indeterminate 'suchness.' In mysticism knowledge of the ultimate Reality cannot be attained through reasoning because it transcends our conventional modes of language."[11]

The process of scientific research tells us that an experimental enquiry into the nature of Reality cannot discard either reason or intuition. Since both these abilities are integrated in the one human being, a mutual complementarity of the two is essential. The significance of intuition and reason is quite evident in our life and they must complement each other in our search of Reality. There cannot exist a rebellion between truth and truth. The pragmatism of the Copenhagen interpretation of quantum theory indirectly affirms the desperate quest for integration. As Gary Zukav puts it: "The rational part of our psyche, typified by science, began to merge again with that other

part of us which we had ignored since the 1700's, our irrational side."[12]

Modern science has come up with the most exciting discovery of the interconnectedness of the universe. The vastness of the Universe poses no threat to its interconnectedness. This phenomenon is found both at the local and cosmic levels, both at the ontological and epistemological levels. This progressive trend towards greater unification enabled science to transcend the apparent contradictions of several pairs of opposites, e.g., force and matter, particles and waves, motion and rest, existence and non-existence. The scientific research has established interconnectedness of all material beings tracing their common origin to quarks and leptons. The Human Genome Project has proved the unity in diversity of the living world.

Capra has established parallels between the principal theories of modern physics and the mystical traditions of the East, viz., Hinduism, Buddhism and Taoism. For example, we have no direct sensory experience of the four-dimensional space-time continuum, and whenever this 'relativistic' reality manifests itself, we find it very hard to deal with it at the level of intuition and ordinary language. [13] A similar situation exists in the Eastern mysticism. The mystics seem to be able to attain non-ordinary states of consciousness in which they transcend the three-dimensional world of everyday life to experience a multi-dimensional reality, which is impossible to describe in ordinary language.

Opposed to the mechanistic conception of the world is the view of the Eastern mystics[14] which may be characterized by the word 'organic,' as it regards all phenomena in the universe as integral parts of an inseparable harmonious whole. For the Eastern mystic, all things and events perceived by the senses

are interrelated, connected, and are but different aspects or manifestations of the same ultimate Reality. Our tendency to divide the world we perceive into individual and separate 'things' and to experience ourselves in this world as isolated egos is seen as an 'illusion' which comes from our measuring and categorizing mentality. The division of nature into separate objects is, of course, useful and necessary to cope with everyday environment, but it is not a fundamental feature of Reality. For the Eastern mystic, any such objects have, therefore, a fluid and ever-changing character. The Eastern worldview is thus intrinsically dynamic, and contains time and change as essential features. The cosmos is seen as one inseparable Reality -forever in motion, alive, organic - spiritual and material at the same time.

Mysticism is the art of union with Reality.[15] A mystical state has the quality of ineffability. It thus resembles a state of feeling rather than a state of intellect. The mystic experience is imbued with a noetic quality, a quality of transience and of timelessness. There are many stages of evolution in the life of a mystic. Ultimately, the mystic attains the perfect union with God and he cries: 'I am God - *aham brahmāsmi.'* It is a well-known fact that mystics feel that exalted state of ecstasy but fail to describe it in ordinary language. The mystics use the simile of a dumb person who cannot describe the taste of candy.[16] Saith Kabir: *"Such state is like the dumb tasting of sugar, which in no way can be described."*

Mystics believe in the integral or holistic experience of Reality. We need not rest content with the partial truths revealed by astronomy, physics, biology, or, history; each discipline, true in its own field; but none complete in itself, none giving the whole picture; nor yet with the truth of mathematics or the truth of language, primarily truths of expression, obeying rules

which men themselves have made. Beyond all these, beyond the contradictions of each separate truth, lies concealed the supreme and final truth.

The realm of mystic experience is a Reality beyond the comprehension of our senses. But there is clear evidence in Sri Guru Granth Sahib (SGGS) [17] regarding the transcendental nature of this phenomenon:

In this realm, one sees but without the eyes; one listens but without the ears;
One walks but without the feet; one works but without the hands;
One speaks but without the tongue; thus attaining life in death.
O Nanak, one meets the God after realisation of the divine law.

Concept of Reality in *Sri Guru Granth Sahib* (SGGS)

The concept of ultimate reality propounded by Guru Nanak in the SGGS is most scientific; as a consequence, it is also dynamic and precise. The *Manglacharan* (the Commencing Verse of SGGS) is a philosophic testimony of Guru Nanak's poetic and scientific vision of the Supreme Reality.[18] Reality is one and non-dual. Hence the *Manglacharan*[19] commences with the numeral 1 before *'Open Oora', which* represents the Existence or Being. It is followed by *Satt(i) Naam* which means the Supreme Reality is true and it is manifested in Truth, Existence and Being. The other features of Reality are its transcendence and immanence, creator person, without fear or hatred, beyond time and space, self-existent, transcendental cosmic spirit made manifest by grace of the Guru.

