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CONTENTS

Buddhist Science of Logic from Nālandā and Vikramaśilā to Tibet (Period 400-1000 AD)

Buddhadev Bhattacharya

Bihar, the ancient land of Buddha, has witnessed a golden period of Indian history. This fertile soil has given birth to innumerous intellectuals who spread the light of knowledge and wisdom, not only in the country but in the whole world. According to ancient history of Bihar, Prince Siddhartha attained enlightenment, became the Buddha at the present town of Bodh Gaya in central Bihar, and the great *dharma* of Buddhism was spread. It is also here that Mahāvīra, the founder of another great philosophy, Jainism, was born and attained *nirvāṇa.*

At Nālandā, the world's first seat of higher learning - a university, was established during the Gupta period. It continued as a seat of Buddhist learning till the Middle Ages when the Muslim invaders burned it down. The nearby town of Rājgīr was the capital of the Mauryan Empire during the reign of Bimbisāra. These places were frequently visited by Gautama the Buddha and Mahāvīra. This glorious history of Bihar lasted till around the middle of the 7th or 8th century A.D. i.e., the Gupta Period, when, with the conquest of almost all of northern India by invaders from the middle east, the Gupta dynasty also fell a victim.

For its geographical location, natural beauty, mythological and historical importance, Bihar feels proud of the assets it has been gifted by time. And for its moral contributions in the fields of arts, literature, religion and spiritualism, it knows no competitors. Centuries old stories related to this land are told even today. The state is the same kingdom, which once upon a time ruled the country as well as the neighboring

countries. Many great rulers have lived here, and it fills us with a sense of pride when we think of Bihar as the 'Karmabhūmi' of Gautama the Buddha and Mahāvīra. This chapter will try to focus on the growth and development of the Buddhist Science of Logic from the 4th century AD to 10th century AD and mention the famous logicians in the state of ancient, medieval and modern Bihar.

Origin of *ānvīkṣikī* or Logic

Ānvīkṣikī is synonymous to Logic. *Ānvīkṣikī* is the science of inquiry. *Ānvīkṣikī* deals with the theory of reasons, was developed into designated especially as the *Ānvikṣikī* or *Ānvīkṣikī* per excellence. We find the term *Ānvīkṣikī* used in this special sense of logic in the *Manusaṁhitā, Gautama Dharma Sūtra, Rāmāyaṇa, Skandapurāṇa, Mahābhārata, Yājñavalkya-saṁhita* etc. In about 327 B.C., Kauṭilya Characterised *Ānvīkṣikī* (evidently Logic) as a highly useful science, which equipped people with reasons for the estimation of their strength and weakness, kept their intellect unperturbed in prosperity and adversity, and infused into their intelligence, subtlety and power.[1]

Ānvīkṣikī, in virtue of the theory of reasons predominating it was called *Hetu-śāstra* or *Hetu-vidyā,* the art of discussion, in as much as it dealt with rules for carrying on disputations in learned assemblies called *pariṣad. Tarka-vidyā,* or *Vāda-vidyā,* is referred to in ancient Indian literature. *Ānvīkṣikī* was, as we shall see later, also called *Nyāya-śāstra,* the science of true reasoning.[2]

Nyāya was one of the various names by which *Ānvīkṣikī* was designated in its logical aspect. With the introduction of this word, the ancient school of Indian Logic entered upon the second stage of its development. In the first stage, Logic was generally designated as *Ānvīkṣikī, Hetu-śastra* or *Hetu-vidyā,* but in the second stage, it was, as we find in the *Nyāya-bhāṣya,* widely known as *Nyāya-śāstra.*

The word *nyāya* popularly signified 'right' or 'justice', 'method', 'analogy' or 'maxim', and is used in the sense of Logic. *Nyāya-śāstra* is therefore, the science of right judgment or true reasoning.

Origin of the Buddhist Science of Logic

The subject matter of the entire teachings of Śākyamuni Buddha are based on two systems which are known as the interpretative and definite. In another way, it can be said that they are based on manifested and hidden phenomena. For the general people, there is no other way but to depend upon the logical method to understand the subject matter dealing with hidden phenomena. It is so, because, such issue is totally the object of inferential cognition and beyond the object of their direct perception. For this reason, the ordinary persons or practitioners depend upon the logical system, especially the inferential system, in order to gain the precise understanding of the system of the four noble truths, the theory of no-self, the theory of momentariness, theory of *śūnyatā* and so forth in a proper way. Therefore, it is explained that the Buddhist Logic deals with the problem of epistemology and valid reasoning. It lays down the rules and systems which are essential to gain faultless and accurate understanding of the object of knowledge. It is utilized to resolve complex philosophical problems and unveil the hidden meanings of the *Buddhavacana* or teachings of Gautama the Buddha. It is also called the magical key to open the lock of treasury of teachings of Gautama the Buddha.

Śākyamuni Buddha said in *Upāyakauśalya Sūtra:* The Bodhisattvas look for the *dharma* of Buddha through enthusiastic effort so that all beings may study the treatises on the science of logic in order to generate the thought of faith. Besides, for understanding the afflictive faults, for refuting the tents of wrong view of the non-Buddhists, for being acquainted with the skillful means for taming beings, for discriminating between the meaning spoken by the Tathāgata and word meaning of the worldly people, the Bodhisattvas study the treatise on logic.[3]

He has also been quoted in a *Tantra* text titled *Śrī Mahābalatantrarāja Nāma:*

Oh Bhikkus and wise men,
Do not accept my words just because you respect me,
But analyze yourself them as the gold smith analyzes gold through

Burning, cutting and rubbing
And then accept them[4]

In the above verse, the term 'analyze' has been used. Why is it so? It is because, Buddha asks his disciples to analyze the contents of Buddha's teachings whether those are implicit or explicit in order to acquire the right understanding of it. Further, we know that there are three types of wisdom: wisdom acquired through hearing, wisdom acquired through contemplation and wisdom acquired through meditation. Among these three, how does the second type of wisdom arise in oneself? I think until and unless one resolves the complex philosophical problems through logical reasoning, there will be no question arising this type of wisdom in oneself. And also it is not possible to cut off the root of misunderstanding and misconception without it. Therefore, regarding the importance of the Science of Logic, Prof. Stcherbatsky says: The Buddhists themselves call this science a doctrine of logical reason or a doctrine of the sources of right knowledge or simply an investigation of right knowledge.[5] In another way, it can be said that there are four philosophical schools in Buddhism. Among them, although both the *Svātāntrika* and *Prāsaṅhika* maintain that their own system is *Madhyamaka* (middle way) as they claim that they assert a middle way which is free from the two extremes of eternalism and nihilism. Moreover, each of the four schools has a different way of avoiding the two extremes. The fact is that the tenets of higher schools are excellent than lower schools. However, the adherents of each of the schools consider it advantageous to employ logical arguments for defending their dogmas and attacking those of their opponents.

Growth of the Buddhist Science of Logic

In general, the term 'Logic' is an extra-ordinary science. It could either be Buddhist or non-Buddhist. It is understood from the above line that the logical system is not a later development. But regarding the Buddhist logic, it can be traced back to Śākyamuni Buddha. Among the leading Buddhist masters, Nāgārjuna, who was the pioneer of *Madhyamaka* Philosophy of Nālandā University, was a great logician. He freely employed the logical method in his compositions. The

description of name of a text in logic titled *'Pramāṇa-vihetana'* ascribed to Nāgārjuna is also found in some books. His text *'Vigraha-vyāvartanikārikā'* deals with the criticism to the *Nyāya* theory of *Pramāṇa* laid down by Akṣapāda. His another work titled *Upāyakauśala-hridaya-śāstra* is stated to be a work on the art of logic. He composed the text by dividing its subject matters into four chapters: 1. an elucidation of debate, 2. an explanation of the points of debate, 3. an explanation of the truths, and 4. the analogue or far-fetched analogy. After Nāgārjuna, one of his principal disciples Āryadeva wrote number of texts on *Madhyamaka* Philosophy, all of which bear evidences of his knowledge of logic.

Asaṅga, who was the pioneer of *Vijñānavāda,* wrote numerous works which exist in Tibetan and Chinese, and few of them are restored in Sanskrit too. Among them a short summary of the logic of Asaṅga is found in the 11th volume of *Prakaraṇaya-vāca-śāstra*[6] and the 7th and 8th volumes of *Mahāyānābhidharma-saṁyukta- śāstra.*

Vasubandhu, who was a Ācārya of 5th century in Nālandā University and also was the younger brother of Ārya Asaṅga, has great contribution in the composition of texts on different subjects. Among them, *Abhidharmakoṣa* is the principal work which is available in many languages, and is also prescribed in monastic and institution's curricula for learning and teaching. According to S. C. Vidyābhuṣaṇa, three books on Logic - *Vādavidhi* (the method of debate), *Vādāvidhāna* (the course of debate) and *Vādahṛdaya* (the expedients of debate) — are ascribed to Vasubandhu. Besides, there was another work on Logic called *Tarkaśāstra,* consisting of three chapters, composed by this Ācārya, and its Chinese version still exists. Further, some Tibetan sources say that *rtsod pa sgrub pa* (Sanskrit *Vādasiddhi?)* is the first text on Logic and is said to have composed by Vasubandhu.[7] Prof. Stcherbatsky says: Vasubandhu was a renowned teacher of Logic. He himself composed three logical treatises. They had been translated into Tibetan, but an incomplete Chinese translation of only one of them exists.[8] To make it clear that he was an outstanding master in Logic, it is said that once he intended to challenge a Sāṁkhya Master named Vindyavāsi in debate who had defeated his teacher Vasumitra

in debate. But unfortunately he found that the Sāṁkhya Master, by then had already passed away. As a token to refute the text titled *Sāṁkhyasaptati* by Vindyavāsi containing his opinion, he composed a text titled *'Paramārthasaptati*.[9]

However, from the origin of Buddhism to its expansion into the four philosophical schools, there were no systematic Buddhist works on Logic, except a few fragmented works or a few stray references to that science. Diṅnāga is the earliest writer of systematic Buddhist Logical School. Actually, Vasubandhu had four close disciples: Sthiramati who was well-versed in *Abhidharma,* Vimuktisena - in *Prajñāpāramitā,* Gaṇaprabha — in *Vinaya* and Diṅnāga - in *Nyāya* or Logic. After studying Logic from Vasubandhu in Nalanda University, Diṅnāga made critical analysis on Logic, as well as, composed some independent texts on Logic by making the contents more precise and systematic, in order to defend and prove one's philosophical viewpoint against the non-Buddhists and so on. Prior to that, though this Ācārya had composed a hundred of on Logic monographs such as *Ālambanaparīkṣā, Apohaparīkṣā, Āgamaprakaraṇa* and many other, but seeing them in fragmented form, he compiled all of them into one, having six chapters, titled *'Pramāṇa-samuccaua'* or Compendium of Valid Cognition - the great Buddhist logical text. Further, there are some marks on other Logic such as *Nyāya-Praveśa* which are also ascribed to him. S. C. Vidyābhūṣaṇa says: with 450 A.D. began a period when Logic was completely differentiated from general philosophy and a large number of Buddhist writers had their undivided attention to that branch of learning.[10] On this basis, Diṅnāga is called the Father of Medieval Buddhist Logic.

Parallel Growth of Brāhmaṇical and Buddhist Systems of Logic

In the history of Indian thought, the Buddhist and Brāhmaṇical systems of logic present a unique picture of development. There is fundamental difference in their outlooks, i.e., between idealism and realism. This led to mutual refutations which continued in an unbroken line for generations of scholars resulting in the growth of a rich and vigorous literature. This parallel growth of the two systems for a long

period, each indirectly influencing the other, is rather unique. The Buddhists had bitter rivalry with other schools of thought, especially with the Mīmāmsakas. But nowhere else was their rivalry so systematic and for such a long duration as was in the case of the *Nyāyaśāstra.*

We find, the *Nyāya-Sūtra* of Akṣapāda Gautama is the first systematic treatment of logic in India. The fragments of pre- Diṅnāga Buddhist Logic, as preserved in Tibetan and Chinese and brought to light through the laborious researches of Prof. Tucci[11], show that the categories accepted in the *Nyāya* system had become the basis on which the Buddhist masters also built up their edifice. In these works, though incomplete in many cases, we find exhaustive treatment of the *Nyāya* categories like *pramāṇa, avayava, hetvābhāsa, siddhānta, chala, jāti* and *nigrahasihāna.* In their subdivisions as well as in definitions there is close agreement between the two schools. But more often these Buddhist tracts differ in the examples which in their case must conform to their distinct faith and metaphysics.

The development of the *Nyāya* system during the time of Akṣapāda Gautama and Vātsyāyana is difficult to trace. The *Nyāyabhāṣya* of the later records alternative explanations of some *Sūtras*[12], current in his time, and particular references to the Buddhist views, are traceable in his work. Till the time of Asaṅga and Vasubandhu there seems to be hardly any sharp difference between the logical positions of these two schools.

But with the advent of Diṅnāga in the field there were revolutionary changes. It was he who gave the Buddhist Logic the honour of being recognized as a distinct system dealing mainly with epistemological problems. From his time onwards the *Nyāyasūtras* ceased to exercise any authority over the Buddhists.

In the subsequent stages of the development of the *Nyāya* system we hear of no less than six commentaries[13] on the *Nyāyabhāṣya,* of which only the *Nyāyavārttika* of Bhāradvāja Uddyotakara has come down to us. The importance of the other five can be gathered from the later Buddhist works where they have been quoted and criticized. Uddyotakara in the very opening of his *Nyāyavārttika* refers to the bad logicians. To dispel their ignorance was his incentive to write the

exposition on the *Sūtras* of Akṣapāda. He criticizes the views of Nāgārjuna, Vasubandhu and Diṅnāga.

Uddyotakara in his turn was ruthlessly criticized by Dharmakīrti, the grand disciple of Diṅnāga. He was the greatest Buddhist logician who over-shadowed his predecessors, and can be recognized as one of the four original thinkers of India who commanded respect even outside the sphere of their influence. The others are Bhartṛhari — the Grammarian, Kumārila—the Mīmāmsaka and Śaṅkara—the Vedāntin.

Every system of philosophy present at that time received a shock and new activities followed everywhere to meet Dharmakīrti's objections. Brāhmaṇical philosophers had to reshape their own systems and, sometimes, read new meanings in their old *Sūtras,* which probably their authors did never think.[14] The *Pramāṇavārttika* among the works of Dharmakīrti, though based on Diṅnāga's *Pramāṇasamuccaya,* surpassed the original in importance and became the basis of a huge literature in its turn.

After Dharmakīrti, the *Nyāya* School produced Śaṅkara Aviddhakarṇa, Adhyayana and others whom Śāntarakṣita and Kamalaśīla quoted and criticized in the *Tattvasaṁgraha* and the *Tattvasaṁgrahapañjikā* respectively. After these two, we also hear of many *Nyāya* Schools like Bhāsarvajña Trilocana, Satānanda, Vittoka, Narasimha, Sānātani etc. But the real opponent of Dharmakīrti arose in Vāchaspati Miśra, who eclipsed most of his predecessors in the *Nyāya* School, of course, with the honourable exception of the *Sūtras,* the *Vāṣya* and the *Vārttika* to which his *Nyāyavārttika-tātpāryaṭīkā* was indirectly related.

Between Vācaspati and Udayanācārya, the author of the *Nyāyavārttika-tātpāryapariśuddhi,* there was a very long gap during which we do not come across any Buddhist author refuting the views of Vācaspati, and at the same time himself being the object of criticism of Udayanācārya, who upheld Vācaspati's position against the Buddhists. The discovery of the works of Jñānaśrīmitra and Ratnakīrti to some extent fills this gap. The works of these two authors serve as a key to the proper understanding of the works of Vācaspati on the

one hand and that of Udayanācārya on the other. They present before us a picture of the living scholarly antagonism between the Brāhmaṇical and Buddhist philosophers. They attest to the inherent strength of the Buddhist position which could defy the onslaughts of a master mind like Vācaspati. There is a common belief that Buddhism was uprooted from the Indian soil by the efforts of Kumārila, Śaṅkarācārya and others. But long after them we find Buddhist monasteries in their pristine glory and Buddhist scholars making vigorous intellectual endeavors. The end of Buddhistic speculations was marked by the advent of Islam. Moreover, Buddhism was not uprooted by intellectual activities alone. Vācaspati had his illustrious successor in Udayānācarya while diverse circumstances did not allow any Buddhist scholar to uphold the position of Jñānaśri or Ratnakīrti. But unsoundness of their philosophical position cannot be held responsible for it. On an examination of the works of these two authors in the proper perspective, one is sure to be convinced that these works are not merely idle philosophical speculations, but an outcome of historical necessity and full of intellectual vigour. They contain quotations from rare and extinct works of importance and supply us new information regarding some authors of repute. Further, they have preserved a few fragments from the works of scholars altogether unknown in the History of Indian Philosophy.

The Contentious Spirit of Buddhist Logic

Unlike the Jainas, the Buddhists in holding their logical tenets offered a bold challenge to the Brāhmaṇas. In the 2nd century A.D. the Brāhmaṇic logician Akṣapāda brought out his comprehensive work on Logic called *Nyāyasūtra,* in which there was an explanation of sixteen categories, including four means of valid knowledge and five members of a syllogism. The Buddhist logician Nāgārjuna, who flourished in the 3rd century AD affirmed in opposition to Akṣapāda that a syllogism consisted of three members only. The Brāhmaṇic commentator Vātsyāyana (about 400 AD) attempted in vain to defend the position of Akṣapāda until he was overthrown by the Buddhist logician Diṅnāga who reduced the sixteen categories of *Nyāya Sūtras*

to one, viz. *pramāṇa* and the four means of valid knowledge to two, viz. *pratyakṣa* and *anumāna.* "It was to dispel the error of Diṅnāga" that the Brāhmaṇic logician Uddyotakara wrote his *Nyāyavārttika* about 635 AD. He in his turn was assailed by the Buddhist logician Dharmakīrti who defended Diṅnāga.

After Uddyotakara there was a long gap in the succession of Brāhmaṇa writers on Logic until when the 9th century AD Vācaspati Miśra wrote his *Nyāyavārttika-tātparya-ṭīkā.* By that time the Buddhist Logic had achieved a great triumph, as is evident from the Buddhist writings of Devendra Bodhi, Śākya Bodhi, Vinīta Deva, Ravi Gupta, Jinendra Bodhi, Śānta Rakṣita, Kamala Sīla, Kalyāṇa Rakṣita and others. In the 9th and 10th centuries, Dharmottara, Areṭa and other Buddhist logicians, having attacked the Brāhmaṇic authors, Udayanācārya, a Brāhmaṇa of Mithilā brought out at the close of the 10th century AD, his *Ātma-tattva-viveka,* etc., to refute the views of the Buddhist. Subsequently, a large number of logicians such as Jina Mitra, Pragñākara Gupta, Jetāri, Śaṅkarānanda and Mokṣākara Gupta appeared in the field to vindicate the Buddhist Logic from the attack of Brāhmaṇas. For nearly 800 years from 300 AD to 1100 AD the Buddhists fought valiantly against the Brāhmaṇas, but at last their principles of thought were almost entirely absorbed into Brāhmaṇic Logic which left no room for an independent existence of the Buddhist Logic.

A great Buddhist logician, Jñānaśrīmitra gives us a chronological list of the Ācāryas of the *Vijñānavāda* school. According to him, Ārya Asaṅga received secret teachings from Maitreyanāthapāda. Vasubandhu inherited the same from Asaṅga. Diṅnāga followed Vasubandhu. Next to Diṅnāga, Dharmakīrti was the most important scholar. Prajñākara came the next. It may be pointed out in passing that a number of original works of these Ācāryas have been preserved in Tibet, and their photographs are now deposited in the Bihar Research Society, Patna.

Ratnakīrti quotes from Ācārya Maitreyanāthapāda. His regard for Dharmakīrti knew no bounds is as evident from the epithets used by him. To Ratnakīrti, Dharmakīrti is *Bhagavān* and *Bhuvanaikaguru.* Many

verses from the *Pramāṇavārttika* of Dharmakīrti are found quoted in Ratnakīrti's works.

Buddhist Science of Logic and Logicians

We have seen that during the period from the origin of Buddhism in the 6th century BC to its expansion into four philosophical schools in the 4th century AD there was no systematic Buddhist works on Logic, but only a few stray references to that Science in the works on philosophy and religion. About 300 AD, Nāgārjuna wrote a tract on Logic which was a mere review of the common topics of the Ancient School of Brāhmaṇic Logic. During the 400-500 AD, Maitreya, Asaṅga and Vasubanhu handled Logic, but their treatment of it was merely incidental, being mixed up with the problems of the Yogācāra and Vaibhāṣika Schools of philosophy. Since 450 AD began a period when Logic was completely differentiated from general philosophy and a large number of Buddhist writers gave their undivided attention to that branch of learning. The works brought out by these writers, along with those produced by the Jainas, constitute the Medieval School of Buddhist Science of Logic. Diṅnāga is the earliest known logician of this School.

Diṅnāga (about c. 450-520 AD)

Diṅnāga is just regarded as the Father of Mediaeval Logic. Both in matter and in manner his work marked distinct departure from those of his predecessors. The keenness of his insight and the soundness of his critical acumen combined to stamp him with an individuality all his own. No praise seems too high for him.

Ācārya Diṅnāga is called in Tibetan Phyogs-glaṅ. He was born in a Brāhmaṇa family in Siṁhavaktra near Kāñcī (in Channaya). By Nāgadatta, a Paṇḍita of the Vātsīputrīya sect, he was admitted to the religious system of that sect and attained erudition in the *Tripiṭaka* of the *Sarvāstivādin.* Later on, he became a disciple of Ācārya Vasubandhu with whom he studied all the texts of the *Hīnayāna* and *Mahāyāna.* A few years later he was invited to Nalanda University where he defeated Brāhmaṇa Sudrjaya and other Tīrtha dialecticians and won them to the doctrine of Gautama the Buddha.

Pramāṇa-samuccaya

The *Pramāṇa-samuccaya* is one of the grandest monuments of Diṅnāga, It is said to have been composed while he was residing on a solitary hill near Veṅgi in Andhra. Seeing that the Śāstras on Dialectics written earlier by him remained scattered about, he resolved to collect them. Accordingly, putting together fragments from particular works, he engaged himself in compiling in verse a compendium called the *Pramāṇa-samuccaya.* A Brāhmaṇa named Īśvarakṛṣṇa surprised at this wonder came to Ācārya Diṅnāga and finding that he had gone out to collect alms, wiped out the words he had written. Diṅnāga came and rewrote the words and Īśvarakṛṣṇa wiped them out again. Diṅnāga wrote them a third time and added, "Let no one wipe these out even in joke or sport, for none should wipe out what are of great importance; if the sence of the words is not right, and one wishes to dispute on that account, let him appear before me in person".[15]

The *Pramāṇa-samuccaya* is a Sanskrit work written in *anuṣṭubh* metre. The Sanskrit original is preserved in Tibetan translation in Bstan-'gyur Mdo, section in folios 1-13 Ce volume. It is devided into six chapters which are named respectively: 1. Perception, *Pratyakṣa* in Tibetan Mṅon-sum: 2, Inference for one's own self, *Svārthānumāna,* (in Tibetan Raṅ-don-gyi-rji-dpag): 3. Inference for the sake of others, *Parārthānumāna,* (in Tibetan Gshan-gyi-don-gyi-rji-dpag): 4. Reason and example, *Hetu-dṛṣṭānta* (in Tibetan Ctan-tshing-daṅ-dpe): 5. Negation of the opposite, *Apoho,* (Tibetan Tshan-sel-wa) and 6. Analogue, *jāti,* (in Tibetan Ltag-gcod).

Nyāya-Praveśa.

The *Nyāya-praveśa* or *Nyāya-praveśo-nāma-pramāṇa* is an excellent work on the Logic of Diṅnāga. The Sanskrit original is lost, the only text available is in Tibetan translation of it which extends over folios 183-188 of the Bstan 'gyur in Mdo section, Volume Ce.

Hetu-Cakra-Hamaru (Logic of Nine Reasons)

The *Hetu-cakra-hamaru* is another small treatise on Logic of Diṅnāga. The Sanskrit original is lost, the only text available is in Tibetan

translation of it which extends over folios 193-194 of the Bstan 'gyur in Mdo section. In this work Diṅnāga has analysed all nine possible relations between the middle and the major terms, and found that there are two relations among them which conform to the three characteristics of the middle term already laid down, and remaining seven relations are at variance with those characteristics. Accordingly he has concluded that only two relations are valid.

Pramāṇa-Samuccaya-Vṛtti

The *Pramāṇa-samuccaya-vṛtti* is a commentary on the *Pramāṇa-samuccaya* by Diṅnāga himself. The Sanskrit original of this work is lost, the only text available is in Tibetan translation of it which extends over folios 13-96 of the Bstan 'gyur in Mdo section, Vol. Ce. The Tibetan translation was prepared at the command of king Rigs-ldan-rgyal-po by famous Indian scholar Vasudhara Rakṣita, who was, as it were, the crest gem of logicians, and the Tibetan interpreter Sha-ma-dge-bsñen-siñ-rgyal. The text is divided into six chapters corresponding to those of the *Pramāṇa-samuccaya* itself.

Pramāṇa-Śāstra Nyāya Praveśa

Pramāṇa-Śāstra Nyāya praveśa is another work on the Logic of Diṅnāga. It was translated into Chinese and the Chinese version was translated into Tibetan. The Sanskrit original of the work appears to be lost but available the text in Tibetan in folios 188-193 of the Bstan 'gyur in Mdo section, Vol. Ce.

Ālambaṇa-Parīkṣā

Ālambaṇa-parīkṣā is another important work of Diṅnāga. The Sanskrit original of the work appears to be lost but it is available in Tibetan translation in folio 180 of the Bstan 'gyur in Mdo section, Vol. Ce. *"An Examination of the Objects of Thought"*. It begins with an invocation to Buddha and all the Bodhisattvas.

Ālambaṇa-Prīkṣā-Vṛtti

Ālambaṇa-parīkṣā-vṛtti is a commentary on the *Ālambaṇa-parīkṣā* by Diṅnāga himself. The Sanskrit original of the work appears to be lost but it is available in Tibetan translation, folios 180-182 of the Bstan 'gyur in Mdo section, Vol. Ce.

Trikāla-Parīkṣā

Trikāla-parīkṣā is another important work of Diṅnāga. The Sanskrit original of the work appears to be lost but it is available in Tibetan translation, folios 182-183 of the Bstan 'gyur in Mdo section, Vol. Ce.

Śankara Svāmin (about c 550 A.D.)

Śankara Svāmin, as it appears from the Chinese records, was a pupil of Diṅnāga. He seems to have been a native of Southern India. Logic is said to have been handed down by Diṅnāga through Śankara Svāmin and ten other masters to Śīlabhadra, who was the head of the Nālandā University and a favourite teacher of Hwen-thsang, in 635 AD. According to the Chinese Tripiṭaka, Śankara Svāmin was the author of a work called *Hetuvidyā Nyāya-praveśa-śāstra* or *Nyāya-praveśa-tarka-śāstra* which was translated into Chinese by Hwen-thsang in 647 AD. The text is different from Diṅnāga's *Nyāya-praveśa-nāma-pramāṇa.*

Dharmapāla (about 600-635 AD)

Dharmapāla, a logician, was a native of Kāñcīpura in Drāviḍa. He was admitted in Nalanda University in which he acquired great distinction. Subsequently, he became the head of the University. He must had retired from Nalanda by 635 AD when Hwen-thsang visited it and found that Śīlabhadra had succeeded him in the headship of the University. Dharmapāla, together with Bhartṛhari, composed a *Veda-vṛtti* on Pāṇini' s grammar.

He was a follower of the Yogācara philosophy and the author of several works, such as

1. *Ālambaṇa-pratyaya-dhyāna-śāstra-vyākhyā*
2. *Vidyāmātra-siddhi-śāstra-vyākhyā* and
3. *Śata-śāstra-vaipulya-vyākhyā* which was translated into Chinese in 650 AD.

Hwen-thsang, who visited India in 629 AD, found in Kauśāmbī the ruins of the monastery where Dharmapāla had refuted the arguments of the heretics.

Ācārya Śīlabhadra (about 635 AD)

Śīlabhadra was a Brāhmaṇa and belonged to the family of the king of Samatata (Bengal). He was student of Dharmapāla at the Nalanda University of which he subsequently became the head. The Chinese pilgrim, Hwen-thsang was his student in 635 AD. Ācārya Śīlabhadra was a great logician and master of *śāstras.*

Dharmakīrti (c. 600 AD)

The 7th century A.D. was the period of Dharmakīrti, the great Indian Buddhist Logician. He studied many texts on Logic, but he was not satisfied. Then arriving at Nalanda University, he studied *Pramāṇasamuccaya (Synthesis of All Reasoning)* from Īśvarsena, a disciple of Ācārya Diṅnāga and a famous logician. Later on, he composed seven texts[17] on Logic. I-Tsing who travelled India during 671-695 AD described how Dharrnakīrti made further improvement in Logic after Diṅnāga.[18] During his visit to India, he also saw the students from different parts of the world to Nalanda University to study Logic. More especially, the *Vādavidhi* of Vasubandhu and *Pramāṇasamuccaya* of Diṅnāga were selected as the texts for the study of Logic.

