

‘Is There Physics in the Nyāya-Vaiśeṣika Philosophy’ – An Enquiry

Puja Bhakat

Assistant Professor of Philosophy
Sambhu Nath College, Labpur, Birbhum, West Bengal

Abstract

In Indian Philosophy Epistemology, Metaphysics, Ethics, Psychology these all branches have been discussed. Now a day's Aesthetic and Axiology also have been discussed. These all branches are discussed together, but not separately. In regarding metaphysics, a question is raised by many Nyāya-Vaiśeṣika philosophers. The question is following: 'Is there Physics in the Nyāya-Vaiśeṣika philosophy'? This is the main aim of this paper. In this paper, I have discussed the above mentioned question and tried to find out an acceptable answer.

Keywords: Nyāya, Vaiśeṣika, Metaphysics, Atom, Physics

Definition of Physics

Physics is the branch of science concerned with the nature and properties of matter and energy. The subject matter of physics includes mechanics, heat, light, and other radiation, sound, electricity, magnetism, and the structure of atoms.

Atomic theory is the scientific theory which defines the nature and behavior of matter. Matter is composed of different units known as atoms. It started as a philosophical concept in ancient period and entered to science mainstream in the early 19th century. Several discoveries made up of atoms.

The word atom comes from the ancient Greek word "atoms" which means indivisible. In the 19th century chemists started using the term in connection with the growing number of chemical elements that are irreducible. In the 20th century, through several experimental with radioactivity and electromagnetism. Scientists discovered the indivisible atom is a mixture of several sub-atomic particles which exist separately from each other. At a certain extreme environment, neutron star, extreme pressure and temperature prevents these indivisible atoms of existing. As atoms were found to be divisible, physicists invented a term "elementary particles".

According to Dalton's atomic theory:

1. Every chemical elements is composed of small particles that are indivisible and cannot be seen by the naked eye are defined as atoms.
2. Atoms are indestructible as "atoms can neither be created nor be destroyed". 3. All the atoms of an element are identical in mass and other properties while atoms of one element differ from all the other elements. For example — silver and gold have different atomic masses and properties.
3. Compounds are formed by a combination of different elements in a simple numerical ratio.
4. Any chemical reaction is an arrangement of atoms.

Where did all the elements come from?

In the very beginning, both space and time were created in the Big bang. It happened in 13.7 billion years ago. Afterwards, the universe was very hot, expanding so up of fundamental particles. The universe expanded rapidly during inflation and expands at a more or less constant rate now. As it grows, it becomes cool. At first, the universe was dominated by radiation. Soon quarks combined together to form baryons (protons and neutrons). When the universe was 3 minutes old, it had cooled enough for these protons and neutrons to combine into nuclei. This is known as the time of nucleosynthesis. Hydrogen, helium, lithium, and beryllium were produced. Today, about 90% of the universe is still hydrogen. Remember that only the nuclei of these atoms were created at this time. The universe was still far too hot to allow these nuclei to attract electrons and form atoms. That did not happen for another 300,000 years, at the time of recombination. At this time the universe had cooled sufficiently for atoms to exist. Echoes from these first atoms can still be seen in the cosmic microwave background. But this process only created the lightest four elements. How did the other 88 natural elements come about? To understand this, we need to understand fusion. All protons have positive charge and therefore repel one another. How then, can they be packed tightly into a nucleus? What holds them there? The answer is another force, the strong force. When protons collide with enough energy, their electric repulsion can be overwhelmed by this new force and they will be bound together. Similar process takes place between neutrons and protons and among small nuclei. This building up of heavier nuclei is called nuclear fusion. Three important fusion processes are the protons-proton chain which details how helium is made in our sun. The CNO cycle which explains how hydrogen is fused in hotter stars, and the triple alpha process which accounts for the helium fusing that occurs in mature stars. The atoms left over by the big bang were gravitationally attracted to one another and condensed into huge clouds. The gravitational pressure on the centre of these clouds heated them to temperatures of millions of degrees. This led to the fusion of hydrogen into helium stars were born.

The first four elements were present after the big bang. Elements up through magnesium were created in red giants. Elements up through iron were created in supergiant and the elements from iron to uranium were created in supernovae. These atoms can meet one another in nebulae, on dust particles, and even in planets. When they do, chemical reactions take place. These reactions eventually led to life and thenus.

