



Kaṇāda's Vaiśeṣika sutras explain the idea of an atom and the law of motion.

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Abstract: -

This article summarizes the main ideas related to substance, the fundamental (anu) atom, and the law of motion in vaisheshika. The ancient Indian tradition of physics. In particular, in the conception of anu, Kanada used his framework to define the observables (matter) through the effect of motion in a very consistent manner. The anu in itself is not observable and is thus an abstraction. Kanada's framework defies the usual categories of realist versus idealist since for him matter in itself is a result of motion. The observation is central to Kanada's theory.

Introduction: -

In ancient Vedic India, Vaisheshika, also known as Vaiśeṣika (Sanskrit: वैशेषिक) is one of the six Hindu schools of philosophy.

About the second century BC, the sage Kaṇāda (also known as Kana-bhuk, Kanabhuj[1][2] which literally means "atom-eater"[3]) first advocated them.

According to the Vaisheshika or Vaiśeṣika [4][5]Sutras, everything in the physical universe can be reduced to a finite number of atoms. This version of atomism is promoted.

Among the six Hindu philosophical systems in India is Vaisheshika. It has historically been strongly linked to the Nyaya school of Hindu logic (syllogism, inference).

This school's philosophers engaged in a variety of debates and attempted to reach a consensus.

Sage and philosopher Acharya Kaṇāda (Sanskrit: कणद) was born in Prabhas Kshetra, Gujarat, India, which is close to Dwaraka. His Sutras were written by him in 600 BCE.

His main field of study was Rasavādam[6], which is regarded as an alchemical practice. Water, fire, earth, air, and ether are the five elements that are claimed to make up all living things.

The sense of discriminating (time, place, and mind) is one for vegetables, insects, birds, and vegetables. Birds have fire, water, earth, and air. Humans, on the other hand, are the pinnacle of creation with ether.

He postulated that the gravity denoted by the Hindi/Sanskrit term Gurutva was the cause of objects falling to Earth.

As a result, he identified and defined gravity before Newton, having done so much earlier than Prasnopanishad, who did so about 600 BC.

Literature Of Vaisheshika

In the Vaiśeṣika Sūtra of Kaṇāda (or Kaṇabhaksha), the Vaisheshika is presented in its earliest systematic form. There are ten books in this treatise. There are no longer existing Rāvaṇabhāṣya and Bhāradvājavṛtti[7], the two commentaries on the Vaiśeṣika Sūtra.

This school's next major work is the Padārthadharmasamgraha by Praśastapāda[8], which dates to the 4th century.

Even though it is frequently referred to as the Bhāṣya of Vaiśeṣika Sūtra, this treatise is really a stand-alone work on the subject.

The subsequent Vaisheshika book, Candrar's Daśapadārthaśāstra (648)[9], is exclusively accessible in Chinese translation and is derived from Praśastapāda's treatise.

Vyomaśiva's Vyomavātī [10](8th century) is the oldest commentary on Praśastapāda's book that is known to exist. Śrīvatsa's Līlavātī (11th century), Udayana's Kiranāvālī (10th century), and Śrīdhara's Nyāyakandalī[11 12] (991), are the other three commentaries. Śivāditya's Saptapadārthī, which is additionally a part of both the Nyāya and the Vaiśeṣika principles as a component of a single whole within the same period. A significant work on Vaiśeṣika Sūtra is also Śaṅkara Miūra's Upaskāra[13].

3 Vaishesika Sutras proposed 1800 years before Newton's Three Laws of Motion

- वेगः निमित्तविशेषात् कर्मणो जायते [[14]
Translation: Change of motion is due to impressed force.
 (The law states that an object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced force.)
- वेगः निमित्तापेक्षात् कर्मणो जायते नियतदिक क्रियाप्रबन्धहेतु [[15]
Translation: Change of motion is proportional to the impressed force and is in the direction of the force.
- वेगः संयोगविशेषविरोधी [[16]
Translation: Action and reaction are equal and opposite.

The Padārtha or Categories

The Vaisheshika school holds that all things that are cognizant, naming, and existing are padārthas, or experience objects (literally, meaning that a word has meaning). Six categories can be used to group all objects of experience: viśeṣa (particularity), guṇa (quality), karma (activity), sāmānya (generality), and samavāya (inherence). Subsequently, Śrīdhara, Udayana, and Śivāditya, the Vaiśeṣikas, added the category of abhava (non-existence). According to the definition of artha, which is perceivable, the first three categories are real, objective entities.[17]

The final three categories are logical and are classified as budhyapekṣam (product of intellectual discrimination).

1. **Dravya (substance):** There are nine substances in total. Earth (pṛthvī), water (ap), fire (Tejas), air (vāyu), ether (ākāśa), time (kāla), space (dik), self (ātman), and mind (manas) are these. The first five are referred to as bhūtas; these substances are endowed with particular qualities that enable them to be perceived by one or more senses outside the body.[18]
2. **Guṇa (quality):** Praśastapāda added seven more guṇas (qualities) to the Vaiśeṣika Sūtra's list of seventeen. While a substance can exist on its own, a guṇa (quality) is incapable of doing so. Rūpa (color), rasa (taste), gandha (smell), sparśa (touch), saṅkhyā (number), parimāṇa (size/dimension/quantity), pṛthaktva (individuality), saṁyoga (conjunction/accompaniments), vibhāga (disjunction), paratva (priority), aparatva (posteriority), buddhi (knowledge), sukha (pleasure), duḥkha (pain), icchā (desire), dveṣa (aversion), and prayatna (effort) are the original 17 guṇas (qualities). Praśastapāda added saṅkāsra (faculty), dharma (merit), adharma (demerit), śabda (sound), gurutva (heaviness), and dravatva (fluidity) to these.[19]

