

BRAJENDRANATH SEAL ON THE SCIENTIFIC METHOD OF THE HINDUS: SOME REFLECTIONS

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Acharya Brajendranath Seal in his *The Positive Sciences of the Ancient Hindus* offered a thorough analysis of the method of science followed in ancient India after concentrating to various process of knowing like perception, observation, inference and hypothesis and fallacies of observation. In this context a question can be raised why the adjunct 'positive' is conjoined with the word 'Science'. Is there any science which is 'negative' (as opposed to 'positive') in character? It seems to me that Seal was an advocate of positive science in the sense that the scientific decisions are always based on experiment in life and experienced world, but not in laboratory alone. Positivity of science means the scientific principles based on reasoning or logic without entertaining any blind faith. Whatever is experienced in our mundane life is subject to thorough intellectual analysis to prove its positivity. That is why; there is hardly any reference to the Vedānta and Mīmāṃsā texts. Seal has highlighted the criterion of truth after the Buddhists. That knowledge is valid which prompts us to a successful activity (*samvādipravṛtti*). If otherwise (*visamvādipravṛtti*), it is to be taken as an invalid one. Though this criterion is said to be adopted by the Buddhists, Seal has corroborated that this is unopposed or supported by Vātsyāyana, a Nyāya thinker. In fact, Seal was deeply influenced by Buddhism and Nyāya, according to whom knowledge can be taken as true if it has pragmatic value. Both the systems judge a piece of cognition as a valid one from the fulfilment of our purpose. In fact, the commentary on *Nyāyasūtra* called *Vātsyāyanabhāṣya* is started with this problem- ' *pramāṇato ' rthapratipattau pravṛttisāmarthyād arthavat pramāṇam* '. Evidence is considered to be true or veridical as opposed to *pseudo-pramāṇa*, as it leads to successful inclination as opposed to an abortative one. This fact is described by Seal as 'the harmony of experience' (*samvāda*).¹

A Naiyayika could say that doubt arises when there is a cognition touching both the alternatives (*ubhayakotikajñāna*). When an object is known as either a man or a trunk of a tree, it is true that there is some lack of cognition. It can be interpreted that when there is

cognition of a man, it is due to the lack of cognition of a trunk of a tree. When there arises the cognition of a trunk of a tree, it is due to the lack of the cognition of a man. Whatever may be the case we must admit that there is certainly a cognition sometimes taking man as its content and sometimes taking a trunk of a tree as its content. An individual's mind moves between two cognitions successively, but not simultaneously. That is why; such wavering cognition arises from the mental state metaphorised as the movement of the cradle (*dolācalacittavṛtti*). The cognition of a man may be caused by the absence of the cognition of a trunk of a tree or otherwise, but the existence of the cognition of a man for one moment and the cognition of a trunk of a tree for the next moment must be accepted. In this case the existence and non-existence of the peculiarities in a man is known in the successive moment, but not simultaneously as accepted by Nagarjuna². Herein lies the difference between two schools-Bauddha and Nyāya.

When the determinants are not available in determining the nature of an object, doubt arises there. The absence of determining proof of an entity, which is the object of knowledge, is the cause of doubt. Doubt plays a positive role in generating critical thinking of mankind after removing blind faith from them. In other words, doubt is the revealer of the windows of our critical and open-minded thinking. Considering this aspect Gautama has enumerated it as one of the sixteen categories, the right cognitions of which lead us to the land of success-mundane and transcendental (*nihsreyasādhiḡamaḡ*). To Vātsyāyana doubt has been given a due emphasis in Nyāya on account of the fact that logic can alone be applied to the object in doubt, but not to an object which is purely known or unknown (*Tatra nānupalabdhe na nirṇite'rthe nyāyah pravartate. Kim tarhi? sams'ayite'rthe - Nyāyabhāṡya on sūtra n. 1.1.1.*). From this statement it is proved that Nāgārjuna's thesis that something is either known or unknown is wrong. If it is known, he says, it is a kind of valid cognition. If it is unknown, it is to be taken as illusion. Vātsyāyana is of the opinion that this is the ideal case where we can have doubt. To him doubt is a kind of intellectual activity arising out of the confrontation by two different philosophical positions called *pakṡa* (thesis) and *pratipakṡa* (antithesis) at the same time.³ To think an entity as both known and unknown does not lead us to admit its fictitious character, but it is a kind of doubt. This view of the Naiyayikas will find support in Vācaspati Miśra's *Bhāmatī* where he accepts the dubious character of an object as a criterion of an enquiry about it.⁴

