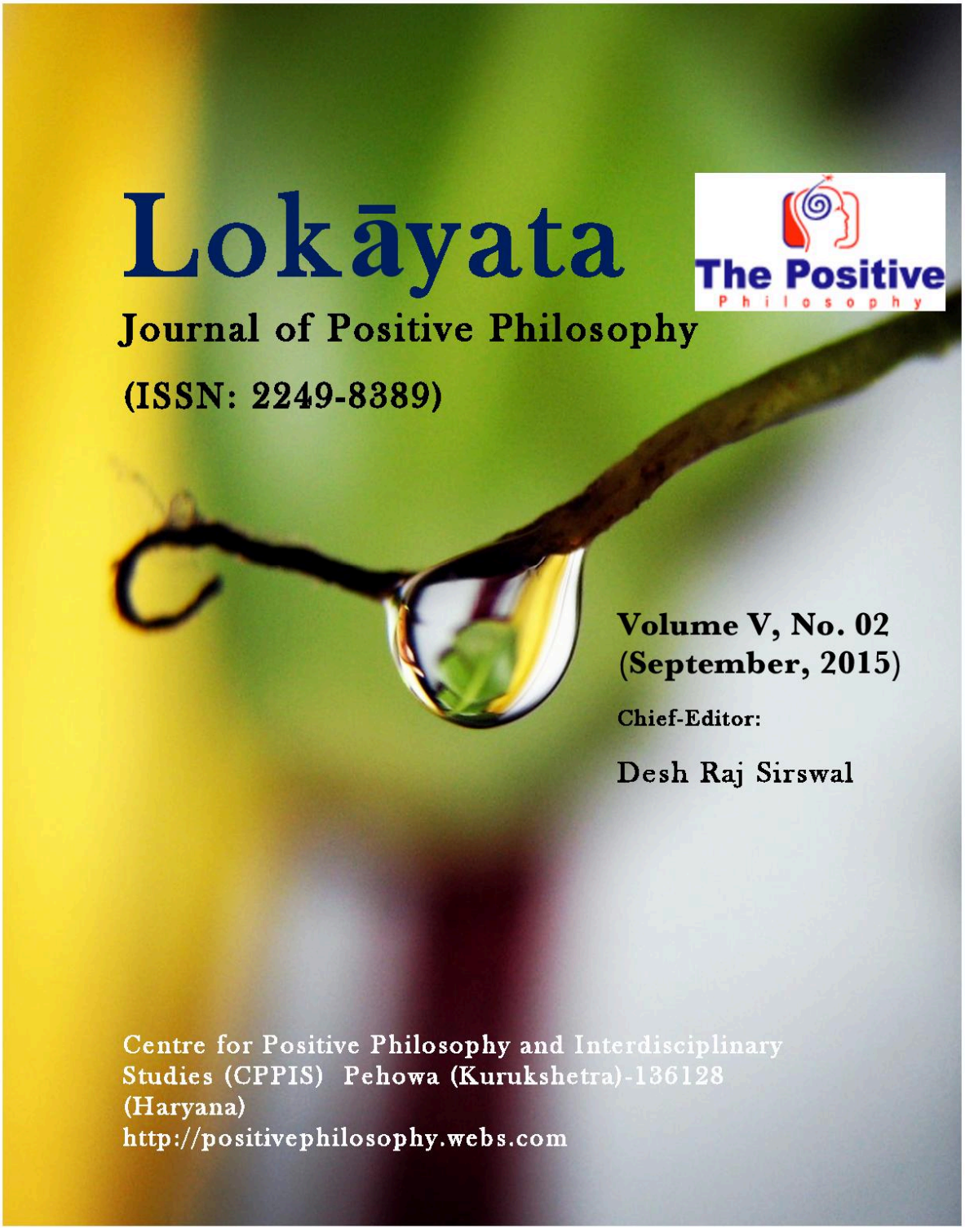

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Lokāyata: Journal of Positive Philosophy is an online bi-annual interdisciplinary journal of *the Center for Positive Philosophy and Interdisciplinary Studies (CPPIS)*. The name Lokāyata can be traced to Kautilya's *Arthashastra*, which refers to three *ānvīk ikīs* (logical philosophies), Yoga, Samkhya and Lokāyata. Lokāyata here still refers to logical debate (*disputatio*, "criticism") in general and not to a materialist doctrine in particular. The objectives of the journal are to encourage new thinking on concepts and theoretical frameworks in the disciplines of humanities and social sciences to disseminate such new ideas and research papers (with strong emphasis on modern implications of philosophy) which have broad relevance in society in general and man's life in particular. The Centre publishes two issues of the journal every year. Each regular issue of the journal contains full-length papers, discussions and comments, book reviews, information on new books and other relevant academic information. Each issue contains about 100 Pages.