3. **Karma (activity):** Ākāśa (ether), kāla (time), dik (space), and ātman (self), though substances are devoid of karma (activity), the karmas (activities), like the gunas (qualities), have no separate existence, they belong to the substances. However, an activity is a transient feature of a substance.[20]
4. **Sāmānya (generality):** There will be relationships between the various substances because there are multiple of them. A property is referred to as sāmānya when it is found to be shared by numerous substances.[21]
5. **viśeṣa** the ability to distinguish between different substances is known as viśeṣa (particularity). The viśeṣas are as numerous as the ultimate atoms.[22]
6. **Samavāya (inherence):** Kaṇāda defined samavāya as the relation between the cause and the effect. Praśastapāda defined it as the relationship existing between the substances that are inseparable, standing to one another in the relation of the container and the contained. The relation of samavāya is not perceivable but only inferable from the inseparable connection of the substances.[23]

The theory of atoms

According to an intriguing story, he had this theory while out for a walk, holding food in his hand. The idea of a matter that cannot be divided further emerged as he nibbled at the food in his hand and threw away the small particles. This realization came to him because he could not divide the food into more parts. He referred to that indivisible material as an atom, or anu. Additionally, he said that an object can exist in two states: complete rest and motion.

To demonstrate that all objects, including the four bhūtas, pṛthvī (earth), ap (water), Tejas (fire), and vāyu (air), are composed of indivisible paramāṇus (atoms), the early Vaiśeṣika texts presented the following syllogism: Assume that the matter is continuous and not composed of indivisible atoms.[24]

Pick up a stone. This can be divided into an infinite number of parts because matter is continuous. Since there are an endless number of pieces in the Himalayan Mountain range, it is possible to construct another Himalayan Mountain range using the pieces that one already has. Since there is a paradox between starting with a stone and ending up with the Himalayas, the original assumption that matter is continuous must be false, and all objects must consist of a finite number of paramāṇus (atoms).

The smallest mahat (perceivable) particles are the trasareṇu (dust particles visible in the sunbeam coming through a small window hole), which are defined as tryaṇukas (triads) by the Vaiśeṣika school.[25]

Each of these three components is defined as dvyaṇuka (dyad). The two components that make up the dvyaṇukas are defined as paramāṇu (atom) for each of them. Atoms, or paramāṇus, are eternal and indivisible; they cannot be created or destroyed.[13] Every paramāṇu (atom) has a unique viśeṣa (individuality).

Parimaṇḍala parimāṇa is the term used to describe the part-less atom measurement. It cannot produce the measure of any other substance and is eternal. It measures itself entirely on its own. Of course, the Bhagavata Purana and the Rig Veda, which describe cloning incidents, are where knowledge of atoms and molecules was first acquired.[26]

The Vedic Atomic Theory:

According to Kanada, atoms are eternal and have a propensity to bind together. The four elemental atom types were proposed by Vaisesika atomists.

A "Dwinuka" is a double or binary molecule created when two atoms come together. Kanada's theory states that Dwinuka would have the same characteristics as the original parmanu (atoms). He added that when distinct types of atoms are combined, a non-identical molecule is created that has the ability to chemically alter a component in the presence of particular stimuli, like heat. One example of this would be the color of heated mud utensils changing. Kanada's atomic theory, which asserts the following, was captured in his book Vaisheshik Darshan, also known as the Kanada sutras.[27]

Everything is divisible; subdivision eventually results in the creation of parmanu (atoms); and parmanu is indivisible, meaning it cannot be divided further.

- Every particle's subsection has an end and cannot continue indefinitely.

The following characteristics of an atom:

- It cannot be seen with the naked eye
- It is the building block of all material existence
- It is indestructible
- It has a unique property that is the same as the class of substance to which it belongs
- It can be combined in various ways to produce chemical changes by heating them or using other measures.
- A parmanu, or atom, can exist in two states: a moving state and a completely still state.

In today's measurements, Paramanu:

Any being's unit of measurement is the paramanu, or "atom." The smallest possible unit is represented by a single Paramāṇu. Eight Paramāṇu units can be combined to create a single Rathadhūli[28]unit, and so on. The suggested units of measurement in relation to each other are listed below:

- Eight Paramāṇu= One Rathadhūli, chariot-dust; Eight Rathadhūli= One Vālāgra, hair-end (measured at approximately 75 μm today).
- 8 Likṣā= 1 Yūka, louse; 8 Vālāgra= 1 Likṣā, nit
- Barley-corn, 8 Yūka = 1 Yava
- 8 Yava = 1 Aṅgula, digit (finger width: approximately 1.9 cm or 3/4 of an inch).

One Aṅgula, or 1.9 cm in finger width, is equal to $8 * 8 * 8 * 8 * 8 = 262,144$ paramanus. One paramanu is equal to approximately 7.2×10^9 meters. As of right now, the size of an atom is approximately 10^{-30} meters, or 700 times larger than Kanad's paramanu. [29]

It is said that only sages can perceive paramāṇu, the smallest unit. The aṅgula is the smallest unit of measurement that the general public can use for all other purposes.

Even though Kanada's atom was about 700 times larger than what we currently know, it is still an amazing achievement to be able to imagine such small sizes 2,500 years ago without the use of modern scientific tools.

Conclusion –

One of the greatest knowledge repositories is the Indian tradition, where all of the Shastras' knowledge is easily comparable to and categorized with current knowledge. The theories from India are on par with those from today. We can presume that those theories were presented centuries ago without the aid of any readily available technology.

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