We may recall Udayana in this connection. To him if there is mistrust among the family-members, socialbeings etc., our empirical doubt will not be possible. If, on the other hand, there is no doubt, there does not arise any philosophical enquiry. (*S'amkā cedanumāstyeva na cecchankā tatastarām / vyāghātāvadhīrōs'ankā tarkah s'amkāvadhirmatah / /*)⁵ If there is doubt, there is inferential cognition or an inferential procedure is to be resorted to with a view to resolving doubt. If not, inference is established easily. Such doubt is permissible so long there does not arise self-contradiction (*vyāghāta*). Sometime the method of *Tarka* (*reductio-ad-absurdum*) is taken into account. From this it is proved that doubt has got a positive role in philosophical methodology if it is taken as a category.

The Buddhists in general and Nagarjuna in particular cannot accept the perceptibility and imperceptibility simultaneously due having various presuppositions in their minds. To them a perceptual entity remains only for a moment as per the theory of momentariness and hence it is of *svalakṣaṇa* nature. An imperceptible entity does not come under the purview of it due its vitiation by the mental constructions (*kalpanā*) and hence it bears a character of *sāmānyalakṣaṇa*. On account of such ontological commitments the Buddhist cannot feel the existence of the contradictory properties in an entity. For this reason Nagarjuna does not accept the existence and non-existence of the peculiarities of an object at the same time leading them to the non-acceptance of doubt as an existent object. For this reason Nagarjuna cannot accept the dubious character of an object which is *svalakṣaṇa* (unique particular) in nature. Though such presuppositions behind the formulation of certain theories have been ignored by Seal, he has highlighted the existence of doubt beautifully. The doubt of deviation between the pervader and the pervaded is compared with demon (*pis'āca*) which has been vehemently criticized by Udayana in his *Nyāyakusumāñjali* by the verse beginning with '*naiṣā s'amkā pis'ācim*'. If there is no dependence on the rule of causality, we shall be landed in contradiction called *vyāghāta*. Seal has largely shown his philosophical leaning towards Nyāya. If I believe in such causality, there is no contradiction as explained above.⁶

In order to bring clarify about some concept the Naiyayikas have forwarded their argument in a very precise educative manner of *uddes'a* (mere introduction of the object), *lakṣaṇa* (definition of the object) and *parīkṣā* (critical examination of the same), which makes

a particular system more philosophically alive. If a researcher wants to know something, he may be given a rough idea about the object through *uddes'a* (*nāmnā samkīrtanam uddes'ah*)⁷. At the successive moments one should give a definite description of the object which is called *lakṣaṇa*. To describe an uncommon characteristic of the intended object, which can eliminate it from other object ('*atattva-vyacchedako dharmah*') is called 'definition' (*lakṣaṇa*). At the end it is essential to judge what is said earlier as definition and to see whether it is free from defects or not. *Parīkṣā* hence is to be taken as an ascertainment of reality (*tattvanirṇaya*). *Parīkṣā* or examination is a method which examines a theory to know whether it is such or not such (*lakṣitasya idamittham bhavati iti nyāyatah parīkṣanam parīkṣa*)⁸. The term *parīkṣa* may otherwise be described as *ānvikṣikī* (logic) which is taken as a lamp of all *sāstra* - *s* *pradīpaḥsarva* – *sāstrāṇām*' – *Vātsyāyanabhaṣya* on 1.1.1.).

