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Reality as Relational: Scientific, Philosophical and Theological Bases

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Abstract: This paper attempts to study relationality as an integral aspect of reality. For this the author bases himself on scientific and philosophical perspectives, with a view to understanding theology more adequately. The worldview of science plays a significant role in shaping the philosophical and theological worldview and vice versa. In this paper he starts with the Western perspective on relation and relationality with specific reference to the views of Stoics, Aristotle and Thomas Aquinas. It is followed by the idea of relationality in process philosophy. We bring to light the notion of relationality in Indian Philosophical schools with special emphasis on Sankara's notion of relation. Relationality is further substantiated by the Vedic myth of *Purusa Sukta* which underscores the relatedness of the living and non-living beings of the universe. We move on to the scientific grounding of relationality with special reference to Newtonian Mechanics, Einstein's Theory of Relativity and Quantum Mechanics. It is shown that the concept of relation has been a food for thought in the schools of science and philosophy both in the East and in the West. The scientific and philosophical grounding of relationality enable us to create an adequate platform for interfacing science, philosophy and theology.

The scientifically and philosophically inferred analogical sparks of divine nature on the world also set forth a new scientific framework for theology and an incentive to rethink its traditional conceptions of Theological doctrines and dogmas. In this paper we tried for a historical synthesis of the concept of relation from scientific and philosophical perspectives.

Keywords: Relationality, Relation, Aquinas, Panikkar, Cosmotheandric vision, *Imago Dei*.

1. Introduction

Theologians have always freely borrowed concepts and terms from the philosophies of the day.¹ In the process, philosophy shapes theology, and theology contributes to the development of doctrines and thought forms. In this paper we are trying to make a historical synthesis of the concept of relation² from scientific and philosophical perspectives. In the process of synthesizing there is criss-crossing and overlapping of the worldviews of both science, philosophy and theology. The worldview of science plays a significant role in shaping the philosophical and theological worldview and vice versa. In this paper we start with the Western perspective on relation with specific reference to the views of Stoics, Aristotle and Thomas Aquinas. It is followed by the idea of relationality in process philosophy. We bring to light the notion of relationality in Indian Philosophical schools with special emphasis on Sankara's notion of relation. Relationality is further substantiated by the Vedic myth of *Purusa Sukta* which underscores the relatedness (*bandhuta*) of the living and non-living beings of the universe. We move on to the scientific grounding of relationality with special reference to Newtonian Mechanics, Einstein's Theory of Relativity and Quantum Mechanics. It is shown that the concept of relation has been a food for thought in the schools of science and philosophy both in the East as well as in the West. The scientific and philosophical grounding of relationality enable us to create an adequate platform for interfacing science, philosophy and theology.

2. Philosophical Base to Relationality: A Historical Synthesis

Philosophers have always argued about questions of relation. Pythagorus in the fifth century B.C. divided all that existed under three heads: the absolute substance; the opposites (life and death, light and darkness, etc.); the relative.³ It was under this designation

that relation or “the relative” entered into the thought of Plato, Aristotle and the Hellenistic philosophers. Plato, however, gave no place to “the relative” in his five categories.⁴ But Aristotle recognized it as a category in its own right.

2.1 Aristotle and Stoics on Relation

The Aristotelian text *Categories* was one of the very few pieces of ancient Greek philosophy available in the Latin West between the seventh and twelfth centuries, and the only one to contain a systematic philosophical treatment of relations. In the Book 1 of the *Categories*, Aristotle lists 10 categories of being (*Categories*, 4, 1b, 25). The first category is divided into primary and secondary substances. Primary substances are individual substances (e.g. that tree); secondary substances are kind of substances (that tree is an Oak). The difference between primary and secondary substances would become critical in the late fourth century as theologians were pushed to clarify the meaning of *homoousios*, and thereby to distinguish more sharply between the substance (*ousia*) of God and the three divine persons (*hypostases*). The remaining nine categories of being are accidents, that is, characteristics that may reside in a substance but are not essential to it. These include quantity, quality, relation, place, time, posture, having, acting, and being acted on.

Aristotle attempted to characterize relations on the basis of the differences between statements containing relational (or ‘relative’) terms and those containing only non-relational (or ‘absolute’) terms. In addition to the characterization of relations in the *Categories*, Aristotle also suggests a general model or paradigm for analyzing what we shall call ‘relational situations’.⁵ It means the situations or states of affairs that explain the truth of genuinely relational statements. Although the analysis of relational situations that Aristotle suggests in the *Categories* is perfectly general, it is clear from his later writings that he does not think that all relational situations conform to it. Thus, in the *Metaphysics* he claims that there are relational situations in which substances are related not in virtue of a *pair* of accidents, but rather in virtue of a *single* accident possessed by just one of the substances.⁶ Nonetheless, philosophers throughout the medieval period denied that all relational situations conform to

the *Categories* paradigm. The basis of the medieval denial was largely theological in nature. Considerations associated with the Christian doctrine of the Trinity forced them to admit that, in certain relational situations, even substances themselves can qualify as relations. The Aristotelian model exercises enormous influence during the Middle Ages, and until at least the fourteenth century, medieval philosophers develop their own analysis of relational situations in terms of it.

The Stoics, Plotinus and the whole of the Christian middle ages included relation in their lists of categories. In Stoic philosophy there are four categories.⁷ The first is substance or substrate which corresponds to matter. Second, there is the quality that differentiates the matter. Third, there is a 'being in a certain state' or disposition. This is the category of relation, which distinguishes relatively impermanent or accidental dispositions of individuals. Finally there is a relative disposition which classifies properties that one thing possesses in relation to something else. This fourth category can be bifurcated into relative state and relative. In a relative state one object is defined by something outside it, for example; in the father-son relation or the relation of left to right. The relative refers to things capable of change where the relation is given by comparison of two states.

The Stoic and Aristotelian understandings of relation are not identical. In Stoic philosophy, to know the object's relative dispositions does not inform about the object's existence as an object. "Relative dispositions are the relations of an individual thing to other individual things that are associated with it in the world, but on which its continuing existence as an entity does not depend."⁸ In the case of the father-son relation, if the child dies, the man ceases to be a father, but he does not cease to exist. By contrast, in the use made by theologians of Aristotelian philosophy, a father is constituted as father by his son, and vice versa. In the Latin Trinitarian tradition, which would rely on Aristotelian rather than Stoic Philosophy, relation would be identified with substance: relation shows *what* something is. In Greek Trinitarian tradition, relation will show only *how*, but not *what*, some thing is. The sense that relation is a 'toward

another' (*esse-ad*) whether in Stoic or Aristotelian made it ideal for the Trinitarian problematic.