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In this issue……

PLACE OF LOGIC IN INDIAN PHILOSOPHY

Desh Raj Sirswal

Abstract

The title of the present paper might arouse some curiosity among the minds of the readers. The very first question that arises in this respect is whether India produced any logic in the real sense of the term as has been used in the West. This paper is centered only on the three systems of Indian philosophy namely Nyāya, Buddhism and Jainism. We have been talking of Indian philosophy, Indian religion, Indian culture and Indian spirituality, but not that which are of more fundamental concepts for any branch of knowledge whether it is social sciences or humanities. No aspect of human life and the universe has been left unexamined by Indian philosophers, and this leads to a totality of vision in both philosophical and psychological fields. In this paper we will discuss the main thinkers, sources and main concepts related to Indian Logic.

LOGIC IN INDIAN PHILOSOPHY

Philosophy in India has been called '*Darsana*', which means vision, insight, intuition, and these words itself signifies that Indian philosophers pursued the quest of having a total vision of life and universe, based on personal experience, and not on a limited place of modern methodology.[1] There have been a good number of divergent philosophical systems (six *Aastika* systems, *Buddhist*, *Jains* & *Carvaka*). But there is a common current of idealism and spiritualism running through all of these. Wemost of the discussions on Indian philosophy leave the *Carvaka* system (Indian Materialism) which does not survive and of which only references are traceable. In the Nasadiya Sukta of the *Rigveda* contains ontological speculation in terms of various logical divisions that were later recast formally as the four circles of *catuskoti*: 'A', 'not A', 'A and not A', and 'not A and not not A'. This is the most ancient expression of Indian Logic.

The development of Indian logic can be said to date back to the *anviksiki* of Medhatithi Gautama (c. 6th century BCE); the Sanskrit grammar rules of Pānini (c. 5th century BCE); the Vaisheshika school's analysis of atomism (c. 2nd century BCE); the analysis

of inference by Gotama (c. 2nd century BCE), founder of the Nyāya school of Indian philosophy; and the *Tetralemma* of Nāgārjuna (c. 2nd century CE). Indian logic stands as one of the three original traditions of logic, alongside the Greek and Chinese traditions.

According to Matilal, logic as the study of the form of correct arguments and inference patterns, develop in India from the methodology of philosophical debate. The art of conducting a philosophical debate was prevalent probably as the time of the Buddha and the Mahāvirā, but it became more systematic and methodological a few hundred years later.[2] He defines Indian logic as the "systematic study of informal inference-patterns, the rules of debate, the identification of sound inference via-a-vis sophistical argument and similar topics." [3]

Medhatithi Gautama founded the *anviksiki* school of logic. The *Mahabharata* (12.173.45), around the 5th century BCE, refers to the *anviksiki* and *tarka* schools of logic. Pānini developed a form of logic which had some similarities to Boolean logic for his formulation of Sanskrit grammar. Logic is described by Chanakya (c. 350-283 BCE) in his *Arthashastra* as an independent field of inquiry *anviksiki*. Now we will discuss the above mentioned philosophies in reference to their sources, logicians and logical speculations. These are as follows:

Nyāya

The principal interests of the philosophers of the Nyāya school are epistemology and philosophical method. These are the philosophers who most forcefully advocate the so-called *pramana* method as a method for rational inquiry. The main philosophers and texts in early Nyāya are –*Nyāyasutr*ā by Gautama Akaspadā (c. AD 150); *Nyāyabhasya* – commentary on *Nyāyasutrā* by Vatsyayana (c. AD 450) ; *Nyāyavārttika* – commentary on *Nyayabhasya* by Uddyotakara (c. AD 600); *Nyāyamañjari* – an independent work on Nyāya by Jayanta (c. AD 875); *Nyāyavarttikatatparyatika*– commentary on *Nyāyavārttika* by Vacaspati (c. AD 960); *Atmatattvaviveka, Laksanvali, Nyāyakusumañjali*, and other treatises by Udayana (AD. 975–1050).