In Indian Buddhist Logic Dharmakīrti marks the highest watermark. On account of his vigour and method, he has been described by Professor Stcherbatsky of Leningrad University as "the Indian Kant". Prof. Stcherbatsky has written a treatise in two volumes on his published work *Nyāya-vindu,* under the title *Buddhist Logic.* Dharmakīrti's superior work *Pramāṇavārttika,* vastly cited in Indian and Tibetan literature, had been missing. But Rev. Rahul Sankrityayana has not only brought that main treatise from Tibet on which the reputation of Dharmakīrti rest, but the whole literature on it in Sanskrit.

Dharmakīrti is the author of numerous works on Logic. *Pramāṇavārttikakārikā* is one of them. A verse of this work was quoted by great philosopher Mādhavācārya in the 14th century AD. With the permission thus received he composed a metrical commentary on Pramāṇa-samuccaya called *Pramāṇavārttikakārikā.*

The Sanskrit original of the *Pramāṇavārttika* appears to be lost, but the text is available in Tibetan translation in the Bstan ' gyur, Mdo

section, Volume Ce, Folios 194-258. This translation was done by the Indian Paṇḍita Subhūtiśri Śānti and the Tibetan interpreter Dge-wa'i-blo gros. The Tibetan work is called Tshad-ma-rnarn-' grel-gyi-tshig, signifying "Memorial Verses explanatory of *Pramāṇa* or Sources of Knowledge". The work is divided into four chapters as follows: 1. Inference for one's own self, in Tibetan — Rang-gi-don-rjes-su-dpag-pa and in Sanskrit: *Svārthānumāna;* 2. Establishment of *Pramāṇa,* — in Tibetan: Tsad-ma-grub-pa, and in Sanskrit: *Pramāṇasiddhi;* 3. Perception, — in Tibetan: Mnon-sum, and in Sanskrit: *Pratyakṣa;* and 4. Words for the sake of others, — in Tibetan: Gshan-gyi-don-gyi-tshig, and in Sanskrit: *Parārthavākya.* The colophon of the work runs as follows: "Here is finished the *Pramāṇavārttikakārikā* of Dharmakīrti who was born in a family of the Deccan, who exposed largely the errors of all the vicious texts of the *Tirthikas,* whose fame filled the entire earth, and who as a great sage had no rival".[20]

Dharmakīrti's Seven Logical Texts with its Tibetan Pramāṇavārtti

There was a sub-commentary on the *Pramāṇavārttikakārika* called *Pramāṇavārttikavṛtti* by Dharmakīrti himself. The Sanskrit original of this work is lost. There exists, however, a Tibetan translation[21] of it in the Bstan-'gyur, Mdo, Ce, Folios 420-535. In Tibetan the work is named Tshad-ma-nam-' grel-gyi-' grel-wa. In the concluding lines of the work, Dharmakīrti is described as "a great teacher and dialectician, whose fame filled all quarters of the earth and who was, as it were, a lion, pressing down the head of elephant-like debaters."[22]

Pramāṇaviniścaya

Pramāṇaviniścaya, quoted by Mādhavācārya, is another work on Logic by Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation of it in the Bstan-' gyur, Mdo, Ce, Folios 259-347. The translation was prepared by the Kāśmīrian Paṇḍita Parahita Bhadra and the Tibetan interpreter Blo-ldan-úes-rab in the city of Kāśmīra. The work in Tibetan is called Tshad-ma rnan-par-nges-pa signifying "Determination of *Pramāṇa* or Sources of Knowledge." The work is divided into three chapters as follows: 1. System of Perception — in Tibetan: Mngon-sum gtan-la- dwab-pa

and in Sanskrit: *Praiuakṣa-vyavasthā;* 2. Inference for one's own self - in Tibetan: Rang-gi-don-gyi-rjes-su-dpag-pa and in Sanskrit: *Svārthānumāna, Pramāṇa* and (3) Inference for the sake of others — in Tibetan: Gshan-gyi-don-gyi-rjes-su-dpag-pa and in Sanskrit: *Parārthānumāna*. In the concluding lines Dharmakīrti is described as a great sage of unrivalled fame born in Southern India.

Nyāyabindu

Nyāyabindu is another excellent work on Logic by Dharmakīrti. The Sanskrit original of this work was discovered among the palm leaf manuscripts preserved in the Jaina temple of Śāntinātha, Cambay, and has been published in the Bibliotheca Indica Series of Calcutta by Professor Peterson. There exists a Tibetan translation[23] of the work in the Bstan-'gyur, Mdo, Ce, Folios 347-355. The work in Tibetan is called Rigs-pa'i-thigs-pa, signifying "A Drop of Logic". It is divided into three chapters as follows: 1. Perception — in Tibetan: Mngon-sum, in Sanskrit: *Pratyakṣa;* 2. Inference for one's own self—in Tibetan: Bdag-gi don gyi-i jes-su-dpag-pa, in Sanskrit: *Svārthānumāna;* and 3. Inference for the sake of others in Tibetan: Cshan-gyi-don-rjes-su-dpag-pa, in Sanskri: *Parārthānumāna*.

Recently, *Nyāyabindu* with Dharmottara's Commentary (in Hindi, Sanskrit and Tibetan) translated and annotated by G. C. Pande and edited (Tib.-San.) by Dr. Lobsang Dorjee Rabling, Thinlay Ram Shasni, has been published in Bibliotheca Indo-Tibetan Series, Vol. 71, 2010 by the Central Institute of Higher Tibetan Studies, Sarnath, Varanasi.

Hetubinduvivaraṇa

The *Hetubinduvivaraṇa* is another excellent work on Logic by Dharmakīrti. The Sanskrit original of this work is lost, but it exists in Tibetan translation of the Bstan-'gyur, Mdo, Ce, Folios 355-375. The work in Tibetan is called Gtan-thigs-kyi-thigs-pa, signifying "A Drop of Reason". The work is divided into three chapters as follows:

1. Relation of identity between the middle term and the major term in Tibetan: Rang-bshin-gyi-gtan-tshigs, in Sanskrit: *Svabhāvahetu;* 2. Relation of effect and cause between the middle term and the major

term - in Tibetan: 'bras-bu'i-gtan-tshigs, in Sanskrit: *Kāryahetu;* and 3. Relation of negation between the middle term and the heterogeneous major term - in Tibetan: Mi-dmigs-pa'i-gtan-tshigs, in Sanskrit: *Anu pālabdhihetu.*

Vādanyāya / Tarkanyāya

The *Vādanyāya* or *Tarkanyāya* is another treatise on Logic by Dharmakīrti. The Sanskrit original of this work is lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ce, Folios 384-416. The work in Tibetan is called rtsod-pa'i-rigs- pa, signifying the 'Method of Discussion'. The Tibetan translation was prepared by the great Indian Paṇḍita Jñānaśrī Bhadra and the Tibetan interpreter-monk Dge-wa'i-blo-grog. The translation was retouched by the great Paṇḍita Dīpaṅkara of Vikramaṇīpura in Bengal, born in 980 AD. and started for Tibet in 1040 AD along with the interpreter monk Dar-ma-grags.

Santānāntarasiddhiḥ

The *Santānāntarasiddhiḥ,* also called *Tantrāntarasiddhi,* is a philosophical treatise by Dharmakīrti. The Sanskrit original of the work is lost, but available in Tibetan version of the Bstan-'gyur, Mdo, Ce, Folios 416-420. The work in Tibetan is called Rgyud-gshan-grub-pa, signifying "Proof of the Continuity of Succession". The Tibetan translation was prepared by the Indian sage Viśuddha Siṁha and the Tibetan official interpreter Dpal-rtsegs.

Recently, the text *Santānāntarasiddhiḥ* with *Santānāntarasiddhitīkā* of Ācārya Vinītadeva is restored and edited (Tibetan and Sanskrit with Hindi Inroduction) by J. S. Negi and published in Bibliotheca Indo-Tibetan Series, Vol. XXXVII, in the year of 1997, by the Central Institute of Higher Tibetan Studies, Sarnath, Varanasi. Dr. Mangala R. Chinchore also restored the same text with Commentary from Tibetan to Sanskrit and published in Bibliotheca Indo-Tibetan Series, Vol. XXXVIII, in the year of 1997, by the Central Institute of Higher Tibetan Studies, Sarnath, Varanasi.

Sambandhaparīkṣā

The *Sambandhaparīkṣā* (Analyzes of Relations) is another philosophical treatise by Dharmakīrti.

The *Sambandhaparīkṣāvṛtti* is a commentary on the *Sambandhaparīkṣā* by Dharmakīrti himself. The Sanskrit original of the work is lost, but it is available in Tibetan translation of the Bstan-'gyur, Mdo, Ce, folios 377-384. The Tibetan work is called 'brel-wa-brtag-pa'i-'grel-wa.

Śaṅkarānanda (About 1050 AD), called in Tibetan 'Bde-byed-dga' wa, composed *Sambandbaparīkṣānusāra,* - in Tibetan 'brel-pa-brtag- pa'i-rjeg-su-'brang-wa', which is a commentary on the *Sambandbaparīkṣā* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan 'gyur, Mdo, Ze, Folios 24-39. The translation was prepared by the great Indian Paṇḍita Parahita, and the Tibetan translator Dga'-wa'i-rdo-rje.

Now Rev. Sankrityayana has not only brought that main treatise on which the reputation of Dharmakīrti rests, but the whole literature on it is in Sanskrit, namely.

a. Complete *Pramāṇavārttika,* is being printed in the *Journal of Bihar and Orissa Research Society, Patna,* with a commentary on the first chapter by K.P. Jayaswal
b. A complete commentary on the latter by Karnakagomin (8000 slokas, 9th century).
c. A complete commentary on the *Pramāṇavārttika* by Prajnakara Gupta, a Professor of Nalanda (c. 700 AD) who is regarded as only text to Dharmakīrti, if not an equal authority. The commentary measures 15,000, the Sanskrit half of which is verse and the other half is mixed with prose.
d. Another commentary by Manoratha Nandi which deals with each word of the *Pramāṇavārttika.* Its extent is 10,000 slks. The author belongs to the 10th century. It is printed in the *Journal of Bihar and Orissa Research Society, Patna.*

The manuscripts (Mss.) of Karnakagomin, which is in Sakya monastery, was written in the 11th century and the other manuscripts belong to the 12th century. Sakya monastery's manuscripts copied, photographed or brought in the original by Rev. Sankrityayana are on the palm leaves ranging from the 10th to 12th century, except the commentary by Manoratha Nandi, which is on papers written in Tibet, about 1220 AD by an Indian exile.

The Mss. of Manoratha Nandi's work has a special interest as it is the hand writing of an Indian scholar, particularly a scholar from Bihar, Bibhutichandra who stands very high in the Tibetan literature. He was one of the two Indians whose knowledge of Tibetan has been noted as perfect, the other being Smritijñana (c. 1030 AD) whom Dipankar Srijnana declared to be the greatest scholar in the whole of India. Smritijñāna went as a missionary to Tibet and mastered Tibetan by adopting the life of a menial.

Bibhutichandra was a Bengali who left India on account of Muhammadan invasion of Bihar and went to Tibet along with Śakya Śri Bhadra (died 1225 AD) who was the royal preceptor, head of Buddhism in Magadh and the president of Vikramshila University (Bhagalpur district). One paper manuscript brought by Sankrityayana on its cover Bibhutichandra has the draft of a verse of his composition.

The logicians of the Bihar Buddhist Science of Logic were Devendra Bodhi, Śākya Bodhi, Vinīta Deva, Ravi Gupta, Jinendra Bodhi, Śānta Rakṣita, Kamala Śīla, Kalyāṇa Rakṣita and others.

Devendrabodhi (about 650 AD)

Devendrabodhi, in Tibetan Lha-dwang-blo, was a contemporary of Dharmakīrti and, so, lived in about 650 A.D. He wrote the work on *Logic Pramāṇavārttikapañjikā,* called in Tibetan 'Tshad- ma-rnam-' grel gyi-dkah-' grel', signifying "An Explanation of Difficulties in the *Pramāṇavārttika* of Dharmakīrti". The Sanskrit original of this work is lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Che, folios 1-380. The translation was prepared by the Indian logician Subhūti Śri and the Tibetan interpreter-monk Dge-wa'i-blo-gros. A story goes regarding the composition of the *Pramāṇavārttikapañjikā:*

Dharmakīrti chose Devendrabodhi to write a commentary on his *Pramāṇavārttika.* After Devendrabodhi had finished the commentary for the first time and had shown it to Dharmakīrti, the latter erased it with water. After he had compiled it for the second time, Dharmakīrti burnt it in fire. He then compiled it for the third time and gave it to Dharmakīrti with the observation, "Since the majority of men are incompetent and time is fleeing, I have written this commentary for

the people of lighter understanding". This time Dharmakīrti allowed the work to exist.

Śākyabodhi (about 675 AD)

Śākyabodhi is stated to have been a pupil of Devendrabodhi. He seems to have lived about 675 AD. He was the author of the following work: The *Pramāṇavārttika-(pañjikā)-ṭīkā,* called in Tibetan: Tshad- ma rnam-' grel-gyi-' grel-bsad, which is an annotation on the *Pramāṇa-vārttikapañjikā* of Devendrabodhi. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation which covers volumes Je and Ñe of the Bstan-'gyur, Mdo. The translation was prepared by the interpreter Dge-wa'i-blo-gros.

Vinīta Deva (about 700 AD)

Vinīta Deva, called in Tibetan Dul-lha, lived in Nalanda during the time of King Lalita Candra, son of Govi Candra, and Dharmakīrti died during the time of Govi Candra. Vimala Candra, the father of Govi Candra, was married to the sister of Bhartṛhari, who sprang from the ancient royal family of Malwa. Supposing this Bhartṛhari to be identical with the famous grammarian of that name who died in 651-652 AD we may place Govi Candra in the middle of the 7th century AD. This is exactly the time when Dharmakīrti died. Hence, we may conclude that Lalita Candra, son of Govi Candra, flourished towards the end of the 7th century AD. Vinīta Deva, a contemporary of Lalita Candra, also must have lived in about this time, which with the date of Dharmakīrti coincides, on whose works Vinīta Deva wrote commentaries. Vinīta Deva, who was the famous author of the *Samayabhe-doparacanacakra,* wrote the following works on Logic:

Nyāyabinduṭīkā — in Tibetan: Rigs-pa'i-thigs-pa-rgya-cher-' grel-wa, is a detailed commentary on the *Nyāyabindu* of Dharmakīrti. The Sanskrit original of this work is lost, but a Tibetan translation of it exists in the Bstan-'gyur, Mdo, She, folios 1-43. The translation was prepared by the Indian scholar Jina Mitra and the interpreter of Shu-chen named Vande-ye-śes- sde.

Hetubinduṭīkā — in Tibetan Gtan-tshigs-kyi-thigs-pa- rgya-cher-'grel-wa, which is a detailed commentary on the *Hetubindu* of Dharmakīrti.

The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, She, folios 116-205. The translation was done by the Indian teacher Prajñā Varma and the Tibetan translater of Shu-chen named Dpal-brtsegs-rakcita.

Vādanyāyavyākhyā — in Tibetan Rtsod-pa' i-rigs-pa' i-' grel-wa, is a commentary on the *Vādanyāya* (otherwise called *Tarkanyāya)* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but available in Tibetan translation in the Bstan-'gyur, Mdo, Ze, folios 39-65. The work starts like thus: "Who is self-perfected in sweet logical discussion, supreme in patience, affection, charity and self-restraint, and who is the most excellent of logicians to him (Buddha) bowing down I compose a commentary on the text of *Vādanyāya".*

Sambandhaparīkṣāṭīkā — in Tibetan 'brel-pa-brtag-pa'i-rgya-cher-bcead-pa, is a copious commentary on the *Sambandhaparīkṣā* of Dharmakīrti. The Sanskrit original of this work is lost but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, folios 1-24. The translation was done by the Indian Paṇḍit Jñānagarbha and the Tibetan interpreter Vande-nam-mkhas. The work starts like this:

"Who is entirely unconnected with the world, and is yet designated as the supreme teacher of it to him bowing down fully I explain the *Sambandhaparīkṣā*" .

Ālambaṇaparīkṣāṭīkā — in Tibetan Dmigs-pa-brtag-pa'i-'grel-búad, is an annotation on the *Ālambaṇaparīkṣā* of Diṅnāga. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, folios 186-200. The translation was done by the Indian Paṇḍit Śākyasiṁha and the Tibetan interpreter Vande-dpal-brtsegs of Shu-chen. The work opens with this: "Meditating oji the merciful Omniscient One, and saluting him by my head, I compose the *Ālambaṇaparīkṣāṭīkā."*

It ends with this: "Here is finished the *Ālambaṇaparīkṣāṭīkā,* which is a clean work of the teacher Vinīta Deva who weighed all sorts of *ālambaṇa* (objects of thought), and is a lion of speakers confounding the brains of the Tīrthika elephants."

Santānāntārasiddhiṭīkā in Tibetan: Rgyud-gshan-grub-pa'i-' grel-bcead, is a commentary on the *Santānāntatrasiddhi* of Dharmakīrti.

The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Tshe, folios 1-21. The translation was done by the Indian scholar Viśuddhasiṁha and the Tibetan interpreter of Shu-chen named Dpal-rtsegs-rakcita.

Ravi Gupta (about 725 AD)

Ravi Gupta, in Tibetan Ṣi-ma-sbas, was born in Kashmira. He was a great poet, dialectician and Tantric teacher, who established 12 great religious schools in his native country of Magadha. He was a contemporary of king Bharca of Varendra, and flourished before Jayanta, the author of *Nyāyamañjarī.* He must have lived in the first quarter of the 8th century AD, for his disciples the famous Tantric monk Sarvajña Mitra, lived in the middle of the same century. Ravi Gupta is mentioned in the inscription of Vasanta Sena as the *Sarvadaṇḍanāyaka* and *Mahāpratīhāra* in the Gupta samvat 435 corresponding to 751 A D. He was the author of the following work on Logic:

Pramāṇavārttikavṛtti - Tibetan in Tshad-ma-rnam-' grel-gyi-' grel-pa, is an annotation on the *Pramāṇavārttika* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Tshe, folios 132-252.24

Jinendrabodhi (about 725 AD)

In the Bstan-'gyur, Mdo, Re, there is the Tibetan version of the work called *Viśālāmalavatī-nāma-pramāṇasamuccaya-ṭīkā.* This version was prepared by the Tibetan lo-tsa-ba (translator) Rdo-rje-rgyal-mtshn with the assistance of Dpal-ldan-blo-gros.

The author of the original work was Jinendrabodhi, called in Tibetan Rgyal-dwang-blo-gros, who was comparable to the Bodhisattva *(Bodhisattvadeśīya).* He is perhaps the same person who wrote the wellknown *Nyāsa* on the grammar of Pāṇini in the 8th century AD.

Śānta Rakṣita (about 749 AD)

Śānta Rakṣita, in Tibetan - Shi-wa-'tsho, was born in the royal family of Jashor in Bangladesh. (The exact date of his birth is unknown, but it is stated that he was born at the time of Gopala who reigned

up to 705 AD and died at the time of Dharma Pala who became the king in 765 AD. He followed the Svatantra Mādhyamika School and was a Professor at Nalanda. He visited Tibet at the invitation of king Khri srong-deu-tsan who was born in 728 AD and died in 864 AD. In 749 AD the king, with the assistance of Śānta Rakṣita, built the monastery of Sam-ye in Tibet, modelled after the Odantapura Vihara of Magadha. Sam-ye[25] was the first regular Buddhist monastery in Tibet and Śānta Rakṣita was its first abbot. He worked in Tibet for 13 years, that is, till 762 AD. He was known there under the name of Ācārya Bodhisattva, and was the author of the following works on Logic:

Vādanyaya-vṛtti-vipañcitārtha, in Tibetan Rtsod-pa'i-rigs-pa'i-'brel-pa-don-rnam-par-byed-pa, is an elaborate commentary on the *Vādanyāya* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but the text exists in Tibetan translation in the Bstan-' gyur, Mdo, Tshe, folios 21-131 and in the Bstan-hgynr, Mdo, Ze, folios 65-186. The translation was done by the Indian Paṇḍita Kumāraśribhadra and the Tibetan interpreter-monks venerable Śes-rab and 'bro-seng-kar (who was a native of the province of 'bro or Do) of the holy monastery of Bsam-yas (Sam-ye). The work starts with this:

"Who, constantly dispersing darkness by the ray of the heap of various pure precious qualities, exerted himself in fulfilling the desire of various sentient beings and rejoiced to do well to the entire world, to that Mañjuśrī bowing down in reverence, I compose this concise and stainless *Vādanyāya-vṛtti-vipañcitārtha"*

Tattvasaṁgraha-kārikā, in Tibetan De-kho-na-ñid- bsdus-pa'i-tshig-lehur-byas-pa, is a work containing memorial verses on the summary of the *Tattvas.* The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, He, folios 1-146. The translation was done by the Indian Paṇḍita Guṇākaraśrībhadra (belonged to the religious circle, first instituted by the great king Lalitāditya in the incomparable city of Kashmira) and the great Tibetan lo-tsa-ba the Śakya monk Lha-bla-ma-shi-wa-hod in the province of Guge of south-west Tibet. The work reviews various systems of philosophy, such as the Sāṁkhya, Jaina, etc.

The subject-matter of the work begins thus: "From *Pradhāna* (the primordial matter or nature), possessed of entire powers, all sorts of effects are produced."

The work is divided into 31 chapters, *viz.* : (1) examination of nature - in Sanskrit: *Svabhāvaparīkṣā,* and in Tibetan: Rang-bshin- brtag pa; (2) examination of the sense organs - in Sanskrit: *Indriyaparīkṣā* and in Tibetan: Dwang-phyug-brtag-pa; (3) examination of both, in Sanskrit: *Ubhayaparīkṣā,* in Tibetan: Gñis-ka-brtag-pa: (4) examination of the theory that the world is self existent - in Sanskrit: *Jagatsvabhāva-vāda-parīkṣā* and in Tibetan: 'gro-wa-rang-bshin-du-smra- wa-brtag-pa; (5) examination of Brahma the presiding deity of sound — in Sanskrit: *Śabda-Brahma-parīkṣā* and in Tibetan: Sgra'i-tshangs-pa-brtag-pa: (6) examination of the soul- in Sanskrit: *Puruṣaparīkṣā* and in Tibetan: Skyes-bu-brtag pat; 7) examination of the Nyāya and Vaiśeṣika doctrines of the soul - in Sanskrit: *Nyāya-vaīśeṣikā-parikalpita-puruṣa-parīkṣā* in Tibetan: Rigs-pa-can-dang-bye-brag-pas- kun-tu-brtags-pa'i-skyes-bu-brtag-pa; (8) examination of the Mīmāṁsaka doctrine of the soul - in Sanskrit: *Mīmāṁsaka-kalpita-ātma- parīkṣā,* in Tibetan: Spyod-pa-pas-brtags-pa'i-bdag-brtag-pa; (9) examination of Kapila's doctrine of the soul - in Sanskrit: *Kapila-parikalpita-ātma-parīkṣā* and in Tibetan: Ser-skya-pas-kun-tu-brtags-pa'i-bdag-brtag-pa; (10) examination of the Digambara Jaina doctrine of the soul — in Sanskrit: *Digambara-parikalpita-ātma-parīkṣā* and in Tibetan: Nam-mkha'i-gos-can-gyis-kun-tu-brtags-pa'i-bdag-brtag-pa, (11) examination of the Upaniṣad doctrine of the soul- in Sanskrit: *Upaniṣad-kalpita-ātma-parīkṣā;* and in Tibetan: U-pa-ni-ṣa-di-kas-brtags- pa'i-bdag-brtag-pa): (12) examination of the Vātsīputra doctrine of the soul- in Sanskrit: *Vātsīputra-kalpita-ātma-parīkṣā* and in Tibtan: Gnas-ma'i- bus-bdag-brtag-pa; (13) examination of the permanence of entities - in Sanskrit: *Sthira padārtha-parīkṣā* and in Tibetan: Brtan-pa'i-dngos-po-brtag-pa; (14) examination of the relation between *Karma* and its effect - in Sanskrit: *Karma-phala-sambandha-parīkṣā* and in Tibetan: Las-dang-'bras-bu'i-'brel-pa-brtag-pa; (15) examination of the meaning of the word 'substance' - in

Sanskrit: *Dravyapadārtha-parīkṣā* and in Tibetan: Rdsas-kyi-tshig-gi-don-brtag-pa; (16) examination of the meaning of the word 'quality'- in Sanskrit: *Guṇa-śabdārtha-parīkṣā* and in Tibetan: Yon-tan-gyi-tshig-gi-don-brtag pa; (17) examination of the meaning of the word *Karma* - in Sanskrit: *Karma-śabdārtha-parīkṣā,* in Tibetan: Las-kyi-tshig-gi-don-brtag-pa: (18) examination of the meaning of the word generality or genus - in Sanskrit: *Sāmānya- śabdārtha-parīkṣā* and in Tibetan: Spyi'i-tshig-gi-don-brtag-po; (19) examination of the meaning of the words 'generality,' and 'particularity' - in Sanskrit: *Sāmānya-viśeṣa-śabdārtha-parīkṣā* and in Tibetan: Spyi-dang-bye-brag-gi-tshig-gi-don-brtag-pa; (20) examination of the meaning of the word 'co-existent cause', - in Sanskrit: *Samavāya- śabdārtha-parīkṣā* and in Tibetan: 'du-wa'i-tsbig-don-brtag-pa; (21) examination of the meaning of the word 'sound' - in Sanskrit: *Śabdārtha-parīkṣā* and in Tibetan: Sgra-yi-don-brtag-pa; (22) examination of the definition of perception - in Sanskrit : *Pramāṇāntaraparīkṣā* and in Tibetan: Mngon-sum-gyi-mtshan-ṣid-brtag-pa; (23) examination of inference - in Sanskrit: *Anumānaparīkṣā* and in Tibetan: Rjes-su-dpag-pa-brtag-pa: (24) examination of other kinds of valid knowledge - in Sanskrit: *Pramāṇāntaraparīkṣā* and in Tibetan: Tshad-ma-shan-brtag-pa; (25) examination of the doctrine of evolution, - in Sanskrit: *Vivartavādaparīkṣā* and in Tibetan: 'gyur-war-smra-wa-brtag-pa; (20) examination of the three times- in Sanskrit: *Kālatrayaparīkṣā,* and in Tibetan: Dus-gsum brtag-pa; (27) examination of continuity of the world — in Sanskrit: *Saṁsārāsantatiparīkṣā,* and in Tibetan: 'jig-rten- rgyud-pa'i-brtag-pa; (28) examination of external objects-; in Sanskrit: *Vāhyārthaparīkṣā,* and in Tibetan: Phyi-rol-gyi-don-brtag-pa; (29) examination of Śruti or Scripture - in Sanskrit: *Śrutiparīkṣā,* and in Tibetan: Thos-pa-brtag- pa; (30) examination of self evidence - in Sanskrit: *Suoiaḥ- prāmāṇyaparīkṣā,* and in Tibetan: Rang-las-tshad-ma-drtag pa; and (31) examination of the soul which sees things beyond the range of senses — in Sanskrit: *Anyendriyātitārtha-darśana-puruṣa-parīkṣā,* and in Tibetan: Gshan-gyi-dwang-po-las-' das-pa' i-don mthong-wa-can-gyi-skyes-bu- brtag-pa.

Kamala Śīla (about 750 AD)

Kamala Śīla,[26] also called Kamala Śrīla, was a follower of Śānta Rakṣita. He was for some time a Professor of Tantras in Nalanda whence he was invited to Tibet by king Khri-srong-deu-tsan (728-786 AD). While in Tibet he vindicated the religious views of Guru Padmasambhava and Śānta Rakṣita by defeating and expelling a Chinese monk named Mahāyāna Hoshang. He was of wide fame and the author of the following works:

Nyāyabindu-pūrva-pakṣe-saṁkṣipta — in Tibetan Rigs-pa'i-thigs-pa'i-phyogs-snga-ma-mdor-bsdus-pa, is a summary of criticisms on the *Nyāyabindu* of *Dharmakīrti.* The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-' gyur, Mdo, She, folios 106-115. The translation was done by the Indian Paṇḍita Viśuddha Siṁha and the Tibetan lo-tsa-ba of Shu-chen named Dpal-rtsegs-rakṣita.