2.2 Thomas Aquinas on Relation

In the thirteenth century Thomas Aquinas made one of the most exhaustive studies of the concept of relation ever undertaken. For him creatures are related to God by a real relation, whereas God is related to them by a mere relation of reason. When a substance acquires a new relation without undergoing any real change this is often explained by saying that the substance acquired a mere relation of reason. Aquinas says:

A man is really (and not merely conceptually) identical to himself, even though his relation (of self-identity) is a being of reason. And the explanation for this is that the cause of his relation is real-namely, the unity of his substance, which our intellect considers under the aspect of a relation. In the same way, the power to compel subjects is really in God, and our intellect considers this power as ordered to the subjects because of the subjects' order to God. It is for this reason that he is really said to be Lord, even though his relation is a mere being of reason. And for the same reason it is evident that he would be Lord (Creator, etc.) even if there were no created intellect in existence. (*De potentia* q. 7, a. 11, ad 3-5)⁹

Aquinas applies the notion of relation to the Trinitarian God. According to the Christian doctrine of the Trinity, God exists in three persons: Father, Son, and Holy Spirit. As this doctrine was typically understood during the Middle Ages, it implies not only that God possesses certain relations - such as fatherhood and sonship - but also that he possess them independently of the activity of any mind. As Aquinas says in his *Summa Theologica*:

Someone is said to be a father only by virtue of his fatherhood, and someone is said to be a son only by virtue of his sonship. Therefore, if (the relations of) fatherhood and sonship are not really

in God, it follows that God is not a Father or Son really, but merely according to a concept of the mind - which is the Sabellian heresy. So if God is good, he is identical to his goodness; if he is wise, he is identical to his wisdom. By parity of reasoning, therefore, if God is a father or son, he must be identical to his fatherhood and sonship. Whatever is in God is his nature ... It is thus clear that a relation really existing in God is identical to his nature according to reality, and does not differ from it except according to a concept of the mind (*Summa theologiae* I, q. 28, a. 2, corpus).¹⁰

With the doctrine of the Trinity we arrive at what is perhaps the medieval's greatest departure from Aristotle. Gilbert de la Porree, Duns Scotus and the Scholastics in general show considerable interest in relation because of the use made of it by Aquinas with reference to the inner mystery of the Godhead.¹¹

By the end of the Middle Ages, Ockham eventually adopts a view according to which all relations depend for their existence on the activity of the mind; that is relations of reason. In more modern times, Spinoza and Locke offer us three categories - substance, modes and relations - and Leibniz six: substance, quantity, quality, activity, passivity and relation. In their thinking relation is still present, but no longer preponderant as in the theologically oriented philosophy of the Middle Ages. With Kant, however, the perspective changes. Relation with all the other categories is relegated entirely to the realm of reason, serving only to spell out the phenomena which one reads as experience.¹² With the rationalization of whole of philosophy and the acceleration of the strongly mathematical tendency initiated by Descartes, relation stretched its hands to all domains including metaphysics, psychology and theology. This growing exaltation of relation in modern philosophy seemed to receive final confirmation from the Einsteinian theory of relativity.¹³ In the light of the modern physics that everything changes and everything is relative acquired axiomatic status. Yet with the exception of Aristotle, Aquinas, Gilbert de la Porree and Duns Scotus hardly any of the line of Western philosophers from the Pythagoreans to the present day have made any serious attempt to define the nature of relation as such.¹⁴

2.3 Relationality from Process Philosophy Perspective

Alfred North Whitehead (1861- 1947), British mathematician,¹⁵ logician and philosopher is the founder of process philosophy. Process philosophy is characterized by an attempt to reconcile the diverse intuitions found in human experience such as religious, scientific, and aesthetic into a coherent holistic scheme. This reconciliation of the intuitions of objectivity and subjectivity, with a concern for scientific findings, produces the explicitly metaphysical speculation that the world, at its most fundamental level, is made up of momentary events of experience rather than enduring material substances. According to Whitehead the fundamental elements of reality are actual occasions or actual entities or occasions of experience.¹⁶ The experience model is in contrast to the early philosophical model - “bit of matter model” - of understanding the fundamental reality as a static reality. Process thought instead states matter is self-sustaining, externally related, valueless, passive, and without an intrinsic principle of motion; on the contrary actual occasions or ‘organisms’ are interdependent, internally and externally related, value-laden, active, and intrinsically active. Whitehead’s basic insight is that reality is a series of interrelated becomings. How a thing *becomes* constitutes what a thing *is*. The process of becoming is more fundamental than the being that is achieved. Now let us have a brief look at the important terms in the Whiteheadian vocabulary.

Process philosophy explains both the processive and the relational character of reality and the essential integration of reality as a whole. The past actualities are still describable as processive and experiential, but their moment of experiencing and becoming is past. They do not endure from the past into the present and on into the future. But to say that these experiences are distinct is not to say that they are independent and separable. On the contrary, a momentary experience is essentially related to previous experiences. In fact it begins as a multiplicity of relations, and achieves its individuality through its reaction to and unification of these relations. It is not first something in itself, which only secondarily enters into relations with others. The relations are primary. The present occasion *prehends*

the previous occasions.¹⁷ The present occasion is nothing but its process of unifying the particular *prehensions* with which it begins.

It should be noted that every level of Whiteheadian thought is relational.¹⁸ Dynamism and process are essential aspects of reality. Reality is organic and interrelated. Calling his system the philosophy of organism Whitehead suggests that the basic analogy for interpreting the world is not a machine but an organism, which is a highly integrated and dynamic pattern of inter-dependent events. "The world is an interrelated web of spatio-temporal process".¹⁹

2.4 Reality as *Cosmotheandric* Relation: Panikkar's Perspective

Raimon Panikkar has portrayed a new perspective of reality with a dynamic worldview that comprises God, human and nature which he calls a *cosmotheandric* experience.²⁰ The term denotes the intertwining of the "cosmic," the "human" and the "divine" - all interpenetrating one another as different dimensions of the Whole. The *cosmotheandric* principle could be formulated by saying that the divine, the human and the earthly are the three irreducible dimensions which constitute reality.²¹ This principle reminds us that the parts are parts and they are not just accidentally juxtaposed, but essentially related to the whole. Applying the *cosmotheandric* principle in the daily context he says that a piece of bread is *cosmotheandric* in so far it is real.²² A piece of bread is a *piece* of bread, which implies that it is a piece, not the totality of bread. Further the bread is also a piece of all those things which serve as bread or food. The real bread of the piece of bread is more than an isolated monad, and its *breadness* does not exhaust all that the bread *is*. The *piece* of bread is the *bread* of the piece, and this bread of the piece is the *is* of the bread. The "is" of the piece of bread is intrinsically connected with everything that is. In this view the piece of bread becomes integral bread, bread that contains entire reality, bread that is divine, material and human at the same time. It is the revelation of the *cosmotheandric* nature of reality.²³

The parts are real participations and are to be understood according to an organic unity. They are the constitutive dimensions

of the whole, which permeates everything that is and is not reducible to any of its constituents. Everything that exists, any real being, presents this triune constitution expressed in three dimensions. It means that the three dimensions of reality are neither three modes of a monolithic undifferentiated reality, nor three elements of a pluralistic system. Though three fold, there is one relation which manifests the ultimate constitution of reality.²⁴ The *cosmotheandric* intuition is not a tripartite division among beings, but an insight into the threefold core of all that is, insofar as it is.

2.5 Relationality: An Indian Philosophical Perspective

Though thinkers of every Indian school have necessarily disputed “the relative” the end results are much the same as in Western philosophy. Each school dealt with its own specific problems of relation in a somewhat empirical fashion. For the Indian schools the problem of relation was not epistemological, but metaphysical.²⁵ According to the Indian schools of philosophy, the two basic aspects of experience are identity and difference, to which all pairs of categories, subject/object, body/soul, universal/particular, one/many, can be reduced. Relation implies one seems to belong to the other or one seems to imply the other. There is change, yet there is somehow permanence also. This is our (Indian schools of philosophy) common belief and we do not feel bothered about their relation except when we become reflective and metaphysical.²⁶ When we reflect, immediately we are confronted by the question: “Is the relation between the two real?” If so, how can both belong to one and the same thing, diametrically opposed as they are to each other? The various systems of Indian metaphysics seem to be different attempts to answer the above question.

