

**THE CONCEPT OF MATTER: A PHYSICS-PHILOSOPHY  
INTERPHASE  
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I**

The Concept of Matter as found in the Cārvāka, Vaiśeṣika and Sāṃkhya systems of Indian Philosophy has got much affinities with that of Physics. Both the traditions firmly believe that the matter has got some inbuilt power through which it can create something without the help of any conscious principle. There is an eternal dispute between the spiritualists and materialists regarding supremacy of matter or spirit. The spiritualists emphasize that spirit is real while matter is unreal. The materialists demand that matter is real and spirit is unreal. Sri Aurobindo is of the opinion that both are correct. In fact, what is called matter is nothing but non-manifested *sat* - element of the spirit called *Saccidānanda*.<sup>1</sup> Before this amalgamated theory some of the Indian thinkers believed and propagated the dynamic character of matter which can create, destroy and sustain the whole universe. Among these thinkers Cārvākas are the fore-runners who are of the opinion that matter (*bhūta*) is of four types- earth (*kṣiti*), water (*āp*), fire (*tejas*). Apart from the amalgamation of the four just as red colour is manifested out of the amalgamation of lime, nut etc., there is no separate consciousness.<sup>2</sup> That is why a dead body is dissolved in the elements. From this it is proved that elements or *bhūta*-s have in-built power to create something.

In the Vaiśeṣika Philosophy it has been accepted just like Quantum Physics that the world is originated through the combination of atoms which is called *Paramāṇukāraṇatāvāda* as opposed to *Brahmakāraṇatāvāda* admitted by the Advaita Vedāntins. At the initial stage two atoms are conjoined resulting in formation of dyadic compound (*dvyāṇuka*). Three dyadic compounds give rise to a triadic one called *trasareṇu* and in this way a gross object is originated. A question arises how two atoms that are matters or unconscious become conjoined without any conscious force.<sup>3</sup> To Sāṃkhya the atoms have got energy of their own leading to their combination. Conjunction in case of creation and disjunction in case of dissolution occurs spontaneously due to having in-built power in an atom. Both are taken to be the sports of Nature possible through its auto-generated nature. Hence there is no need of admitting any other force or God-particle in the phenomenon of conjunction and disjunction of atoms.<sup>4</sup> Hence, no tension can be entertained among the physicists, specially in Quantum Physics, regarding the acceptance of some conscious principle. That a metallic object has got in-built power is evidenced from the following

experiment. When a hot metal work from a blacksmith is found having yellow colour or orange colour, it is visible due to the visibility of the thermal radiation emitted by high temperature. Everything else is glowing with thermal radiation as well, but less brightly and at larger wave-lengths than the human eye can detect. When it is cold, such object looks perfectly black, because it absorbs all the lights that fall on it and emits none. Consequently, an ideal thermal emitter is known as a *black body* and the radiation it emits is called *black body radiation*.<sup>5</sup>

When three constituents of Prakṛti are in the state of equilibrium, there is creation. If this equilibrium is disturbed due to overpowering of one constituent, creation starts. Change is the mark of existence as envisaged by the Buddhists - *Yat sat tat kṣaṇikam and arthakriyākāritvalakṣaṇam sat*.<sup>6</sup> If *Pradhāna* is not transformed (*vikāri*), there is no change or creation. Change occurs automatically in *Prakṛti* due to its dynamic character (*svayamhū*). Creation needs activity and motion among the *guṇa*-s. Without opposition which is possible through the creation of disturbance in equilibrium no activity is possible. That is why, thesis, anti-thesis and syntheses are taken as methods of creativity. (cp. '*sakal dvanda-birodha-mājhe jāgrata je bhālo*').

A.B.N. Seal has explained the three constituents -*sattva*, *rajas* and *tamas* as essence, energy and mass. The first is the cause of self-illumination and others' illumination, second is the cause of action and the third is the cause of obstruction (*bādhakasvarūpa*). The illuminating character is transparent and useful in any disinterested pleasure. The third is a balancing factor capable of controlling others. These three cannot remain in a separate manner and hence they are called *guṇa*-s or literally binding factors. In case of immovable matter *tamas* is patent, *rajas* is latent and *sattva* is sub-latent. In case of movable matter *rajas* is patent, *tamas* is latent and *sattva* is sub-latent. An object may seem to be the cause of happiness, misery and infatuation to someone due to having three elements in *Prakṛti*.<sup>7</sup> It is just like a girl who creates happiness to someone whom she loves, becomes the cause of misery to some whom she left and becomes indifferent to someone whom she does not know. Nature becomes balanced due to harmonization of three constituents of it just as our body becomes balanced due to having three constituents- wind (*vāyu*), bile (*pitta*) and cough (*kapha*) in a proportionate way. The Sāṃkhya philosophers have taken another metaphor to point out this truth. Just as a lamp keeps burning due to having mutual