Tattvasaṁgraha-pañjikā — in Tibetan De-kho na-ñid-bsdus-pa'i-dka'-'grel, is a commentary on the *Tattva-saṁgraha* of Śānta Rakṣita. The Sanskrit original of this work is lost, but there exists a Tibetan translation of part I of this work in the Bstan-'gyur, Mdo, He, Folios 146-400, and part II of it in the Bstan-'gyur, Mdo, Ye, folios 1-385. The translation was done by the Indian Paṇḍita Devendra Bhadra and the interpreter-monk Crags-'byor-ses-rab.

Kalyāna Rakṣita (about 829 AD)

Kalyāna Rakṣita, - in Tibetan Dge-bsrung, was a great dialectician and the teacher of Dharmottarācārya. He flourished during the reign of Maharaja Dharma Pala who died in 829 AD. He was the author of the following works: *Sarvajñasiddhi-kārikā,* called in Tibetan Thams-cad-mkhyen-pa-grub-pa'i-tshig-le'ur-byas-pa, signifying "memorial verses on the attainment of omniscience". It is contained in the Bstan-'gyur, Mdo, Ze, folios 201-202, and begins with a salutation to Sarvajña.

Vāhyārthasiddhi-kārikā, in Tibetan Phyi-rol-gyi-don-grub-pa-ces-bya-wa'i-tshig-le'ur, which signifies memorial verses on the reality of external things. The Sanskrit original of this work is lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, folios 202-

210. The translation was done by the Vaibhāṣika teacher Jina Mitra of Kāśmīra and the Tibetan interpreter-monk Dpal-brtsegs-rakṣita.

Śrutiparīkṣā in Tibetan Thos-pa-brtag-pa'i-tshig-le'ur-byas-pa, which signifies 'memorial verses on the examination of Śruti or verbal testimony.' The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 210-211.

Anyāpoha-vicāra-kārikā, in Tibetan Gshan-la brtag-pa'i-tshig-le'ur-byas-pa, signifies 'memorial verses on the determination of a thing by the exclusion of its opposites'. The Sanskrit original of this work is lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 211-213.

Īśvara bhaṅga-kārikā, in Tibetan Dwang-phyug-'jīg-pa'i-tshig-Ie'ur-byas-pa, signifies 'memorial verses on the refutation of God'. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 214-215.

Dharmottarācārya (about 847 AD)

Dharmottara (Ācārya Dharmottara or Dharmottarācārya), in Tibetan Chos-mchog, was a pupil of Kalyāṇa Rakṣita and Dharmakāra Datta of Kashmira. He appears to have flourished in Kashmira, while Vana Pāla was reigning in Bengal, in about 847 AD, and is mentioned by the Brāhmaṇa logician Śrīdhara in about 991 AD and by the Jaina philosophers Mallavādin, the author of *Dharmottara-mippanaka* in about 962 AD, and Ratnaprabha Śūri, the famous author of *Syādvāda-ratnā-karāvatārikā* dated 1181 AD Dharmottara was the author of the following works:

Nyāyabinduṭīkā, in Tibetan Rigs-pa'i-thigs-pa'i-rgya-cher-'grel-wa, is a detailed commentary on the *Nyāyabindu* of Dharmakīrti. The Sanskrit original of this work was preserved in the Jaina temple of Sāntinātha, Cambay, and has been published by Professor Peterson in the Bibliotheca Indica series of Calcutta. There exists a Tibetan translation in the Bstan-'gyur, Mdo, She, Folios 43-106. The translation was done by the Indian sage Jñānagarbha and an interpreter-monk of

Shu-chen named Dharmāloka, and afterwards was redone by the Indian sage Sumatikīrti and the Tibetan interpreter-monk Blo-Idan-śes-rab. *Nyāyabinduṭīka* begins thus: "Sugata, the conqueror of lust, etc., has overcome this world, the source of series of evils beginning with birth: may his words dispelling the darkness of our mind attain glory".[27]

Pramāṇaparīkṣā, called in Tibetan Tshad-ma-brtag-pn signifying 'an examination of *Pramāṇa* or the sources of valid knowledge'. The work begins with salutation to Sugata. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 215-253. The translation was done by monk Blo-Idan-ses-rab.

Apohanāmaprakaraṇa, in Tibetan Gshan-sel-wa, signifying 'a treatise on the determination of a thing by the exclusion of its opposites'. The Sanskrit original of this work appears to be lost, but it exists in Tibetan translation in the Bstan-'gyur, Mdo, *Ze,* Folios 254-266. The translation was done by the Kāśmīrian Paṇḍita Bhavyarāja and the interpreter-monk (lo-tsa-ba) Blo-Idan-śes-rab, in the incomparable city of Kashmira.

Pāralokasiddhi, called in Tibetan 'jjig-rten-pha-rol-grub-pa, signifying 'proof of the world beyond'. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 266-270. The translation was done by the great Paṇḍita Bhavyarāja and the interpreter-monk Tshab-ñi-ma-grags during the lifetime of Śrī Harṣa Deva (king of Kashmira, 1089-1101 AD) in the great incomparable city of Kashmira.

The work begins thus: "Some say that the world beyond is possessed of the characteristics of a complete separation from the link of consciousness which began from before birth and continued after death, etc".

Kṣaṇabhaṅgasiddhi, in Tibetan Skad-cig-ma-'jig-pa-grub-pa, signifying 'proof of the momentariness of things'. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 270-282. The translation was done by the Indian Paṇḍita Bhavyarāja and the interpreter-monk Blo-ldan-śes-rab.

Pramāṇaviniścayaṭīkā, in Tibetan Tshad-ma-rnam-Ees-kyi-ṭīkā, is a commentary on the *Pramāṇaviniścaya* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Dse, Folios 346, and 1-188. The translation was done by the Kasmirian Pandita Parahita Bhadra and the Tibetan interpreter Blo-Idan-śes-rab in the model city of Kashmira. In the concluding lines of the work, Dharmottara, the author of it is described as "the excellent subduer of bad disputants (quibblers)".

Muktākumbha (after 900 AD)

Muktākumbha, in Tibetan Mu-tig-bum-pa, was the author of a work called *Kṣaṇabhaṅga-siddhi-vyākhyā,* which is a commentary on Dharmottaracarya's *Kṣaṇabhaṅga-siddhi.* Muktakumbha must have flourished after 847 AD., when Dharmottara was alive.

The *Kṣaṇabhaṅga-siddhi-vyākhyā,* is called in Tibetan-Skad-cig-ma-'jig-grub-pa'i-rnam-'grel. The Sanskrit original of the work appears to be lost, but a Tibetan translation is embodied in the Bstan-'gyur, Mdo, Ze, Folios 282-301. This version was prepared by the Indian sage Vināyaka and the interpreter-monk Crags-tbyor-ses-rab.

Arcaṭa (about 900 AD)

Guṇaratna Sūri, the famous Jaina author of the *Ṣaḍdarśana samuccayavṛtti,* who lived in 1409 AD, mentions the *Tarkaṭīkā* of Arcaṭa. Arcaṭa is also mentioned by the Jaina philosopher Ratnaprabha Sūri, the well-known author of *Syādvādaratnākarā-vatārikā,* dated 1181 AD. In the Jaina *Nyāyāvatāravivṛti* it appears that Arcaṭa criticised Dharmottarācārya who lived in about 847 AD, and roughly speaking, he flourished in the 9th century AD. Arcaṭa was the author of the following work on Logic:

Hetubinduvivaraṇa, in Tibetan Gtan-tshigs-thigs-pa'i-' grel-wa, is a commentary on the *Hetubindu* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, She, Folios 205-375. It is divided into four chapters treating respectively of (1) Identity, in Tibetan — Rang-bshin and in Sanskrit- *Suabhāva;* (2) Effect, in Tibetan — 'bras-bu and in Sanskrit- *Kārya;* (3) Non-perception, in Tibetan: Mi-dmigs-pa and in

Sanskrit — *Anupālabdhi;* and (4) Explanation of Six Characteristics, in Tibetan-Mtshan-ñid-drug-bśad-pa and in Sanskrit — *Ṣaḍlakṣaṇavyākhyā.* In the beginning of the work it is stated that Areama was a Brāhmaṇa, and from the concluding part it appears that he lived in Kashmira. The Tibetan version ends with this: "In the city of Kāśmīra, the pith of Jambudvīpa, the commentary (on the work) of Dharmakīrti, who was the best of sages, was translated. From this translation of Pramāṇa, the pith of holy doctrines, let the unlearned derive wisdom".

Aśoka (about 900 AD)

Aśoka, otherwise known as Paṇḍita Aśoka or Ācārya Aśoka, is called in Tibetan Mya-ngan-med. It is stated that through his spiritual instructions Candra Gomin was able to behold the face of Avalokiteśvara, the Lord of supreme mercy and Tārā the saviouress.

Aśoka quotes Dharmottara and must therefore have flourished after 847 AD. We may approximately place him in about 900 AD.

He wrote two logical treatises *viz. Avayavi-nirakārarṇa* refutation of the whole, and *Sāmānya-dūṣaṇ-dik-prasāritā* — horizon-of the refutation of generality extended. The first work, i. e., *Avayavi-nirākārarṇa,* which begins with a salutation to Samantabhadra, upholds the theory that the whole *(avayavī)* is a mere collection of its parts *(avayava)* beyond which it has no separate existence. There is no eternal relation called inherence *(samavāya)* existing between a whole and its parts.

The second work, *viz. Sāmānya-dūṣanadik-prasāritā,* begins with a resolution to oppose those who maintain that there is a category named generality *(sāmānya)* which, being one and eternal, abides in many individual objects. It is argued that though we can see fingers as individual things, we cannot see fingerness as a generality pervading all fingers.

That Aśoka had to defend himself against the attacks of many Brāhmaṇa philosophers is evident from the last verse of his *Avayavi-nirākararṇa* which reads as follows:

"Having uprooted the numerous thorns of criticism fabricated by wicked intellects, I have cleansed the broad moral path of our Teacher. Let people removing their spites, move on by this path."

Candra Gomin (about 925 AD)

Candra Gomin, in Tibetan - Zla-wa-dge-bssen, was born in a Kṣatriya family in the east as Varendra (modern Rajshahe in Bangaladesh). He was endowed with a very keen intellect, and acquired distinction in literature, grammar, logic, astronomy, music, fine arts and the science of medicine. He learnt the Sūtra and Abhidharma Piṭakas under Ācārya Sthiramati of the Buddhist scripture, and was converted to Buddhism by Vidyādhara Ācārya Aśoka. He had ardent faith in the Buddhist god Avalokiteśvara and the goddess Tārā.[28] He was offered in marriage a daughter of the king of Varendra. Being told that she was named Tārā, which was the name of his tutelary deity, he, thinking it improper to accept her hand, shrank from her with fear. Upon this the king became angry and put Candra Gomin into a chest which was thrown into the Ganges. The chest was carried down until it stopped at an island at the place where the Ganges flowed into the ocean. Candra Gomin, with deep reverence offered a prayer to goddess Tārā, by whose blessing he got out of the chest. He resided in the island, which in course of time was named Candradvīpa or the island of Candra. He, as a Buddhist devotee *(upāsaka)*, established there stone images of Avalokiteśvara and Tārā. At first, only the fishermen *(kaivarta)* settled in the island, but afterwards other people also came to live there. Gradually the island became a town.

There was another Candra Gomin called Candra Gomin the Senior who went to Ceylon and on his way back found Nāga Śeṣa's (Patañjali's) Bhāṣya on Pāṇini's grammar in the house of Vararuci in Southern India. Finding that it contained "many words but few thoughts", he himself composed a commentary on Pāṇini, which was named *Candra-vyākaraṇa*. Afterwards, he came to Nalanda, the store house of knowledge, and met there Candrakīrti, the famous commentator on the *Mādhyamika* Philosophy of Ācārya Nāgārjuna. Candra Gomin himself was a follower of the Yogācāra system expounded by Ācārya Asaṅga. While Candrakīrti and Candra Gomin entered upon philosophical discussions people used to observe: "Alas! The text of Ācārya Nāgārjuna is medicine to some but poison to others, whereas the text of invincible Ācārya Asaṅga is very ambrosia

to all men". It is further stated that Candra Gomin threw the original manuscript of his grammar into a well at Nalanda, thinking that it was not better than the one which Candrakīrti had written. At that time Tārā and Avalokiteśvara appeared before him saying: "Though Candrakīrti is overwhelmed with pride as a sage, your work is more useful than all others and will do immense good to the world". They raised the manuscript from the well, which was thence reputed as "Candra's well", in Sanskrit — *Candrakūpa* and in Tibetan — Tsandra'i-khron-pa, the water of which was not to be drunk by people in the belief that thereby their intellect would become sharp. Candrakīrti was, however, a great admirer of Candra Gomin.

When the latter arrived at Nalanda the monks refused to give him a reception, saying that it was not proper for priests to welcome a mere devotee (*upāsaka).* Hearing this, Candrakīrti brought three chariots, two of which were occupied by himself and Candra Gomin, while in the third was placed an image of Mañjuśrī, the Buddhist god of learning. The chariots passed through the town in a great procession, attended by the whole body of priests who carne really to recite hymns to Mañjuśrī, but apparently to accord a fitting welcome to Candra Gomin. It is not known as to whether Candra Gomin lived at a time when Śīla, son of Śrī Harṣa, reigned in Kanoj and Siṁha of the Licchavi dynasty reigned in Vārendra. The famous poet Ravi Gupta was a contemporary of Harṣa, son of Siṁha. Śrī Harṣa seems to be the same as King Harṣa Vardhana who was a contemporary of Hwen- thsang and reigned in 647 AD. His son Śīla seems, on a rough calculation, to have reigned in 700 AD, when his contemporary Candra Gomin must also have lived. Jaina scholar Hema Candra Sūri, who lived during 1088-1172 AD, refers to Candra Gomin while Jayāditya, the famous author of the *Kāśikāvṛtti,* who died in 661-662 AD, does not mention him. This may be explained on the supposition that Candra Gomin lived after Jayaditya, but preceded Hema Candra.

The other Candra Gomin called Candra Gomin the Junior seems to have lived in about 925 AD, as his preceptor Ācārya Aśoka flourished about in 900 AD. It is not known with certainty as to

whether Candra Gomin, the author of *Candra Vyākaraṇa,* was identical with the sage of that name who was a contemporary of Candrakīrti. But it may be asserted safely that Candra Gomin, the logician, was different from either.

Candra Gomin was the author of the following work on Logic: *Nyāyālokasiddhi,* or *Nyāyasiddhyāloka,* in Tibetan - Rigs-pa-grub-pa'i-sgron-ma, signifying "a lamp of logical reasoning". The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo Ze, Folios 200-201. The translation was done by Paṇḍita Śrī Sitaprabha and the interpreter-monk Vairocana.

Prajñākara Gupta (about 940 AD)

Prajñākara Gupta, called in Tibetan Śes-rab-'byun-gnas-sbas, lived at the time of Maha Pāla, who died in 940 AD. He was a lay devotee and quite different from Prajñākara Mati, who was a monk and keeper of the southern gate of the University of Vikramaśīlā during the reign of Cānakya in 983 A.D. Prajñākara Gupta was the author of the following works:

Pramāṇavārttikālaṅkāra, called in Tibetan - Tshad-ma-rnam-' grel-gyi-rgyan, is a commentary on the *Pramāṇavārttika* of Dharmakīrti. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation which is divided into two parts. The first part extends over Folios 1-352 of Volume Te, and the second part Folios 1-328 of Volume She of the Bstan-' gyur, section Mdo. The translation was done by the great Kāśmīrian Paṇḍita Bhavyarāja and the Tibetan interpreter Blo-ldan-śes-rab. Subsequently, it was looked through by Sumati and the interpreter Blo-ldan-śes-rab. The translation had the advantage of having been assisted by numerous sages of the great monastery of Vikramaśilā in India, under the supervision of the great wise Paṇḍita Śrī Śunayaśrī Mitra and as well as the wise Paṇḍita Kumāraśrī of the model city of Kashmira.

Sabhāvalambhaniścaya, called in Tibetan Lhan-cig-dmigs-pa-nges-pa, signifies "the ascertainment of objects and their knowledge arising together". The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios

301-308. The translation was done by the Nepalese Paṇḍita Śānti Bhadra and the Tibetan monk Śākya-hod of the village of Seng-dkar in the province of 'bro (Do).

Ācārya jetāri (940-980 AD)

Jetāri or Ācārya Jetāri, called in Tibetan Dgra-las-rgyal-wa, was born in a Brāhmaṇa family. His father Garbhapāda lived in Vārendra at the court of Rājā Sanātana, who was a vassal to the Pāla kings of Magadha. Being expelled by his kinsmen, Jetāri became a Buddhist devotee and worshipped Mañjuśrī, by whose grace he became a perfect master of sciences. He received from king Maha Pāla the royal diploma of Paṇḍita of the University of Vikramaśilā.[29]

The famous Dīpaṅkara or Śrījñāna Atīśa is said, to have learnt five minor sciences from Jetāri at a very young age. Maha Pāla reigned up to 940 AD and Dīpaṅkara was born in 980 A. D. Their contemporary Jetāri, must have lived in between those years. He was the author of the following works on Logic:

Hetutattvopadeśa, called in Tibetan Gtan-tshigg-kyi-de-kho-na- ṣid-bstan-pa, signifies "instruction on the real nature of the middle term in a syllogism". The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-' gyur, Mdo, Ze, Folios 344-354. The translation was done by the Indian Paṇḍita Kumāra Kalasa and the Tibetan interpreter Śākya-hod.

Dharmādharmaviniścaya, called in Tibetan Chos-dang-chos-can-gtan la-dwab-pa, signifies "determination of the minor and major terms". The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 354-359.

Bālāvatāratarka, called in Tibetan Bis-wa-'jug-pa'i-rtog-ge, signifies "children's introduction to logic". The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 359-372. The translation was done by the Indian Paṇḍita Nāga Rakṣita and the Tibetan interpreter of the province of Sum-pa (in Amdo) named Dpal-mchog-dang-po'i-rdo-rje. The work begins with this:

"Who by the lustre of his sermon has completely dispersed and cleared the veil of the gloom of ignorance, who is a single lamp to three worlds - may that Bhagavān long remain victorious". It consists of three chapters named respectively: (1) Perception, (2) Inference for one's own self, and (3) Inference for the sake of others.[30]

Jina (about 940 AD)

Jina, called in Tibetan Rgyal-wa-can, was the author of *Pramāṇavārttikālaṅkāraṭīkā,* in Tibetan - Tshad-ma-rnam-'grel gyi-rgyan-gyi-'grel-bœad, is a voluminous work, the Tibetan version of which occupies Volumes De and Ne of the Bstan-' gyur, section Mdo. This version was prepared by Paṇḍita Dīpaṅkara Rakṣita of Vikramaśilā (who arrived in Tibet in 1045 A.D.) and the Tibetan interpreter, Byang-chub-śes-rab of Śang-Śung.

Jina, the author of the original work, is probably the same as Jina Bhadra of Koṅkana who was a contemporary of Vāgīśvarakīrti, in about 940 AD.

Ratnakīrti at Vikramśilā University

Jñānaśrīmitra gives us a chronological list the Ācāryas of the *Vijñaśnavāda* School. According to him Ācārya Asaṅga received secret teachings from Maitreyanāthapāda, Vasubandhu inherited the same from Asaṅga. Diṅnāga followed Vasubandhu. Next to Diṅnāga, Dharmakīrti was the most important scholar. Prajñākara came next. It was through Jñānaśrīmitra efforts that we get an idea about the affiliation of Jñānaśrīmitra and Ratnakīrti. They were very close to each other as preceptor and disciple. Quotations from and references to the Ācāryas listed by Jñānaśrīmitra in the works of both these authors show that their views were very popular at Vikramaśilā, the place of activity of both of them.

Ratnakīrti quotes from Ācārya Maitreyanāthapāda. His regard for Dharmakīrti knew no bounds, as is evident from the epithets used by him. To Ratnakīrti, Dharmakīrti is *Bhagavān* and *Bhuvanaikaguru*. Many verses from the *Pramāṇavārttika* of Dharmakīrti are found quoted Ratnakīrti's works. It may be pointed out in passing that a number of original works of these Ācāryas have been preserved in Tibet and their photographs are now deposited in the Bihar Research Society.

It is well known that Prajñākara started the philosophical school of interpretation of *Pramāṇavārttika*[31]. Both Jñānaśrīmitra and Ratnakīrti were exponents of this school and naturally we find Prañākara's *Pramāṇavārttikabhāṣya* quoted as authority in the works of both.

Of special interest is the reference to the views of Nāgārjuna and Dharmottara. The former did not belong to the *Vijñānavāda* School and yet Jñānaśrī mitra and Ratnakīrti considered him as an authority, where the *Mādhyamika* and *Vijñānavāda* views are identical. But Dharmottara, an exponent of the philosophical school of interpretation on Dharmakīrti's *Pramāṇavārttika,* has once been criticized adversely.

Ratnakīrti's Works (about 940-1000 AD)

Ratnakīrti, called in Tibetan Rin-chen-grags, was a Professor at the University of Vikramaśilā. As he was a teacher of Ratnākara Śanti, he must have flourished in about 150 AD. This Ratnakīrti, designated as Mahāpaṇḍita is different from the sage of the same name who was patronized by King Vimala Candra of Bengal, Kāmarūpa and Tirhut in about 650 AD. Ratnakīrti criticizes the views of Dharmottara, *Nyāyabhūṣaṇa* and Vācaspati Miśra on the subjects of *Apoha* (exclusion) and *Kṣaṇabhaṅga* (momentariness).

He wrote two logical treatises, viz. *Apohasiddhi* and *Kṣaṇabhaṅgasiddhi,* one of which begins with a salutation to Lokanātha and the other to Samanta Bhadra. The first work, which deals with the doctrine of *apoha,* propounds that a word while denoting a thing positive excludes it from all other things different from it, that is, a word bears a negative denotation along with a positive one. The second work attempts, through affirmative and negative inferences, to prove that all things are momentary by showing that they do not require three moments for their production, continuance and destruction. Ratnakīrti is said to have written two other treatises, *viz. Sthirasiddhidūṣaṇa* and *Citrādvaitasiddhi.*

Jñānaśrīmitra (about 1040 AD)

Jñānaśrīmitra, designated as a great pillar of the University of Vikramaśilā, was born in Gauḍa. He was at first admitted into the Śrāvaka School of Buddhism, but afterwards imbibed faith in the

Mahāyāna. Dīpaṅkara or Śrījñāna Atīśa (born in 980 AD) is said to have been much indebted to him. Jñānaśrīmitra was appointed as a gate keeper of the University of Vikramaśilā by Cāṇakya who reigned in Magadha. Jñānaśrimitra was attached to the University of Vikramaśilā even in 1040 AD when Dīpaṅkara Atīśa left for Tibet. Naropā, while visiting Vikramaśīla, got down from his conveyance leaning on the right arm of Atīśa and left arm of Jñānaśrīmitra. The Hindu philosopher Mādhavācārya in the 14th century quotes Jñānaśrī, who is perhaps the same as Jñānaśrīmitra. He was the author of the following work on Logic:

Kāryakāraṇabhāvasiddhi, in Tibetan - Rgyu-dang-'bras-bu'i-ngo- wo-grub-pa, signifies 'establishment of the relation of cause and effect'. The Sanskrit original of this work appears to be lost, but there exists a Tibetan translation in the Bstan-'gyur, Mdo, Ze, Folios 413-418. The translation was done by the great Indian sage Kumara Kalasa and the interpreter monk Śakya-hod. Subsequently, it was revised and published by the Nepalese Paṇḍita Anantaśrī and the afore mentioned interpreter-monk. Prof. Anantalal Thakur restored and edited this text from the Tibetan material collected by Rāhul Sāṅkṛtyāyaṇa, entitled *Jñānaśrimitra Nibandhāvalī* at the K. P. Jaiswal Research Institute of Patna.

Udayanācārya wrote *Ātmatattvaviveka* to refute the arguments of the Buddhist scholars, and among them by far the greatest target of his attack was Jñānaśrīmitra. Though he is mentioned by name only once in the book (Bibliotheca Indica ed., p.292), we gather from Śaṅkara Miśra's commentary that he is cited and refuted more than a dozen times (289,292-3,317, 356, 367,371, 436, 453, 464-5, 489-90 & 841). The Ā*tmatattvaviveka* is the very first work of Udayanacārya and it should be carefully noted that the first stroke of his genius was brought forth by his conflict with the last and the greatest dialectician among the Buddhist logicians, namely Ācārya Jñānaśrīmitra - a fact which is now entirely forgotten.[32] The following facts about Jñānaśrīmitra - (who should not be confused with the Kaśmirian Jñānaśrībhadra) should be carefully considered. As many as twelve of his dialectical treatises in original Sanskrit have been discovered in Tibet and their photographs are now preserved in the Bihar Research Society. These

are a small tract of only 6 Folios. Neither his works, nor any of the numerous works of his disciple Ratnakīrti have been translated into Tibetan. This proves that a period of decadence had already set in among the Buddhists and that they were losing intellectual fight with their opponents. This is one of the reasons why Buddhism soon perished in India.

Important works of Ratnakīrti and Jñānaśrīmitra

Between Vācaspati Miśra and Udayanācārya, the author of the *Nyāyavṛttikatātparya-pariśuddhi* there was a gap long we during which not come across any Buddhist author refuting the views of Vācaspati and at the same time himself being the object of criticism of Udayana, who upheld Vācaspati's position against the Buddhists. The discovery of the works of Jñānaśrīmitra and Ratnakīrti fills this gap.[33] The works of these two authors serve as a key to the proper understanding of the works of Vācaspati on the one hand, and Udayana on the other. They present before us a picture of the living scholarly antagonism between Brāhmaṇical and Buddhist philosophers. They attest to the inherent strength of the Buddhist position which could defy the onslaughts of a mastermind like Vācaspati. There is a common belief that Buddhism was uprooted from the Indian soil by the efforts of Kumārila, Śaṅkarācārya and others. But long after them we find Buddhist monasteries in their pristine glory and Buddhist scholars making vigorous intellectual endeavors. The end of Buddhistic speculations was marked by the advent of Islam. And Buddhism was not uprooted by intellectual activities alone. Vācaspati had his illustrious successor in Udayanācārya while diverse circumstances did not allow any Buddhist scholar to uphold the position of Jñānaśrī or Ratnakīrti. But unsoundness of their philosophical position cannot be held responsible for it.

On an examination of the works of these two authors in the proper perspective, one is sure to be convinced that these works are not merely idle philosophical speculations but an outcome of historical necessity and full of intellectual vigour.

They contain quotations from rare and extinct works of importance and supply us new information regarding some authors of repute.

Further, they have preserved a few fragments from the works of scholars altogether unknown in the History of Indian Philosophy.[34]

Jñānaśrīmitra's Works[35]

1. *Kṣaṇabhaṅgādhyāya*
2. *Vyāpticarcā*
3. *Bhedābhedaparīkṣā*
4. *Anupalabhdirahasya*
5. *Sarvaśabdābhāvacarcā*
6. *Apohaprakaraṇa,*
7. *Īśvaravāda, consisting of three sections:*
   a. *Pūrvapakṣa,*
   b. *[svaradu~alJa and*
   c. *Vārttikasaptaślokavyākhyāna,*
8. *Kāryakāraṇabhāvasiddhi,*
9. *Yoginirṇayaprakaraṇa,*
10. *Advaitabinduprakaraṇa*
11. *Sākārasiddhiśāstra,*
12. *Sākārasaṅgrahasūtra*

Of these the *Kāryakāraṇabhāvasiddhi* along has a Tibetan translation. *Apohaprakaraṇa* and *Kshaṇabhaṅgādhyāya* published by Vādī Devasūri[36]. Devabhadrasūri in the Nyāyāvatāramippaṇa quotes the definition of 'sat' as given by Jñānasrī *(Nyāyāvatāramippaṇa,* JSC, 1928, p. 56). Udayana's Ātmatattvaviveka appears to have been written with the object of criticizing and refuting the views of Jñānaśrīmitra[37] as expressed in the *Ksaṇabhaṅgādhyāya* and *Sākārasiddhiśāstra.*

We learn from Tibetan sources much about Jñānaśrīmitra of Gauḍa. He commanded great respect among the scholars of Vikramaśilā and was the second Mahāstambha (great pillar) among its gate keeping *paṇḍitas.* We find Atīśa seeking his advice on esoteric matters before his departure for Tibet. Jñānaśrīmitra is also known to have received special recognition from Naropa at the time of the latter's visit to Vikramaśilā.[38] _

The same sources inform us that Ratnakīrti also was recognized as an important scholar among the "many eminent *paṇḍitas* under Atīśa

like the star of heaven".[39] Ratnakīrti was a *mahāpaṇḍita* and a great practicing *tāntrika.* He was associated with both Somapurī and the Vikramaśilā Vihāras. A disciple of Buddhakīrti in esoteric matters, he was the teacher of Ratigupta and Ratnākaraśīlānti.[40] Moreover, Jñānaśrīmitra, Ratnakīrti and Ratnākaraśīlānti are said to be the disciples of Acārya Dharmapāla of Suvarṇadvīpa.[41]

Therefore, Jñānaśrimitra and Ratnakīrti are found as respectable personages during the time of Atīśa's departure for Tibet, an event which took place in 1040 AD. According to the Tibetans, it will not be wrong to hold that both were fairly advanced in age and literary career at that time while Ratnakīrti as the disciple may be slightly younger than Jñānaśrīmitra.