All the possible basic approaches to the above questions can be formulated *a priori* as follows: 1. identity, difference and relation are equally real; 2. all are equally unreal; 3. both *relata* (the objects/ things/entities in relation) are real but the relation between them is false; 4. all - identity, difference and the relation - are equally false.²⁷ Every one of the Indian philosophy can be brought under one or other of these four views. According to Sara Grant:

That all the three - relation as well as *relata* - are real is the fundamental metaphysical doctrine of all the realist systems: the *Nyaya*, *Vaisesika*, the *Mimamsa*, Jainism and all the realist interpretations of Vedanta such as *Dvaita*, *Visistadvaita*, *Suddhadvaita*, etc. This is because a pluralist view of reality cannot be sustained without accepting the reality of relation. The question raised here is: "How can there be an unreal relation between two reals?"²⁸

The *Samkhya* system on the other hand, held that although the terms are real, the relation between them is false:

Relation cannot be of the same status as the *relata*. *Purusa* and *Prakrti*, the one representing identity and the other representing difference are both real, but the relation between the two is not real or ultimate; it can be removed by *viveka* or discriminating knowledge. There is no real relation either between *purusa* and *prakrti* or between two *purusas*. The question here is: 'How can there be a real relation between two such incompatible and exclusive realities as *purusa* and *prakrti* or identity and difference?'²⁹

The *Bauddha* and *Vedantin* schools held that the relation, and necessarily, therefore, one of the terms, is false - the Vedantins rejecting difference and Buddhas identity; while the Madyamika Buddhists rejected all three.³⁰

2.6 Sankara's Views on Relation

In India, no single philosopher except Sankara has given serious priority to investigation of the specific ontological status and function of relation. The difficulties experienced in the philosophical minds when the question of relation is raised is addressed by Sankara in unique way. According to Sankara, to be free from contradiction, reality (*tattva*) must be transcendent; yet to be realized it must also be immanent in experience. This is the corner-stone of Advaita position. Sankara introduced the relation (*sambandha*) existing

between *Atman-Brahman*. *Sambandha*, *Samyoga*, *Samvaya* and *Svarupa* are the relational terms used by Sankara in his philosophy.³¹

Sankara's *Advaita Vedanta* is strictly the denial of dualism (*Advaita*).³² It affirms the unity of the absolute (*Brahman-Atman*) which alone is being (*Sat*) in the supreme sense of the term (*paramarthatah*). *Brahman* is the internal Cause (*upadana*) and Supreme *Atman* (*Paramatman*) of all. If *Brahman-Atman* is the Cause, the creation is its effect.³³ The existential unity of human person derives absolutely from this innermost *Atman* through the mediation of its reflection, the *Jivatman*, which diffuses it into the intellect (*buddhi*), mind (*manas*), senses (*indriyas*) and body (*sarira*). The reality of the world is totally from Brahman. Creation is the effect (*karya*), extrinsic denominator, and name and form (*nama rupa*).³⁴ Thus in Sankara's *Advaita Vedanta* on the one hand there is total dependence of human person and the rest of creation upon *Brahman-Atman* and on the other there is total grace from the part of *Brahman-Atman* upon humans and the whole of creation. It is this total dependence and total grace which gives meaning to life. Total grace and total dependence is possible only in non-dualism.³⁵

According to Dr. Radhakrishnan, the problem of relation between *Brahman* and the unreal world is imaginary and illegitimate, and so impossible of solution.³⁶ But for Sankara, the question of relation between *Atman-Brahman* and the world was clearly legitimate. Because from a metaphysical point of view the detached observer who prescinds to some extent both from his own personal experience of absolute existence and also from immersion in the empirical world of sense-experience and tries to trace the hidden bond of experience which he is convinced must exist between these two levels of experience, and to express his findings in conceptual terms.³⁷ For Sankara the world is not "unreal" in the sense of pure illusion or non-existence: though not real in the absolute sense in which Brahman is real, and wholly dependent upon Brahman for its existence, it nevertheless has objective reality as manifestation of Brahman. If it were absolutely non-existent Sankara would certainly agree that its relationship to Brahman would be unreal. If it has objective existence, the question of that relationship is not only

legitimate but also imposes itself a matter of the most acute urgency, insistently demanding a solution.³⁸

2.7 Relationality: A Vedic Perspective

The concept of relationality in the Indian philosophical schools is abstract and ambiguous as in the Western schools. But a Vedic-mythological perception of relationality transcends the abstraction and ambiguity to a great extent. The concept of relationality is rich in the Vedic myths especially in the *Purusa Sukta*.³⁹

According to this myth, creation of the universe is the result of a dismemberment of the cosmic giant, *Purusa*. The main thrusts of the myth are twofold: first to affirm the totality of *Purusa* and the primordial unity he breaks to give form to creation and secondly to affirm the creation as a divine sacrifice thereby bringing everything under 'sacrifice', the *nabhi* (navel) of the world (*RV* 1.164.35). The hymn speaks of a mysterious oneness, a symbolic correlation between the humans and nature. In the words of Subhash Anand the hymn says, "Humans and the rest of creation are *bandhus* (relatives), and the bond (*bandha*) that bind us together is the belief that we all have our birth from a common parent."⁴⁰

The striking thing about the Hindu universe of meaning is that on the one hand it does not divide the world into the sacred and the profane and on the other hand it embraces everything beginning from the highest order of beings and reaching to the lowest. Time and timelessness, space and the sky, sun and moon, wind and lightning, the four classes of society, the sense organs and the cosmic elements, the scriptures, sacrifice and sacrificial straw etc. are part and parcel of this holistic worldview.⁴¹ The wholeness of the Hindu worldview is manifested in the myths and metaphors, in the interconnectedness and inter-dependence of all beings and happenings, in the sacredness of the secular and the secularity of the sacred. In Hindu experience the world of the Divine pervades that of the Human and the Cosmic, and the world of the Human includes the Divine and the Cosmic, and the cosmos is the cosmos of the Divine and the Human.

We have seen a brief synthesis of the concept of relationality in the philosophical systems of East and West.

2.8 *Sunyata*: The Symbol of Relationality in Buddhism

The ultimate reality for Buddhism is *Sunyata*. Its literal meaning is vacuum, emptiness, voidness or absolute nothingness. It is unobjectifiable and non-conceptualizable. *Sunyata* has its etymology in “svi or “sva, means to swell or to grow.⁴² For Mahayana Buddhism, *Sunyata* is not negativity and not annihilator.⁴³ For them *Sunyata* is non-*Sunyata*.⁴⁴ In *Sunyata* everything is realized as it is. There is no distinction between the self and the other, person and nature, divine and human. Everything is suchness in the realization of *Sunyata*. Suchness realized in *Sunyata* encompasses every thing including human beings, nature and the Divine.⁴⁵ The state of *Sunyata* is without any center. It is free from anthropocentrism, cosmocentrism and theocentrism. There is no dominant – subordinate relationship and no subject - object relationship. Everything is dominant over everything else and at the same time every thing is subordinate to every thing else. This is complete freedom and emancipation from bondage. Because of it there is interpenetration and mutual reversibility in *Sunyata* including all the opposites. It is a synthesis of opposites.⁴⁶

Sunyata is not a static and dead state.⁴⁷ The most dynamic spontaneity is realized in *Sunyata* without any will, self or other, human or divine. It is the fundamental ground for both humanity and nature, for change in both human life and nature. In *Sunyata* time is beginningless and endless.⁴⁸ It is potentiality in actuality. It is more than a defined concept. In *Sunyata* reality is a non-dual continuum. True *Sunyata* empties itself. It is a pure dynamic function of self-emptying. Through self-emptying it makes everything to exist as it is and works as it does. It makes self and the other to manifest their suchness. It is an occurrence in time. It is a happening, establishing, controlling, uncovering and concealing. It is enduring, elusive fullness and liveliness.