Navya-Nyāya

Navya-Nyāya, the 'new' Nyāya is a philosophical system inve nted by Gangesa Upadhyaya (c. AD 1325). It tries to find solutions to many of the criticisms that the early Nyaya conception of rational inquiry were confronted with by the sceptics. Raghunatha Siromani (c. AD 1500) revolutionised the teachings and methods of the school. Both he and his great follower, Gadadhara Bhattacharya (c. AD 1650) wrote short independent tracts on particular philosophical problems and concepts.

Gangeśa's book *Tattvacintāmani* dealt with all the important aspects of Indian philosophy, logic, set theory, and especially epistemology, which Gangeśa examined rigorously, developing and improving the Nyāya scheme, and offering examples. The results, especially his analysis of cognition, were taken up and used by other darśanas.

Navya-Nyāya developed a sophisticated language and conceptual scheme that allowed it to raise, analyse, and solve problems in logic and epistemology. It systematized all the Nyāya concepts into four main categories: sense or perception (pratyakṣa), inference (anumāna), comparison or similarity (upamāna), and testimony (sound or word; śabda).

Jainism

Jainism made its own unique contribution to this mainstream development of logic by also occupying itself with the basic epistemological issues, namely, with those concerning the nature of knowledge, how knowledge is derived, and in what way knowledge can be said to be reliable. Jain logic developed and flourished from 6th Century BCE to 17th Century CE. Important Jaina philosophers include Siddhasena Divākara (c. AD 700) Haribhadra Suri (c. AD 750) Hemacandra (c. AD 1150), Mallisena (c. AD 1290), Yasovijaya (c. AD 1624-88), Kundakund (2nd century AD). Their belief in the principles of tolerance, harmony and rapprochement lead them to a philosophy of pluralism in metaphysics and ethics and to perspectivalism in epistemology and semantics. Jaina's main texts include: *Pañcāstikāyasāra* (Essence of the Five Existents), the *Pravacanasāra* (Essence of the Scripture) and the *Samayasāra* (Essence of the

Doctrine) by Kundakunda; *Tattvārthasūtra* by Umāsvāti or Umasvami ;*Nyāyāvatāra* (on Logic) and *Sanmatisūtra* (dealing with the seven Jaina standpoints, knowledge and the objects of knowledge) by Siddhasena Divākara;*Saddarśanasamuccaya* and *Yogabindu* by Haribhadra; *Yogaśāstra* and *Trishashthishalakapurushacharitra* by Hemacandra.

Buddhism

Indian Buddhist logic (called *Pramana*) flourished from about 500 CE up to 1300 CE. Nāgārjuna's of Madhyamikā school (c. AD 150) interpretation of the teachings of the Buddha was called the Doctrine of the Middle Way. He argues that all philosophical and scientific theories are empty of content. He is a severe critic of the *Pramana*method for conducting rational inquiry, and he claims instead that the only way to reason is by exposing incoherences within the fabric of one's conceptions. Candrakirti (c. AD 600) is an influential exponent and interpreter of Nāgārjuna.

The three main authors of Buddhist logic are Vasubandhu (c. AD 400 - 800), Dignāga (c. AD 480 - 540), and Dharmakīrti (c. AD 600 - 660). The most important theoretical achievements are the doctrine of Trairūpya and the highly formal scheme of the Hetucakra ("Wheel of Reasons") given by Dignāga. He is form Yogacāra Buddhism and his great follower Dharmakirti (c. AD 625) interpreted the teachings of the Buddha in a very different directions, as a kind of idealism. There is a still living tradition of Buddhist logic in the Tibetan Buddhist traditions, where logic is an important part of the education of monks.