Notes

[1] Ānvīkṣikī in Tibetan is called rtsod pa, the *Amarakoṣa*, Svargavarga, verses 155, edited in Sanskrit with Tibetan version by Satis Chandra Vidyabhusana, in the Bibliotheca Indica Series, Calcutta.

[2] The *Hetu-śāstra* or *Hetu-vidyā, Mahāvyutpatti,* Part-I, p.20, Edited in Sanskrit, Tibetan and English by Dr. E. D. Ross and Satis Chandra Vidyabhusana, in the Bibliotheca Indica Series, Calcutta. Also Bstan'gyur, Mdo, Go, Folios 223-377.

[3] sde bka' mdo 'A' 189.

[4] 391 Ga 216 b.

[5] *Buddhist Logic*, Vol. I, p. 2, Dover, Publication inc., New York.

[6] Bunyin Nanjio's *Catalogue of the Chinese Tripitaka*, Nos. 1177, 1178.

[7] Rnam rig pa'i ita grub dang nang pa'i tshad ma'i rnam bzhag, Tibet House, 1989, pg. 10.

[8] Buddhist Logic, Vol. I, p. 29, Dover, Publication inc., New York.

[9] Prof. Ramsankara Tripathi : *Bauddha Darshana Prasthān*, p. 315.

[10] Vidyābhūṣana, S. C, p. 270.

[11] Pre-Diṅnāga Buddhist Texts on logic, GOS, 1929.

[12] *Nyāyabhāṣya* I,. i. 5, 22, 32; II. ii. 9 etc.

[13] a. *Viśvarūpa's Nyāyabhāṣyatīkā (Dhaīmottarapradīpa,* p. 175). b. *Adhyayana's Rucṣiṭīkā,* (p. 175). c. *Trilochana's Nyāyabhāṣyaṭīkā* (p. 173). d. *Aviddhakarṇas Tattvaṭīkā (Vādanyāya-vipañchitārthā,* p. 78). e. *Bhāvivikta's bhāṣyaṭīka* (p.88). f. *Uddyotakara's Nyāyavārttika.*

[14] The meaning of the work *Avyapadesya* in *Nyāyasūtra* I. i. 4. By J. S. Jetly, *Journal of the University of Bombay,* Vol. XIX, pp. 2, Sept. 1950.

[15] *Dpag-bsam-lion-bzaṅ,* edited by Sarat Chandra Das, p. 101.

[16] Satis Chandra Vidyabhusana, 'A History of Indian Logic', *Early Buddhist Writers on Logic,* Motilal Banarsidass Pubishers Pvt. Ltd. Delhi, 2006, p-276.

[17] Commentary on Valid cognition *(Pramāṇavārttika),* Discernment on Valid Cognition *(Pramāṇaviniścaya),* Drop of Reasoning on Valid *(Nyāyabindu),* Drop of Logical Reasoning *(Hetubindu),* Analysis of Relationship

(Sambandhaparīkṣā), Establishing another Continunum *(Santānantarasiddhi)* and Science of Debate *(Vādanyāya).*

[18] Vidyābhūṣana, S. C., p. 306.

[19] A. Complete *Pramāṇavārtika,* is being printed in *Journal of Bihar and Orissa Research Society, Patna* with a commentary on the first chapter by the K.P. Jayaswal.

B. A complete commentary on the latter by Karnakagomin (8000 Slokas, 9th century).

C. A complete commentary on the *Pramāṇavārttika* by Prajñākara Gupta, Professor of Nalanda (c. 700 A.D) which regarded as only text of Dharmakīrti, if not an equal authority. The commentary measures 15, ślokas half of which is verse and the other half in prose mixed.

D. Another commentary by Manoratha Nandi which deals with each word of the *Pramāṇavārttika.* Its cover 10,000 Śloks. The author belongs to the 10th century. It is printed in the *Journal of Bihar and Orissa Research Society, Patna.*

[20] Dr. Satis Chandra Vidyabhusan's Introduction to "Bilingual Index of Nyāyabindu" published in the Bibliotheca Indica Series of Calcutta.

[21] Consulted the *Catalogue of Indian Buddhist Texts in Tibetan Translation Kanjur & Tanjur,* Vol. I, Texts (Indian Titles) in Tanjur by Alaka Chottopadhyaya, Indo-Tibetan Studies, Calcutta, 1972.

[22] Some verses of *Pramāṇa-viniścaya* were quoted in the *Sarvadarśana-saṁgraha,* chapter on *Bauddha-darśana* by the great philosopher Mādhavācārya in the 14th century A.D.

[23] Consulted the Tibetan Catalogue by Lama Chimpa and Aloka Chottopadhyaya, Calcutta, and compared with Bilingual Index of Nyāya-bindu by Satis Chandra Vidyabhusan in the Bibliotheca Indica Series and *Nyāyabindu* with Dharmottara's Commentary (Hindi, Sanskrit and Tibetan) translated & annotated by G. C. Pande and edited (Tib.-San.) by Dr. Lobsang Dorjee RabIing, Thinlay Ram Shasni, published in Bibliotheca Indo Tibetan Series, Vol. 71, 2010, Central Institute of Higher Tibetan Studies, Sarnath, Varanasi.

[24] Satis Chandra Vidyabhusana, Motilal Banarsidass Pubishers Pvt. Ltd., Delhi, 2006, p. 322.

[25] For Sarn-ye, Csoma de Koros's Tibetan Grammar, p. 183, Sarat Chandra Das in the *Journal of the Asiatic Society of Bengal*, 1881, Part-I, p. 226.

[26] Dpag-bsam-ljon-bzali, Part-I, p-112, Ed. by Sarat Chandra Das, the Asiatic Society, Calcutta.

[27] Satis Chandra Vidyabhusana, *A History of Indian Logic* by Motilal Banarsidass Pubishers Pvt. Ltd. Delhi, 2006, p. 329.

[28] Satis Chandra Vidyabhusana, *A History of Indian Logic, Systematic Writer on Buddhist Logic,* Motilal Banarsidass Pubishers Pvt. Ltd. Delhi, 2006, p. 335.

[29] *Journal of the Buddhist Text Society of Calcutta,* Calcutta, Vol. I, Part-I, p. 8.

[30] Satis Chandra Vidyabhusana, *A History of Indian Logic by Systematic Writer on Buddhist Logic,* Motilal Banarsidass Pubishers Pvt. Ltd. Delhi, 2006, p. 338.

[31] Th. Stcherbatsky, *Buddhist Logic,* Motilal Banarsidass Pub., Delhi, 2008, Vol. 1, pp. 39-47.

[32] Anantalal Thakur: "Jñānaśrīmitra and His works", *JBRS,* Buddhajayanti Special, Issue, pp. 186-92.

[33] Anantalal Thakur, Ed. *Ratnakīrtinibandhāvalī,* p. 9. Also *JBRS*, XXXVII, Pt. 3-4. Prof. Thakur's paper "Ratnakīrti and his work" (p. 4 of Reprint). The lower limit of Sucarita's date is now fixed at 1000 AD before the times of Udayana and Ratnakīrti. These tracts of Ratnakīrti throw a flood of light on a dark age.

[34] Anantalal Thakur, "Jñānaśrīmitra and His works", *JBRS*, Buddhajayanti Special Issue, 1957, pp. 186-92.

[35] Jñānaśrīmitra's Works are preserved and almost published in Tibetan Sanskrit Text Series by K.P. Jayaswal Research Institute, Patna.

[36] *Syādvādaratnākara,* Poona, pp. 1, 712 & 747.

[37] Anantalal Thakur, "Jñānaśrīmitra's *Ksaṇabhaṅgādhyāya", JBRS,* Vol. XXXVI, p. 76.

[38] S. C. Das, *Indian Pandits in the Land of Snow,* Ed. Nobin Ch. Das, Asian Educational Services, Delhi, 1992, p. 17.

[39] S. C. Das, "Indian Pandit's in Tibet", *JBTS,* p. 17.

[40] Bhupendranath Datta, *Mystic Tales of Lama Taranatha,* pp. 45, 47, 61.

[41] P. V. Bapat, *2500 Years of Buddhism*, p. 230.

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Serpent Worship and its Influence on Early Buddhist Art and Iconography

Shreedevi Nair Pal

Early Buddhist art is peopled with Yakśas, Kinnaras, Nāgas, and many other local tutelary deities who were already in residence when Buddhism enters a new area. In this paper we are specifically dealing with the way that Nāgas and Nāga worship has impacted on Buddhism.

Nāgas are mythical deities who are represented in their therianthropic or theriomorphic form in art and religion and were worshipped by barren women in order to beget offspring, agriculturists who wanted rain in order to grow their crops, and by everyone else in order to be spared deaths from snake bites. Till today, they are expected to play the same roles in the lives of the Indian people.

According to Buddhist scriptures, the Nāgas are one of eight classes of demi-gods – the Devas, the Nāgas, the Gandharvas, the Asuras, the Garuḍas, the Kinnaras and the Mahoragas.[1] In this list, two of the demi-gods, the Nāgas and the Mahoragas are reptilian.

The Historical Buddha

Buddha, a scion of the Sakya clan, is said to have lived for 80 years and most probably died in the year 544 BCE.[2] He renounced his throne and his life as a prince and went in search of truth at a fairly young age and established a monastic religion which eschewed the caste system and emphasised the virtues of self-realisation through meditation.

Within 250 years of Buddha's death, the Nāga seems to have inveigled itself into the religion he founded. The later hagiographic accounts of Buddha's life - from his birth to his enlightenment, his

ministry and finally his death, include many episodes that involve the Nāga. It would be fair to say that the Nāga was present at every important moment in Buddha's life. At his birth, the Nāgas, Nanda and Upananda are said to have lustrated him, witnessed by Brahma.[3] (Fig. 1.) When he achieved enlightenment, the Nāga Mūcalinda covered his person from inclement weather as he sat meditating under the peepul tree.[4] (Figs. 14 a,b,c,d). The Nāga Elapattra goes to Buddha to learn about his teachings.[5] (Fig. 11) And finally after his death, when Buddha's relics were divided, the Nāgas demand and get their share, which they then entomb in a *stūpa* at Ramagrāma. (Fig. 5). When the Mauryan Emperor Asoka, two hundred and fifty years later, asked them to give him the relics of the Buddha for redistribution among the many *stūpa*s, he was building across the country, the Nāgas are said to have replied that nobody could protect and look after the relics like they did, and Asoka on finding this to be so - or so the story goes - left without disturbing their *stūpa*.[6]

In the later traditions of Buddhism, there are many more stories involving Buddha and the Nāgas, and the later the text, the more wondrous the stories. For example, Hiuen Tsang who came to India to study the Buddhist religion and then wrote about his sojourn in his book *Si-Yu-Ki* relates the legend of how Buddha's tooth was given to the Nāgas for protection.[7]

Buddha on How to Deal with Serpents

We will never know for certain whether Buddha personally subscribed to Nāga worship, whether many of the statements attributed to him were actually spoken by him and whether it was indeed part of Buddha's strategy to co-opt these ancient gods into his religion. These deities were so strongly rooted in the spiritual landscape of the place, that for this new religion to thrive and be accepted, it would have had to bring these tutelary deities into its fold. So what we are left with are the words of Buddha as quoted by his companions, the religion as it is practised on the ground and the texts that explicate its doctrines.

For itinerant monks, snakes posed a very real danger in the monsoon season. Ever practical, Buddha when told about a certain

Bhikku being bitten by a serpent while sleeping on a low bed is said to have told his monks that his *Vinaya* rules permitted them to sleep on raised beds.

'I allow you, O Bhikkhus, supports to your bedsteads.'[8]

Another time when told that a monk had died from snakebite, he is said to have instructed his monks to repeat a formula, in which they declared their great love and reverence for four types of royal serpents, the Virupākkhas, the Erāpathas, the Kanhāgotamakhas, and the Khabyāputtas.[9]

A *dhāraṇi* text, the *Megha Sūtra,* dated to circa 9th century CE and now found only in the Chinese Buddhist literary tradition was considered of such importance that it was officially promulgated for propagation throughout China.[10] It deals with what *dhāraṇis* should be imparted by the dragons to those who desired rain. Buddha, while preaching at the court of Nāgarāja Upananda tells the dragons that rains will fall when people live by charity and if they repeat the *Sarvasukhāndadadhāraṇi* that he was giving them. This in turn will improve the agricultural prospects of the people.[11]

People were encouraged to worship the Nāgas for rain, for prosperity and other worldly things, continuing the ancient Nāga connection with water and with worldly riches in the Buddhist context.

Nāgas in the Early Art of Buddhism

The art of the late Mauryan and post Mauryan period is, from the point of subject matter and iconography, mostly Buddhist, dedicated to decorating Buddhist *stūpa*s and *vihāra*s.[12] This is also the earliest period of Buddhist art, beginning from around the 2nd century BCE and can be found in the form of sculptures on stone railings surrounding various early *stūpa*s such as those at Bharhut, Sānchi, Bodh Gaya, Sanghol, as well as Amarāvati and Nāgārjunastūpas in South India. These early *stūpa*s contained the relics of Buddha deposited there by Emperor Aśoka, after he is said to have opened up the early *stūpa*s of Buddha and taken out the relics placed there soon after Buddha's Mahāparinirvāṇa. The *stūpa* form is not a Buddhist invention; it existed earlier as a 'funerary tumulus', an idea that would

later be used to house the remains of Buddha, and the great spiritual leaders, monks and teachers of Buddhism.[13] It is probably the earliest symbol of Buddha, because the early *stūpa*s enshrined the relics of Buddha after his *Mahāparinirvāṇa* and even enclosed the relics of his favourite disciples like Sariputra and Maudaglayana.

At first sight the presence of lush fertility deities like Nāgas and Nāginīs, Yakṣas and Yakṣiṇīs, śālabhaṇjikas on the *stūpa* railings and drums seem to be at variance with an ascetic or Śramanic religion like Buddhism. And yet, especially in the early period of Buddhist art, they are to be found everywhere.[14]

An early historian of Buddhism, Alexander Cunningham observed that Nāgas play a more important role in early Buddhism than do Yakṣas.[15] James Fergusson on seeing the Amarāvati marble reliefs felt that these relief sculptures were an instance of serpent worship, and so called his book on Amarāvati and other early *stūpa*s, "Tree and Serpent Worship or Illustrations of Mythology and Art in India in the First and Fourth Centuries after Christ from the Sculptures of the Buddhist Topes of Sānchi and Amrāvati, Prepared under the Authority of the Secretary of State for India in Council, with Introductory Essays and Description of the Plates."[16] The variety of ways in which the Nāgas have been depicted on the railings of early *stūpa*s, the importance given to Nāgas and Nāga episodes at Amarāvati and the frequency with which they were depicted, give credence to this idea. (Fig. 16)

The question then is how can an ascetic religion like Buddhism be reconciled with these unabashedly worldly fertility deities? Can the 'austere theology' of Buddhism be squared with images in which the human body has been displayed with a lack of prudishness on Buddhist monuments? Ananda Coomaraswamy who had pondered on this visual and theological anomaly believed that early Buddhist art, like that of Sānchi was a "hedonistic,"[17] art adapted for spiritual purposes, that it was not a true reflection of early Buddhism, but was derived from an older popular art, which, because it was wrought in impermanent materials, is lost to us.[18] This researcher however believes, with all due respect to Coomaraswamy that the answer lies elsewhere and for that we have to examine the early history of Buddhism.

Buddhism was primarily a monastic religion that was committed to every Buddhist monk working towards his enlightenment and while they lived in communities, they were primarily patronised by royalty. With the fall of the Mauryan Empire the Buddhists lost most of their royal patronage. The Sunga rulers who were Hindu Brahmins would not have provided them the kind of patronage that the Mauryan rulers had provided.[19]

But having lost at least some, if not most, royal patronage, Buddhism would have had to take measures to survive and in the process reinvented itself. This was done by making it more accessible to their lay followers. It spread its roots down to reach the *vyantaradevatā*s and their numerous devotees, thus increasing the number of its followers.[20]

All this meant that Buddhism was changing from the ethically simple but powerful creed set down by Buddha. The deification of Buddha, the concept of the Bodhisattva, the transference of merit from one person to another by a pious act like donating money for the creation or maintenance of *stūpa*s were not present in Buddhism in its original form.[21] But after much deliberation when these ideas were adopted they helped to bridge the gap between the clergy and the laity.

Fortuitously, this was the period when trade, both international and internal, expanded and there were enough traders and craftsmen who were becoming wealthy through trade and the creation and promotion of art, who stepped into the breach.[22] While minor royalty and the nobility of the land contributed to the creation of *stūpa*s, the local *sangha* was patronised also by monks, townsmen, artists' guilds and nuns.[23] Traditionally it was the mercantile class that financed heterodox religions like Buddhism and Jainism. This was the case even in Buddha's own lifetime. Anāthapindika the rich merchant who gave Jetavana to Buddha is immortalised in art and literature. *Saddharma-pundarika*, *Mahāvastu* and *Milindapañha* speak warmly of the mercantile community, suggesting close ties between the Buddhist monks and the mercantile community.[24] In a caste-ridden society, these religions offered the merchants and artists who were well-off, the

opportunity to be upwardly mobile, bypassing the strict caste hierarchy of Hinduism.[25]

In the *Milindapañha*, purported to be a record of discussions between the Bactrian king Menander and Nāgasena, a Buddhist monk whose exposition of the philosophy of Buddhism leads to the conversion of the king, Nāgasena tells the king that the worship of the relic or *sarīrapūja* is only meant for the laity. The monks on the other hand should practise "understanding and meditation."[26]

In short, the monks were to concentrate on their own spiritual development while the *stūpa* was primarily meant to be the focus of worship for the laity. It is through the sculptures on the *stūpa*, at a time when literacy was confined to the fortunate few, that Buddhism explained its tenets in a simple uncomplicated fashion to the lay people.

In the making of *stūpa*s and by having the stories of the Buddha's life and *Jātaka* tales sculpted on the railings and gateways around the stūpa, the monks found the ideal way to reach out to the people. Emperor Asoka had shown the way to propagate Buddhism by creating innumerable stupas along with edicts written on stone pillars enunciating his idea of Buddhist Dharma. So the later Buddhists would have been following in his footsteps in the building of *stūpa*s, *chaitya*s and *vihāra*s at sites close to or on the trade routes[27] making it easier for the mercantile community to come in close touch with the Buddhist clergy.

Buddhism had moved beyond monasticism by the 2nd century BCE, and this change is reflected both in the *Jātaka* stories and in the art of the period. The *Jātaka* tales or fables were long in circulation among the people, many of them even before the time of Buddha. They embody the oldest extant folklore of the country[28] and give us glimpses into the lives of ordinary people, their concerns, superstitions and beliefs. The Buddhists appropriated them for expounding their doctrines to the masses and modified them to tell the stories of Buddha in his previous lives.This they did in two ways; textually and visually. They adapted these old folk tales that included these folk deities to reflect the teachings of Buddha and they gave visual expression to these stories in sculptures meant to edify the worshippers. Both the

Jātaka stories and the autochthonous deities mentioned in the *Jātaka* thus find a place in the stupa that over a period of time had become synonymous with the Buddhist faith. These stories would have been injected into Buddhist discourses to edify and entertain the laity and to prevent the attention of the audience from flagging.[29]

Buddhism was a proselytising religion and it must have recognised the popularity of folk cults and so co-opted them into their religion. By illustrating the stories of Buddha's life and *Jātaka* stories that dealt with his previous lives on stūpa railings, the *stūpa* becomes a place for laymen to worship Buddha. And by bringing the autochthonous deities into the *stūpa* precincts, the Buddhists were making sure that the lay community and potential converts to Buddhism would find the stūpa a welcoming place. So a more plausible explanation for the conundrum posed by Coomaraswamy is that the Nāgas and Yakṣas and other autochthonous deities were present in the art of early Buddhism because they were there in the *Jātaka*s. The *Jātaka*s are the source material for the art. Buddhism did not supplant these autochthonous religions but augmented them and used them to further its own cause.

The *Jātaka*s contain no abstruse or complex philosophical ideas because they are primarily meant for the laity.[30] They explain in simple terms the religion of Buddha to the ordinary people, the very people who also worshipped such primitive deities such as the Nāgas and the Yakṣas. Also, the underlying premise of the *Jātakas* that all creatures have to work out their salvation through many life times, is inherent in the parabolic structure of the stories.

Buddha, according to the *Jātaka*s lived through many non-human forms like the Nāga, Garuḍa, the elephant and monkey, before he completed his spiritual evolution as Prince Siddhartha of the Śākya clan. As a Bodhisattva he progressed from life to life, never deviating from the path of virtue even if it meant pain, humiliation or death. He was born as a Nāga in some of his previous births; as Nāga Champaka in the *Champeyya Jātaka*, Nāga Śankhapāla in the *Śankhapāla Jātaka* and Bhūridatta in the *Bhūridatta Jātaka*.

Unlike the *Jātaka*s and the art that it spawned on *stūpa* reliefs, *Vinaya* literature was meant for the clergy or monkhood, because they preached a more puritanical and ascetic form of Buddhism. They laid down the rules of the Sangha and the rules of behaviour expected from monks and nuns, as well as Buddha's life stories.

The ordinary folk who contributed money for work done on the *stūpa* not only believed in Buddha and his teachings but were also worshippers of autochthonous deities like Nāgas and Yakṣas. They would not have found it incongruous to see these deities given space in *stūpa*s where they came to worship Buddha. The Nāgas and Yakṣas, along with Surya, Lakshmi and Indra and stories from the *Jātaka*s and scenes from Buddha's life, all jostled for space on the railings of the Bharhut, Bodh Gaya, Amaravati and Sanchistupas. Such a yoking together of two kinds of religion, one cerebral and the other, popular, is found in the early stūpas. Also since the majority of members of the sangha were drawn from the ordinary people of the land who would have subscribed to such worship, the absorption of these cults into the Buddhist religion should not have posed any great problem. There is little doubt that the sangha would have been complicit in this arrangement.

This of course meant that the religious life of the people of the early period was flavoured with eclecticism and this is confirmed by archaeological and epigraphical evidence.

Epigraphical evidence such as inscriptions of donations to *vihāra*s and Nāga temples also supports this idea.[31] For example, the Jamalpur Mound has yielded both Buddhist and Nāga remains. An inscription on a stone slab dated to the 26th year of Kaniska's reign (circa 104 CE) found at the site of a major *vihāra* or monastery established by the Kusana King Huviśka in 125 CE, suggests that a shrine dedicated to Dādhikarṇa was situated there well before the vihāra came up on that site. This slab was installed by the Chhandaka brothers, chief among whom was Nandibāla and it records that a gift was made to Dādhikarṇa, a Nāgarāja,[32] probably a tutelary deity. An inscription on the base of a pillar presumed to be from a later vihāra from the same archaeological site, states that this pillar was the gift of Devila

a servant of the shrine of Dādhikarṇa.[33] Here is proof that the worshipper found no contradiction or problem with worshipping both the Nāga as well as Buddha.

In the same fashion, at Maniyār Math there is evidence of the Serpent King or Mani Nāga, the tutelary deity of Rājagṛha, being worshipped from the beginning of the Christian era. An inscription on an image of Nāgarāja Mani-Nāga, now in the National Museum New Delhi and dated to around the 1st - 2nd CE informs us that the donor of this sculpture was 'Bhagini Samagadhi' or 'sister Samagadhi', a Buddhist nun, who nevertheless believed in Nāga worship. In addition, remnants of a Buddhist *stūpa* were found under layers of both Hindu and Jain structures, proving that this site was considered sacred by all three religions[34] as well as by autochthonous religions like Nāga worship. (Fig. 3)

While in the early period of Buddhist art, we find innumerable depictions of Nāgas on *stūpa* railings and in the case of Amaravati, on the drum of the *stūpa* too, there is enough archaeological evidence to suggest that this connection continued into the Gupta period. (Figs. 10, 12) For example, from Gupta times, shrines dedicated to Nāgas were set up within the Sānchistūpa complex. By then Buddhism was very much an established religion in the area. The days when the *sangha* was itinerant were long over and the Buddhist sangha had become a part of the community, often involved in the agrarian and economic lives of the people.[35] And these people and probably the monks too would have worshipped the Nāga. Probably in return for such services, the community of monks were looked after with food and other amenities by the lay community.

At Cave 16, Ajanta, built by Varāhadeva prime minister to the Vakataka King Harisena in the late 5th century CE, a Nāga, shown seated in the position of royal ease or '*maharājalīlāsana*' has been given space at the entrance to the sanctum sanctorum where the seated Buddha was worshipped. The front steps that lead to this cave are extant, so we can see that the Nāga still looks over the Waghora River over which he presides and this suggests that this site would have had been the Nāga's home long before it became Buddha's. Every

worshipper would first have to pay obeisance to the Nāga before he went inside the cave to worship Buddha. An inscription by Varāhadeva reads that besides making a temple for Buddha inside, he had built a shrine dedicated to the Nāgas.[36] In Nandivardhana a shrine to the Nāgas is said to have co-existed with one to Buddha.[37] (Fig. 4)

The Nāgas were there to protect the holy relics in the *stūpa*[38] and also faced the reservoirs of the area, since as deities connected with water and hence fertility, they were supposed to bring rainfall that resulted in the fertility of the land.

The Chinese Buddhist scholar and traveller, Fa-hien talks of a Buddhist monastery in the town of Saṁkāṣya that had displaced a Nāga. The monks not only worshipped the Nāga but also provided it a chapel and a seat or throne. Once a year it was offered cream in a copper bowl in its lair and all the monks from the highest to the lowest walked past him in a procession.[39]

As we can see from the examples above, the Indian tradition of building temples on consecrated or sacred ground led in many cases to Buddhist monuments being constructed on earlier Nāga temples[40] and when this happened it behoved the monks to pay due respect to the deity that had earlier occupied the place.

Buddhism changes the basic character of the Nāga and the manner of its worship when in Buddhist premises, just as much as the Nāga and other tutelary deities change Buddhism. In the *Jātaka* seven Nāgas who are otherwise considered unpredictable and deadly, can become Bodhisattvas, exemplars of such virtue, forbearance and goodness, that the traditional Nāga character is lost. These Nāgas could very easily have turned on their tormentors and destroyed them but because they followed the Dharma, chose to endure the suffering and renounce their power to do harm.[41] Buddhist theology is salvific; it transforms these beings into Buddhists intent on working towards their *nirvāṇa*. The Nāgas were not considered so unregenerate that they could not be saved.

In the *Saddharma Pundarika Sūtra*, or the Lotus *Sūtra* an influential and early Mahayana Buddhist text,[42] Buddha is described sitting on the top of Vulture Peak in Rāagṛha, preaching his *dharma* in the midst

of an incredible multitude of divine beings, and prominent among those who came to hear him preach were the Nāgas, headed by the eight Nāgarājas, Nanda, Upananda, Sagara, Vasuki, Takshaka, Manasvin, Anvatapta, and Utpala.[43] What this means is that Buddha considered all creatures capable of understanding and following his dharma, so that they too could benefit from it. (Fig. 9)

Again, there is no contradiction in the fact that the Bodhisattva was born as a Nāga as well as its arch enemy, Garuḍa. Because according to the tenets of early Buddhism, Buddha resolved all contradictions in his person, he rose above all of them and represented all living creatures.

While the Nāga is worshipped by ordinary folk, in Buddhist art it is shown worshipping Buddha, the worshipped becomes the worshipper. Examples of such worship can be found in the reliefs from early *stūpa*s like the Bharhut and Amarāvati *stūpa*s. A relief from Amarāvati shows garlands of snakes decorating the drum of a *stūpa*. Another relief from Amarāvati shows a garland of multi-hooded serpents festooned over a *stūpa*. Here the suggestion seems to be that the serpents are such great devotees of Buddha that they offer themselves as a garland on his *stūpa* to show their devotion. This could well be a representation of the Rāmagrāmastūpa which according to Buddhist legend was looked after and worshipped by the Nāgas. (Figs. 5, 6 and 17)

A roundel on the Bharhut railing shows Buddha's seat under a tree strewn with flowers, in front of which Nāga Elapattra stands in a worshipful attitude, his hands folded together. **(**Fig.11**)** The Buddha-Mūcalinda episode is depicted with Buddha's empty seat, with Mūcalinda in theriomorphic form looming over it in a protective posture.