Seal advocates that while investigating any subject the Indians adopt the procedure of the enumeration of the subject-matter (*uddes'a*), ascertainment of essential characters by definition (*lakṣaṇa*) and examination or verification called *parīkṣā*. Apart from these Seal has mentioned another method called *upalakṣaṇa* (description) for knowing an object after following the tradition. If an object is known by some temporary definition (*tatasthalakṣaṇa*), it is called *upalakṣaṇa*. When the house of Debadatta, for example, is known with the help of the existence of a crow sitting in front of it (*kākaiḥ devadattagrham*), it is *upalakṣaṇa* of the house, because the sitting crow may move to some other places. Moreover, any truth established by this three-fold procedure is called a *siddhānta* or an established theory. These scientific methods are merely ancillary to the *pramāṇas* themselves.⁹

In the history of Indian Philosophy the *Cārvākas* believe that inference cannot be taken as a source of valid cognition (*pramā*) because the knowledge of *Vyāpti*, the uncommon cause (*kāraṇa*) of inference, cannot be known by any means and hence prediction about future is not justifiable. To them if some one gets fire from the knowledge of smoke, it is merely accidental which is technically called *yādṛcchika*, which is exemplified by the phrase '*maṇimantrauśadhādivat*'. Just as an individual being gets his desired object after holding some jewel or after chanting some *mantra* or applying some medicine, a man can get fire from the knowledge of smoke, which has no causal basis. *Vyāpti* cannot be ascertained through

perception in which internal sense-organ acts as an instrument. As internal sense-organ depends on external one in knowing an external object, it cannot produce the perceptual knowledge of an object independently. The internal sense-organ has got capacity to reveal the mental situations which are going on within, but not to reveal other objects that are capable of being perceived through external sense-organs. Inference cannot provide the cognition of *vyāpti* on account of the fact that the knowledge of *vyāpti* is the precondition for applying an inference. If the knowledge of *vyāpti* depends on an inference, the inference itself also will depend on the knowledge of *vyāpti*. Thus the knowledge of *vyāpti* or inference will never be attained due to the defect of *Infinite Regress* (*anavasthā*). Verbal testimony fails to ascertain *vyāpti*, because the import (*samketa*) existing in a term known from the meaning of a particular word is understood through the auditory perception of the words. The knowledge of the import regarding a particular meaning of a particular word is attained from the conventional usage (*vṛddhavyavahāra*) which is a form of inference. Hence the above-mentioned defect i.e., *infinite regress* will again occur here. According to some, *vyāpti* is a relation free from extraneous adjunct (*upādhi*) (*nirupadhiko sambandho vyāptih*). If it is accepted, the knowledge of the absence of extraneous adjunct is highly essential. If it is known by inference, there would occur the defect called *infinite regress* (*anavasthā*). If something has an equal pervasion with the probandum not being pervader of the probans, it is called *upādhi*. (*sādhanāvyāpakatve sati sādhyasamavyāptih*). The cognition of *upādhi* is not at all possible as it will involve the defect of mutual dependence (*anyonyās'raya*). Without the cognition of *vyāpti* the equal pervasion with the probandum (*sādhyasamavyāpti*) cannot be properly understood. The terms like '*vyāpya*' and '*vyāpakatva*' are relative in the sense without the proper idea of *vyāpti* this term are unintelligible and hence without the proper knowledge of *vyāpti* the knowledge of *upādhi* is not possible. For this reason the defect of *anyonyās'raya* occurs. Depending on the foregoing arguments it is concluded that the knowledge of *vyāpti* cannot be attained through perception etc. leading to the impossibility of inference as a source of valid cognition (*pramāṇa*). In connection with the refutation of the view of the Cārvākas regarding the impossibility of the ascertainment of *vyāpti* (*vyāptigraha*), the Buddhists have come forward and are of the opinion that *vyāpti* can easily be ascertained with the help of identity (*tādātmya*) and causality (*tadutpatti*). To them *vyāpti* remains between an object and the particular nature remaining