According to Buddhist philosophy every phenomenal reality is a net of interconnectedness or causal connections. The interrelated whole as the sum total of all parts is not the whole. The whole is a

different quality altogether. The implicate order within the beings⁴⁹ refers to the interrelatedness of phenomenal (explicate) reality. Reality is beyond the dualism of implication and explication. Reality is an interrelated whole, a continuous process of self-movement. In *Sunyata* there is both the interpenetration and the mutual reversibility of all things. *Sunyata* is oneness in differentiation. It is the unified awareness that comprehends and transcends both oneness and differentiation. It is emptied of all duality. It includes and transcends spatiality and temporality. *Sunyata* is a relationship and continues itself as a universal relationship. The transcendence, the interrelatedness, the suchness, the spontaneity and the self-emptying features of the symbol of *Sunyata* enables one to have a holistic understanding of the ultimate reality.

3. Scientific Base to Relationality: A Historical Synthesis

Here we trace the historical and philosophical roots of science during the pre-modern times, modern times and contemporary times.

3.1 Philosophical Roots of Science till the Middle Ages

The contemporary science leads us today to a worldview which is essentially mystical and relational. In a way, it is a return to its beginning, 2,500 years ago.⁵⁰ The roots of all Western science are to be found in the first period of Greek philosophy in the sixth century B.C., in a culture where science, philosophy and religion were not separated. The sages of the Milesian school in Ionia were not concerned with such distinctions. Their aim was to discover the essential nature, or real constitution, of things which they called 'physis'.⁵¹ The monistic and organic view is also seen in the philosophy of Heraclitus of Ephesus.⁵² Heraclitus believed in a world of perpetual change, of eternal 'Becoming'. He taught that all changes in the world arise from the dynamic and cyclic interplay of opposites and he saw any pair of opposites as a unity. This unity, which contains and transcends all opposing forces, he called the *Logos*. The split of this unity began with the Eleatic school, which assumed a Divine Principle standing above all gods and humans. This principle was first identified with the unity of the universe, but

was later seen as an intelligent and personal God who stands above the world and directs it. Thus began a trend of thought which led, ultimately, to the separation of spirit and matter and to a dualism which became characteristic of Western philosophy.

3.2 Scientific Development since Renaissance

Western science started flourishing during the renaissance. Galileo was the first to combine empirical knowledge with mathematics and is therefore seen as the father of modern science.⁵³ The birth of modern science was preceded and accompanied by a development of philosophical thought which led to an extreme formulation of the spirit/matter dualism. This formulation appeared in the seventeenth century in the philosophy of Rene Descartes who based his view of nature on a fundamental division into two separate and independent realms; that of mind (*res cogitans*), and that of matter (*res extensa*).⁵⁴ The 'Cartesian' division allowed scientists to treat matter as dead and completely separate from themselves, and to see the material world as a multitude of different objects assembled into a huge machine. Such a mechanistic world view was held by Isaac Newton who constructed his mechanics on its basis and made it the foundation of classical physics.

The 18th and 19th centuries witnessed a tremendous success of Newtonian mechanics in the form of the development of the Mechanical Philosophy of Nature (MPN). This theory affirmed the Newtonian view and believed in the mechanistic explanation of the natural phenomenon. According to MPN, the universe is a gigantic machine which functions like a clock. All living beings in the universe are nothing but machines.⁵⁵ It led to a large scale reduction of all organisms in the universe, including the human body and human beings themselves, to mere machines. However, the MPN collapsed towards the end of the 19th century under its own weight: it claimed to do too much, but was unable to explain even the common phenomena like sensation, irritability, etc. However, in many ways it reincarnated in the form of Logical Positivism (LP) in the twentieth century. According to LP all true knowledge must be based on empirical experience and the scientific truths were considered permanent and immutable.⁵⁶ However, it is fascinating to see that

twentieth century science, especially the theory of relativity and the quantum theory, which originated in the Cartesian split and in the mechanistic world view overcame the fragmentation and led back to the idea of unity expressed in the early Greek and Eastern philosophies.

3.2.1 The Theory of Relativity

The theory of relativity, or simply relativity, generally refers specifically to two theories of Albert Einstein: the special theory of relativity and the general theory of relativity. The special theory of relativity is a theory of the structure of space-time. It was introduced in Albert Einstein's 1905 paper "On the Electrodynamics of Moving Bodies".⁵⁷ The special theory of relativity has many surprising consequences. According to the special theory of relativity theory, space is not three-dimensional and time is not a separate entity. Both are intimately connected and form a four-dimensional continuum, 'space-time'. The following are the other consequences of this theory:

Relativity of simultaneity: Two events, simultaneous for some observer, may not be simultaneous for another observer if the observers are in relative motion.

Time dilation: Moving clocks are measured to tick more slowly than an observer's "stationary" clock.

Length contraction: Objects are measured to be shortened in the direction that they are moving with respect to the observer.

In 1915, Einstein proposed his general theory of relativity in which the framework of the special theory is extended to include gravity, i.e. the mutual attraction of all massive bodies.⁵⁸ Whereas the special theory has been confirmed by innumerable experiments, the general theory has not yet been confirmed conclusively. However, it is so far the most accepted, consistent and elegant theory of gravity and is widely used in astrophysics and cosmology for the description of the universe at large. The force of gravity, according to Einstein's theory has the effect of 'curving' space and time. This means that ordinary Euclidean geometry is no longer valid in such a curved space, just as the two-dimensional geometry of a plane cannot be applied on the surface of a sphere. Einstein's theory says that three-

dimensional space is actually curved, and that the curvature is caused by the gravitational field of massive bodies.

3.2.2 The Quantum Understanding of Relationality

In the 1920s an international group of physicists including Niels Bohr from Denmark, Louis De Broglie from France, Erwin Schrodinger and Wolfgang Pauli from Austria, Werner Heisenberg from Germany, and Paul Dirac from England found the precise and consistent mathematical formulation of quantum theory.⁵⁹ The effect of quantum theory on the physicists' imaginations was truly shattering. Rutherford's experiments had shown that atoms, instead of being hard and indestructible, consisted of vast regions of space in which extremely small particles moved, and now quantum theory made it clear that even these particles were nothing like the solid objects of classical physics. The subatomic units of matter are very abstract entities which have a dual aspect. Depending on how we look at them, they appear sometimes as particles, sometimes as waves; and this dual nature is also exhibited by light which can take the form of electromagnetic waves or of particles. Later Max Plank discovered that the energy of heat radiation is not emitted continuously, but appears in the form of 'energy packets'. Einstein called these energy packets 'quanta' and recognized them as a fundamental aspect of nature.⁶⁰

The quantum theory called in question the very foundation of the mechanistic world view, especially the concept of the reality of matter. At the subatomic level, matter does not exist with certainty at definite places, but rather shows 'tendencies to exist', and atomic events do not occur with certainty at definite times and in definite ways, but rather show 'tendencies to occur'.⁶¹ In the formalism of quantum theory, these tendencies are expressed as probabilities and are associated with mathematical quantities which take the form of waves. This is why particles can be waves at the same time. They

are not 'real' three dimensional waves like sound or water waves. They are 'probability waves', and all the laws of atomic physics are expressed in terms of these probabilities. We can never predict an atomic event with certainty; we can only say how likely it is to happen. Quantum theory has thus demolished the classical concepts of solid objects and of strictly deterministic laws of nature.⁶² At the subatomic level, the solid material objects of classical physics dissolve into wave-like patterns of probabilities, and these patterns, ultimately, do not represent probabilities of things, but rather probabilities of interconnections. The exploration of the subatomic world in the twentieth century has revealed the intrinsically dynamic nature of matter.