These folk deities were taken into the Buddhist fold only after this form of worship was cleansed of all cruel practices like blood sacrifices, the offering of meat or drink to the deity or the partaking of these things by the worshipper in the course of the worship. The *Dumeddha Jātaka* relates the story of one of Buddha's former lives as a royal prince in Varanasi, who when he becomes the king, eschews the killing

of sheep, goats, swine and other such living creatures as sacrifices to tree spirits or Yakṣas. Instead he gives flowers, perfumes and oblations of water as offerings when he goes to these *chaityas* to pray. He also bans the sacrifice of all living creatures to these nature spirits in his kingdom and decrees that anyone who disobeys would himself be sacrificed to these deities.[44]

This is even more true when the tutelary deity is worshipped in Buddhist precincts. In the *Āyakūta Jataka* we are told that the Yakṣas were furious that all blood sacrifices had been banned by the king of Benaras, and so decided to kill him. They send a Yakṣa with a huge piece of blazing iron to strike him dead, but Śakra (Indra) puts this creature to flight. The point to be noted is that the Bodhisattva, did not ban the worship of such deities; he only wanted such worship to be in line with the humane principles of Buddhism.[45]

While the Nāga shrine lent legitimacy to Buddhism and helped in accommodating the religion and the clergy among the local community, once Buddha occupies his space, the Nāga becomes his door keeper. So even while accommodating the Nāga, his inferiority, vis-à-vis Buddha is clearly stated. At the same time, the Nāga would continue to receive worship from the local populace, may be even the Buddhist monks who lived in the place.[46]

The Nāga would perform certain services in exchange for the worship and honour that he was being paid. So if one worshipped Nāgas they protected, not destroyed the crops through excessive rains, floods or storms, prevented snake bites, and blessed the worshipper with offspring, material wealth and prosperity. These were much the same reasons for which they were worshipped earlier as independent deities.

Since the Nāga took over the responsibility of catering to the physical and material needs of the people, Buddha, as befits his more intellectually advanced religion, would be worshipped for spiritual wellbeing and salvation.[47] The presence of the Nāga would allow Buddha to be involved with more intellectual and spiritual matters, which is as it should be, while the Nāga looked after the temporal problems of the laity. So the meditating Buddha continued to be the

leitmotif of this religion, the still centre, even as the whirligig of life swept around him.

In fact Buddhism used these autochthonous deities to convert the populace to the Buddhist cause, they were the familiar signposts into unfamiliar territory. These deities would have been a reassuring presence in the Buddhist *vihāras* and shrines. The *Jātakas,* had brought in tutelary deities that were there in their parables. This left the door wide open for deities with a narrow remit to be brought into local *stūpa*s and personalising it for the benefit of the local populace that the *stūpa* and the community of monks served. By doing so, Buddhism was also assuring its own position in the society of the area. For example, on the Bhārhut *stūpa* is a resplendent, full length, figure of Chakravāka Nāga, (Fig. 7) who was probably only known in that area and was the tutelary deity there.

Buddhist literature also uses these deities to explain Buddhist doctrines[48] because they found in these tutelary deities the means to spread the message of Buddha. For example, Buddhist texts like the *Tripiṭaka*s speak in terms of Buddha or his monks defeating the serpent or Nāga who was causing great harm to the people.[49] Such stories served multiple purposes: they elevated Buddha to a superior position vis-à-vis the Nāga gods, and they suggested that the Nāgas would be more amiable, less prone to harming humans if they were accessed by the believer through Buddha since he had the power to control, even punish them if they lapsed into bad behaviour. Finally, it spelled out in unambiguous terms that Buddha's religion, his Dharma, gave him power over the Nāgas. So it is only fitting that they are shown in attitudes of worship in the *stūpa* premises.

In a story popular in the Swat valley dealing with Buddha and the Nāga, we have Buddha coming to the rescue of villagers living in the vicinity of the River Suvastu (modern Swat), who beseech him to stop a powerful Nāga called Apalāla from poisoning their water. Buddha's companion Vajrapāṇi smites the mountain side with his thunderbolt terrifying the Nāga. The Nāga comes out from his lair and listens to Buddha's sermon, his heart is purified, and he converts. He requests Buddha that since he gets his sustenance from the White River, he

should be permitted to flood the region once every twelve years. The rest of the time he would leave the people in peace. As this seemed a reasonable request, he is granted his wish.[50]

From the *Mahāvaṁsa,* an epic poem written in Sri Lanka circa the 5th century CE by a Buddhist monk, we have a story that illustrates how Buddha's *dharma* gives a monk the strength to subdue a Nāga. A Nāgarāja called Aravala causes rain and hail to destroy the crops of the people in Kashmir and Gandhāra, but the Buddhist monk Majjhantika is not even a little intimidated by the Nāga, when he brings fierce Nāgas to terrify him. Instead he preaches the Dharma to the Nāgas and converts them. Whereupon, Aravala sets the monk upon a jewel-throne and fans him. All the people of Kashmir and Gandhara go to hear the monk preach the dharma, namely the *Asivisupama* (The Discourse of the Serpent Similes). He converts eighty thousand people and a hundred thousand receive the *pabbajja* (the first rites of monkhood) from him.[51]

One of the stories in the *Mahāvastu*, compiled the 2nd century BCE and 4th century CE, is about the taming of the fearsome Nāga in the firehouse of the Kaśyapa brothers, some of Buddha's earliest disciples. This incident is the last of the many miracles that Buddha performed to convince the Kaśyapa brothers and their followers of Buddha's spiritual superiority.[52] Even this Nāga, the most recalcitrant of them all - so fearsome that none dare approach it, breathes fire and tries to intimidate Buddha with his show of fire power - is not killed. Buddha uses the fire of his "tejas" to fight the fire of the serpent and defeat it, but he does not kill it. He shows that even in victory one should show compassion to one's enemy.

These myths are similar to the earlier hero versus dragon myths found all over the world, except that in the case of Buddhism, its defeat did not mean certain death for the dragon. It would be persuaded to give up its evil ways and convert to Buddhism so that one day it too would find *nirvāṇa*. From being the enemies of the faith, the Nāgas end up becoming the defenders of the faith. So Buddha-Nāga conflict modifies the ancient myth of the hero defeating

and killing the evil dragon, which has persisted in many parts of the world. While the hero wins the bout, the evil dragon now turns over a new leaf and becomes a Buddhist.

Both in the stories of serpents and in the sculptural representation of these stories, we find that a distinction has been made between the Nāga and the *sarpa* or serpent. They are two different creatures, one mythical and larger than life, and the other real and the characters of the two are often diametrically opposite to each other. The former, like its anthropomorphic form suggests, has human qualities which redeem its character while the latter is represented as a reptile and is considered more unpredictable by nature. This difference of perception has been carried through into the art fostered by this religion. Also the *sarpa* is not usually given a name, but is spoken of in generic terms.

A Bhārhutb *stūpa* architrave, now in the National Museum, New Delhi, illustrates the *Suvannakakkata Jātaka* 'The Jataka of the Golden Crab'.[53] The story in short is about a Brahmin, (Buddha in one of his previous lives) who was bitten by a snake at the behest of a crow whose wife wanted to eat the eyes of the Brahmin. The Brahmin had befriended a large crab and it was this crab that catches the snake that had bitten the Brahmin. It insists that the snake retract the poison from the Brahmin's body and save his life. Once the Brahmin was safe, the crab kills the snake and two crows that had instigated the snake to bite the Brahmin. (Fig. 13)

In the roundel depicting this story on the *stūpa* railing of Bhārhut, this snake is given a normal reptilian form (even its forked tongue is clearly visible) - with no multiple headed hoods or an anthropomorphic form. Within the circular synoptic format, the story has been told quite clearly in the continuous narrative technique of the earliest period of Buddhist art. The serpent here is nowhere given a name or the characteristics of a Nāga much like the serpent of Uruvilva which was subdued by Buddha. By identifying it with Māra, the God of Death, the *Jātaka* was making it clear, that it had none of the redeeming qualities of Śankapala and Campaka.

The Nāga in the Aniconic Period

In the early period of Buddhist art, for various, not completely understood reasons, Buddha himself was not shown in human form till the 1st century CE.[54] He was represented with symbols or by an empty space where his form should have been. The earliest repositories of Buddhist art, the early *stūpa*s, did not portray Buddha's image but used symbols to denote his presence or an important event in his life.

It was not till the fourth Buddhist council held under the aegis of the Kuṣāṇa Emperor Kaṇiṣka, that Buddha began to be depicted in human form in art. In ambitious *stūpa* projects where building activity continued for a long time, as at Amarāvati and Nāgārjunakonda, both the aniconic and the iconic phases can be seen – the aniconic in the earlier phase and the iconic in the later.[55] At the time when Buddha was not depicted in human form, the stūpa stood in for him.[56]

A conundrum of early Buddhism is, why was Buddha, who was born human represented only symbolically, while chthonic deities some non-human, like the Nāgas were given human form?

'Aniconic' should not be taken to mean iconoclastic, (as in the case of the religions of the Book)[57] because Buddhist art contained both images and symbols, many of them theriomorphic like the serpent, the lion or the deer. Buddhist aniconism consisted of geometrical, botanical or theriomorphic symbols as supports of contemplation.[58] Various symbols such as emblematic representations of certain parts of the Buddha's own body such as his footprints, and an empty space or a 'non image substituted for a human representation of the Buddha.'[59] It is important at this point to emphasise that the symbols used for representing the Buddha were not exclusively Buddhist, but were used by Hinduism and Jainism too.[60] The meanings that accrued to these symbols over a long period of time were now being played out in new contexts.

Buddha himself was not represented, except with an empty space where his form would have been in normal circumstances, a few symbols like the wheel or *chakra* etc. to represent his dharma and with non-human beings like the deer, the Nāga etc. Among such examples is the Buddha-Mūcalinda scene where an empty seat,

Fig. 1. *Nanda and Upananda Worshipping Baby Buddha*. 1st-2nd century CE. Mathura. Government Museum, Mathura. Researcher's Photograph.

Fig. 2. *Worship of the Buddha*. 1st century BCE-1st century CE. Amarāvati. Government Museum, Chennai. Researcher's Photograph.

Fig. 3. *Back of Maniyar Math Nāga Stele with Inscription of Gift.* 1st-2nd century CE. National Museum, New Delhi.

Fig. 4. *Nāga at entrance of Cave* 16.5th century CE. Ajanta Caves, Maharashtra. Huntington Archives.

Fig. 5. Nāgas worshipping *Stūpa*.

Fig. 6. *Nāga on Stūpa Drum with Umbrellas.*
Top and Below 2nd-1st century BCE. Amaravati, Andhra Pradesh.
Government Museum, Chennai. Researcher's Photographs.

Fig. 7. *Chakravaka Nāga*. Bhārhut Stūpa.
Śunga Pd. 2nd century BCE.
Indian Museum, Kolkata. Researcher's Photograph.

Fig. 8. *Buddha with Nāga Kalika*. Gandhara. National Museum, New Delhi. Researcher's Photograph.

Fig. 9. *Buddha preaching to a Nāgarāja and a Monk with Coiled Snake*. 150-300 CE, Satavahana Pd. Coping Slab. Amarāvati. Huntington Archives.

Fig. 10. *Nāgarāja with his consorts*. 2nd century BCE. Śunga Pd. Bhārhut *Stūpa*, Madhya Pradesh. Indian Museum, Kolkata.

Fig. 11. *Elapattra Nāga Panel*. Railing, Bhārhut *Stūpa*.
Indian Museum, Kolkata. Researcher's Photograph.

Fig. 12. *Shalabhanjika and Consort.* 2nd century BCE. Śunga Pd, Bhārhut Stūpa Railing.
Indian Museum, Kolkata. Researcher's Photograph.

Fig. 13. *Suvannakakkata Jataka*. 2nd century BCE. Śunga Pd. Bhārhut *Stūpa* Railing, M.P. National Museum,
New Delhi. Researcher's Photograph.

Fig. 14a. (Left) *Buddha Mūcalinda*. 2nd century BCE. Pauni *Stūpa*, Maharashtra. National Museum, New Delhi.
Fig. 14b. (Right) *Buddha Mūcalinda on a Stūpa Railing*. 3rd-2nd century BCE. Śunga Period. Bharhut, Madhya Pradesh. Allahabad Municipal Museum.
In Huntington Archives.

Fig. 14c. (Left). *Buddha Mūcalinda.* 2nd-1st century BCE. South Face of North Pillar, West Gateway, Stupa 1.
Sanchi, Madhya Pradesh. Online picture.
Fig. 14d. (Right). *Buddha Mūcalinda.* Ca. 3rd century CE. Nāgārjunakonda, Andhra Pradesh. Marble. Acc. No. IM81-1936.
Victoria and Albert Museum. Collection Online.

Fig. 15. *Buddha-Mūcalinda.* 6th-7th century. Bodhgaya. Front and Back.
Sandstone. Indian Museum, Kolkata. Researcher's Photograph.

Fig. 16. *Nāgarāja Purnaka Fighting Sumana in Annottava Lake*. 2nd-1st century BCE. Mathura. Government Museum, Mathura. Researcher's Photograph.

Fig. 17. *Nāgas Worshipping the Relic Casket of Buddha*. 3rd Century CE. Amarāvati, Andhra Pradesh. Railing Crossbar. British Museum. Collection Online.

Fig.18 *Buddha Mūcalinda, Worshipped by Nāgas.* 200-299 CE. Ikṣvāku Dynasty. Nāgārjunakonda. Nāgārjunakonda Site Museum, Andhra Pradesh.

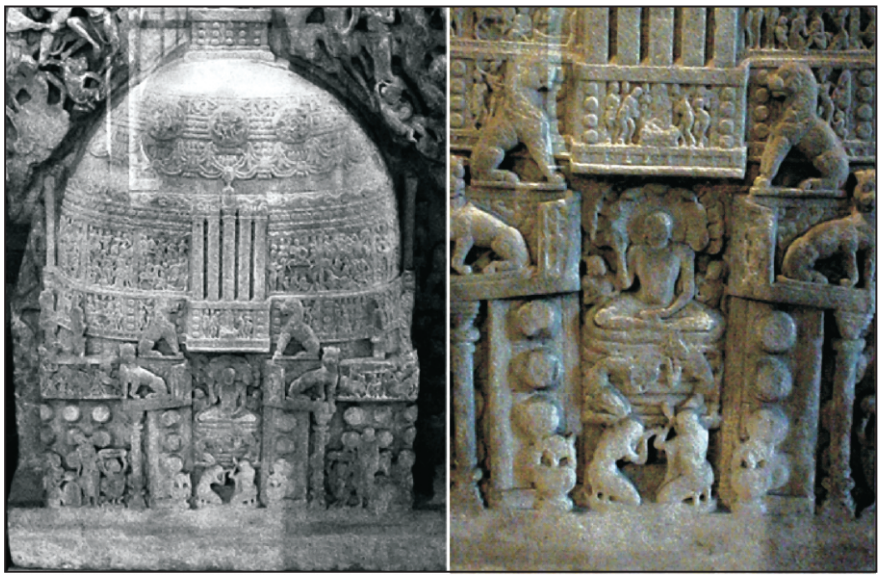

Fig. 19. (Left)*Buddha-Mūcalinda on Stūpa Drum.* (Right) *Detail.* 2nd century CE. Amarāvati. Andhra Pradesh. British Museum, Researcher's Photograph.

Fig. 20. *Buddha-Mūcalinda*. 2nd Century CE. Gandhāra. Victoria and Albert Museum. Acc. No. IS.79-1949. Collection Online.

represents Buddha sitting under the *peepul* tree in meditation, (Fig. 2) the feet of the Buddha shown climbing down steps on his return from the thirty-third heaven, an empty seat with flowers on it, in front of which Nāga Elapatra is standing worshipfully, etc.

In the illustrations of popular *Jātaka* tales on early *stūpa*s like Bhārhut, Sāñci and Bodh Gaya, Buddha takes on animal and human forms and identifies with all of nature, not just man. Through his own example he was expressing the fact that all manifestations of nature were very important in the cosmic scheme of things. While you finally become a Buddha in your human form, nothing prevents you from becoming a Bodhisattva in the other forms of life. The underlying premise of the *Jātaka*s that all creatures have to work out their salvation through many life times, is inherent in the very structure and moral of the stories. What this means is that no creature was so unregenerate as to not hope for enlightenment.

Otherwise how could a Nāga in its serpent form represent Buddha at the time of his enlightenment, a period that defined him forever? So this early aniconic period represented early Buddhism which had a more pantheistic, egalitarian, less anthropocentric view of the world. While the Nāgas depicted on the Bhārhut *stūpa* were shown in attitudes of supplication to Buddha, their presence balanced the absence of the Buddha image.

In Amarāvati the importance of the Nāga is even more evident. It occupies the central position on the *stūpa*, standing in for Buddha in the aniconic period. Garlands of Nāgas festoon the drum of the *stūpa*, stories with Nāga characters are sculpted on the railing and the drum of the *stūpa*. Very likely the people there were serpent worshippers so this was one way of bringing them into the Buddhist fold. (Fig.5)

It was not that Buddha was not worshipped in the aniconic period. In early depictions we see worshippers paying homage to the tree and the seat which represented Buddha at the time of his enlightenment. We also see Mūcalinda behind the seat in his reptilian form with his torso raised, and his multi-headed hood above the seat, protecting Buddha from the storm as on a Bhārhut *stūpa* railing. (Fig. 14c) But without the anthropomorphic image of Buddha, the Nāgarāja

Mūcalinda carries the burden of the story telling and hence got as much of the worship as Buddha. But in later *stūpa* representations where Buddha is represented in person, its importance is diminished though not obliterated. In later depictions, the Buddha image overwhelms every other image surrounding him, and becomes central to the depiction.

The theology behind religious art is too important to be left to just the artists to interpret as they will and early Buddhist art is no exception to this. From the earliest period of Buddhist art, there surely must have been theological discussions on how to accurately translate the philosophy of early Buddhism into visual art. The non-representation of Buddha and the use of symbols to depict him are the result of theological deliberations rather than a random act, because all early Buddhist art reveals the same characteristics. In fact this researcher posits that the earliest art of Buddhism reflects accurately the compassion of Buddha and his identification with all the living beings of this world, and the method it used to depict this idea visually was by not representing Buddha in anthropomorphic form but through his absence and through symbols.

The Buddha Icon

It would take nearly two hundred years for Buddhism to move from representing Buddha symbolically to depicting him anthropomorphically. From circa the 1st first century CE, the period when the Kuṣāṇa King Kaṇiṣka ruled over northern India and parts of Afghanistan, Buddha started being depicted as a *Mahāpuruṣa* or a 'supramundane' person.[61] This in turn would have led to the Buddha being represented anthropomorphically, because it is as a human that Siddhartha attains Buddhahood. But his *Mahāpuruṣa* status ensured that the focus of worship was Buddha himself in this stage. Mathura and the South-Amarāvati, Nāgārjunakonda and Jagayapetta- too shifted from the non-representation of Buddha to his representation in human form.

We are told of a sandalwood image of Buddha made in his lifetime, when he rose to the Heaven of the Thirty-Three Gods, to preach his doctrines to his mother who had died within a few days of giving

birth to him. This image was made at the behest of King Udayana, who missed Buddha when he disappeared from the earth to preach to his mother. Both Hiuen Tsang and Fa Hein mention this story in their accounts of their travels to the holy land of Buddhism. The original story is from India and can be found in the *Ekottarāgama Sūtra* of the Mahasanghika sect, and the *Vinaya* of the Mūlasarvāstivādins.[62] Rowland suggests that the story of the images were created to ward off criticism from more orthodox quarters when Buddha statues started being made in Kuṣāṇa times.[63]

The only precedents available to the Buddhists for the creation of Buddha image in the more organised forms of religion were a few early Jain sculptures, and *āyāgapatta*s or plaques, and some Hindu sculptures especially of Balarāma. On the other hand, folk religions from around the 3rd century BCE, had started using huge monolithic images of autochthonous deities like Nāgas and Yakṣas. Small household images of deities of folk origin in friable materials like terracotta were probably being made for a long time but after the Mauryan period, stone was being used for image-making in all religions, which is why many have survived, even if sometimes damaged, to this day.

All the three religions must have found that people related more easily to an iconic rather than an aniconic form of worship and recognised this as an excellent means for propagating their religions.[64] The attitude of those who actually made use of anthropomorphic images is defined in the *Divyāvadāna*,[65] where Upagupta who had compelled Mara to appear in the form of Buddha, bows to the apparent form of Buddha. He explains to the shocked Mara that those who worship earthen images do not worship the clay images but the immortal principles which are represented on them; (*mṛnmaya-pratikṛti*).[66]

In another story directly relevant to the subject on hand, Buddha fixes his image on a cave face at Nāgarahāra, in Hadda, Afghanistan to remind two Nāgas of his teachings. So the idea of a Buddha image was not alien to his worshippers or acolytes even if they had not been translated into action. [67]

It also seems reasonable to assume that when folk and popular deities were co-opted into Buddhism, their images came with them. Such images could have been the inspiration for the creation of Buddha images.[68] The designation Bhāgavata was used not only for Viṣṇu, Śiva and Buddha, but also to the Regents of the Four Quarters, who were Nāgas and Yakśas, and also to individual Nāgas and Yakṣas.[69] So it seems that all the three mainstream religions followed a similar trajectory and their deities were given similar names.

With the use of the anthropomorphic image of Buddha, the visual language shifts from nature to the person of Buddha. While the earlier symbolic language was not completely discarded, it was made subsidiary to the image of Buddha. So Nāgarāja Mūcalinda no longer substituted for Buddha's enlightenment but was an added accessory to the anthropomorphic image. The two deer on the plinth of the seated Buddha did not carry the entire burden of relating to the viewers that what was being represented was Buddha preaching his first sermon at Deer Park in Sarnath, but their presence there clarified beyond any doubt that the seated Buddha with his *dharmacakrapravartanamudra* was indeed shown preaching his first sermon at Sarnath. With the ascendance of the human form, nature while still a part of the action was relegated to a subsidiary role. So the importance that the Nāga enjoyed in the earlier art is diminished somewhat in the later period.

Nāga images however contributed in a more profound way to Buddha images. Nāga images meant for households to worship in the course of Nāgabali rituals described in the various *Gṛhya-Sūtra*s,[70] were probably made from quite early times. The iconography that informed and distinguished these figures would have been used for the large monolithic images that were made from the 3rd century BCE in Mathura. These images, very popular in the North of India, preceded Buddha images by about two centuries.

The very presence of these huge Nāga and Yakṣa figures in the spiritual landscape of the country, from 3rd century BCE but in greater abundance from the 2nd century BCE at Mathura and their popularity with the people would have had an enormous impact in breaking the

taboo that may have existed on the creation of Buddha's images earlier. Buddha images started being made from the 1st century CE, in the Kuṣāṇa period during the rule of Kaṇiṣka.[71] Without the example of the monolithic Nāga and Yakśa images it is doubtful if Buddha images would have emerged when they did in the Indian heartland.

While the earliest Bodhisattva or Buddha images were modelled on Yakṣa figures, the Buddha-Mūcalinda figure is based on the Nāga images of the day.[72] Even the hand gestures of Buddha imitate those of Nāga and Yakṣa figures. Early Buddha images have the hands raised to shoulder level, the palms in profile when viewed from the front, very like the Nāga of the same period. This was a very typical gesture represented on Nāga figures from the 2nd century BCE. It was actually a gesture of benediction, *the abhaya mudra* and a similar gesture was found in early Mathura Buddha figures.[73] Over a period of time, in the case of the Nāgas as well as Buddha and Bodhisattvas, the hand was lowered and the flat of the palm faces the viewer in a gesture of benediction.

So we see that Buddha image borrowed the medium - stone in this case - the gestures or *mudra*s, the rituals of worship from these ancient deities[74] and sublimated all of them with its own philosophy. Over a period of time the Theravada or Hinayana school too embraced the creation and worship of Buddha images.

Image of the Seated Buddha

The Nāga is only one of the Bodhisattva's theriomorphic manifestations in the *Jātaka*s. Also it is not only Buddha who is born as a Nāga in one of his previous lives, in some instances even his disciples were Nāgarājas in their previous birth, as Sariputra in the *Śilāniśaṁsa Jātaka*.

This is a religious art, and in this art, the theriomorphic and botanical beings that people it serve a larger religious purpose than just the obvious. The serpent represents that incident in Buddha's life, his enlightenment that defined his entire existence and changed the religious landscape of the country.

The protection that Mūcalinda gave Buddha when he was seated under the Bodhi tree engrossed in his meditation is considered one of the *aṣṭa-mahā-pratihārya*s (or Eight Great Miracles).[75] The *Mahāvagga*,[76] one of the earliest Buddhist texts, (5th-4th c. BCE) mentions this incident. Another old Buddhist text, *Udana: Exalted Utterances* repeats the same story[77] while an even later Sanskrit text *Lalitavistara*, elaborates on this legend by adding the names of the Nāgarājas of the East, West, North and South to that of Mūcalinda as protectors of Buddha.[78]

According to the story, Buddha arose after seven days of intense meditation under the banyan tree and sat under the Mūcalinda tree enjoying the bliss of his enlightenment. An unseasonal storm arose and Nāgarāja Mūcalinda came out from his abode and wound himself seven times around Buddha. To protect him further, he spread his multi-headed hood over Buddha's head and stayed in that position till the storm dissipated. He then assumed the form of a human and with folded hands waited upon Buddha.[79] (Fig. 15)

Buddha seated in *padmāsana* is a uniquely Indian image[80] and Buddha seated in *padmāsana* on a serpent throne formed by Mūcalinda's lower torso is but a variation of this basic image.

But in the earliest period, it is the Nāga that represents the Buddha's newly won Buddhahood, even without the image of the Buddha. One of the best examples of Buddha's absence from a scene - an absence that makes his presence clear - would be the empty seat of Buddha with Mūcalinda looming protectively behind it, a representation of the great spiritual awakening of Buddha. It is shown sculpted on reliefs at Sāñci, Bhārhut and Pauni where the Buddha is represented by his empty seat under the Bodhi tree and looming above it, the many headed cobra. (Figs.14a, b, c, d). The serpent symbolised spiritual and material well-being and its presence in the scene expresses the enlightenment of Buddha in a way that would otherwise have not been possible.

Since Buddhist art never broke free from the ancient symbolic forms but continued to use them - as did Jainism and Hinduism,[81] when the serpent was used in this art, it was brought into the religion with its entire symbolic baggage.

The ancient connection of the serpent with spirituality, with yoga, meditation and self-knowledge, is brought to bear on this image of the serpent in the central niche of the drum of the *stūpa* (as can be found on the railings and reliefs from the Amarāvatistūpa) to represent the inexplicable, ineffable process of spiritual illumination. Some ideas are beyond words or depictions and the serpent makes the ineffable understood in a more profound way without words. And the true worshipper of that period in his turn understood the symbolic meaning of the serpent in that context.

The seated figures of Buddha show little affinity to the standing Nāga or Yakṣa figures, they could have been inspired by the seated *yogi* figure that has been prevalent in India from the time of Mohen-jo-daro.[82] However, the Buddha-Mūcalinda image surely owes a great deal to the Nāga image, especially in the manner in which the snake hoods frame his head. As Ananda Coomaraswamy has so pertinently pointed out, Buddha-Mūcalinda image and the Pārśvanātha - Dharanendra image look suspiciously similar to the Nāga image,[83] because in all instances with regard to Buddha and in most cases, with regard to Pārśvanātha, the Nāga image with little change has been copied. When seated on the serpent throne, with the torso of the serpent climbing up his back, Buddha could well be mistaken for a Nāga figure if it was not for the fact that he is always shown in deep meditation, which the Nāga figure is not. The same thing is true about Pārśvanātha images.