The members of this school were brilliant logicians and made many important advances in philosophical theory. Although they are idealists, they are also advocates of the *pramāna* method as the correct way of investigating and resolving philosophical problems. They disagree with the Nyāya about almost every matter of philosophical substance, but because they share a common approach to the rational resolution of philosophical dilemmas, the encounter between the two schools is fascinating and is an important axis in the evolution of Indian philosophical thought. The main text of Buddhist logic include:*Mulamadhyamakakārikā* (The Middle Stanzas) by Nāgārjuna;

Vigrahavyāvartani (Reply to Critics) by Nāgārjuna; *Prasannapadā* by Candrakirti; *Pramānasamuccaya* (Collection on Knowing) by Dignāga ; *Alambanapariksā* (Examination of Supports) by Dignāga; *Hetucakradamaru* (Chart of Reasons) by Dignāga; *Pramāavārttika* (Commentary on Knowing), by Dharmakirti;*Nyāyabindu* by Dharmakirti ; *Vādanyāya,* by Dharmakirti.

Main Concepts of Indian Logic

Logic developed in ancient India from the tradition of Vādavidyā, a discipline dealing with the categories of debate over various religious, philosophical, moral, and doctrinal issues. There are so many concepts that are the central to Indian systems of logic. But mainly it is concerned with *pramanas* as we said earlier. Nyāya deals with inference. Inference is a form of mediate knowledge of knowing something by knowing something else. The Nyāya school of thought is better known for its extensive works in logic and on argumentation. The widely used terminology for inference is anumāna. Anumāna literally means 'after knowledge'. Nyāya tradition calssifies different types of anumāna. First of all, it is said that anumāna can be of two types:

1. *Svarthanumāna* (For the sake of oneself): In this, inference drawn in one's own mind as a result of repeated observation earlier. You see the smoke on the mountain top and in your own mind you draw the conclusion that there must be fire at the top. It is rather causal process.
2. *Pararthanumāna* (For the sake of others): When in a dialectical or debate situation where you have to prove what you inferred and also show how you have inferred it. It is not an informal matter. It requires demonstration of the inferential process as well as the evidence or ground for making the inference.[4]

The Nyāya system holds that true cognition (*pramā*, *yathārthānubhava*) is of four kinds: (1) perceptual (*pratyaksa*), (2) inferential (*anumiti*), (3) analogical (*upamiti*), and verbal (*sabda*). According to the Nyāya logic, the proper formulation of your inference should have five parts.

The methodology of inference involves a combination of induction and deduction by moving from particular to particular via generality. (1) the statement of the thesis of inference, (2) stating the reason or evidence for this thesis, (3) citing an example is such that it is well accepted by others, (4) application of the present observation to the generalization, and (5) conclusion or assertion that the statement of the thesis has been proven.[5] It has five steps, as in the example shown:

There is fire on the hill (called *Pratijñā,* required to be proved)

Because there is smoke there (called *Hetu*, reason)

Wherever there is fire, there is smoke (called *Udaharan*a, ie, example) as in a kitchen.

There is smoke on the hill (called *Upanaya*, reaffirmation)

Therefore there is fire on the hill (called *Nigamana*, conclusion)

In Nyāya terminology for this example, the hill would be called as *paksha* (minor term), the fire is called as *sadhya* (major term), the smoke is called as *hetu*, and the relationship between the smoke and the fire is called as *Vyapti*(middle term). The concern clearly was to promote the notion and practice of a good debate, and to differenticate it from the pointless, destructive debates. In *Nyāyasutra*, three kinds of debtates were identified by Aksapādā:

1. Good debate or Vāda in which the proof and refutation of thesis and antithesis are based on proper evidence (pramāna) and with contradicting any background or already established assumptions (siddhānta).
2. Devious or sly debate , or Jalpa, in which the proof and refutation use unfair, measures such as hair-splitting empty pedantry (chala), false rejoinders (jati) and defeat situations (nigrahasthāna).
3. Purely destructive or refutation-only debate or Vitanda, in which no positive counter thesis is proved.[6]

Aksapādā also classified inference as : Apriori (*purvavat*, from cause to effect), A Posteriori (sesavat, from effect to cause) and From analogy (*samanyato-drsta*, perception of homogeneousness. A three fold classification of inference also found according to

Navya Nyāya. Nyāya also deals with Hetabhasas. Hetu further has five characteristics: (1) It must be present in the Paksha, (2) It must be present in all positive instances, (3) It must be absent in all negative instances, (4) It must not be incompatible with the minor term or Paksha and (5) All other contradictions by other means of knowledge should be absent. The fallacies in Anumana (hetvābhasa) may occur due to the following:

1.**Asiddha**: It is the unproved hetu that results in this fallacy. (Paksadharmata):(a) Ashrayasiddha: If Paksha (minor term) itself is unreal, then there cannot be locus of the hetu. e.g. The sky-lotus is fragrant, because it is a lotus like any other lotus. (b) Svarupasiddha: Hetu cannot exist in paksa at all. E.g. Sound is a quality, because it is visible. (c) Vyapyatvasiddha: Conditional hetu. 'Wherever there is fire, there is smoke'. The presence of smoke is due to wet fuel.