Thus, Guru Nanak projects the nature, potentialities and characteristics of Supreme Reality or God of his vision. This concept of Reality is unique, scientific and revolutionary and it differs in its connotation from the Vedantic concept. According to Ahluwalia, "This new conception of God marks a qualitative

change in the cognition of the Ultimate Reality from Being to Spirit. This evolutionary change, heralded by the Sikh metaphysics in the history of the Indian religious thought, leads to a new conception of time." [20]

The very first *śloka*[21] after *Manglacharan* elaborates further the nature of ultimate Reality. Reality or God was in existence before the commencement of creation and time *(yugas)* during the epoch of cosmic void. God existed at the beginning of this universe, i.e., creation of space and time. God exists now and will also exist in the future (even when the universe is annihilated).

The Sikh philosophy dialectically unites the ideas of God and the world. Transcendence shows that God is prior to and distinct from the world. Immanence of God represents God's connection with the world. God himself transforms into creation, i.e., changing His *nirguna* form into *sarguna* form:[22]

The Formless is attributed and un-attributed;
And gone into absorption in the cosmic void.
Saith Nanak: He has made creation,
Himself on it meditates.

The *Manglacharan* in the SGGS is an expression of Guru Nanak's intuitive insight into the metaphysical realm, which presents an integrated view of the basic Reality that is monistic, but whose manifestation is pluralistic.[23]

The conceptual framework of the *Manglacharan* is comprehensive enough to include some of the most significant attributes of the Absolute (Supreme Reality). Even the manifest aspect of Reality, namely, the physical universe, defies measure and count. Perhaps, God alone can contemplate the vastness and totality of the cosmic existence:[24]

Limitless the creation; Limitless the expansion

The Guru assures us that the light and grace of the Absolute are ever with man in his search for Supreme Reality. A person of cosmic consciousness *(brahm gyāni)* can experience Reality and all his doubts are dispelled:[25]

He, who receives faith of Lord in himself,
His mind is illumined by the Reality of the Real.

Ultimate Reality is subtle and incomprehensible but can be realised through Guru's *sabda* unconsciously:[26]

The Lord is the subtle, unfathomable entity;
So how is one to attain Him?
It is through Guru's Word that our doubt is dispelled
And the self-dependent Being cometh into our minds.

Guru Nanak has combined the symbol *Satt* with *Naam, which* literally means 'Name.' When we refer to the world of names and forms, we refer to the concrete, empirical universe, which we know in our ordinary experience and discover through the agency of science. In short *Naam is* Truth, or the knowable aspect of Reality. *Naam* is immanent in the universe and its practice is the only formula prescribed by the Sikh Gurus to realize God. In fact, whatever is created is *Naam*:[27]

All that is created is His manifestation

Guru Nanak was always antipathetic to any view of the world, which denigrated its reality or made the world illusory. He was, therefore, firm on the principle that the creation is as real as the creator - it includes, besides material existence, the culture of human, his thoughts and his values. Guru Nanak discards the Vedantic conception of Reality in *Asa-di-Var,* and proclaims that this universe is real, not an illusion:[28]

Real are Thy continents; Real is the universe;
Real are these forms and material objects;
Thy doings are Real, O Lord.

The Guru calls this vast universe as His mansion:[29]

This moving universe is the divine mansion of the true Lord;
And the true one lives therein.

Guru Nanak has identified the manifest Reality with Nature:[30]

Nanak, the beneficent Lord alone is true and
He is revealed through His Nature.

God transformed Himself from *nirguna* to *saguna,* created *Nam(u)* and *Kudrat(i),* i.e., Nature:[31]

His-self He created and manifested His Name;
And then He created Nature and abiding within it,
He revelled in His wonder.

The description of Nature[32] by Guru Nanak in *Asa-di-Var* is a new dimension in the history of religious thought:

All that is visible is His Nature;
All that is heard too is His Nature….
In the nether regions and skies
is the manifestation of His Nature;
Of His Nature are all the manifestations.

To sum up the concept of Supreme Reality as presented in SGGS is unique, scientific and revolutionary. In a way, scientific study of Nature is sanctioned in Sikh religion in an identical manner as it was pursued by Kepler and Newton in the Christian world. It is not a mere abstraction. Its realization is possible through the practice of *Sabd* and *Naam*. Guru Nanak was blessed with the vision of God or Reality in Nature:[33]

The Guru hath revealed the Lord's presence to Nanak in the three worlds;
In the woods, waters and over the earth.

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22. SGGS, M. 5, p. 290.
23. SGGS, M. 5, p. 250.
24. SGGS, Japu 24, p. 5.
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