With the Buddha-Mūcalinda image we have the serpent seat formed from the lower torso of the serpent and the protective umbrella formed from the multi-hooded head of the Nāga. Other features remain the same. While the earliest image of a person with a serpent rising above him can be traced to the Harappan civilisation, its earliest use in the Buddhist context can be found on railings from Sāñci and Bhārhut. There of course it was used without Buddha image, his presence registered by the empty seat. But reliefs with the anthropomorphic image of Buddha were probably made for the first time in Amarāvati, around the 2nd-3rd century CE.[84] This image achieved great popularity in South India, at Amarāvati, Jagayyapetta

and Nāgārjuna konda *stūpa*s in Andhra Pradesh. It diffused from there to Thailand and Kampuchea where it continues to be used to this day.[85] Calembur Sivaramamurti believes that the serpent was represented in several reliefs on *stūpa*s in the Krishna Valley because the serpent had become sacred since he had protected Buddha.[86]

Images of Pārśvanātha seated on Dharanendra could also have inspired the Buddha -Mūcalinda image. While the existence of seated sculptures in the round of Pārśvanātha that pre-date Buddha - Mūcalinda images cannot be ruled out, none have been found so far. But on some *āyāgapata*s, older by at least a century to the earliest extant sculptures of Buddha, there are portrayals of seated Jinas in meditation, including those of Pārśvanātha and these could have provided inspiration for the seated Buddha in his meditative pose. But Pārśvanātha was not seated on the serpent in the early depictions of him. He was shown with the serpent as a halo when seated, (as in an early *āyāgapata*) or the serpent climbing behind him (as in the 2nd century CE bronze, now in the Chhattrapati Shivaji Museum in Mumbai), when standing. Jains had no proscription - implicit or explicit - against the creation of images so they could well have had a head start on image creation and worship.[87]

The contemplative mood of the image could also have come from these Pārśvanātha images, where the Jina is shown standing in *kayotsarga* or sitting in meditation. What this implies is that there was considerable cross fertilisation of symbols, ideas and artistic motifs in this early period of Indian art. Some of the Buddhist images could well have been made in the same workshops in Mathura where the Nāga images were being made, making this kind of borrowing possible.

Both Viṣṇu and Pārśvanātha are represented in much the same way in later periods, and in the case of the Jina the story that justifies such a depiction has very close parallels with the Buddhist story.

Buddha-Mūcalinda depictions show Buddha sitting on top of Mūcalinda, instead of being wrapped around by him – the version according to the texts[88]. If one sticks to the latter of the story in the *Mahāvagga*, the *Vinaya Piṭakam*, the *Lalitavistara Sūtra* and the

Nidānakatha, the serpent king Mūcalinda encircled Buddha completely and then raised his multi-headed hood over the saint in order to protect him from the inclement weather.[89] At Bhārhut and Sāñci, Mūcalinda is shown behind the seat which represents Buddha. But in the later Amarāvati style Buddha is shown sitting on the serpent with the hood raised as an umbrella above him. (Fig. 19)

In most cases the Buddha is shown sitting on top of the coiled Mūcalinda rather than be smothered by him. This is an artistic rather than a literal interpretation of the Buddha/Mūcalinda incident. Part of the reason the image was not created in this fashion could be because the image of a deity sitting on the serpent makes for a more attractive image. And because the divinity is sitting on top of the serpent, instead of being smothered by it, the relationship of the serpent with the divinity has been spelt out in unambiguous terms - the new divinity is in a position of dominance vis-à-vis the serpent.

There is however, one very rare literal interpretation of this myth to be found on a second century Gandharan relief on grey schist, now in the Victoria and Albert Museum, London. It shows Buddha's entire body, barring his head, completely covered by serpent coils and the multi-headed serpent hood of Mūchalinda hovering above him. He is flanked by serpents, bending forward in homage to Buddha. They look strangely like droopy plants than serpents, but they are serpents. Mūchalinda however has been shown almost three-dimensionally and the serpent heads are animated and well defined. (Fig. 20)

But in the much more common depictions of the Buddha Mūchalinda episode, the serpent takes the place of the lotus seat and the lion seats –the usual seat of divinities from fairly early times,[90] adding to its importance in the iconographic scheme of things. Buddha, befitting his royal rank as a prince of the Śākya clan, has some royal attributes given to the depiction of his personage. They include the *cakra* (*cakravartin*) his Wheel of Law, the *chattri* (*chattrapati*) or the royal umbrella and a throne. In this case, attributes like the serpent umbrella or nimbus, and the serpent throne show how central this incident is in the larger Buddha story. These specific attributes are also a reference to the specific Buddha-Mūcalinda story, the story of

his enlightenment, the defining episode in Buddha's life. So in spite of its subsidiary status, some of Buddha's divinity rubs off on Mūcalinda, thanks to his proximity to the saviour.

Nevertheless, the serpent's importance has diminished. It is not any more the central focus of worship. On reliefs from Bhārhut, Sāñci and Amarāvati, the Nāgas are represented, not as beings to be worshipped – which they were in earlier times - but as worshippers of Buddha, the worshipped becoming the worshippers. (Fig. 18) The Nāgas, even when they were depicted as stand-alone figures on the early *stūpa*s such as those found at Bhārhut, Sāñci and Amarāvati, are often shown in the *anjali mudra*, in obeisance to Buddha. (Fig. 7 & 8) On all the *stūpa*s the sculptors have without any ambiguity, given the Nāgas and the Yakṣas a secondary stature in the scheme of things.[91] Yet, while they lost their omnipotence in the Buddhist scheme of things, they were not eliminated, because they were so well entrenched in the hearts of the ordinary people.

Notes

[1] "Aspects of Early Nāga Cult in India: The George Birdwood Memorial Lecture." *The Royal Society for the Encouragement of Arts, Manufactures and Commerce Journal*. J.S. Skidmore. Editor, vol. CXXIV, 663-683. (October 1976), 666. The Mahoragas are protectors of Buddhism depicted as giant serpents. Interesting to note that two forms of reptilian beings are among the eight kinds of demi-gods in Buddhism, the Nagas and the Mahoragas.

[2] These are the dates given by the Theravada tradition, the oldest tradition of Buddhism according to which he was born about 80 years before that, circa, 624 BC. There are various variant dates given for Buddha 's birth and death, but the dates of this early tradition seem to be confirmed by new archaeological excavations at Lumbini conducted by the University of Durham, UNESCO and National Geographic.
http://press.nationalgeographic.com/2013/11/25/birth_of_Buddha/ accessed on 23/2/2015.

[3] J.Ph. Vogel, *Indian Serpent Lore or the Nāgas in Hindu Legend and Art*, (reprint), Asian Educational Services, New Delhi, 1995, 95. In his chapter on Buddhism and Nagas.

[4] *ibid*, 102-103

[5] *ibid*. 105-107.

[6] *ibid*. 125-130.

[7] Samuel Beal, translator, *HuienTsiang's Si-Yu-Ki: Buddhist Records of the Western World, vol 1*, (London: Trubner, 1884), 158. https://archive.org/details/siyukibuddhistre01hsuoft/page/158.

[8] T. W.; Rhys Davids, Hermann Oldenberg,, translator. (1881–85).” Vinaya Texts,” *Sacred Books of the East,* XX, Clarendon/Oxford,. Reprint:, Delhi: Motilal Banarsidass, vol.20, pt. 3, vi.2.5.

[9] Elizabeth A. Reed, *Primitive Buddhism: Its Origins and Teaching,* Chicago: Scott, Foresman & Co., 1896, 143.
“Now surely, that Bhikkhu, O Bhikkhus, had not let his love flow out over the four royal breeds of serpents! Had he done so, he would not die of the bite of a snake. And which are the four royal breeds of serpents? The Virūpakkhas are a royal breed. The Erāpathas are a royal breed. The Khabyāputtas are a royal breed. The Kanhāgotamakas are a royal breed. Now surely that Bhikkhu, O Bhikkhus, had not let his love flow out over the four royal breeds of serpents! Had he done so, he would not die of the bite of a snake. I allow you, O Bhikkhus, to make use of a safeguard for yourselves for your security and protection, by letting your love flow out over the four royal breeds of serpents. And thus, O Bhikkhus, are you to do so….”

[10] James Fergusson, *Tree and Serpent Worship or Illustrations of Mythology and Art in India in the First and Fourth Centuries After Christ. From the Sculptures of the Buddhist Topes of Sanchi and Amravati, Prepared Under the Authority of the Secretary of State for India in Council, with Introductory Essays and Description of the Plates.* London: India Museum, W.H. Allen, Publishers to the India Office, 1868, 52.

[11] Cecil Bendall, translator and editor. “The Megha-Sutra”, *Journal of the Asiatic Society*, New Series, vol.XII, (London, Trubner and Co., 1880), 294-295. The dragon is the counterpart of the Naga in Chinese Buddhism. 296-297.

[12] Niharranjan Ray, *Maurya and Post Maurya Art: A Study in Social and Formal Contrasts,* New Delhi: Indian Council of Historical Research, 1975, 54-55.

[13] David L. Snellgrove, editor, *The Image of Buddha,* Paris: UNESCO, Serindia Publications, 1978, 33.

[14] Robert DeCaroli, *Haunting the Buddha: Indian Popular Religions and the Formation of Buddhism* (Oxford and New York: Oxford University Press, 2004), 4.

[15] Alexander Cunningham, *Stupa of Bharhut: A Buddhist Monument With Numerous Sculptures Illustrative of Buddhist Legend and History in the Third Century BC,* (London: W.H. Allen & Co. et al., 1925), 23.

[16] James Fergusson, *Tree and Serpent Worship or Illustrations of Mythology and Art in India in the First and Fourth Centuries after Christ From the Sculptures of the Buddhist Topes of Sanchi and Amravati, Prepared Under the Authority of the Secretary of State for India in Council, with Introductory Essays and Description of the Plates.* London: India Museum, W.H.Allen, Publishers to the India Office, 1868.

[17] Ananda K. Coomaraswamy, “Buddhist Primitives”, *The Burlington Magazine for Connoisseurs,* vol. 28, No.154, Jan. 1916, 151.

[18] ibid., 152.

[19] RomilaThapar, *Early India: From the Origins to AD 1300*, London: Allen Lane, 2002, 210. While the Buddhists may have exaggerated the extent of persecution of their community by the Brahmanical Sungas, Thapar believes that there could be some truth to stories of their persecution, because some of the damages inflicted to the *stūpa* at Sanchi and the monastery at Kaushambi date to Sunga times.

[20] Sukumari Bhattacharji, *The Indian Theogony: A Comparative Study of Indian Mythology from the Vedas to the Puranas*, Cambridge: Cambridge University Press, 1970, 11.

[21] Thapar, *Early India*, 271.

[22] Devangana Desai, "Social Dimensions of Art in Early India", *Social Scientis*t, vol. 18, no. 3, Mar. 1990, 7.

[23] Ray, *Maurya and Post-Maurya Art*, 73.

[24] Thapar, *Early India,* 270.

[25] Abraham Eraly, *The First Spring : The Golden Age of India,* New Delhi : Penguin Books of India, 2011, 749.

[26] T.W. Rhys Davids, translator, "Milindapanha: The Questions of King Milinda", Part I, In the Series, *Sacred Books of the East*. vol. XXXV, Oxford: Clarendon Press, 1890, IV.3, 24-27; *Milindapanha* is dated from the 2nd century BCE-2nd century CE.

"… But it was not to all men, it was to the sons of the Conqueror that it was said: "Hinder not yourselves, Ānanda, by honouring the remains of the Tathāgata. Paying reverence is not the work of the sons of the Conqueror, but rather the grasping of the true nature of all compounded things, the practice of thought, contemplation in accordance with the rules of Satipatthāna, the seizing of the real essence of all objects of thought, the struggle against evil, and devotion to their own (spiritual) good. These are things which the sons of the Conqueror ought to do, leaving to others, whether gods or men, the paying of reverence."

Kalyankumar Ganguli, 'Buddha in Art: From Symbol to Image', *Bulletin of Tibetology, New Series,* 1986, no. 3, ed. Nirmal C. Sinha and Jampal K. Rechung, 15.

[27] Thapar, *Early India,* 268.

[28] Ananda K. Coomaraswamy, *Buddha and the Gospel of Buddhism,* Delhi: Munshiram Manoharlal Publishers Pvt. Ltd, Second Indian Edition, 1985, 269.

[29] Ibid., Preface, viii-ix. *The Jataka*s as they exist now consist of 547 poems and stories and have been reproduced in the orthodox canonical literature of Buddhism, like the *Pitaka*s. The *Nidana Katha*, a Pali text serves as an introduction to the Jatakas and contains stories of Buddha's last and second last lives before he attains Buddhahood. By the 3rd century BCE, the Jatakas were already considered a part of the sacred history of Buddhism. Together, they were the literary inspiration for the relief sculptures on the early stupas.

[30] Allen J. Behm, 'The Eschatology of the Jatakas', *Numen*, vol. 18, Fasc. 1 Apr., 1971, 31.

[31] Upinder Singh, "Cults and Shrines in Early Historical Mathura, 200 BC-AD 200", in *World Archaeology: The Archaeology of Hinduism,* vol. 36, no. 3, (Sep. 2004), 385.

[32] Upinder Singh, *A History of Ancient and Early Medieval India: From the Stone Age to the 12th century*, India: (Pearson Longman, 2009, : 430-431.

[33] D.C. Sircar, *Studies in the Religious Life of Ancient and Medieval India,* New Delhi : Motilal Banarasidass, 1971, 134.

[34] Decaroli, *Haunting Buddha*, 8-59. Also his f.n. 12 to Ch. 3, 56-62, 197.

[35] Julia Shaw, "Sanchi's Archeological Landscape: Buddhism, Vaisnavism and Local Agricultural Cults in Central India, First century B.C.E. to Fifth Century C.E." *ArtibusAsiae,* vol. 64, no. 1, 5-59, 2004. 51.

[36] Walter Spink, *Ajanta: The End of the Golden* Age, Leiden, Amsterdam: Koninklijke Brill NV, 2005, 72-73.

[37] Richard S. Cohen, "'Nāga, Yaksini, Buddha: Local Deities and Local Buddhism at Ajanta", *in History of Religions, The Theology and Practice of Buddhism*, vol. 37, no. 4, (University of Chicago, May 1998), 363-364.

[38] Lowell, W. Bloss '"Buddha and the Naga: A Study in Buddhist Folk Religiosity", *History of Religions* 13, no. 1, Aug., 1973 : 50. They were reprising the role they had performed when they protected the Ramagrama stupa and the Buddha's relics entombed in it.

[39] Samuel Beal, Translator, *Si-Yu-Ki, Buddhist Records of the Western World: Translated from the Chinese of Hiuen Tsang, AD 629*, London: Kegan Paul, Trench and Trubner & Co, 1884, vol. 1, xli.

[40] J. Ph.Vogel, "Naga Worship in Ancient Mathura" in *The Archaeological Survey of India Annual Report,* 1908-1909, 159-160.
Decaroli, *Haunting Buddha , 58.*
Lokesh Chandra, *Buddhism: Art and Values,* New Delhi: Aditya Prakashan, 2007, 34-35. Emperor Asoka decreed that 84,000 *stupa*s be created. Many such *stupa*s were places of popular worship that were converted into Buddhist monuments. Such monuments brought with them folk practices.

[41] Vogel, *Indian Serpent–Lore*, 133. *Shankhapala Jātaka : Champaka Jātaka*; *Bhuridatta Jātaka.*

[42] The *Saddharma Puṇḍarika Sūtra* was written down between the years 100BCE-100CE, the process being completed by 200CE.

[43] H. Kern, trans*lator.,* "*Saddharma Puṇḍarika* or the Lotus of the True Law", in *Sacred Books of the East,* Max Müller, ed., vol. XXI, 1884, ch. 1.
"Then did those who were assembled and sitting together in that congregation, monks, nuns, male and female lay devotees, Gods, Nāgas, goblins, Gandharvas, demons, Garuḍas, Kinnaras, great serpents, men, and beings not human, as well as governors of a region, rulers of armies and rulers of four continents, all of them with their followers, gaze on the Lord in astonishment, in amazement, in ecstasy".

[44] DeCarolis, *Haunting the Buddha* , 24-25. *Dumeddha Jātaka*, vol.1, 126-128.
[45] ibid., 25.
[46] Richard Cohen, "Nāga, Yakṣiṇī, Buddha: Local Deities and Local Buddhism at Ajanta", in *History of Religions,* vol. 34, no. 4, May 1998, 375-379.
[47] Lowell W. Bloss, "Buddha and the Naga: A Study in Buddhist Religiosity", in *History of Religions,* vol. 13, no.1, Aug. 1973, 36-53; (Chicago: The University of Chicago Press, 1973), 48-49.
[48] Robert DeCarolis, *Haunting Buddha* : 35.
[49] Vogel, I*ndian Serpent Lore,* 93-94.
[50] ibid.,121-122.
Beal, *Si-Yu-Ki*, 121-123.
[51] Wilhelm Geiger, and Mabel Haynes Bode, translators, *Mahavamsa: The Great Chronicle of Ceylon*, London: Pali Text Society, 1912, 82-84.
[52] J. J. Jones, translator, *Mahāvastu,* vol. 111, London: Luzac& Company Ltd., 1956, 428.
Vogel, *Indian Serpent Lore*. 108.
[53] H.T Francis, R.A. Neil, trans., *The Jātaka,* vol. III, London: Luzac & Co., 1897, no. 389, 183-186.
[54] Claudia Wenzel, "The Image of Buddha : Buddha Icons and Aniconic Traditions in India and China", *Transcultural Studies,* Heidelburg University, Germany, Issue, 2011, vol.1, 268.
http://archiv.ub.uni-heidelberg.de/ojs/index.php/transcultural/article/view/1938/2977
[55] The Brahmanical faith and Jainism too did not have images in the beginning and changes in devotional attitudes and philosophy towards the divine brought about icon worship.
[56] Mireille Benisti, *Stylistics of Buddhist Art in India,* New Delhi: Indira Gandhi National Centre for the Arts and Aryan Book Centre, 2003, 17.
[57] Wenzel, *The Image of the Buddha*, 268.
[58] Ananda K Coomaraswamy, "The Nature of Buddhist Art", (2006), *The Origin of the Buddha Image & Elements of Buddhist Iconography*, 8, Lousiville, Kentucky, USA, Fon Vitae, The Matheson Trust, 2006.
[59] Wenzel, "The Image of the Buddha", 269.
[60] Ananda K. Coomaraswamy, "The Origin of the Buddha Image", *Art Bulletin*, Vol. 9, No. 4, (June 1927), 293.
[61] Singh, *A History of Ancient and Early Medieval India,* 441.
[62] Benjamin Rowland Jr. "A Note on the Invention of the Buddha Image", in *Harvard Journal of Asiatic Studies,* Vol.11, No.1/2(June 1948), 184.
[63] Ibid, 184.
[64] Shailendra Kumar Verma, *Art and Iconography of Buddha Images,* (Delhi: Eastern Book Linkers, 1996), 4.
[65] Cowell, Edward Byles, R.A. Neil, Translators and Editors. *Divyāvadāna: A Collection of Early Buddhist Legends.* (Cambridge, UK: Cambridge University Press, 1886.)Ch.LXXVII.

[66] Coomaraswamy, *Origin of Buddha Image*, 328.
John S. Strong, trans and ed., *The Legend of King Asoka: The Study and Translation of the Asokavadana,* New Jersey: Princeton University Press, 1983, 196-197.

[67] Alexander Soper, trans., *Sutra on the Ocean-like Samadhi of Buddha Contemplation (Guan fosanmeihaijing),* 266.
Claudia Wenzel,"The Image of the Buddha : Buddha Icons and Aniconic Traditions in India and China", *Transcultural Studies,* Heidelburg University, Issue, 2012 (1), 279-280.

[68] Coomaraswamy, *Origin of the Buddha Image*, 287-329.
Shailendra Kumar Verma, *Art and Iconography of Buddha Images*, 27.

[69] Coomaraswamy, *Origin of Buddha Image*, 299-300.

[70] ibid., 290.

[71] ibid., 323 etc.

[72] ibid., 302-303

[73] Coomaraswamy, *Origin of Buddha Image.*" Please view illustrations 34-38, (p. 308, as well as 48, 49 and 50, p. 312). Nagas and Buddha use the identical gestures.

[74] Coomaraswamy, *Origin of Buddha Image,* 299.

[75] B.N.Misra, 'Sculptural Representations of Nāga Mūcalinda', *Indian Archaeology: New Perspectives*, R.K. Sharma, ed., Delhi: Agam Kala Prakashan, 1982, 293.

[76] The dates of the *Mahavagga* are disputed; Buddhists believe that it was written down at the end of the first Buddhist Council held a year after Buddha's death at Rajagriha, and then added to after the second Buddhist Council. *The Mahāvagga* is the third book of the *Vinaya Piṭaka* that deals with the various rules and rituals of Buddhism, stories of the incidents after Buddha's awakening, etc. Historian Upinder Singh believes that the *Mahāvagga* was written down between 5th and 3rd century BCE. Upinder Singh, *History of Ancient and Early Medieval India*, 258.

[77] Anandajyoti Bhikku, translator, "Udāna:Exalted Utterances, *Mūcalinda vaggo*", 39-40.
http://www.Buddhanet-de.net/ancient-buddhist-texts/Texts-and-translations/Udana/Exalted-Utterances.pdf

[78] Vogel, *Indian Serpent-Lore* 102-103.

[79] T.H. Rhys David trans., "The Mahāvagga", *Sacred Books of the East*, ed. Max muller, vol. 13, Khandaka 1, 79-81.

[80] ibid. 301.

[81] Coomaraswamy, *The Origin of Buddha Image*, 293.

[82] Margaret F. Marcus, "Buddha Sheltered by Mucalinda", in *The Bulletin of the Cleveland Museum of Art*, 1965, vol. 52, no. 7, Sept. 1965, Cleveland: 1965, Fig. 2, 186.
Joseph Campbell, *The Mythic Image*, MJF Books, New York, 1974, 281.
Both these sources provide the picture of the Mohenjodaro seal that

represents a central figure in a yogic pose flanked by two worshippers or acolytes with monocephalous serpents rising above their heads, from behind them.

[83] Coomaraswamy, *'Origin of Buddha Image'*, 300.

[84] Margaret F. Marcus, *Buddha Sheltered by Mucalinda,* 187.

[85] C. Sivaramamurti, "Buddha as Mahapurusa", Sir Tashi Namgyal Memorial Lectures, 1972, Gangtok, Sikkim: Director, Namgyal Institute of Tibetology, 1972, 18-19.

[86] Sivaramamurti, *Buddha as Mahapurusa,* 19.

[87] Coomaraswamy, *The Origin of Buddha Image,* 310.

[88] This anomaly between the representation and the story as it is revealed in the texts has been noticed by Pratapaditya Pal too. *Light of Asia:Buddha Sakyamuni in Asian Art,* 108.

[89] Vogel, *Indian Serpent Lore*, 102-103.

[90] Buddha shown seated on a lotus seat was especially popular in Gandhara; in Mathura the lion seat was more popular. Coomaraswamy, *The Origin of Buddha Image*, 305.

[91] The largest number of Nāga images are found on the remnants of the railings of the 'Amaravati stupa'. Nāgas, both in their anthropomorphic form and in their reptilian form are depicted on steles and the railings of this stupa. James Fergusson's 'Description of the Amaravati Tope on the banks of the Kistnah in the Guntur Zillah' a paper presented to the Royal Asiatic Society in 1867 even suggests that the holes on the friezes found between the *stūpa* and the inner railings were probably meant for attaching a metal image of the Nāga, in much the same way that it does in Angkor Wat. (p. 10.). He also suggests a Bactrian influence on the sculptures. (p. 17) His logic is that since Taxila and Kashmir were the 'headquarters' of serpent worship, they must have influenced the sculptural depictions at Amaravati. We know today that serpent worship was prevalent in many parts of India and the serpent continues to be popularly worshipped still. However it is remarkable that Fergusson observed so early in the study of Buddhism in India, the pervasive importance of serpent worship in that faith.

Language-area Relationship : Modelling the Degree of Language Endangerment

Sibansu Mukherjee and Rajkumar Roychoudhury

Introduction

The relationship between biological diversity and linguistic diversity has been robustly discussed in many studies (Gorenflo et al. 2012; Upadhyaya & Hasnain 2017; Skutnabb-Kangas 2000). Particularly in Gorenflo et al (2012), the biodiversity hotspots as well as high biodiversity wilderness areas are considered to have high level of linguistic diversity, and this fact is true for 70% of the world's languages. This fact leads us to draw an analogy between language endangerment (LE) and species endangerment, and thus between language and species.

To account the trend in species-extinction, Preston (1962) proposed a model, namely, Species Area Relationship (SAR), which was methodically implemented to a large scale data by Rosenzweig (1995). Moreover, the modified evaluating equation of SAR is $S = K (A)^z$, as appeared in Spiller and Schoener (2009), where, S = the number of species, A = the area of island, K and superscripted z are other fitting parameters.

This paper offers an area-specific model of prediction on the degree of LE with a strategy somewhat different from SAR. Area-specific model of prediction on the degree of LE is called Language-Area relationship (LAR). The reason behind this exclusive estimation is that a species has a bio-physical body whereas a language has not. The human evolution has been going through an extensively complex procedure of living with various cultures and habits. Such convolution of human living along with the huge number of socio-cultural realities helps us to account the facts behind LE differently from that of species endangerment.

Language-area relationship or LAR

Based on the basic conceptual approximation estimated in the various applications of SAR, we consider language as a socio-culturally dynamic entity unlike the biophysical body of a species. For LAR, we set three parameters as numerator and their relationship with the land area, the only denominator. The three parameters (numerator) are as follows: the distributed speakers of language, i.e., The total number of speakers of a language divided by the number of available variations of that language, the growth of the population of the area where the speakers of the language live and the literacy rate of that area in a given decade.

The model LAR works to estimate the endangerment value (E_v) of languages. This value implies the strength of a language, compared to the others. Therefore, the proposed model is as follows:

$$E_V = \frac{nl \; x \; \bar{X} \; x \; \bar{Y}}{\sum A_n} \qquad (1)$$

were,

$$nl = \frac{Number\ of\ speakers\ (NoS)}{Number\ of\ variations\ of\ languages\ (Lv)} \qquad (1a)$$

and,

X and Y are the other fitting parameters. For this study, X and Y are respectively, the literacy rate in a given decade (2001) and the population growth rate in a given decade (2001). $\bar{X}$ is used as the *mean value of the literacy rates* in different areas. $\bar{Y}$ is used as the *mean value of population growth rates* in different areas.
and,

$\sum A_n$= Summation of areas (1b)

Let us discuss about the parameters. Since the name of a language is considered as a cover term for a planned language along with its several variations, the total number of speakers of the language (a name) can be considered as a summation of the speakers of the planned language and the other different variations of that language. Therefore,

it can be assumed that a language having more unrecognised varieties is lesser planned and has a higher level of linguistic diversity, but as a survivor its strength is low. *nl* score as used in this model reflects the strength of a language in terms of the number of available variations of that language.

Further, we use the literacy rates and population growth rates among the areas in a given decade, i.e., 2001. The reasons for the choice of the parameters are as follows: Firstly, literacy increases overall awareness of the population. Thus, it can be assumed that the overall higher rate of literacy implies high level of awareness of any kind of identity among the people of the area. This is, nevertheless, to say that the awareness regarding collective self as a linguistically identifiable community primarily emerges through literacy. Beriar and Rababah (2016) show how the sustainability of Nubin linguistic community depends on learning the system in order to makeover the specific development of Nubin orthography. Robinson (2016) also feels the need of literacy evidently related to linguistic diversity, and ultimately proceeds towards literacy-oriented language policies. This work (Robinson, 2016) was primarily used as a Global Monitoring Report referred by UNESCO. Secondly, the population growth rate as a parameter has been taken to include the natural demographic nature of the area in the distribution of a language.

The only denominator, land area (A) is borrowed from the model of SAR, remarkably used in Rosenzweig (1995). However, we use A for this occasion in a completely different manner.

Degrees of LE and the application LAR

Krauss (1992) observes that all spoken languages of the world can be categorised into three groups: (i) moribund languages (ii) endangered languages and (iii) safe languages. According to his observation, 20% to 50% of the total languages of the world would become moribund soon as the children of those languages no longer learn these as their mother tongue.

UNESCO (2003) has referred to a scale of six degrees of LE based on the concept of *intergenerational language transmission*. According to this scales languages of the world may be categorised into either of

the followings: safe, vulnerable, definitely endangered, severely endangered, critically endangered and extinct. The speakers of the safe languages are free to use their languages. The extinct languages have no alive speaker. In between these two terminal status, the four degrees of LE (UNESCO, 2003: 8) are as follows:

- Unsafe (status of the vulnerability) : *The language is used by some children in all domains; it is used by all children in limited domains*.
- Definitely endangered languages: *The language is used mostly by the parental generation and up. Thus children no longer learn the language.*
- Severely endangered languages: *The language is used mostly by the grandparental generation and up.*
- Critically endangered languages : *The language is used mostly by very few speakers of great-grandparental generation*.

Even this scale uses more generalised definitions of the said six degrees of LE when it refers to the total number of speakers. Referring to the total population, this scale defines the degrees when either of the following number of speakers speak the language: *all*, *nearly all*, *a majority*, *a minority*, *very few* and *none*.

UNESCO published *Atlas of the World's Languages in Danger* in 2011. The atlas based on the UNESCO's approximation on the degrees of LE shows that in terms of the total languages of the world, 57% languages are safe, 10% vulnerable, 11% definitely endangered, 9% severely endangered, 10% critically endangered and 4% extinct since 1950.

The model LAR does not suggest any alternative solution to this but deals with a more specific inquiry, i.e., what is the distance between two languages when they belong to the same status of LE defined by UNESCO?