3.3 Theological Grounding of Relationality

In this session we shall be dealing with the Trinitarian relationality in theology with reference to the doctrine of *imago dei*.⁶³

3.3.1 *Imago Dei*: The Metaphor of Relationality⁶⁴

The Scripture, Tradition and the Magisterium make clear the truth that human beings are created in the image of God. The doctrine of the *imago Dei*⁶⁵ refers to the immediate relationship of humankind to God. The metaphor of image and likeness expresses how humankind is related to God, the other and the World. The image of God refers to the way in which God intends human beings to live in the world.⁶⁶ The metaphor, 'image and likeness' is a dynamic one. It is not something imprinted on us. It is not that God created human beings once for all in His image but that God is creating us in His image and likeness. It refers to an ongoing relationship and reveals to us that the human person is not a finished product but a becoming.

God *ad intra* becomes God *ad extra* in creating the body-persons, who can give and receive life in relationship. According to Matthew Jayanth creation reveals God's self *ad extra*.⁶⁷ It is in creating the human being as relational, sexual, creative and dialogical in structure that the Godhead revealed its own relational and dialogical nature to the world. The focus of the creation stories in Genesis is not the origin of the human being in itself. But it is a presentation of the

vision of an authentic human existence in relation to God.⁶⁸ To have been created means a profound relationship to God.⁶⁹ The creation of human beings is a deliberate choice of God. For it is written, “Let us make human beings.” This deliberation of Godhead points to the uniqueness and the privileged choice of human existence as related to God. The image and likeness of God refers to the human capacity for a dialogical relationship. Among the whole of creation, only humankind have the capacity to enter into dialogical and personal communion and relationship with God. The very fact of being created in the image and likeness of God shows that dialogical existence belongs to the very structure of human beings and this capacity for a dialogical relationship with God is central to being human. Relatedness to God, which is essential to man, becomes a living dialogue and man’s being is a “response-giving” existence.⁷⁰

3.3.2 God as Persons in Communion: The Mode of Human Relationality

The age-old deliberations on the Trinity as one substance (*ousia*) and three persons (*hypostasis*) use the term ‘person’ to denote the distinctive existence of the Father, the Son and the Spirit. Starting with Tertullian, the term ‘person’ is used down the centuries to explain the Trinity. The Cappadocian Fathers used for the first time the idea of person as relation mainly to speak of the unique hypostatic identity of Christ and also to express the distinction within God without postulating a difference in substance between divine persons.⁷¹ For the Greek Fathers, personhood and relationality of the Father, the Son and the Spirit are the ground for the divine substance - the immanent Trinity.⁷²

Both the Greek and the Latin traditions affirm communion of persons as the nature of the Trinity. For the Latin tradition the starting point is the one divine substance.⁷³ The idea of person and its relational aspects are present in Augustine and Thomas Aquinas.⁷⁴ However, the Latin theology speculates on the Trinitarian communion as an intra divine occurrence and Greek theology speculates on this communion as an extra divine occurrence.⁷⁵ LaCugna observes that with Rahner that “the economic Trinity is immanent Trinity and vice versa,” the intra divine communion of persons and the extra divine

communion of persons in the Trinity become the manifestation of the one and the same substantial and distinctive unity of the three persons in the Trinity.⁷⁶ This juxtaposition of the economy of salvation and the theology of the Trinity in the doctrine of the Trinity brings out the ontology of relation that makes the doctrine of the Trinity more intelligible to people and pertinent to Christian life. LaCugna writes, “A relational ontology understands both God and the creature to exist and meet as persons in communion. The economy of creation, salvation, and consummation is the place of encounter in which God and the creature exist together in one mystery of communion and relation. The meaning of to-be is to-be-a-person-in-communion. This relational ontology follows from the fundamental unity of *oikonomia* and *theologia*; God’s To-Be is To-Be-in-relationship, and God’s being-in-relationship-to-us is what God is.”⁷⁷ The Trinitarian communion communicated *ad extra* in creation reveals the meaning, value and purpose of the human person to be actualized in the present, hoping for the future fulfillment in God.⁷⁸ God, the creator, has given His own life as a vision of what human beings are called to become.

3.3.3 The Divine *Perichoresis*: The Source of Relationality

In the dogmatic formulation of the doctrine of the Trinity, the term *perichoresis* was first used in a Christological context, probably by Gregory of Nazianzus, to stress the mutual reation of the two natures of Christ.⁷⁹ It gained importance in Trinitarian theology both in the Greek and the Latin traditions. In the eighth century the Greek theologian John Damascene used the term *perichoresis* to highlight the dynamic and vital character of each divine person, as well as the co-inherence and immanence of each divine person in the other two. Cyril of Alexandria called this movement a “reciprocal irruption” (Cyril of Alexandria, *Joannis Evangelium* 1.5, PG 73, 81).⁸⁰ LaCugna gives a sound explanation to the term *perichoresis* as revealing the true nature of God in its fullness. She writes:

While there is no blurring of the uniqueness of each person, there is also no separation. There is only the communion of love in which each person comes to be what he/she is, entirely with reference to

the other. Each person expresses both what he/she is and at the same time expresses what God is: ecstatic, relational, dynamic, vital. *Perichoresis* provides a dynamic model of persons in communion based on mutuality and interdependence.⁸¹

The Triune intimacy or *perichoretic* communion is an ever-rich symbol and model for human life. This Triune intimacy is an imperative model for meaningful existence as we are created in the Trinitarian image of the Godhead. The Trinitarian revelation invites us to be in loving communion and interconnectedness.

3.3.4 Jesus: The Key to Divine-Human Relationship

Jesus is the meeting point of divinity and humanity in its authentic fullness and, thereby, he reveals that every human person is the locus of an encounter between the divine and the human.⁸² Relationality of God incarnated is Jesus Christ. In the discovery of his authentic self in relation to God, other humans and the entire creation, Jesus discovered the meaning of every human existence. God sends his only Son Jesus, to make it known to humanity that God desires a life of interpersonal relationship with the human person. The life and mission of Jesus is the manifestation of the divine will of building up a cosmic communion through love and service. In the Last Supper, Jesus shared his embodied relatedness with the humankind making them sharers in the embodied relatedness of God, human beings and the World. The sharing of his body and blood makes us partakers of the divine mode of existing in relationship as persons. The symbol of the Cross is actually the expression of the self-emptying and inner relationship of the Trinity.⁸³ The death of Jesus has revealed a power in the world that is transforming all our relationships from within. By his own death and resurrection, Jesus restored wholeness to humanity. In Jesus, human beings encounter the full actualization of the multiplicity of the embodied relatedness in the divine, human and cosmic realms.