cooperation among three factors- light (*agni*), wick (*vartti*) and oil (*taila*), *Prakṛti* can work with mutual cooperation of three constituents. A girl becomes such due to different situation and different person. It is the nature of sandal to provide happiness, but it may not seem to be so if other factors are not favourable to it. It may become the cause of unhappiness if it is applied in the winter. A camel can enjoy thrones and hence it is the cause of happiness to it. But to other animal's thorne becomes the cause of unhappiness due to having different type of skin etc. Natural qualities are not manifested due to having some impediment (*pratibandhakatā*).<sup>8</sup>

According to another section of scholars like Abhinavagupta etc, among the three constituents (*guṇa*) *sattva* also acts as a balancing factor in a different way. One who is overpowered with *sattva* quality is called *sāttvika*. According to the Sāṃkhya system, *rajaguṇa* makes an individual fickle-minded and lunatic while *tamaguṇa* makes us infatuated leading him the world of inertia and frustration. Both *sattva* and *rajas* are the factors which make an individual imbalanced. That is why; *sattvaguṇa* alone makes a man tranquilized and calm. Under this stage a man can have artistic creativity, aesthetic enjoyment and exercise his creative (*kārayitrī*) and appreciative (*bhāvayitrī*) genius (*pratibhā*). The glory of such *sattvaguṇa* is found in the emotional mood involved in grief which gives rise to the realization of joy. How is joy realized from the painful situations? In this situation our mind is absorbed in the performances and this absorption depends on the equilibrium of mind. When our mind is disturbed due to the non-equilibrium of three attributes like *sattva*, *rajas* and *tamas*, the pain follows. If our mind remains in the state of aesthetic experience, there is something which forcibly snatches our mind and keeps it in a state of complete rest (*viśrānti*) (“...*rajastamovaicitryānuviddha-sattvamaya-nija-cit-svabhāva-nivṛtirviśrānti lakṣaṇah...*”).<sup>9</sup> At this stage an individual's mind attains real rest, which is characterized by the taste of its own blissful consciousness dominated by the *sattva* quality along with the association of *rajas* and *tamas*. In other words, one can enjoy the taste of his own blissful consciousness or self due to the prominence of *sattva*-quality. When there is prominence of *sattva*, it may provide a real mental relief (*viśrānti*). From this it does not follow that other qualities, i.e., *rajas* and *tamas* are not there. The prominence of *sattva* quality along with the association of others in a non-prominence stage gives rise to the taste of own self as blissful generating

aesthetic pleasure. It is the aesthetic pleasure which only can do this thing. This joy is endowed with such type of mystic power by which audience can enjoy this bliss even out of painful situation, but in our practical life human nature is found averse to experience of pain (“*Evam hi sati tadduhkhena so’pi duhkhitā iti kṛtvā rasasyātmateṇi niravakāśam bhavet.*”)<sup>10</sup> This pain is an impersonal one, but not personal. Had it been personal, the experience of pain would have arisen in the sage himself. Personal pain makes a man crippled while impersonal pain empowers him in creativity (*nirmāṇa-kṣamatva*). This empowerment through impersonal pain leads Vālmīki to create a poetry- “*Mā niṣāda pratiṣṭhām tvamagamah śāśvatīh samāh/ Yat krauñcamithunādekamavadhīh kāmamohitam//*” (That is, O Fowler, you will never receive establishment in your life, as you have killed one of the pain of crane who were engaged in sexual pleasure). Hence, Viśvanātha, the celebrated rhetorician, has said that poetry is a peculiarly unworldly phenomenon, an extraordinary creation of supernatural supernormal genius and hence it cannot be governed by the rules of ordinary human intellect. In ordinary life sorrow arises from sorrow, fear follows fear, but in the world of poetry we find pleasure deriving from the painful, horrible and terrible situations. (“*Hetutvam śokaharṣādergatebhyo lokasamśrayāt śokaharṣādayo loke jāyantam nāma laukikah. Alaukikavibhāvatvam prāptebhyah kāvyā-samśrayāt sukham sañjāyate tebhyah sarvebhyo’ piti’ kā kṣatih.– Sāhityadarpaṇa, 3/6-7.*”).