Data

We have taken data on six Indian languages mainly from the report of Census provided by the Government of India. The languages are: Hindi, Bangla, Tamil, Lepcha, Tangsa and Chakhesang. The first respective three out of these six are safe and the rest of the languages

belong to endangered category as per the UNESCO's approximation. Let us describe these languages in brief:

- Hindi, Bangla and Tamil are respectively at the 4th, 7th and 20th position in terms of the highest spoken languages of the world. The Hindi speaking population reaches 4.46% of the world population. Simultaneously, Bangla speaking population is 3.05% and Tamil speaking is 1.06% of the world population. These are undoubtedly safe. Hindi has the largest number of speakers in India and spread over many regions. Bangla is the second largest and Tamil is at the 5th position as per the Indian context.

- Lepcha, Tangsa and Chakhesang belong to the second category which we have mentioned as endangered languages. These are also considered as the languages with high diversity. Moreover, UNESCO has marked Lepcha and Tangsa as *definitely endangered* and Chakhesang as a *critically endangered* language.

Each of these three so-called endangered languages is also considered as the language of scheduled tribe in India. According to the Census data, these languages have comparatively low speaking population showing some swings in the decadal estimations.

For example, the decade-wise data of Tangsa speakers, according to the Indian Census, are as follows: 13333, 12027, 28121, 40086 respectively recorded in the decades of 1971, 1981, 1991 and 2001. The striking fact is that the number of Tangsa speakers was decreased at the rate of 9.80% in 1981, whereas the immediate decade (1991) shows 133.82% growth. Similarly, the consideration of Sikkim as an area turns the number of the Lepcha speakers bigger. May we consider the identity awareness of linguistic community as the catalyst factor for such unusual growth of speakers? Let us consider Darjeeling and Kalimpong as the land areas occupied by Lepcha speakers in West Bengal, whereas the entire Sikkim has been taken as a land area of Lepcha speakers. The simple logic of our consideration of the land area covered by the Lepcha speakers is that Darjeeling and Kalimpong in West Bengal are the two districts with high-density of the Lepcha speakers. Apart from that, the entire Sikkim has the average density of Lepcha speaking population. Furthermore, in 1971 and in 1981 the

Indian Census did not consider Chakhesang as a mother-tongue since it did not fulfill the minimum requirement of having 10,000 speakers to be considered as a non-scheduled language. But the Chakhesang speakers have been considered in the Census in 1991 as the number of speakers was 30985. It is also surprising because in 1981, Chakhesang has less than 10000 speakers and in 1991, Chakhesang was reported to have 30985 speakers.

To establish the LAR hypothesis (Endangerment Value or E_v in terms of the formula) representing the strength of the languages; Hindi, Bangla, Tamil, Lepcha, Tangsa and Chakhesang, we set the following criteria:

- We account the languages, which are rigorously spread over the regions despite their international borders. It means we have accepted continuity of the population as the language speakers.
- In that case, Bangladesh along with Tripura is included because West Bengal, Bangladesh and Tripura shows geographic continuity over the international boundaries. But, Sri Lanka and Andaman and Nicobar Island (ANI) as Tamil-speaking area and Myanmar as Tangsa-speaking are excluded because these are geographically separated.
- Moreover, the reason for the exclusion of Sri Lanka is that 13 million people of Sri Lanka use Sinhali which is nearly 75% of the total population of Sri Lanka, whereas the Tamil speakers of Sri Lanka are about only 4.7 million, and use a special variety of Tamil called Sri-Lanka Tamil.
- The 2001 Indian census reports that 26% of the total ANI population speak Bangla. The Hindi speakers of ANI are 18.23%, Tamil speakers are 17.68% and the Telugu, Malayalam and Nicobarese respectively are 12.81%, 8.11% and 8.05% of the total population.
- Consequently, the variations (dialects) spoken outside India are not taken to calculate P_d, for example, Sri-Lanka-Tamil, South-Africa-Tamil, etc.
- In case of Hindi also we have excluded 5 states where Hindi speakers live through a large scale but not in a continuous geographic region.

- Lastly, for the same reason, we have not considered the speakers of linguistic diaspora.

Let us consider three tables for showcasing data and rechecking the criteria mentioned above. Table 1 presents NoS of six languages and the different land areas for each language both counted and uncounted in this study. The variations of the above-mentioned languages are presented in Table 2. We have observed that Hindi has 12 variations, Bangla has 14, Tamil has 15 and Lepcha has only 3 variations observed from different sources referred in the Table 2. Ethnologue has reported that Tangsa has 55 variations whereas Chakhesang has none. Table 3 and Table 4 respectively consists of data on literacy rate and population growth rates of the areas shown as counted in Table 1 observed in 2001.

Table 1 : Total number of speakers of six languages and their (counted and uncounted) regional distribution.

Sl. No.	Name of the languages	Number of speakers*	Speakers live in the area: country (C), state (S), union territory (UT), district (D)	Land area Counted (km^2)**	Total land area for each language estimated (km^2)	Uncounted as discontinuous geographic area
1	Hindi	422048642	Himachal Pradesh, S	55673	1091580	
			Rajasthan, S	342239		
			Uttarakhand, S	53483		
			Uttar Pradesh, S	236286		
			Delhi, S	1484		
			Madhya Pradesh, S	308252		
			Bihar, S	94163		
2	Bangla	246324866	Bangladesh, C	147570	246813.69	
			West Bengal, S	88752		
			Tripura, S	10491.69		
3	Tamil	60793814	Tamil Nadu, S	130060	130539	Sri Lanka, Andaman and Nicobar Islands – scattered
			Puducherry, UT	479		
4	Lepcha	50629	Sikkim, S	7096	11301	
			Kalimpong, D (West Bengal)	1056		
			Darjeeling, D (West Bengal)	3149		

Sl. No.	Name of the languages	Number of speakers*	Speakers live in the area: country (C), state (S), union territory (UT), district (D)	Land area Counted (km^2)**	Total and area for each language estimated (km^2)	Uncounted as discontinuous geographic area
5	Tangsa	40086	Jugli and Lungchang villages in Tirap district, D (Arunachal Pradesh)	2362	7024	Myanmar (1) Sagaing region: Khamti district, Nanyun, Pangsau, Lahe, and Khamti townships (2) Kachin State: Myitkyina district, Shinbwiyan and Tanai townships
			Tutsa and Mungshang villages in Changlang district, D (Arunachal Pradesh)	4662		
6	Chakhe-sang	11415	Village Cheswezumi in Phek district, D (Nagaland)	2026	5297	
			Senapati district, D (Manipur)	3271		

* Number of speakers observed in 2001 as reported by the Indian Census (http://www.censusindia.gov.in/2011Census/Language-2011/Statement-7.pdf as seen on 06.09.2018) and by the Government of Bangladesh (http://www.bangladesh.gov.bd as seen on 06.09.2018)

** Each land area is noted from the official portal of the country or of the state or of the union territory or of the district. All the following websites were seen on 05.09.2018: http://www.himachal.nic.in/en-IN/, https://rajasthan.gov.in/Pages/default.aspx, http://uk.gov.in/, http://up.gov.in/, http://delhi.gov.in/, http://www.mp.gov.in/, http://gov.bih.nic.in/, http://www.bangladesh.gov.bd/, https://wb.gov.in/portal/web/guest/home, https://tripura.gov.in/, http://www.tn.gov.in/, https://www.py.gov.in/, https://www.sikkim.gov.in/portal, https://kalimpongdistrict.in/, http://www.darjeeling.gov.in/, https://tirap.nic.in/, https://changlang.nic.in/, http://phek.nic.in/, https://senapati.nic.in/.

Table 2: Number of the available variations of the language

Sl. No.	Name of the language	Number of the available variations of the language	List of variations (termed as 'dialects' exhibited in https://www.ethnologue.com/country/IN/languages, as seen on 05.09.2018 and for Hindi the data has been collected from https://www.britannica.com/topic/Hindi-language, as seen on 05.09.2018)	nl score (NoS/Lv)
1	Hindi	12	Khari Boli, Awadhi, Bagheli, Bhojpuri, Bundeli, Chhattisgarhi, Garhwali, Haryanawi, Kanauji, Kumayuni, Magahi, and Marwari	35170720.16

Sl. No.	Name of the language	Number of the available variations of the language	List of variations (termed as 'dialects' exhibited in https://www.ethnologue.com/country/IN/languages, as seen 05.09.2018 and for Hindi data has been collected from https://www.britannica.com/topic/Hindi-language, as seen on 05.09.2018)	nl score (NoS/Lv)
2	Bangla	14	Barik, Bhatiari, Chirmar, Kachari-Bengali, Lohari-Malpaharia, Musselmani, Rajshahi, Samaria, Saraki, Siripuria (Kishanganjia), Barisal, Noakhali, Khulna, Mymensingh	17594633.28
3	Tamil	15	Adi Dravida, Aiyar, Aiyangar, Arava, Burgandi, Kongar, Madrasi, Madurai Tamil, Tigalu, Harijan, Sanketi, Hebbar, Mandyam Brahmin, Secunderabad Brahmin	4052920.93
4	Lepcha	3	Ilammu, Tamsangmu, Rengjongmu	16876.33
5	Tangsa	55	Bote (Bongtai, Butay, Hteinpa, Nokpa, Nukpa), Chamchang (Kimsing), Champhang (Thamphang), Chuyo (Wanggu, Wangoo), Gaha (Halum), Gakat (Wakka, Wanga), Gaqchan (Gashan), Gawkchung (Kochong), Henchin (Sanching, Shang-chein), Kaisan (Kyetsan), Khalak (Hkalak), Lakki (Lakai), Lama, Lochang (Lanchein, Langshin), Lumnu, Lungri, Moshang (Mawshang), Miku (Maihku), Mitay (Maitai), Mungre (Mawrang, Morang), Nahen (Nahim, Nahin), Ngaimong (Maimong, Ngaimau), Pingku (Pyengoo), Ranchi (Rangchein), Rasa, Rara, Ranu, Ringkhu (Rangkhu), Sansik (Sheiknyo, Siknyo, Sikpo), Shangti (Sangtai, Shangthi), Shangwan (Changwan, Shangwal, Shawvel), Shekyü (Sangche, Sanke, Shaekjeng, Shaekyeu), Shokra (Sawkrang, Shaukra, Shograng), Toke (Tawkay), Yangno, Chamkok (Tamko, Thamkok), Cholim (Tawlum, Tulim, Tulum), Hachum (Chumnyu, Chumsa, Gachung), Hakhun (Gakhun), Hacheng (Hakyai), Haman (Gaman), Hapaw, Hasik (Awla, Awlay, Laju), Kumka (Kum Ga, Kumga), Rera (Ronrang), Asen (Aasen, Hansin, Raqsa, Yasa), Hakhü (Gakhi, Hachi, Hakhii, Hatse), Hokuq, Jöngi (Dongai, Donghee, Dongi), Kon (Chawang, Kyawan, Yawngkon, Yongkon), Kotlum (Kawlum), Lonyung (Galawn, Galun), Lungkhi (Longkhai), Maitai (Meitei, Mitay), Riha (Lulum).	728.83
6	Chakhesang	1		11415

Table 3 : Overall area-specific literacy rate as observed in 2001.

Sl. No.	Name of the languages	Speakers live in the area: country (C), state (S), union territory (UT), district (D)	Overall literacy rates of the areas in 2001 *, **	Mean of overall literacy rates for the areas of each language
1	Hindi	Himachal Pradesh, S	76.48	65.31
		Rajasthan, S	60.41	
		Uttarakhand, S	71.62	
		Uttar Pradesh, S	56.27	
		Delhi, S	81.67	
		Madhya Pradesh, S	63.74	
		Bihar, S	47	
2	Bangla	Bangladesh, C	40.82	60.88
		West Bengal, S	68.64	
		Tripura, S	73.19	
3	Tamil	Tamil Nadu, S	73.45	77.34
		Puducherry, UT	81.24	
4	Lepcha	Sikkim, S	68.81	68.72
		Kalimpong, D (West Bengal)	68.64	
		Darjeeling, D (West Bengal)		
5	Tangsa	Jugli and Lungchang villages in Tirap district, D (Arunachal Pradesh)	34.54	34.54
		Tutsa and Mungshang villages in Changlang district, D (Arunachal Pradesh)		
6	Chakhesang	Village Cheswezumi in Phek district, D (Nagaland)	66.59	68.56
		Senapati district, D (Manipur)	70.53	

* http://planningcommission.nic.in/data/datatable/data_2312/Databook Dec2014%20224.pdf as seen on 06.09.2018

** https://countryeconomy.com/demography/literacy-rate/bangladesh as seen on 06.09.2018

Table 4: Area-specific population growth rates as observed in 2001.

Sl. No.	Name of the languages	Speakers live in the area: country (C), state (S), union territory (UT), district (D)	Population [growth rates of the areas *,**]	Mean of the population growth rates for areas of each language
1	Hindi	Himachal Pradesh, S	17.54	27.44
		Rajasthan, S	28.41	
		Uttarakhand, S	20.41	
		Uttar Pradesh, S	25.85	
		Delhi, S	47.02	
		Madhya Pradesh, S	24.26	
		Bihar, S	28.62	

Sl. No.	Name of the languages	Speakers live in the area: country (C), state (S), union territory (UT), district (D)	Population [growth rates of the areas *,**]	Mean of the population growth rates for areas of each language
2	Bangla	Bangladesh, C	17.04	16.94
		West Bengal, S	17.77	
		Tripura, S	16.03	
3	Tamil	Tamil Nadu, S	11.72	16.17
		Puducherry, UT	20.62	
4	Lepcha	Sikkim, S	33.06	25.41
		Kalimpong, D (West Bengal)	17.77	
		Darjeeling, D (West Bengal)		
5	Tangsa	Jugli and Lungchang villages in Tirap district, D (Arunachal Pradesh)	27	27
		Tutsa and Mungshang villages in Changlang district, D (Arunachal Pradesh)		
6	Chakhesang	Village Cheswezumi in Phek district, D (Nagaland)	64.53	44.69
		Senapati district, D (Manipur)	24.86	

* http://censusindia.gov.in/2011-prov-results/data_files/india/Final_PPT_2011_chapter3.pdf as seen on 06.09.2018

** http://en.banglapedia.org/index.php?title=Population as seen on 06.09.2018

Result

The parametric data associated with six Indian languages have been taken for getting the index of area-specific E_V scores which enables us to compare between the safe and the endangered languages respectively. The E_V scores (marked as bold) along with the final data set representing the parametric values have been shown in Table 5.

E_V scores derived by the equation shown in (1) for Hindi, Bangla, Tamil, Lepcha, Tangsa and Chakhesang are as follows: 57741.68, 73518.90, 38827.73, 2607.64, 96.76 and 6602.78. Bar-diagram shown in Figure 1 represents these scores with a comparative view. Normalising the E_V scores we get an index of values as enlisted at the last column in Table 5.

Table 5: Final data set to be used in the model

Sl. No.	Language	*ln* as we get from (1a)	$\bar{X}$	$\bar{Y}$	A_n	E_v score	Normalized value
1	Hindi	35170720.16	65.31	27.44	1091580	57741.68	0.785
2	Bangla	17594633.28	60.88	16.94	246813.69	73518.90	1
3	Tamil	4052920.93	77.34	16.17	130539	38827.73	0.528
4	Lepcha	16876.33	68.72	25.41	11301	2607.64	0.035
5	Tangsa	728.83	34.54	27	7024	96.76	0.001
6	Chakhesang	11415	68.56	44.69	5297	6602.78	0.089

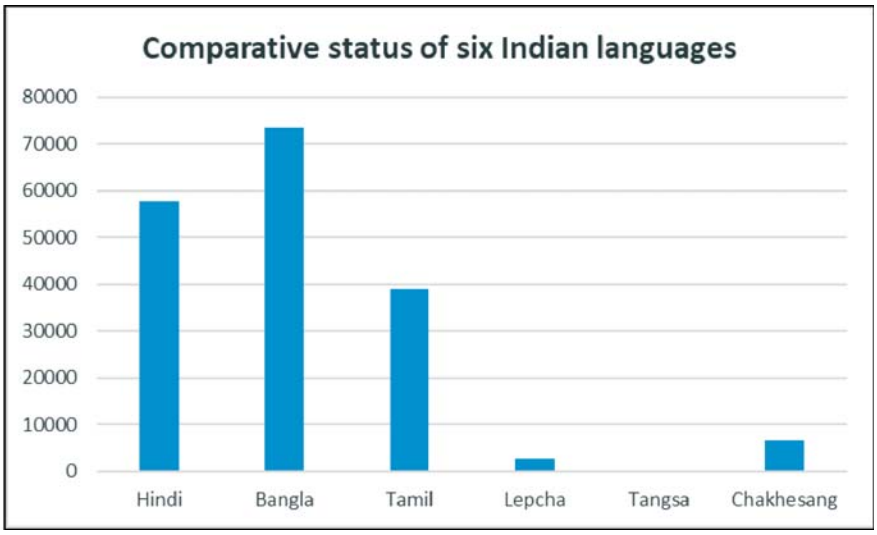

Figure 1 : Figure 1 exhibits a comparative status of the degrees of LE for six Indian languages: the result derived by LAR enables us to see that Bangla is safer than Hindi, Hindi is safer than Tamil among the safe languages and Tangsa is weaker than Lepcha and Lepcha is weaker than Chakhesang among the endangered languages.

The above figures show that Bangla, Hindi and Tamil can be assumed as Safe with the normalised values as follows respectively; 1, 0.785, 0.528. UNESCO categorises Lepcha and Tangsa as *definitely endangered* and Chakhesang as a *critically endangered* language, whereas LAR predicts that in terms of the degree of LE, Tangsa is at the highest risk (NIV, 0.001) among these three endangered languages. Even LAR shows that Chakhesang (NIV, 0.089) is safer than Lepcha (NIV, 0.035).

Again, as far as the number of speakers concerns, Hindi is in the 4th, Bangla is in the 7th and Tamil is in the 20th position among top 20 languages of the world. On the contrary the index estimated by LAR showcased in Table 5 clearly shows that the area-specific status of Bangla got the highest value whereas Hindi is in the second and Tamil is in the third position.

Further Discussion

Now, on the basis of the LAR model we can predict that among the six Indian languages Chakhesang is facing the highest risk of extinction whereas Hindi, Bangla, and Tamil are more or less safe. It was expected because Tamil and Bangla are the oldest Indian languages, and there is also a large number of people who recognise Hindi as their mother tongue. Strong literary traditions and the other issues of language planning in these languages are also the other indicators of their robustness.

The distributional pattern, whatever the reasons behind it, is not similar for each case. For example, on the one hand, the speakers of Bangla language largely live in the state of West Bengal and Tripura in India and in Bangladesh. Bangla is also one of the national languages in India mentioned in the Eighth Schedule of the Indian Constitution and also the official language of the state West Bengal and Tripura, and statutory national language of Bangladesh. The speakers of Hindi are distributed in north India, mainly concentrated in Delhi, Uttar Pradesh, Uttarakhand, Rajasthan, Punjab, Madhya Pradesh, northern Bihar and Himachal Pradesh. Tamil has spread mainly over Tamil Nadu, Andhra Pradesh, eastern Puducherry enclaves, South Kerala, etc. On the other hand, three endangered languages are mainly based on North-East India: the speakers of Chakhesang live in a particular village in Nagaland and some of them are in Sentapati district of Manipur. Lepcha is spread over the state of Sikkim and in two districts (Darjeeling and Kalimpong) of West Bengal, and Tangsa has been spread over Arunachal Pradesh and Assam.

Now, let us describe the case of Chakhesang which has no variation as per the report of *The Ethnologue*. The Statement 8 of the Census

2001 has considered to show 100 non-scheduled languages, each of which has more than 10000 speakers. Chakhesang (serial no. 12 in Statement 8) is one of these 100 non-scheduled languages. The data has been produced under the head, *persons who returned the language as their mother tongue*. We do not have the data of Chakhesang in 1971 and 1981 because of the less number of speakers. The number of the Chakhesang speakers had increased from 2792 (in 1971) to 30985 (in 1991) in 20 years, and in the immediate decade, number of Chakhesang speakers had decreased from 30985 to 11418 (in 2001).

Interesting is that on the one hand, the Ethnologue does not have the entry of Chakhesang as a separate head. It considers *Naga, Chokri* as an entry of language name, one of the several alternative names of which is Chakhesang. Ethnologue reports that the other alternative names of Naga, Chokri are Chakrima Naga, Chakru, Chokri and Eastern Angami. On the other hand, Chakhesang Naga is considered as a Scheduled Tribe in India although the *Ethnologue* reports that Chokri, Khezha, and Sangtam-Pochuri are the basic composition of the Chakhesang Naga community. *Ethnologue* also comments that the Eastern Angami tribe has its own language. The association of the name 'Chakhesang' in tribal and linguistic variations of Nagaland is very much complex and overlapping. If we plot the whole scenario of Chakhesang associations, we can have a flow-chart as described in Figure 2.

This figure (Figure 2) represents a great number of language (as well as community) names, either for the entire groups or for a different group or for a part of the entire group. Furthermore, a name as represented in Figure 2 is used to designate a group of ethnic population and also to signify a group of speakers of languages at the same time. This process of naming however brings us to a peculiar association as reflected in figure 2. The arrows also show Chakhesang Naga as a scheduled tribe recognized in the Indian Constitution consists of three small groups, namely, Chokri, Kheza and Sangtam. On the other hand Chokri is a separate speech community in the *Ethnologue* as we have mentioned that it reports Chakhesang as an alternative name of Chokri. On the other hand, Chakhesang is noted

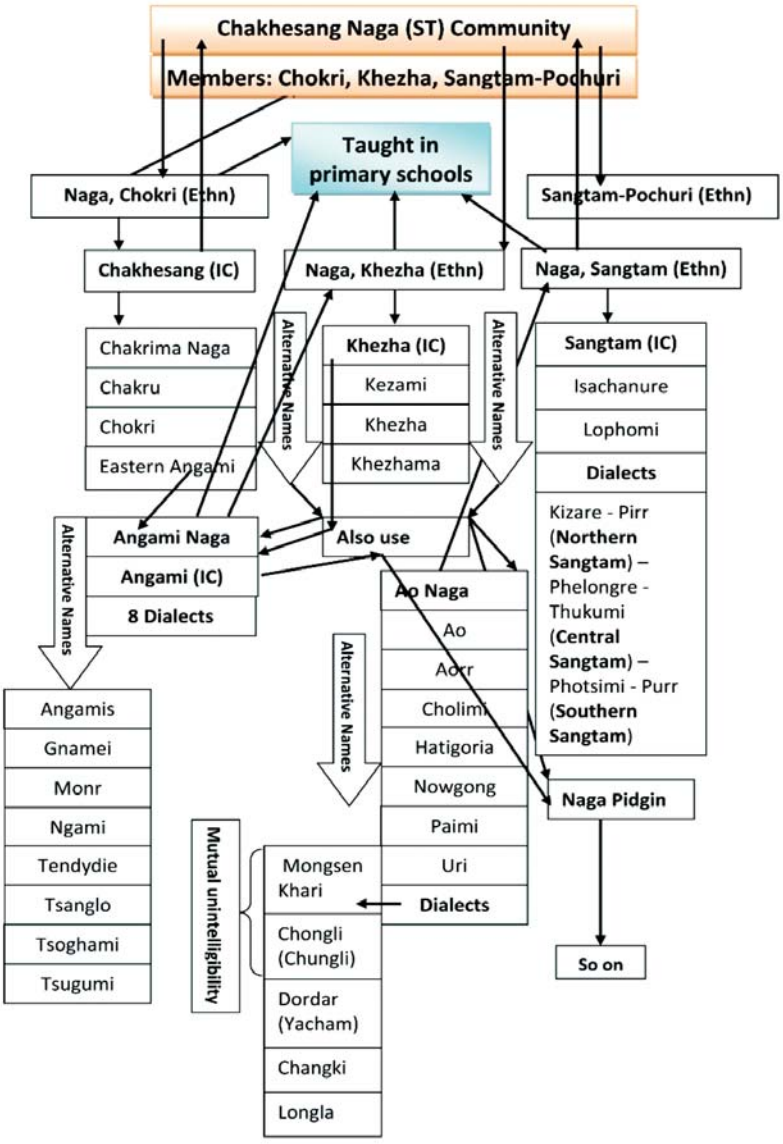

Figure 2: Real situation of Chakhesang in Nagaland

as the main *name* – in the Indian Census. Figure 2 also shows that Chakhesang Angami is also considered as a different language which has more alternative names and 8 dialects listed in the Eighth Schedule. Two arrows are set between two heads in the opposite directions. This implies that the base-names and derived names are not fixed.

The situation of Chakhesang proves that the consideration of the number of speakers and *intergenerational language transmission* is not sufficient to predict the degree of LE in particular, whereas LAR helps the same with more perfection.

Acknowledgement

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History of Zoological Gardens in Colonial Bengal [1800-1947]

Doel De

"The goal of life is living in agreement with nature."
— Zeno.

"Man began to study animals while he was still living in caves, and he is likely to go on doing as long as he remains Man. The essential purpose of a zoo is to provide spacial opportunities for this study that could not well be provided by any other means."[1]

That is simply another way of saying that zoology began before zoos and is still the major purpose of zoo.[2]

The concept of zoological garden can be defined as a wild place constrained imperfectly within human imposed limits. It's the cultivated wild with a paradox, where wilderness contained, nature under management, wild animals obliged by human rules.[3]

This topic is an iota of the larger theme of the 'Environmental History', which emerged as an active sub-discipline in 'History' in 1929 with the 'Annal's Journal of France and in North America and Europe after Second World War.

In the words of distinguished environmental historian, Donald J. Hughes, 'The task of Environmental History is the study of human relationships through time with natural communities of which they are part, in order to explain the process of change that affect the relationship. As a method, Environmental ffistory is the use of ecological analysis as a means of understanding human history. It studies the mutual effects that other species, natural forces and cycles have on humans, and the actions of humans that affect the web of

connections with non-human organisms and entities. Environmental historians recognize the ways in which the living and non-living systems of the Earth have influenced the course of human affairs. They also evaluate the impacts of changes caused by human agency in the natural environment. These processes occur at the same time and are mutually conditional.'[4]

Ancient Greek thinkers as Herodotus, Hippocrates and Theophrastus speculated on environmental influences; even in ancient Indian mythological tales, we find such effects of environmental influences. If we take the example of incarnations of Vishnu, its always the story of rescue of nature in crises, that is, whenever nature's resources were plundered by a brutal king, Bhoopati [Vishnu] came to the rescue of Bhoodevi [Earth].[5]

Thus within such a vast paraphernalia of study on environmental history, the concept of 'zoological garden' reflects the 'intellectual perception of nature by man'.[6]

The concept is innovative in the study of environmental history, as till date the concept of 'National Park' has been within the ambience of study under it.

Besides there are many monologues on the evolution of zoological garden in Europe by James Fischer, Solly Zuckermann and others but not on the basis of environmental history or Indian context and even more in the context of Bengal.

Then in the whole world perspective, spanning over a period of time, along with first hand reference of the then contemporary zoological gardens, was made by French zoologist, Gustav Loisel through his book- "Histoire des Menageries Antiquité des à nos Jours" [1912].[7]

It's a four parts, three volumes work, where the first and second parts, trace the history from Prehistory to middle ages, and then in the Renaissance period, from 15th century to 16th century respectively. In the second volume, 'Temps Modern', which means modern times, comprises 17th century and 18th century. In the third volume, Époque

Contempoire', means contemporary period of 19th and 20th centuries.

The work is a general study on the evolution of zoological garden, in a 'diachronic form', without any basis of environmental history.

Its about the evolution of zoological garden in colonial Bengal, with a reference chapter on changing images of zoos in contemporary India.

The question arises how come the subject under study, be placed within environmental history, which is unique part of the work. For this, let's have a look at the theoretical base of the study.

Gustav Loisel's work identified five stages of evolution of zoological garden in world context without any reference to environmental history. The five stages are- Prehistoric Period- Paradisos Period-Menagerie Period-Classical Zoo Period-Modern Zoological garden.

While the study to be undertaken will develop the theoretical part, as one has to go through the evolution of the environmental history at various stages of historical development, along with regard to changing human psychic with time, in regard to nature.

When one turns to prehistoric period of animal domestication to-the development of the first civilizations of the world at large and in India in particular like Indus, then Mesopotamia, China etc., all were agrarian based civilizations, when nature was feared, revered, or used as entertainment[Roman & Greece Civilizations].[8]

Under this ambience, we find the existence of zoological garden in many civilizations of the world, at the same historical stage in India, we didn't find the existence of zoos, though people took keen interest in the observation of animals, as the toys and seals of the Indus civilization reflect. In Mauryan Age forests were maintained for elephants, as they were important for war, on the other, Asokan edicts, speak for animal welfare and non-violence towards animals.