2**. Savyabhichara**: This is the fallacy of irregular hetu :(a) Sadharana: The hetu is too wide. It is present in both sapaksa and vipaksa. 'The hill has fire because it is knowable'. (b)Asadharana: The hetu is too narrow. It is present only in the Paksha, it is not present in the sapaksa and vipaksha. 'Sound is eternal because it is audible'. (c) Anupasamhari: Here the hetu is non-exclusive. The hetu is all-inclusive and leaves nothing by way of sapaksha or vipaksha. e.g. 'All things are non-ternal, because they are knowable'.

3. **Satpratipaksa**: Here the hetu is contradicted by another hetu. If both have equal force, then nothing follows. 'Sound is eternal, because it is audible', and 'Sound is non-eternal, because it is produced'. Here 'audible' is counter-balanced by 'produced' and both are of equal force.

4.**Badhita**: When another proof (as by perception) definitely contradicts and disproves the middle term (hetu). 'Fire is cold because it is a substance'.

5.**Viruddha**: Instead of proving something it is proving the opposite. 'Sound is eternal because it is produced'.

The Nyāya model of inference was modified and replaced by an influential formulatism of Dignāga, the Buddhist logician. Dignāga's theory of inference describes a structure of inference based on the nature of sign (hetu) can properly stand for another. He formulated the 'triple nature of sign', three conditions which a sign (hetu) must fulfill in order that it leads to valid inference:

1. It should be present in the case (object) under consideration.
2. It should be present in a similar case or a homologue.
3. It should not be present in any dissimilar case, any heterologue.

The sign as pointed out above, is also the reason for the inference and is called the *hetu*. The inferred property is *sādhya* and location is *paksa*.[7] It is equivalent to the three terms of a syllogism, the middle term, minor term and major term respectively. A standard example of a traditional syllogism is the following:

All men are mortal beings.

Socrates is a man.

Therefore, Socrates is mortal being.

Every syllogism consists of three sentences, and three terms. The sentences must be in their logical form, i.e. they must exhibit a subject, a predicate and a copula which is not a part either of the subject or of the predicate. In this tripartite division of a sentence in its logical form, the copula has the following characteristics:

(a) It must be a form of verb 'be'.
(b) It must be in the present tense.
(c) It may be either affirmative or negative.

We can compare and contrast the Navya-Nyāya theory of inference with the traditional syllogism, Aristotelian syllogism, and sometimes with the theory of modern symbolic logicians.[8] From the 14th century CE, with the Navya-Nyāya school, Indian logic

became more formal. Logicians came up with a novel idea of universal qualification, rules for sentinetial logic etc. The debate between the Buddhists and Nyāyikas continued over the centuries. This fertile interaction catalyzed new concepts as well as refined many fundamental concepts in logic and epistemology. Logical ideas were sharpened in these debates, which included proponents of other traditions such as the Vedāntins as well. It has been observed that Navya-Nyāya is closer to modern logic.

One another important concept of Indian logic is *Vyapti*. The Sanskrit term '*vyapti*' is rendered into English in variety of ways as 'pervasion', law or law like statement etc. In the present contexts, especially in logic and epistemological contexts '*vyapti*' captures the sense of inductive or empirical generalization. *Vyapti* or law like statement is one of the premises, and Indian thinkers have shown considerable interest in the formulation of vyapti or law like statement.[9] We can find a good deal on Vyapti by all main systems of Indian logic. Nyāya system also deal with *Vyaptigrahyopaya*.