in it. In the inference ‘It is a tree, as it has got the property remaining in *s'ims'apā* (*ayam vrkṣaḥ s'ims'apātvāt*) *s'ims'apā* is an object in which there is the invariable relation of treeness. If the causal relation remains in two objects, the *vyāpti* in the form of *tadutpatti* remains between them. In the inferential form- ‘The mountain has got fire, as it has got smoke’ (*parvato vahnimān dhūmāt*) there is the relation of cause and effect between smoke and fire, which is *vyāpti*. The inseparable relation in the form of *vyāpti* is called *avinābhāva*. The term ‘*vinā*’ means the locus of the absolute negation of a *sādhya* (*sādhyāntābhāvavān*). The meaning of the negative particle ‘*na*’ (*nanārtha*) is connected with an absence (*abhāva*). Hence the meaning of the term ‘*avinābhāva*’ would be the locusness of the absence of the superstratumness determined by the locus of the absence of the probandum (*sādhyāntābhāvavān*)¹⁰. As to this Seal thinks that the Hindu analysis of Anumāna as a Formal-Material Deductive Inductive Inference is more comprehensive and more scientific than Aristotle’s or Mill’s analysis of syllogism (Mediate inference). As the principles of causality and identity have been introduced in a scientific manner, there does not arise any question of inductive leap. (*The Positive Science*, p. 192)

In Indian tradition the importance on experiments and observations has been laid before formulating a particular theory. Acharya Seal has shown an example of experiment relating to the weight of air from Udayana’s *Kiraṇāvalī*. He observes: “Udayana argues that air must be a distinct and independent Bhuta, for if air were a form of the Earth-Bhuta, it would have weight, and it has none. To prove the absence of weight, he refers to an experiment. A small bladder made of a thin membrane, filled with air, will not cause a greater descent in the scale than the same bladder weighted empty. Hence the air possesses no weight.”¹¹ But Udayana has shown a counter-example and said that the balloon filled with smoke (or gas *dhūma*) goes towards the sky, while the air-filled balloon comes down, which proves that air has got weight. Ultimately Udayana concludes that both smoke and air have no weight at all. Vallabhacarya in his *Līlāvati* tells that there is a tendency in certain objects to float or to come to the surface of water (“*Jalādhogamanam jalena dhāraṇam potanapratibandha unmojjanam, etacca jalasya yogasya kasyacideva patanapratibandhasāmarthyāt.*”)¹²

Seal has drawn our attention to a theory of Vallabhācārya who 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. From this Seal has drawn a conclusion

that he was 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 will be equivalent to weight of the volume of water displaced by it.

In order to highlight Seal's position regarding the experimental side of Hindu scientific thoughts a few cases may be cited from the Hindu tradition. In the *Adhyāsa - bhāṣya* S'ankara has emphasized that even the animals apply *pramāṇa* before they act. They hear the sounds from others. If they are considered favourable to them, they inclined to certain activities. If otherwise, they refrain from doing the same. If they are attacked by an angry man with a stick in hand, they fly away from the place considering this attitude an attempt to hurt them. If an individual goes to them with a handful of green grasses, they go to them without flying away from them. The incidents prove that the animals like human beings can apply proof for knowing (*pramāṇa*) with regard to certain object.¹³

It has been argued by the *Ātmakhyātivādin*-s that the defect existing in sense-organs gives rise to illusion. It is also not tenable, because it is the nature of defect to destroy the potency of the cause to produce on object. If it is so, the defect of the sense-organ cannot produce a particular object, but it is not possible for it to produce another one. If a seed of a tree is defective, it cannot produce tree, but it is impossible to think that it can produce other object.¹⁴