3.3.5 Spirit as the Principle of Relationality

The Holy Spirit is the principle of relationality. Karl Barth develops the relational nature of the Holy Spirit in the Trinity with

the dynamism of love. The Father loves the Son and the Son the Father, and the love and communion which exists between them and unites them is the Holy Spirit. This love which is God in himself (*ad intra*)⁸⁴ from all eternity is the basis of God's love for us (*ad extra*). The Holy Spirit is God himself relating himself to the specific details of human existence and relating his people to one another in fellowship and communion. The relational dynamism of communion effected by the Spirit is reiterated in the second Vatican Council. It shows in its documents that the Father's initiative of salvific revelation led to the mission of the Word, the Son and that of the Spirit (*LG* 2-4; *AG* 2-4), making people one in the unity of the Father, the Son and the Holy Spirit (*LG* 4). The council emphasizes the activities of the Spirit in the world enabling the humankind in different ways to achieve the true relational nature of being human in a collective effort.

The Holy Spirit is God's outreach to the world. The Holy Spirit teaches us to relate to one another. The doctrine of the Spirit especially with Augustine and Aquinas, presents the Spirit as the principle that unites the Father and the Son in the intra divine life and it is the same Spirit that unites the human person to God, the other and the world.⁸⁵ He is the Spirit of truth and he leads all humanity to the fullness of Truth (*Jn* 16:13). In the Spirit the Triune God opens God's self to humans. A new life is brought about, and a person becomes a dwelling place of the Holy Spirit, a living temple of God (*Rom* 8:9; *1 Cor* 6:19), living in God and for God. The Spirit of life, a fount of water springing to life eternal (*Jn* 4:14, 7:38-39) continues to sanctify (*Rom* 8:28) and renew (*EA* 15) the Church and leads her to perfect union with Christ (*LG* 4). The Spirit being the animator and guide of the Church unites all its members with Christ and among themselves. Speaking of the Spirit's activity in the Church, the fifth Plenary Assembly of the FABC states, "the Spirit sent by the Father and the Son and ever present and active in the Church, in the world and in the heart, leads all to their unity and fulfilment."⁸⁶

4. Rationality as a Platform for Interfacing Science, Philosophy and Theology

For a Christian believer, the notion of interrelatedness (relationality) in science is analogically and metaphorically correlated to the Trinitarian ways of thought.⁸⁷ I understand that the analogies and metaphors by no means prove the Trinity, but they are profoundly consonant with a theology that sees the relation of *perichoretic* exchange between the divine persons as lying at the heart of the Source of all created reality. The mystery of the Holy Trinity offer us profound metaphors to account for the mysterious properties of the reality of the cosmos. The cosmic proximity of the *perichoretic* Trinity enables us to look for the Trinitarian footprints on the cosmos. The Trinitarian communion must resemble a Trinitarian cosmos within it. In identifying the cosmic attributes of a Trinitarian mystery, the metaphysical insights of the natural sciences put us on a very advantageous position today. We have seen how the sciences have come to conceive of the entire universe as a unity. On stronger accounts of this unity, the scientific language seems to echo certain Trinitarian nuances. A critical integration of the scientific attributes not only explores the meaningfulness and relevance of the Trinitarian doctrine in our times but provides new incentives for a more authentic view of the entire reality.

From a philosophical perspective, substance is defined as that which is able to exist in itself. The term substance was first introduced into theology by Tertullian. He spoke of God as the divine substance with “three coinhering,” which he called persons. Thus theologically the term person referred to what is triply unique and interrelated in one God: the Father, the Son and the Holy Spirit. A person is regarded as an existence proper and perfect in itself, a distinct and objective way in which God is. Since the Scholastics, each of the Trinitarian persons is identified as a subsistent relation of opposition; the Father is paternity, the Son filiation, and the Spirit spiration. Thus this view was able to uphold the interrelated and independent reality of the three persons.⁸⁸

The explanation of the Trinity in terms of substance and persons, despite its strategic power to combine unity and distinction tends to be closed, with less communication outside the Trinity. However,

the modern response to the Trinitarian problem in terms of eternal *perichoresis* - mutual indwelling - seems to promote better outlets and communication and consequently a better understanding of the universe. The doctrine of *perichoresis* holds that in God there is reciprocal indwelling and mutual interpenetration. The Johannine formulations offer the key to it: "I am in the Father and the Father is in me" (Jn. 14:11). "The Father and I are one" (Jn. 10:30). The dynamic pattern of *perichoresis* can be considered as the wellspring of life of the world.⁸⁹ "We must not view the Trinitarian *perichoresis* as a rigid pattern. We should see it at once the most intense excitement and the absolute rest of the love which is the wellspring of everything that lives, the keynote of all resources, and the source of the rhythmically dancing and vibrating worlds."⁹⁰

Any attempt to reduce the rich allusiveness of the perichoretic communion to subatomic interconnections or a cosmological domain alone is tantamount to the worst form of reductionism.⁹¹ But from a theological perspective it is our contention that the inner dialectic of the Trinitarian *Perichoresis* is also constitutive of the ontological structure of diverse forms of existence. Trinitarian *Perichoresis* is the ultimate archetype of wholeness whereby every being shares in absolute ontological mutuality, reciprocity and communion with one another. There is a trans-relational self-manifesting mutuality between God and the world whereby Trinitology is also cosmology and cosmology is also Trinitology. Parts are parts of the whole. To be is to be related. Being is inter-being and existence is mutually-existing. The overarching Trinitarian wholeness places the entire cosmos into a supra-relational fabric permeated with an indescribable interwoven mode of being: "all relationships which are analogous to God reflect the primal, reciprocal indwelling and the mutual interpenetration of the Trinitarian *perichoresis*: God in the world and the world in God; heaven and earth in the kingdom of God, pervaded by his glory; soul and body united in the life-giving spirit to a human whole, woman and man in the kingdom of unconditional and unconditioned love, freed to be true and complete human beings."⁹² Only a Trinitarian communion can uphold the individuality, identity, uniqueness and fullness of each being. While affirming the individual identity of each being, the ontological

intercommunion of the world enhances the ontological dignity of the world, owing to its participation in the divine mode of being.

3.4 Conclusion

The scientifically and philosophically inferred analogical sparks of divine nature on the world also set forth a new scientific framework for theology and also to rethink its traditional conceptions of Theological doctrines and dogmas. In this paper we tried for a historical synthesis of the concept of relation from scientific and philosophical perspectives. We started with the Western perspective on relation with specific reference to the views of Stoics, Aristotle and Thomas Aquinas. It was followed by the idea of relationality in process philosophy. We brought to light the notion of relationality in Indian Philosophical schools with special emphasis on Sankara's notion of relation. Relationality is further substantiated by the Vedic myth of *Purusa Sukta* which underscores the relatedness of the living and non-living beings of the universe. We moved on to the scientific grounding of relationality with special reference to Newtonian Mechanics, Einstein's Theory of Relativity and Quantum Mechanics. We understood that the concept of relation has been a food for thought in the schools of science, philosophy and religion both in the East as well as in the West. The scientific, philosophical and theological grounding of relationality would enable us to interface these disciplines for a holistic understanding of reality.

Notes

1. According to *Oxford Advanced Learner's Dictionary of Current English*, ed. A.S. HORNBY, Oxford University Press, 1974, the word 'relation' has several meanings: "The act of relating," "connection" between one thing, person, idea, etc., "dealings" or "affairs," and "kinship," etc. We will be choosing mainly the aspect of relationality which means relationality is the state of being related or having a relation. We use the words "relation", relationality, interrelatedness etc. synonymously. However it is acknowledged that the concept of relation / relationality in philosophy, science and theology are unique structurally, substantially and conceptually.