Optics is the branch of Physics which involves the behaviour and properties of light including its interactions with matter. Optics usually describes the behaviour of visible, ultra-violet and infrared light. For, light is an electromagnetic wave, other forms of electromagnetic radiation such as X-ray, micro-waves, and radio-waves exhibit similar properties.<sup>11</sup> In fact the glory of light is always admitted both in Physics and Philosophy. Optical Physics is the study of matter-matter and light-matter interactions on the scale of single atom and molecules. Optical Physics tends to focus on the fundamental properties of optical fields and their interactions with matter to the microscopic realm. The main source of light on earth is the Sun. Sunlight provides us energy that green plants use to create sugar mostly in the form of starches, which release energy in the living things that digest them. This process of photosynthesis provides virtually all the energy used by living things.

The Indian Philosophers also believe that optics or light or energy remains in matter. When energy is found in water, trees, even garbage, it is called *vāravānala* (hydel power), *dābānala* (energy received from forest trees) and power from garbage respectively. The power remaining in different material object has to be extracted from them. In modern Physics it is admitted that the Sunlight gives energy to the green plants. Plants give more sugar which again releases energy in the living beings. Energy in human body can help our body to associate it with the power of digesting. In Indian Philosophy four types of energy is admitted- divine energy (*divya teja*), worldly energy (*bhauma teja*), energy remaining in our stomach (*udaraja teja*) and energy of the matters remaining in mine (*ākaraja teja*).<sup>12</sup> The energy remaining in stomach is responsible for our digestion. The place where this energy remains for digestion of food is called *pākasthālī* i.e. the place where something is being cooked or digested. If there is less energy which is not sufficient for appropriate digestion, it is called *agnimāndya* i.e., weakened digestive fire in the stomach (*jaṭharāgni*) due to the less flow of digestive juice. The disease is medically called dyspepsia. In the *Śrīmadbhagavadgītā* and *Manusamhitā* the science of optics is also eulogized. It is said that light of the Sun gives rise to the accumulation of rain through evaporation and rain in return provides us eatable crops through which human beings can survive in this world (*‘ādityajjāyate vṛṣṭih vṛṣṭerannam tatah prajāh.’*).<sup>13</sup> The rains again come down in this earth through downpour producing bumper crops (*‘annādbhavati bhūtāni parjanyaḍannasambhavaḥ’*).<sup>14</sup> It is known from the above that there is a chain system in nature which starts with the science of light. This light is always taken as a metaphor signifying freedom or liberation or any form of relief while the state of bondage is symbolized as darkness as evidenced in the Upanishadic statement- *‘Tamaso mā jyotirgamaya’*.

From the above it is known to us that there is a chain system for protection of environment particularly the protection of plants and living things. Through the same light and energy *Prakṛti*'s *sattva* element overpowers the other constituents, *rajas* and *tamas*, and allows us to have good will to protect the whole environment after reducing anger and greed from us. Like Vaiśeṣikas the Physicists believe in five elements or matters like earth (*kṣiti*), water (*āp*), light (*tejas*), air (*marut*) and space (*ākāśa*). Vallabhācāryya, a great philosopher in Indian tradition, in his *Nyāyalīlāvātī*

has glorified earth (*kṣiti*) having weight (*gurutva*). As an earthly object has got some weight, it is natural that it will be drowned in water. But Vallabha is of the opinion that there is a tendency in certain object to float or to come to the surface of water without going inside water due to having some sort of impediment on the way of drowning (*'jalādhogamanam jalena dhāraṇam patanaprativandhonmajjanam, etacca jalasya yogasya kasyacideva patanaprativandhasāmarthyāt'*).<sup>14</sup> Vallabha talks of a particular resistance to sinking or gravity exercised by water, which explains the tendency in certain objects to float or to come up to the surface of water. Vallabha was perhaps not aware of the formula of Archimedes at that time which tells that body loses its weight if immersed in water and the weight it loses is equivalent to weight of the volume of water displaced by it.