Physics in Nyāya-Vaiśeṣika Philosophy:

Generally, Indian Philosophy is divided into two broad classes, namely, āstika (orthodox) and nāstika (heterodox). This division is based on the belief in the authority of the vedas and not in the belief in the existence of God. Nyāya-Vaiśeṣika, Sāṃkhya-yoga, Mimāṃsā and vedānta belong to the āstika school. Cārvāka, Buddhism and Jainism belong to the nāstika school of thought. Both schools, āstika and nāstika believe, besides Cārvāka in the atomic theory. Nyāya-Vaiśeṣika philosophers are said to be champions among the atomists. Their theory of causation is known as paramānukāraṇavāda. They developed atomism and put it on a firm logical foundation. Paramānu (atom) is defined as the ultimate indivisible units of a particle. All material things are made up with the four elements of earth, water, fire and air. Composite substances are changeable and divisible. However, they are not endlessly divisible; the atom marks the limit of division. Hence, according to Vaiśeṣika, the world is produced out of the atoms and not from a single ultimate principle. There are four kinds of atoms. These are atoms of earth, water, fire and air. The production of substances out of the atoms occurs in a distinct order. First only two homogeneous atoms (two- earthen or watery or fiery or aerial atoms) combine to form a dyad (dvyaṇuka) due to God's will. It is the first composite substance of the world. It has minute or atomic dimension. That is why it can't be perceived by common people. But God and Yogins can perceive atoms and dyad. Then three homogeneous dyads combine to form a triad (tryaṇuka), also called trasareṇu. It has intermediate dimension or madhyamaparimana. Its gross magnitude is due to the number, magnitude and arrangements of its constituents parts. The triad (trasareṇu) is the smallest visible substance. For example, perceiving the smallest dust in the sun rays. A quartrad (chaturānuka) is produced by the conjunction of four heterogeneous triads. Diversity of atoms is found in quartrad. The quartrads are combined into larger and larger composite substances.

Characteristics of the paramāṇus (atoms):

1. Atoms are globular, part-less, imperceptible, eternal and indivisible. They have atomic magnitude. They can't interpenetrate one another, for there is no intra-atomic space.
2. They cannot produce anything else by themselves due to be inactive or motionless. Their motion is due to an external agent. The external agent is God who produces motion in the atoms.
3. Each atom of earth, water, fire and touch possesses of specific qualities. These are smell, touch, taste and color. The earthen paramāṇu has color, taste, smell and touch. The watery atom has color, taste and touch. The fiery atom has color and touch. The aerial atom has touch.
4. They cannot be perceived through any of the ordinary sense organs. This does not deny the possibility of the intuitive perception of the paramāṇus by the God and yogins .
5. The qualities inherent in the paramāṇus are also eternal except the quality of earthen paramāṇu. Color, taste, smell and touch of earthen atom and earthen composite products are non-eternal due to heating. Heating is contact with fire.
6. The paramāṇus or atoms are the ultimate material cause (upādānakāraṇa) of the universe.
7. Each and every atom has a particularity (antyaviśeṣa) which differentiates one paramāṇu from the other.

The universe appears to be a complexity of contradictions. Here we find unity and diversity, activity, perfection and limitation and the like. Philosophers have to face these contradictory principles and give their own solutions regarding the problems of the universe. Kanāda's atomic theory is an attempt to reconcile the contradictions of the universe. According to vaiśeṣika, conjunction of atoms plays an indispensable role in the production of composite things. So firstly a conjunction between two atoms must take place in order to produce a dyad. But conjunction is only possible with the help of movement (karma). Hence the question is: why have there been movements in the atoms at all? The cause of creative motion is believed to be adṛṣṭa, the unseen moral force which guides the destiny of souls according to their karma and requires them to be provided with equipped bodies and an objective world for the experience of pleasure and pain. Due to the operation of this meta-empirical force the atoms start moving to get together in order to create countless varieties of things.

According to the Nyāya-Vaiśeṣika, God (Īśvara) desires to bring about dissolution (pralaya) in order to secure rest to all living beings. Simultaneously with it, the adṛṣṭa force residing in all the souls and forming bodies, senses and the quos elements, eases to operate. As a result of this, no further bodies, senses or other products come into being. Then for bringing about of the dissolution of all produced things, the separation of the atoms takes place. Thus all combinations as bodies or senses are disintegrated and all earth, all as, all tejas and all vāyu are reduced to the disintegrated atomic state.

The creation and destruction of the universe takes place due to the will of God. According to the Nyāya-Vaiśeṣika view, God wishes to give some rest to all living beings and therefore brings about destruction. He wants to derive the point the fact of dissolution is not an act of cruelty. But reference to God for this purpose does not appear to be warranted.