The word 'constitutive' has three meanings: "Constructive," "formative," and "essential." Here we will be choosing the constructive and essential dimensions of "constitutive".

2. This is true for terms that became supreme in Trinitarian theology: relation (*shesis*); person (*hypostasis*), and nature (*ousia*). Refer Catherine Mowry LACUGNA, *God for Us: Trinity and Christian Life*, HarperSanFrancisco, 1991, 57. Hereafter this book will be abbreviated as *GU*.
3. Refer Sara GRANT, *Sankaracharya's Concept of Relation*, Motilal Banarsidass Publishers, Delhi, 1999, 2. Hereafter this book will be abbreviated as *SCR*.
4. Ibid.
5. A category is a predicate, a way of talking about being. Refer LACUGNA, *GU*, 58.
6. Refer Sara GRANT, *SCR*, 2,3.
7. For details refer J.M. RIST, *Stoic Philosophy*, Univ. Press, Cambridge, 1969, 152-72.
8. Ibid., 170.
9. Refer "Medieval Theories on Relations," in <http://plato.stanford.edu/entries/relations-medieval/>, downloaded on 04-02-2010. Also refer <http://www.google.co.in/search?hl=en&q=thomas+aquinas+summa+theologica-+I%2C+q.28%2C+9.2%2C+corpus&btnG=Search&meta=>, accessed on 05-02-2010.
10. Ibid.
11. Sara GRANT, *SCR*, 3.
12. Ibid.
13. We shall work out the Einsteinian theories on relation while we deal with the scientific grounding of relationality below.
14. Refer Sara GRANT, *SCR*, 4.
15. Refer Robert B. MELLERT, *What Is Process Theology?* Paulist Press New York, 1975, 4. Abbreviated *WPT* hereafter.
16. Refer Alfred North WHITEHEAD, *Process and Reality*, The Free Press, New York, 1929, 18. Abbreviated *PR* hereafter.
17. Refer Alfred North WHITEHEAD, *Adventures of Ideas*, The Macmillan Company, New York, 1933, 70. Abbreviated *AI* hereafter. According to Whitehead *prehensions* are the concrete fact of relatedness of an actual entity to its datum. It is the action of a subject perceiving an object and evaluating its import for the future. However, before a subject can take hold of and understand an object, it must be related to that object. *Prehension* indicates that the relatedness of the elements to the emerging

actual entity is determinative because the relatedness constitutes the entire data available to the entity in its process of becoming. A new actual occasion is constituted by its *prehensions* of the past but it is not necessarily a repetition of the past. It can be constituted into a new and novel synthesis because it can prehend the elements of its past in different ways. Refer Whitehead, *AI*, 70.

18. Refer John COBB Jr. and David Ray Griffin, *Process Theology*, The Westminster Press, Philadelphia, 1976, 14.
19. Refer D.D WILLIAMS, "Christianity and Naturalism," in *Union Seminary Quarterly Review*, Union Theological Seminary, New York, XII, April 1959, 49.
20. Refer R. PANIKKAR, *The Cosmotheandric Experience: Emerging Religious Consciousness*, Orbis Books, Maryknoll, New York, 1993, 10. Abbreviated *CE* hereafter.
21. *Ibid.*, 60.
22. *Ibid.*, 68.
23. For details refer PANIKKAR, *CE*, 55-57.
24. *Ibid.*, 59-60.
25. Refer Sara GRANT, *SCR*, 82.
26. *Ibid.*, 82.
27. *Ibid.*, 82-83.
28. *Ibid.*, 83. For details refer R.V. TRIPATHI, "The Central Problem in Indian Metaphysics," *Philosophy East and West*, vol. XVI, no. 1, January 1969, 27-35.
29. *Ibid.*
30. Refer Sara GRANT, *SCR*, 83-85. The Buddhas and Vedantins recognized immediately the impossibility of the hypothesis of two independent realities or absolutes. They both agreed that relation could not be as real as the *relata*, first, because it is not immediately given in direct experience like the *relata*, and secondly, because if it also were "real" then it would itself become a term.
31. *Ibid.*, 91.
32. Refer K.P. ALEAZ. *The Relevance of Relation in Sankara's Advaita Vedanta*, Kant publications, Delhi, 1996, 29.
33. *Ibid.*, 74.
34. *Ibid.*, 29.
35. *Ibid.*, 218.

36. Refer Sara GRANT, *SCR*, 86 and also refer S. Radhakrishnan, *Indian Philosophy*, vol. 2, second edition, Allen and Unwin, London, 1960, 565.
37. Refer Sara GRANT, *SCR*, 87.
38. *Ibid.*, 88.
39. We follow the translation from F. STAAL (ed.), *Agni: The Vedic Ritual of the Fire Altar*, vol. I, Motilal Banarsidass, Delhi, 1983, 113-115. Also refer R. PANIKKAR (ed.), *The Vedic Experience, Mantramanjari: An Anthology of the Vedas for Modern Man and Contemporary Celebration*, Darton, Longman and Todd, London, 1977, 75-76.
40. Refer S. ANAND, "Purusa - Yajana: Self-giving as the Mystery of Being," in *Third Millennium*, vol. 5, 2002, 26.
41. Refer Francis X. D'SA, "Christian Eucharist and Hindu Yajna," in *Co-Worker for your Joy*, eds. S. Painadath and Leonardo Fernando, Vidyajyoti College and ISPCK, Delhi, 2006, 100-124.
42. Refer Michael VON BRUCK, "Buddhist Sunyata and the Christian Trinity: The Emerging Holistic Paradigm," in *Buddhist Emptiness and Christian Trinity*, eds. Roger CORELESS and Paul F. KNITTER, Paulist Press, New York/ Mahwa, N.J.1990, 53. Abbreviated *BECT* hereafter.
43. Refer Masao ABE, "Kenosis and Emptiness," in *BECT*, 20.
44. *Ibid.*, 22.
45. *Ibid.*, 20.
46. *Ibid.*, 21.
47. *Ibid.*
48. *Ibid.*, 23. Also refer Daisetsu T. SUZUKI, *Mysticism: Christian and Buddhist*, George Allen and Unwin LTD, London, 1970, 50.
49. Refer the idea of holomovement proposed by Modern Physicist David BOHM where reality is expressed in terms of implicate and explicate order. For details see Richard D'SOUZA, "The Undivided Universe: Underlying Unity through Diversity," in *Dancing to Diversity: Science-Religion Dialogue in India*, ed. Kuruvilla PANDIKKATTU, Serials Publications, New Delhi, 62-84. Abbreviated as *DD*.
50. Refer Fritjof CAPRA, *The Tao of Physics: An Exploration of the Parallels Between Modern Physics and Eastern Mysticism*, Flamingo, 1992, 24. Hereafter this book will be abbreviated as *TP*.
51. *Ibid.*
52. *Ibid.*, 25.
53. The telescopic confirmation of the Copernican theory of Heliocentrism is evidence to this claim. Refer Job KOZHAMTHADAM, "The Changing Face of Science Christianity Dialogue," in *STV*, 4, 8.