The five essential elements for the protection of our body are also mentioned in the *Ācarakasmhitā*. The roughness, liquidity, moving force, vital force and vacuum of the body are gathered from the physical elements like *kṣiti*, *āp* etc.<sup>15</sup> It is also mentioned that all the above-mentioned characters of human body are easily be understood with the help of tactual sense organ (*'lakṣaṇam sarvamaitat sparśanendriyagocarāh'*).<sup>16</sup>

## II

First, let us suppose that space and time are continuous. Zeno presents two paradoxes to show that, on this supposition, motion is impossible. The Racetrack Imagine that we are trying to move from point A to point B. Suppose C is the midpoint of the distance from A to B. It seems that we have to first get from A to C, before we can get from A to B. Now suppose that D is the midpoint between A and C; just as above, it seems that we have to first get from A to D before we can get from A to C. Since space is infinitely divisible, this process can be continued indefinitely. So it seems that we need to complete an infinite series of journeys before we can travel any distance - even a very short one! A flying arrow, according to Zeno, is at rest i.e., occupying equal space.<sup>17</sup>

In the like manner the Naiyāyikas have shown a paradox in the concept of time (*kāla*). It is defined as the cause of verbal usage of the past etc is called time or *kāla*. It is said in the *Bhāṣāpariccheda* by Viśvanātha that Time has to be accepted as

a producer of the effects and as the substratum of the universe (*janyānām jahakah kālo jagarāmāśrayo matah*).<sup>18</sup> In a word, the auxiliary cause of any type of effect (*kāryamātram*) is called Time. Because, the usages like ‘Today a jar will be produced’ (*adya ghaṭo bhaviṣyati*). ‘Yesterday a jar was produced’ (*śvah ghaṭo bhavitā*) etc. are possible due to the acceptance of time as the cause of the origination of such effects, and also as the cause of the origination of such awareness expressed in language.<sup>19</sup>

In the foregoing discussion some paradoxes and defects may be shown in their arguments given by the Naiyāyikas.

- First, if time were defined in terms of the cause of the usages like past, present etc., there would arise the defect of circularity or fallacy of mutual dependence (*anyonyāśraya*). For, time is understood in terms of the usages like past etc. while the usages like past etc. are understood in terms of time.
- Secondly, it is very difficult to define past, present and future on account of the fact that there is ‘no cut off time’ in comparison to which an object is said to be existing in past or present. An incident occurred a moment before, may be taken as past and that occurred one hundred years back is also called past. What is the exact time that we can call ‘present’ and in terms of which past and future may be determined? It is very difficult to determine a span of time, which we call ‘present’. The Buddhist would say that an incident occurring in a particular moment is present, but it is beyond conceptualization. It would take more than one moment to conceptualize ‘present’, and hence the question of past and future does not arise at all. Hence, time defined as above is paradoxical.

If the ‘present’ (*vartamāna*) is not determined, the ‘past’ (*atīta*) remains undetermined. Because, the absenteeism existing in an absentee of the destruction occurred at in the ‘present’ is called ‘pastness’ (*ātītatva*) (*vartamānakālavṛttidhvamsa-pratīyogitvam atītatvam*). In other words, the absentee of destruction existing in the present (*vartamāna*) is called ‘past’. In the same way the absenteeism existing in an absentee of the prior-absence occurred in the ‘present’ time is the futureness (*anāgatatva*). (*vartamānakālavṛtti-prāgabhāva-pratīyogitvam*

*anāgatatvam*). In other words, something whose prior absence remains in the 'present' is called future (*anāgata*)<sup>20</sup> as Zeno has shown paradoxes in space and time, the Naiyāyikas have shown paradoxes in conceptualizing time.

In case of leadership an individual can be a leader *per excellence* if he believes in such in-built power on himself and can lead (not mislead) others in the true sense of the term to be conscious about such power in them so that they do not feel any negative states of mind like inferiority complex, self-negating attitudes etc. If such in-built power is admitted, an individual becomes a true leader by arousing their power already within them as Naciketa was aroused by the Mantra- *uttiṣṭhata jāgrata prāpya varānnivodhta* (Arise, awake, stop not until the goal is reached). The human body has got such in-built power by virtue of being matter (*Prakṛti*) but not as a part of Spirit (*Ātman*).

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