Jains developed a logical formulation that was distinct from the standard account of logic in ancient and medieval India. The seven-fold method of conditionally valid predication or the (Saptabhangi-Nayavāda) is considered as an important element in the Jain system. The theory of multiplicity of view points (Anekāntavāda) is an integral part of Jain logic. According to Jain logic, the ultimate principle should always be logical and no principle can be devoid of logic or reason. Thus one finds in the Jain texts, deliberative exhortations on any subject in all its facts, may they be constructive or obstructive, inferential or analytical, enlightening or destructive. In the process, the Jains came out with their doctrines of relativity used for logic and reasoning:

Anekāntavāda – the theory of relative pluralism or manifoldness
Syādvāda – the theory of conditioned predication and
Nayavāda – The theory of partial standpoints

These Jain philosophical concepts made most important contributions to the ancient Indian philosophy, especially in the areas of skepticism and relativity. Jaina theory of anekāntavāda can be taken to form the basis of a semantics for a simple propositional

language. The semantics validates the Jaina theory of sevenfold predication – both about the language and within the language. Jaina logic can therefore be given a rigorous formulation in terms of modern logical techniques. But we have also used these techniques to interrogate Jaina logic itself, particularly concerning its account of assertion and its relativism. The techniques not only highlight certain of its problematic features but also provide possible solutions to some of those problems. The application of contemporary logical techniques to historical theories in Indian logic can be just as fruitful as their application to historical theories in European logic.[10]

Matilal notes that logic in Indian arose out of two different traditions- one, the tradition of debate and dialectics, and the other, the epistemological, empirical tradition, because of which the distinction between logic and epistemology, as in Western logic, is not made in Indian schools of logic. Ganeri, a recent scholar on Indian Logic, has rightly pointed out that the early European scholars approached Indian logic with little knowledge about many other complexities and developments in Indian logic such as the Navya-Nyāya and with a presumption of intellectual superiority. It also is a fact that these had namely Western logic. It is possible that they projected element of their own philosophy legacy on to the Indian thought systems while trying to understand them.[11] Here is a suggestion made by Sarrukai in regards to Indian logic is, "for Indian logic, it seems that the central concern was to make logic scientific. This implies that logical statements have to respond to empirical concerns. While this move militates against the very notion of logic in the western tradition, it is precisely this demand on logic that makes Indian logic essentially correlated to scientific methodology."[12]

Here we are going to conclude this article with this statement that Indian logic has a rich tradition and there are varieties of views and questions related to Indian logic. In the late 18th century, British scholars began to take an interest in Indian philosophy and discovered the sophistication of Indian study of inference. We should concentrate on this aspect of Indian philosophy, then we can have a good approach to deal with Indian philosophy honestly because the very essence of Indian philosophy is it's logically

analysis that help us to understand all theories concerning to metaphysics and epistemology.

Notes & References:

1. Safaya, Raghunath, *Indian Psychology*, New Delhi: Munshiram Manoharlal Publishers Pvt. Ltd.; 1976,p.02.
2. Matilal, Bimal Krishna "Introducing Indian Logic" in *Indian Logic: A Reader*, Edi. by Jonardon Ganeri, Surrey Curzon Press,2001, p.184.
3. ibid, p.183.
4. Chakraborti, Chhanda , *Logic: Informal, Symbolic & Inductive*, New Delhi: Prentice hall of India Pvt. Ltd.,2007,p.498.
5. Sarrukai, Sundar, *Indian Philosophy and Philosophy of Science*, Centre for Studies in Civilizations, New Delhi, 2005,p.51.
6. Matilal, Bimal Krishna "Introducing Indian Logic" in *Indian Logic: A Reader*, p.184.
7. Sarrukai, Sundar, *Indian Philosophy and Philosophy of Science*,p.54.
8. Bhattacharya, Sibajiban "Some Aspects of the Navya-Nyāya Theory of Inference" in *Indian Logic: A Reader*, Edi. by Jonardon Ganeri, Surrey :Curzon Press,2001,p.162.
9. Ingallali, R.I. "Inductive Confirmation in Indian Logic" in *Journal of Bihar Philosophical Research*, Year 2005, p.01.
10. Priest ,Graham "Jaina Logic :A Contemporary Perspective" in *History and Philosophy of Logic*,29 August, 2008, p.277.
    URL: http://dx.doi.org/10.1080/01445340701690233
11. Chakraborti, Chhanda , *Logic: Informal, Symbolic & Inductive*, p.501.
12. Sarrukai, Sundar, *Indian Philosophy and Philosophy of Science*, p.13.