54. Refer CAPRA, *TP*, 27. Descartes' famous sentence 'Cogito ergo sum' - 'I think, therefore I exist' - has led Western man to equate his identity with his mind, instead of with his whole organism. As a consequence of the Cartesian division, most individuals are aware of themselves as isolated egos existing 'inside' their bodies. The mind has been separated from the body and given the futile task of controlling it, thus causing an apparent conflict between the conscious will and the involuntary instincts. The fragmented view is further extended to society which is split into different nations, races, religious and political groups. The belief that all these fragments - in ourselves, in our environment and in our society - are really separate can be seen as the essential reason for the present series of social, ecological and cultural crises. It has alienated us from nature and from our fellow human beings. The Cartesian division and the mechanistic world view have thus been beneficial and detrimental at the same time. They were extremely successful in the development of classical physics and technology, but had many adverse consequences for our civilization.
55. Refer KOZHAMTHADAM, "The Changing Face of Science Christianity Dialogue," in *STV*, 18-20.
56. *Ibid.*, 21.
57. Refer "Theory of Relativity," in http://en.wikipedia.org/wiki/Theory_of_relativity, accessed on 10-12-09.
58. *Ibid.*
59. *Ibid.*, 76.
60. Refer K. Babu JOSEPH, "Quantum Theology: A New Frontier," in *STV* 107.
61. As quoted in PAMPLANY, *TMSP*, 123.
62. Refer Richard D'SOUZA, "The Undivided Universe: Underlying Unity through Diversity," in *DD* 62.
63. For these insights I am grateful to Gino Job CST, Jnana-deepa Vidya Peeth, Pune.
64. No human terminology is adequate to articulate the mystery of '*imago dei*'. The term metaphor is used to comprehend the mystery to a certain extent at least. However the reality is beyond the metaphorical appropriation.
65. The metaphor 'image and likeness' is understood in three ways: 1. Substantive or Ontological Understanding, which refers to the spiritual faculties of the human soul or the person. The spiritual faculties like intellect, mind, reason, will, memory, love, justice, and freedom are seen as reflecting the image of God in the human person. 2. Functional Understanding, which refers to the manifestation of the image of God in the function of dominion-caring, nurturing, enhancing and promoting life

in the world, and 3. Relational Understanding, which refers to the manifestation of the image of God in the embodied relatedness of the human person. It calls for placing ourselves in the world in relation to others, nature and God. For details refer Mathew Jayanth, "Theology and Science on Human Person: Constructing A Theological Anthropology in Dialogue with Science," *Malabar Theological Review* 2, 2007, 6.

66. Refer John F. O' GRADY, *Christian Anthropology: A Meaning for Human Life*, Paulist Press, New York, 1976, 10-11. The Hebrew word for image is 'Selem' which implies a strict physical or external resemblance. Likeness (*demuth*) refers to the spiritual or internal resemblance. The image and likeness, thus, refer to the ongoing process of being created in the image of God acquiring the qualities of God and expressing it in dialogical relationship.
67. Refer Mathew JAYANTH, "Theology and Science on Human Person," 13.
68. Refer Leo SCHEFFCZYK, *Man's Search for Himself: Modern and Biblical Images*, Sheed and Ward, New York, 1966, 45-46. Leo Scheffczyk shows that the first account of creation was not intended to give Israel a cosmological knowledge concerning the beginning of world history. The deepest concern of this account was relating the Israelite belief in the divine election and the Covenant back to the very beginning of all history. Thus, it is the presentation of the vision of the authentic human being as essentially related to God.
69. Ibid., 44.
70. Refer Leo SCHEFFCZYK, *Man's Search for Himself*, 53-54.
71. Refer O'COLLINS, *TG*, 131-134. If we take the noun 'person' in its strict etymological meaning, we cannot attribute the term 'person' to God as a separate subsistent rational being among beings. We take the term analogically where we understand persons as centers of intelligence, love, compassion, graciousness, fidelity and especially the capacity for relationship. These divine qualities are fully expressed in the person of Jesus Christ. Also see Richard P. McBrien, *Catholicism*, 349-350.
72. The interpersonal model of the Trinity as proposed by the Cappadocian Fathers is already mentioned in section 1.2.4.
73. Lacugna explains the difference in the starting point of the Latin tradition from the East. The main problem the Latin tradition was how to reconcile the oneness of the divine substance and the threefoldedness of the persons. Ibid., 10 & 246-248.
74. Refer sections 4.2.6 & 4.2.7 above on St. Augustine and St. Thomas Aquinas.

75. Lacugna through her discussions concludes that the traces of communion are seen both in the Latin and the Greek doctrine of the Trinity - *ad intra* and *ad extra* respectively. She names them as the “ontology of theology” and the “ontology of the economy” respectively. Refer LACUGNA, *GU*, 248-249.
76. Ibid., 248.
77. Ibid., 250. From a theological perspective *Oikonomia* means the history of salvation and *theologia* means the eternal being of God.
78. Refer Mathew JAYANTH, “Theology and Science on Human Person,” 13. Mathew Jayanth presents the original vision of the authentic humanity as communicated to the humankind in creation, the *ad extra* communication of divine *perichoretic* and *kenotic* existence in the past, the present actualization of it, however limited it may be, of the future; and the future is the fulfillment of the present. He observes that the Christian vision of the past, the present and the future constitute a continuum: the present emerges from the past and the future is the flowering of the present. Refer Mathew JAYANTH, “Theology and Science on Human Person,” 13.
79. Refer LACUGNA, *GU*, 272.
80. Ibid., 271.
81. Ibid. and COLLINS, *TG* 179.
82. Refer Mathew JAYANTH, “Theology and Science on Human Person,” 9.
83. Refer MOLTSMANN, *CG*, 235-246. Moltmann presents the suffering of the Son as being experienced by the Father, the Fatherlessness of the Son being the Sonlessness of the Father and the like. And from the Father and the Son, the Spirit proceeds that fills the forsaken with love, the unconditioned and boundless love which proceeds from the grief of the Father and the dying of the Son and reaches forsaken men in order to create in them the possibility and the force of new life.
84. Refer John McIntyre, *The Shape of Pneumatology: Studies in the Doctrine of the Holy Spirit*, T&T Clark, Edinburgh, 1997, 158. Karl Barth adopts Augustine’s account of the Holy Spirit as the eternal love.
85. Refer Alister E. McGrath, *Christian Theology*, 12.
86. Refer Asian Bishops’ Meeting (Manila), 29 November, 1970, “Message of the Conference,” no.2, in *FAPA* 3. Quoted by James Thoppil, *Towards an Asian Ecclesiology: The Understanding of the Church in the Documents of the FABC-1970-2000*, Oriens Publications, Shillong, 2005, 120.
87. For these insights I am grateful to Dr. Augustine Pamplany CST.
88. Refer Brian M. MOLAN, “Person, Divine,” in *The New Dictionary of Theology*, ed. Joseph A. Komanchak, et. al., Theological Publications in India, Bangalore, 1994, 758.

89. The dynamism and the life giving nature of the Trinity is explained in detail in Chapter 4, "The Mystery of Trinity: The Theological Grounding of Relationality."
90. Refer Juergen MOLTSMANN, *God in Creation: An Ecological Doctrine of Creation*, SCM Press Ltd., London, 1985, 16. Hereafter this book will be abbreviated as GC.
91. Reductionism implies that any apparently higher levels, such as life, mind and even religious ideas about God, can be fully explained in terms of the lower level sciences of chemistry and physics. As explained in John F. Haught, *Science and Religion: From Conflict to Conversation*, Paulist Press, New York, 1995, 73. Hereafter this book will be abbreviated as SRCC. For details also refer Daniel C. Dennet, *Consciousness Explained*, Little, Brown, New York, 1991.
92. Refer MOLTSMANN, GC, 17.