

MEHTOD OF SCIENCE USED IN PAST INDIA AND ITS RELEVANCE
TO PRESENT DAY CONTEXT

GAYA PRASAD

Department of Veterinary Microbiology
Haryana Agricultural University,
Hisar 125004

The whole history of India, with vast changes in political, ideological, religious, and philosophical spheres during the last three thousand years, remains yet to be fully understood. Many Indologists are engaged in the search for the philosophy which integrates modern scientific spirit with our cultural heritage.¹⁻³ The study of our past and particularly our philosophical traditions no more remains an abstract and academic exercise; many intellectuals of our country have realised the cultivation of world outlook, which rouses the creative energy of our people, and imparts rigorous spirit of self-confidence and purposefulness in their life. Such an outlook has to be positive in its attitude to the fast changing world and to the spirit of scientific enquiry, which inspire us to go beyond mere narration of different schools of thought and an elaboration of values we have inherited. We need to subject them to rational methods of scrutiny and adaptation so that they may be acceptable to the modern mind.

Very little is documented about the mode of acquisition of knowledge in ancient India. The science of true reasoning and right judgement was developed by Gautama Akṣapāda and it was termed *Nyāya*. It finds its place as one of the six orthodox philosophies of Indian thought, called *Ṣaḍdarśana* which comprises *Nyāya*, *Mīmāṃsā*, *Sāṃkhya*, *Yoga*, *Vedānta*, and *Vaiśeṣika*. *Nyāya* was primarily science of logic in ancient Indian thought, which provided a system for rational analysis of subject and objects in any branch of knowledge to solve the problems of life and reality. Vātsāyana defined it as a critical examination of the objects of knowledge by means of logical proof. The theory of knowledge is thus the most valuable part of *Nyāya*.

Though nothing is known about Gautama, the founder of the *Nyāya* School, it is believed that he must have lived in Mahābhārata period. In any case, the fact that it was very popular in Kauṭilya's time, *viz.*, the fourth century B.C., is unquestioned.⁴ The general principles of the *Nyāya* might have existed even before the time of Gautama, but it was he who formulated them into *Sūtras* and reshaped them into a differentiated body of philosophical thought. The *Nyāya Sūtra* has five chapters and each chapter is divided into two sections.

The *Nyāya* accepted the atomic theory of cosmology, the theory of the unalterable, causeless, eternal, minute particles called atoms existing independent of mind, as the ultimate reality. The universe in its view was constructed by action and interaction of atoms. The concept of five eternal basic elements—earth, water, fire, air, and ether—was the corner-stone of *Nyāya* cosmology.

The *Nyāya* tried to explain the problem of human existence in the light of laws of Nature. It divided reality broadly into *cetana* (conscious) and *acetana* (unconscious). Every facet of mental activity was intimately associated with some external reality and the existence of conscious element was manifested through subconscious element. In addition to the five basic elements, the *Nyāya* recognised four more varieties of the material content of the world—time, space, mind, and soul.

The *Nyāya* considered mind as an important part in the realization of truth. It stressed on the importance of the mental processes like influence, argument, reasoning, etc. But it also stressed at the same time that without direct observation of the object by the senses, *i.e.*, without direct relationship between the observer and the object, truth could not be perceived.

The *Nyāya* gave more emphasis to the process of reasoning and dialectics required for the attainment of knowledge than to the actual study of qualities of an object. According to Gautama, *pramāṇa* was the method of valid cognition. This was so because *Nyāya* was a philosophy primarily dealing with methods of right knowledge. The *pramāṇas* were of four kinds: (1) perception (*pratyakṣa*), (2) inference (*anumāna*), (3) comparison (*upamāna*), and (4) verbal testimony (*śabda*). In other words, it might be perceived by the direct experience of the organs of senses by way of inference, examples, and comparison. *Pratyakṣa* was the knowledge which arose from the contact of senses with an object. *Anumāna* was the knowledge preceded by perception. *Upamāna* was the knowledge of an object derived from its similarity to another object known earlier and *śabda* was the knowledge transmitted by reliable person, and in the modern sense it corresponds to review of literature.

According to *Nyāya*, men generally did not err much in their perception because it was immediate, not depending on any previous experience or reasoning. But that was not the case with inference. One could often make wrong inferences leading to wrong conclusions. Hence Gautama dealt with inference in greater detail. Inference was the process of reasoning by which something unperceived was known on the basis of known thing, the character of which was universally applicable. The existence of unperceived fire on a hill, for example, was inferred when smoke was seen on it and when it was remembered that smoke is always

related to fire. He introduced syllogism to demonstrate the truth concerning a particular object or statement. The five integral members (*avayavas*) of syllogism were *pratijñā* (proposition), *hetu* (reason), *udāharaṇa* (example), *upanaya* (application of example) and *nigamana* (conclusion).

The application of the syllogism could be explained by the following classical example.

- Pratijñā* : This hill is fiery ;
Hetu : Because it is smoky ;
Udāharaṇa : Whatever is smoky is fiery, as a kitchen ;
Upanaya : So is this hill (smoky) ;
Nigamana : Therefore, this hill is fiery.

This syllogism with its five *avayavas* was supposed to be the most efficacious method of avoiding errors and was used in philosophical discussions aiming to ascertain genuine truth.

Now let us look at the modern methods of acquiring scientific knowledge. The basic aim of science is the acquisition of knowledge. Yet the world around us is often not amenable to study because the subject matter offers so many variable factors. These factors are so inter-related that alteration in any one affects the nature of the others. Moreover, human mind itself is highly variable and prone to unconscious bias. Hence, there is a necessity in science for a systematized way for amassing knowledge. It is this systematisation that is known as 'method of science'.

The present method of science includes the following steps :

1. Observe ;
2. Define the problem ;
3. Develop a hypothesis ;
4. Experiment to get data ;
5. Analyse the data ;
6. Interpret the data ;
7. Confirm or reject the hypothesis ;
8. Develop a theory/law/model.

It is apparent that the experimentation part is the key in all modern scientific enquiries which is lacking in *Nyāya Sūtras* of Gautama. Still *Nyāya Darśana* has important components of acquiring knowledge, like logic and reason. *Nyāya sūtras* may appear primitive but they still have relevance to our day to day life since every question can not be answered by experimentation.

REFERENCES

- ¹ Chattopadhyaya, D. P., *Lokāyata*, People's Publishing House, Delhi, 1957.
- ² Damodaran, K., *Indian Thought—A Critical Survey*, Asia Publishing House, 1967.
- ³ Rahman, A., *Trimurti: Science, Technology and Society*, People's Publishing House, Delhi, 1972.
- ⁴ Raju, P. T., *The Nyāya and the Architectonic of Logic in Structural Depth of Indian Thought*, South Asia Publishers, New Delhi, 1985, pp. 192-250.