The Naiyāyikas do not agree with this. To them a defective cause may produce a different type of effect (*kāryāntara*). For it is found that a particular creeper called *Betralatā*, if burnt by forest-fire (*dābānala*) can produce a banana tree. This is an example taken from the botanical world. Another example is put forth from the physiological world. It is pointed out that an ulcer in the stomach increases the hunger of an individual instead of loss of it.¹⁵

To Seal Indian thinkers have adopted some logical tools in philosophizing so that no superstitious, illogical and unscientific ideas find any room for philosophical analysis. That is why, the defects like circularity (*anyonyās'raya*), *gaurava*, fallacy (*hetvābhāsa*), *svakriyāvyāghāta* (contradiction in respect of one's own speech) are always discouraged and methods of agreement and different (*anvaya - vyātireka*) and *Tarka* (*Reductio-ad-*

absurdum) along with others mentioned earlier have always been encouraged to make our conclusions more scientific. For this reason perhaps, Seal did not mention anywhere *S'ruti* as a *pramāṇa* which may be taken as based on transcendental beliefs or reasoning, but not the mundane one.

Notes and References

1. Brajendranath Seal : *The Positive Science of the Ancient Hindus*, Sahitya-Samsad, Kolkata,2001, p.181. Henceforth, *Positive Sciences*. *Nyāyabhāṣya* on *Sūtra* No. 1.1.1.
2. Nagarjuna's *Vaidalyaprakarana*, *Sūtra*No. xxiii. (Tibetan with English trs.), Edited by Fernando Tola & Carmen Dragonetti, Motilal, 1995. Henceforth *Vaidalyaprakaraṇa*.
3. '*Vimṛsyapakṣapratipakṣabhyāmarthāvadhāraṇam nirṇayaḥ*' *Nyāyasūtra*,1.1.4
4. "Atha yadasandigdhamaprayojanam ca na tatprekṣāvatpratipitsāgocaraḥ"
Bhāmatī on
Adhyāśabhāṣya.
5. *Nyāyakusumāñjali* - 3/7.
6. *Positive Sciences*, p. 205
7. '*Tatra nāmadheya - s'abdena padārtha - mātrasyabhidhānam uddes'ah*'
Nyāyabhāṣya, 1.1.2.
8. *Nyāya - dars'ana* , Vol.1, Edited by Phanibhusan Tarkavagisha, p.82, WBSBB, 1989.
9. *Positive Sciences*, p.214
10. *Positive Sciences*, pp. 185-188. Also, *Sarvadars'anasaṅgraha* by Sayanamadhava,
Cārvāka and *Bauddhadarsana*, Bengali trs by Satyajyoti Chakraborty, Sahityasri, Kolkata.
11. *Ibid.* p.184
12. *Ibid.*, p.185
13. "*Yathā hi pas'vādayaḥsabdādibhiḥ's'rotrādīnām sabdādivijñāne pratikūle jāte tato nivartante, anukūle ca pravartante, yathā dandodyattakaram puruṣamabhimukhamupa mām hantumicchati ti palāyitumārabhante,*

harita-tr̥ṇa pūrṇa - pāṇimupalabhya tam pratyabhimukhī bhavanti."

Adhyāśabhāṣya, Bhāmatī Bengali *tr̥ṣ* by Srimohan Bhattacharya, Kolkata, 1973, p.49.

14. "*Doṣasahitānām teṣām mithyāpratyaye'pi sāmāthyamiti cenna, doṣānām*

"kāryopajanansāmāthyam vidhātāmātre hetutvād. Anyathā duṣṭādapi

kutajavījātbatankuropattiprasangāt." *Bhāmatī*, pp.69

15. "*Dr̥ṣtam ca duṣṭānām karaṇānamoutsargika - kāryam pratibandhena*

kāryāntaropajananasāmāthyam, yathā dābāgnidagdhānām betravījānām

kādālīkāndojanakatvam bhasmakaduṣṭasya caudaryasya tejaso

vahvannapacanamiti." *Ibid*, p.79.