From the above discussion some similarities and dissimilarities in the atomic theory of Vaiśeṣika system and Modern Science, have been listed categorically below -

Some Similarities between the Vaiśeṣika philosophy and modern science:

1. Vaiśeṣika philosophy and Dalton's atom model hold that
 - a) Atoms are fundamental unit of matter.

b) Atoms are indivisible and indestructible.

2. They both introduced the concept of atoms to describe the origin of the universe.

3. Combination of atoms takes place in the both systema step by step process. In vaiśeṣika theory, the different stages in the formationof the universe starting from paramāṇu.

Atoms →dyad → triad → quartrad→ universe

Modern Science states that quarks are the fundamental units of matter.

Quarks → protons / neutrons → molecules → compounds → earth.

Some dissimilarity between the Vaiśeṣika philosophy and modern science:

1. Atoms are identical in quantity.	1. Atoms are not identified, i.e. the atoms of the element having some atomic number may be different with respect to man (concept of isotopes).
2. Atoms are indestructible.	2. Atoms are destructible.
3. Atoms are indivisible units.	3.Atoms consists of protons, neutrons and Electrons.
4. Atoms are motionless and inactive.	4.Electrons revolving round the nucleus in Certain paths called orbits.

After minutely discussing of atomic theory of the Vaiśeṣika and modern science, a question is raised: Is there any necessity for admitting God to create motion in the inert atoms? The Vaiśeṣika system admits God as the creator of movements in the atoms. Atoms being inert can't create the objective world. It implies to presuppose the existence of God. But modern science admits force in the atoms for creating this physical world. This force of modern science may be compared to the God of vaiśeṣika system. In this context, I have quoted the view of some physicists –

1.“The question of whether there exists a Creator and Ruler of the Universe has been answered in the affirmative by some of the highest intellects that have ever existed.” –Charles Darwin, the founder of evolutionary biology, as cited in his book Descent of Man .

2. “The more I study science, the more I believe in God.” –Albert Einstein (The Wall Street Journal, Dec 24, 1997, article by Jim Holt, “Science Resurrects God.”)

3. “Atoms are weird stuff, behaving like active agentsrather than inert substances. They make unpredictable choices between alternative possibilities according to the laws of quantum mechanics. It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every atom. The universe is also weird, with its laws of nature that make it hospitable to the growth of mind. I do not make any clear distinction between mind and God. God is what mind becomes when it passes beyond the scale of our comprehension.” “Technology is a gift of God. After the gift of life it is perhaps the greatest of God’s gifts. It is the mother of civilizations, of arts and of sciences.” “You ask: what is the meaning or purpose of life? I can only answer with another question: do you think we are wise enough to read God’s mind?” –Physicist Freeman Dyson. When Einstein died, there was an opening for the title of “most brilliant physicist on the planet.” Dyson filled the opening by assuming Einstein’s professorship in physics at Princeton University. He is the winner of the 1981 Wolf Prize in Physics, the 1993 Enrico Fermird, the 1969 Max Planck Medal.

Conclusion

- ▶ From the above discussion, we find many similarities as well as dissimilarities between the “atomism” of physics and of Nyāya-Vaiśeṣika philosophy. In the Nyāya-Vaiśeṣika philosophy, it is believed that the higher unseen power who creates motion in atom, is God. But whether the “power” of atom in physics and the “higher unseen power” of Nyāya-Vaiśeṣika are the same or not is a matter of unending debate. Many Nobel laureate scientists have mentioned this power of physics as “God”. For example, Moni Bhoomik in his book “Code Name God” has discussed the sign of God in science.
- ▶ The debate is still continuing because some thinkers like B. N. Seal and many Nobel Prize winner scientists accept that in Nyāya-Vaiśeṣika Philosophy, physics is very much present.
- ▶ Albert Einstein says that “The more I study science, the more I believe in God.”
- ▶ “Atoms are weird stuff, behaving like active agents rather than inert substances. They make unpredictable choices between alternative possibilities according to the laws of quantum mechanics. It appears that mind, as manifested by the capacity to make choices, is to some extent inherent in every atom. The universe is also weird, with its laws of nature that make it hospitable to the growth of mind. I do not make any clear distinction between mind and God. God is what mind becomes when it passes beyond the scale of our comprehension.”

—Physicist Freeman Dyson

There are many different views regarding this matter. But in spite of having different views, many thinkers are very much confident about the thing that in the Nyāya-Vaiśeṣika philosophy, physics has a great role to play.

- ▶ But in this brief space, it can not be elaborated. All thoughts and arguments can not be shown in a huge amount. In near future I would like to pursue the topic with elaboration.

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