So in a way, the concept of zoo, whose gospel is 'conservation' and 'zoological study', was there in India. The same facet is not reflected in other civilizations of the world at that time. We had the seed of the zoological garden not the real zoological garden.

During the Mughal rule in India, there were not only royal menageries, but also exclusive forest areas for their 'hunting game' where the local tribal forest people lived in harmony with nature.

On the other, in medieval feudalistic Europe, as the case of England's Henry I's Woodstock menagerie or France's Charlemagne's menagerie and many others, reflected the owner's triumph over the natural world.

But one is beg to differ, when studied in Indian context, as Babar to Jahangir made detailed study of the animals which we could see in the miniature paintings of the time or the then contemporary documents as Tuzuk-i-Babari to Tuzuk-i-Jahangiri etc. where there keen interest in zoological observation comes to fore.

Both the periods of Indian history discussed above, reflects the 'arcadian view' of nature, which speak of peaceful co-existence with nature. It's major proponent Gilbert White, the parson- naturalist, spoke of simple life in close harmony with nature. Its an ecological ethic of co-existence rather than domination, humility rather than self assertion, man as a part of, rather than superior to nature.[9]

In those times, Indian society was agriculture based society, though trade had a part, but the nature - human relation is best explained through the arcadian view.

From the first urbanization in India with its toys and seals of Vedic period to animal welfare of Asokan period there was a harmony of nature and civilization.

Even so in the context of Mughal period, when veterinary science had also developed, and keen human observations about the animal world, presents a combination of faith in nature and nascent science went hand in hand, as in arcadian view of nature, but same cannot be said about European history.

In the modern period of world history or colonial period of Indian history or more clearly from 18th century onwards in Austria, France, England or in colonial India, the zoological gardens were the effects of growing dominance of the scientific worldview in Western culture

and elevation of humans as distinct and above the rest of the natural world, as in Judeo-Christian philosophical tradition.[10]

With Renaissance in Europe, scientific advancements, translated anthropocentric philosophy of nature to reality, as licence to rule the animate and inanimate nature which would transform nature to suit human needs and desires and 'sharply demarcate man from all lower level animal life.'[11]

From this view point, one may find justification for the foundation of zoological garden in early period in Europe or in India.

Clarence J. Glacken, identified three ideas on environmental history- of a designed earth, of the influence of environment on man, and of man as the modifier of environment.[12]

Of these ideas, the last one, justifies the origin of zoological garden, since the human beings tried to tame the wild, to fulfill its desire to establish its superiority over other beings.

In the study of zoological garden one needs to have a look at the development zoology, at that point of time, as both are interlinked; and it was when zoology was not the equal of botany.[13]

The discipline was at a nascent stage in Europe and England when scientific industrialization had taken place. The realization had also dawned that extensive use of natural resources will lead to ecological disaster, so scientific expertise backed by legislation was needed for substantial use of natural resources for human welfare.[14]

The anti-arcadian view, that is, 'imperial view' of nature can best explain it. Francis Bacon, the proponent of this view, was born a century before Gilbert White. He was a man of 'Active Science', whose scientific ideology was born from Christian moral training, He wanted to make the world a man-made paradise, to be made it fertile by science and human management.[15]

It was at this moment when the concept of zoological garden gained momentum and the views of Gilbert White to Charles Darwin influenced the world of zoological garden and study of zoology.

If one turns towards India, the concept of zoology have a long precedence and was far ahead of its time, from the early period of Indian history till the coming of the Mughals who took the subject to its acme. Its brilliant reflections are in the early Indian texts as Rājamārtaṇḍa by Bhojaraja[16] of the 11th century to the medieval texts of Tuzuk-i-Jahangiri.

With the coming of the Britishers' in India, the discipline rejuvenated in the late 18th century, through the Asiatic Society of Bengal, especially by Brian Hodgson, Edward Blyth, John Anderson, Dr. MacClelland and others.

The idea of human ascendency over the natural world, lead to the idea for the formation of the zoological garden. The Judeo-Christian theology of man's dominance over all creations, according to Old Testament was the reigning belief of the age.[17]

Thus the human civilization and conquest of nature became interlinked fact.[18]

In the 17th century the Cartesian doctrine, that man and animal were 'automata '[machine], but man has mind and soul and animals not, created an absolute break between man and the rest of the nature, not only in England but also in Europe.[19] This fundamentally distinct attitude led to the foundation of zoological garden from the pre-modern to modern age.

Besides the growth of natural history with the scientific study of animals, leading to the clarification of the view that 'natural world had a life of its own independent of human need';

This very thought had the idea of the use of zoological garden as a 'observation centre' for zoological species in modern times.[20]

Also by 1800, many species of the wildlife world had disappeared from English landscape due to relentless human activity, which created the urge to preserve this wildlife, which was long exploited for sports or for food; so one sees a change in perspective to preserve the wildlife, even if they had no utility.[21]

This psychological transformation led to the foundation of modern zoological garden; but in case of India besides this reason, there was an urge to study the oriental civilization in all its dimensions, was the foundational basis for the first zoological garden in India, at Barrackpore Park.

By the Victorian period in England, the natural and man-made world was viewed as two unbridgeable parts of savagery and civilization, so did Charles Darwin. Darwin expressed 'deep satisfaction in contemplating the march of improvement set in motion by Christian missionaries and by hoisting of the British flag of the empire over the peoples of southern hemisphere'.[22]

Man's relation to the economy of nature was at the heart of law of progress from savagery to civilization, where the domination is represented through a number of strategies of environmental philosophy. These strategies are, the policy of ecological conquest, rational management of nature and defense of nature from an ecological perspective.[23]

So, when the Europeans came to India, they were experiencing far reaching revolution in pattern of natural resources use at home[24] whose effect would also be visible in dealing with wildlife species in the colonized lands.

These comes out in three forms- 'commodity like attitude' with nature, breaking of primodal cooperative relation between man and nature and changing 'hardware' of resource use was accompanied by equally dramatic changes in 'software'.[25]

Alfred Crosby, referred that "Europe failed to Europeanize 'Asia' but it carried on a 'civilising mission' as it proclaimed its superiority and uniqueness to other civilizations of the world. Even the most advanced ones"[26]

The 'ideology of improvement' over the colonized lands rather mere conquest was the key to the intellectual background for the foundation of European rule in a foreign country. This 'civilizing

mission' was at the heart of the struggle between European colonizers and the leaders of cultures they came to dominate in the 18th century.[27]

This very ideology, was at the basis for the foundation of zoological garden in India; though the first one in colonized Bengal, was part of British' Indian Natural History project', of Barrackpore to educate the trainee civil servants of the East India Company about the 'Orient'; and the second one by the British, was to educate the natives of the land and to entertain them.

Metcalf pointed out, "Europeans created the notion of the 'other', as with loss of America from 18th century, British gave up the inclusive sense of community shared with the American colonists, but creating an 'essential quality of difference' and run the farflung areas by law and order and a mercenary army consisted of its conquered subjects".[28]

This very theoretical perspective, was at the heart of the origin of the first zoological garden in colonial Bengal and at large in Indian context, which is a unique feature in comparison to other zoological gardens of the world.

Thus in the research to be undertaken the points to be analyzed are—

Why the concept of zoological garden gained precedence in colonized Bengal; and whether it is a gift of the British Raj or it was present in India from prehistoric to early period to medieval period in an inert form? Also an analysis of indigenous contribution in colonized Bengal to it.

To proceed to the answer, one needs to analyze the concept of zoological garden, then leading to the evolution of zoological garden in world context as a background study. At the next stage to the evolution of zoological garden in pre-colonial India to colonial India, where indigenous and foreign contributions, both are to be studied. Then in the context of Bengal, it will involve a 'case study' of Zoological Garden at Alipore and in particular of great grandfather of zoo biology-Rai Bahadur Ram Brahma Sanyal.

We also have a look at the other zoos of colonial India, the reasons for their foundation, contribution of native princes and if in any way British patronized them

As already referred earlier, I will like to compare how the zoos established in bygone era different from the present forms of wildlife reserves, as we all know history is not a static subject but a dynamic subject, with deeper and better understanding of the world, which proceeds by interpretation.

Not last but the least, there are ethical questions about zoos, the question of right of man over nature. Thus this approach to study the zoological garden in colonial Bengal is an innovative work under environmental history.

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The 'Inspired' Shoe-Maker Missionary to India

Saptarshi Mallick

"A nation whom you love'd as if your own"[1]

"My heart is wedded to India; and though I am of little use, I feel a pleasure in doing the little I can, and a very high interest in the spiritual good of this vast country, by whose instrumentality soever it is promoted", wrote[2] William Carey (1761-1834), the first Protestant missionary from the Baptist Church of England who was largely responsible for turning the tide of Protestant thought in favour of foreign missions through the propagation of the Gospel into the lands where Christianity had not spread. His acculturated heart underwent an intellectual change and as an orientalised individual he took an active regard in every attempt to make India familiarly known, both to its rulers and its people (Wilson p. 604) interrogating the convention 'to rule and to learn [in order] to subdue the infinite variety of the Orient' (Said p. 78). Carey's journey to Bengal [India] during his forty-one years of stay through 'his work in the languages, philology and science, and above all for his indomitable faith and energy as a pioneer' (India Office Records, "The Inspired Cobbler") along with his several humane endeavours, has permanently associated him with the British Orientalists in Calcutta and with the Bengalis, a passage to India that has not only placed him in golden letters in the annals of the Bengal Renaissance *(Awakening* p. 67) but has also immortalized him with the glittering honour of the diploma of the Doctor of Divinity from the Brown University, U.S.A. in 1807 (Heaton p. 14). Carey remains the solitary individual who stirred the imagination of the modern world through his interdisciplinary endeavours which

represents a turning point in the history of the Christian missions (Tucker, p. 114; *A History of Christian Missions* p. 26). He remains a classic example of a foreigner from the coloniser's country who tried to understand and assimilate within his own self the spirit and the mind of India; he took ardent steps to connect the world to the cultural heritage of India which was long unknown. This was evident through his humanitarian activities for the welfare and the development of the Indians as -

> The greatest things in quiet places grow;
> And men are like the tress, which need the light
> And free fresh air to make them strong for life.
> The noblest deeds in silence are thought out;
> And plans are born while only stars look on,
> And hopes are whispered to the birds and flowers,
> Which keep the secret. So the grand oaks grow
> That once were acrons: so the grand deeds, too,
> That once were only dreams (Farningham, p. 607).

This essay aims to explore the unknown address in Sanskrit by William Carey at the College of Fort William on September 20, 1804, vindicating his association towards India and his love for the Indian vernaculars especially Bengali and Sanskrit. Carey's humanitarian endeavours as the shoemaker, the teacher, the preacher, the translator, the botanist has immortalized him in the socio-cultural history of the nineteenth-century Bengal.

William Carey is the typified Renaissance man with his creative pursuits and multidisciplinary endeavours which are monumental in the history of the renaissance in nineteenth-century Bengal. Though in this context we have to remember that such a sentiment was strange to the twentieth century as rightly pointed by Deaville Walker, but Carey's life embodies the greatness and unselfconscious spirit as vindicated through his powerful couplet "Expect great things from God, Attempt great things for God" (Heaton p. 6). The sense of values that governed his life was based on this ideal of utter selflessness. He

was a man who did not heed to his self betterment, enrichment or comfort, but dedicated his life with all its vigour to India till the seventy-second year of his age, never to return to his birth land. Besides, being a missionary statesman ardently dedicated to the cause of the Lord to spread the 'Word' among the masses, William Carey with the passage of time proved to be,

> an erudite Oriental scholar, a gifted translator, a learned professor, a skilled botanist, a true friend of Bengal and India (Davis p. 73).

He was a common shoemaker[3] but like individuals infused with a new spirit he was "not content to remain a common man" (Fraser p. 15). With his consecrated energy, capacity, ardent devotion "no power on earth could hinder" (Drewery p. 43) him from his cause to spread the 'Word' among the non-Christians and ensure their welfare, as evidenced through the annals of time that,

> ... it is not only by those who are esteemed great among the children of men that God has appointed great things to be done, but let no man dream, on the other hand, that such a history teaches us that it is by careless or indifferent instruments that God will achieve His great purposes (Fraser p. 15).

Therefore, with his patient toil[4] and devoted sacrifice,[5] he wanted to disseminate the humane and saving principles of life taught by Christ among those who were not aware of it and were entangled in a cobweb of paganism and false practices. His approach to India was to appreciate Indian life, history, culture, heritage, and literature with an enduring efficiency than mere poetic or sympathetic enthusiasm. As a sincere individual true to his mission and activities he zealously endeavoured with all his vigorous and enduring application towards the intellectual and spiritual awakening of his brothers and sisters of the East ("Dr Carey" 1836 p. 277). Carey at once felt the necessity and declared, "Behold I come quickly and my reward is with me" (Marshman I : p. 200). "We saw", said Fuller later, "there was a gold mine in India but it was a deep as the centre of the earth. Who will venture to explore it?" "I will venture to go down", said Carey, "but remember that you [addressing Fuller, Sutcliff and Ryland] must hold

the ropes." "We solemnly engaged him to do so, not while we live shall we desert him" (Ibid.). Though Carey came to India with the avowed idea of spreading the 'Word' which is of enormous missiological significance yet his culturally enriched, cosmopolitan heart enabled him to be not a "mere proselytizer[s], but as humane, selfless individual[s] who sought to uplift the people" (Mookerjee p. 348) by ushering the spirit of an awakening in nineteenth century Bengal through a variety of progressive endeavours like the educational and social reforms, literary and linguistic creations in the native languages, botanical and agro-horticultural awareness, and journalism in the native and English languages, which bear a testimony of not only his benign heart and clement soul, but also his love and association with Bengal [India]. Carey proved through his life what Tagore had later theorized that communication of life can only be plausible through a sentient medium which facilitate cultures to grow, move and multiple itself in life *(The Centre of Indian* p. 21).

Besides undertaking the measures for the development of education and social amelioration of the masses, the Serampore missionaries headed by William Carey also addressed the paucity of printed books, which was not only addressed by them from the Serampore Mission Press but this entire process also initiated a revolution in the history of the book and printing in nineteenth century India and the linguistic and literary development of the Indian vernaculars especially the prose in the Bengali language (Nag p. 152), emphasizing Carey and his fellow missionaries' contribution towards the early development of Indology. Though mediocre in comparison to the Indologists of the nineteenth-century Europe yet the British scholars at the College of Fort William had a great enthusiasm, sincerity and sense of duty, passion for learning and versatility in their hearts; like Gilchrist and Lumsden, Carey also played an important role along with the local pundits and scholars to sow in the seeds of a literary and linguistic renaissance in Bengal *(Sahibs and Munshis* pp. 104, 105) through his linguistic and literary creations besides the social and educational reforms. Therefore Carey's endeavour provided a model for the educated Bengali to execute and carry ahead the process of purification

of the Bengali language and literature (Chatterjee p. 81) which with the passage of time developed further under the authorship of Raja Rammohan Roy, Iswar Chandra Vidyasagar, Bankim Chandra Chattopadhyay and finally Rabindranath Tagore. Lord (Marquis) Wellesley's "first administrative reform" (Carey, *William Carey* p. 204) was the establishment of the College of Fort William, "an institution founded by a peer of the realm — a marquess, no less" (*Awakening* p. 69), on May 4, 1800 for educating the young civilians of the East India Company in "courses of two or three years" (Carey, *William Carey* p. 205), whose standard of education was very poor and whose moral values were deplorably low (Marshman I; p. 145). The College of Fort William aimed to train these young officers regarding the land and its people whom they would govern in the days ahead, and William Carey was appointed as a teacher to teach them Bengali, Sanskrit, and later Marathi. Being aware of Carey's translation of the *Bible* in Bengali, Lord Wellesley instructed David Brown to invite Carey to join as a faculty at the Department of Bengali, College of Fort William. He was appointed on May 1, 1801 and he joined the college on May 4, 1801 (Das, *William Carey* p. 25) and remained there as a faculty till 1830,[7] a long fruitful period of thirty years initiating a cultural and an academic coordination between the College of Fort William and the Serampore Mission and their Press (Khan p. 43). This appointment of Carey was viewed by his fellow missionaries as an important means to fund their missionary enterprises (Ross p. 48) whose roots were based on the idea of spreading the true religion throughout the East for which Carey along with Marshman and Ward undertook the translation of the *Bible* into the Indian languages (Klopfenstein p. 12). The "missionary zeal and versatility of the indefatigable" (Kripalani p. 25) William Carey and the literary dynamism of the College of Fort Williams complemented and supplemented each other in ushering a linguistic, literary and a cultural renaissance in Bengal, "a major departure from a kind of cultural imperialism which has shackled many efforts at world evangelization" (*Faithful Witness* p. 174) and thereby pioneered the evolution and the development of the prose in the Bengali language. It was an endeavour

to develop and fashion the prose for modern religious and secular discourse, a printed prose that could communicate and control, without seriously upsetting pre-modern social privilege and privations ("Purity and Print" p. 215) and rekindle the love in the hearts of the natives for the Bengali language *(Early Bengali Prose* p. 23).

As pure enjoyment of knowledge is freedom upon which human beings' science and philosophy thrive *(Personality* p. 8), Carey was not a scholar for the sake of scholarship but he loved the Bengali language and believed it to be "intrinsically superior to all other spoken Indian languages" *(A History of Christianity in India* p. 191) as is evident from his letter written to Mr Sutcliff on August 9, 1794 from Mudnabutty, where he states,

> The language [Bengali] is very copious, and I think beautiful. I begin to converse in it a little; but my third son, about five years old, speaks it fluently. Indeed, there are two distinct languages spoken all over the country, viz., the Bengali, spoken by the Brahmuns and higher Hindus; and the Hindostani, spoken by the Mussulmans and lower Hindus, which is a mixture of Bengali and Persian. I intend to send you soon a copy of Genesis, Matthew, Mark, and James, in Bengali; with a small vocabulary and grammar of the language, in manuscript, of my own composing, to which you will afford a place on one of the shelves in your library *(Memoir* p. 195).

With the discovery of India by the West, the birth and development of Indology as a branch of learning took place; however we can never deny that the study of Indian culture by foreign thinkers has been a continuous process affirming the interest and significance of its contributions and values (Raghavan p. 433). Besides *A Grammar of the Bengalee Language* (1801, 1805, 1815, 1818, 1843), Carey's contributions towards Indology deal with laborious and important publications like his *Kathopokothon [Dialogues]* (1801), *A Grammar of the Mahratta Language* (1805), *A Grammar of the Sungskrit Language* (1806), *A Grammar of the Punjabee Language* (1812), *A Grammar of the Telinga Language* (1814), the unpublished *Polyglot* or *A Universal Dictionary of Oriental Languages, A Dictionary of the Mahratha Language* (1810), *A Dictionary*

in the Bengali Language (Vol. I in 1818, Vol. II Part II in 1825, 2nd edition of Vol. II in 1825), *A Dictionary of the Bhotanta, or Boutan Language* (1826), *The Ramayuna of Valmeeki* (Vol. I in 1806, Vol. II in 1808, Vol. III in 1808, Vol. IV in 1810) and *Itihāsmālā* (1812) along with some other useful articles and tracts.[9] These linguistic and literary endeavours vindicate the talents of Carey which were exaltedly reworked in accordance to the necessity of his endeavour to investigate the oriental languages and thereby raise the Bengali language,

> ... from the condition of a rude and unsettled dialect to the character of a regular and permanent form of speech, possessing something of a literature, and capable, through its intimate relation to the Sanscrit [Sanskrit], of becoming refined and comprehensive vehicle for the diffusion of sound knowledge and religious truth (Wilson, p. 589).

Besides, Carey not only admired but also learnt the Sanskrit language which he believed to be "the parent of nearly all the colloquial dialects of India" *(A Grammar of the Sungskrit* p. i). Therefore from being "an evangelist of the Christian Gospel" ("William Carey and Bengali Grammar" p. 1), Carey like a German Lutheran named Ziegenbalg at the Danish port of Tranquebar in Tamilnad (Kopf p. 51), on being exposed to the culture and languages of the people of India became an "evangelist of the languages" *(Awakening* p. 76). He emerged as the individual who is,

> ... true, where he feels his infinity, where he is divine, and the divine is the creator in him. Therefore with the attainment of his truth he creates. For he can truly live in his own creation and make out of God's world his own world. This is indeed his own heaven, the heaven of ideas shaped into perfect forms, with which he surrounds himself; where his children are born, where they learn how to live and to die, how to love and to fight, where they know that the real is not that which is merely seen and wealth is not that which is stored *(Personality* pp. 28, 29).

As Carey's world was governed by the command of the Lord so he was able to embrace the people of the foreign land and their languages and culture as his own, conspicuous through his observations regarding the Bengali language to be as "one of the most expressive and elegant languages of the East" *(A Grammar of the Bengalee* 1801 p. iv), Carey believed the Sanskrit language to be:

> ... copious and expressive, and which is the parent of so many colloquial languages, and more or less connected with many other, must appear interesting philologist; while those who are desirous of tracing the progress of arts and civilisation, or of examining the venerable remains of antiquity, must wish to become acquaint with the many ancient and curious works of the Hindoos, written upon these subjects *(A Grammar of the Sungskrit* p. iv).

Such an ardent love for the Bengali and the Sanskrit languages [along with the other vernaculars of India] enabled Carey through his literary and linguistic creations to contribute effectively[10] towards the development of Indology during his forty-one years of his stay in India where he became as one of the exotic trees in his formal garden (Woodall p. 98). It proved to be an indispensible versatility in him to love India and undertake her prosperity in several spheres, especially re-invigorating the Bengali and the Sanskrit languages in a greater degree as a faculty of the College of Fort William than as a missionary, effectively contributing towards the evolution and development of the prose (Mookerjee p. 349) and the revival and enrichment of Bengali as a literature and its establishment as a language (Howells p. 114). His works are,

> ... distinguished for their practical character, as many be imagined from the opportunities he possessed of drawing his materials from living authorities: advantages which he did not fail zealously and efficiently to improve, to the great benefit, be it spoken, of eastern letters ("Dr. Carey" 1835 p. 55).

William Carey's association, affection and belonging towards India [Bengal] is well vindicated through his various socio-cultural and literary endeavours. In spite of all his interdisciplinary contributions

Carey's address [unknown to most of the historians and biographers] at a public disputation at the College of Fort William on September 20, 1804 in the august presence of Lord Wellesley, delivered in Sanskrit, precisely vindicates his knowledge of the country. The following[11] is the translation [in the English language] of the introduction and Carey's address:

Sir

It being the rule of our Public Disputations, that the Moderator should express before the assembly, his opinion of the proficiency of the Student in the Language in which he has spoken, it becomes my duty to declare my perfect approbation of the manner in which you have acquitted yourself, and to communicate to you the satisfaction with which the learned Pundits, your auditors, have listened to your correct pronunciation of the Shanscrit Tongue.

Four years have now elapsed since the commencement of this Institution. During that period the popular languages of India have been sedulously cultivated; and are now fluently spoken. Last in order, because first in difficulty, appears the Parent of all these Dialects, the primitive Shanscrit; as if to acknowledge her legitimate offspring, confirm their affinity and relation to each other, and thereby complete our system of Oriental Study.

Considered as the source of the colloquial tongues, the utility of the Shanscrit Language is evident; but as containing numerous treatises on the religion, jurisprudence, arts and sciences of the Hindoos, its importance is yet greater; especially to those to whom is committed, by this government, the province of legislation for the Natives; in order that being conversant with the Hindoo writings, and capable of referring to the original authorities, they may propose, from time to time, the requisite modifications and improvements, in just accordance with existing Law and ancient Institution.

Shanscrit Learning, say the Brahmans, is like an extensive forest, abounding with a great variety of beautiful foliage, splendid blossoms, and delicious fruits; but surrounded by a strong and thorny fence,

which prevents those who are desirous of plucking its fruits or flowers, from entering in.

The learned Jones, Wilkins, and others, broke down this opposing fence in several places; but by the College of Fort William, a high-way has been made into the midst of the wood; and you, Sir, have entered thereby.

The successful study of the Shanscrit tongue will distinguish this fourth year of our Institution, and constitute it an aera in the progress of Eastern Learning; and you, Sir, have the honor of being the first to deliver a speech in that ancient and difficult Language. The success that has attended you in the acquirement of other branches of Oriental Literature, will encourage you to prosecute the study of this, as far as it may be useful in qualifying you for the faithful discharge of your duties in the public service, or may be subservient to your own reputation, in advancing the interests of useful learning.

[Addressing His Excellency Marquis Wellesley, Governor General, Founder and Patron of the Institution]

My Lord,

It is just, that the Language which has been first cultivated under Your auspices, should primarily be employed in gratefully acknowledging the benefit, and in speaking Your praise.

This ancient Language, which refused to disclose itself to the former Governors of India, unlocks its treasures at Your command, and enriches the world with the history, learning, and science of a distant age.

The rising importance of our Collegiate Institution has never been more clearly demonstrated than on the present occasion; and thousands of the learned in distant nations will exult in this triumph of Literature.

What a singular exhibition has been this day presented to us! In presence of the supreme Governor of India, and of its most learned and illustrious characters Asiatic and European, an assembly is convened, in which no word of our native tongue is spoken, but public discourse is maintained on interesting subjects, in the Languages of Asia. The colloquial Hindoostanee, the classic Persian, the commercial Bengalee, the learned Arabic, and the primaeval

Shanscrit, are spoken fluently, after having been studied grammatically, by English youth. Did ever any University in Europe, or any literary Institution in any other age or country, exhibit a scene so interesting as this? And what are the circumstances of these youth! They are not students who prosecute a dead Language with uncertain purpose, impelled only by natural genius or love of fame. But having been appointed to the important offices of administering the government of the country in which these Languages are spoken, they apply their acquisitions immediately to useful purpose; in distributing justice to the inhabitants; in transacting the business of the State, revenual and commercial, and in maintaining official intercourse with the people, in their own tongue, and not, as hitherto, by an Interpreter. The acquisitions of our Students may be appreciated by their affording the suppliant Native immediate access to his principal; and by their elucidating the spirit of the Regulations of our Government by oral communication, and by written explanations, varied according to the circumstances and capacities of the people.

The acquisitions of our Students are appreciated at this moment by those learned Asiatics, now present in this assembly, some of them strangers from distant provinces; who wonder every man to hear in his own tongue, important subjects discussed, and new and noble principles asserted, by the youth of a foreign land.

The literary proceedings of this day amply replay all the solicitude, labour and expense that have been bestowed on this Institution. If the expense had been a thousand times greater, it would not have equaled the immensity of the advantage, moral and political, that will ensue.

I, now an old man, have lived for a long series of years among the Hindoos. I have been in the habit of preaching to multitudes daily, of discoursing with the Brahmans on every subject and of superintending schools for the instruction of the Hindoo youth. Their Language is nearly as familiar to me as my own. This close intercourse with the Natives for so long a period, and in different parts of our Empire, has afforded me opportunities of information not inferior to those which have hitherto been presented to any other person. I may say indeed that their manners, customs, habits and sentiments, are as obvious to

me, as if I was myself a native. And knowing them as I do, and hearing as I do, their daily observations on our government, character and principles, I am warranted to say, (and I deem it my duty to embrace the public opportunity now afforded me of saying it) that the Institution of this College was wanting to complete the happiness of the Natives under our Dominion; for this Institution will break down that barrier (our ignorance of their Language) which has ever opposed the influence of our Laws and principles, and has despoiled our administration of its energy and effect.

Were the institution to cease for this moment, its salutary effects would yet remain. Good has been done, which cannot be undone. Sources of useful knowledge, moral instruction, and political utility, have been opened to the Natives of India, which can never be closed; and their civil improvement, like the gradual civilisation of our own country, will advance in progression, for ages to come.

One hundred original volumes in the Oriental Languages and Literature, will preserve forever in Asia, the Name of the Founder of this Institution. Nor are the examples frequent of a renown, possessing such utility for its basis, or pervading such a vast portion of the habitable globe. My Lord, you have raised a Monument of fame, which no length of time, or reverse of fortune, is able to destroy; not chiefly because it is inscribed with Mahratta and Mysore, with the Trophies of war, and the emblems of Victory; but because there are inscribed on it the names of those Learned Youth, who have obtained Degrees of Honour for high proficiency in the Oriental Tongues.

These youth will rise in regular succession to the government of this country. They will extend the domain of British civilisation, security and happiness, by enlarging the bounds of Oriental Literature and thereby diffusing the spirit of Christian principles throughout the nations of Asia. These youth, who have lived so long, amongst us, whose unwearied application to their studies we have all witnessed, whose moral and exemplary conduct has, in so solemn a manner, been publicly declared before this august assembly, on this day; and who, at the moment of entering on the public Service, enjoy the fame of possessing qualities (rarely combined) constituting a reputation of

three-fold strength for public men, Genius, Industry and Virtue; these illustrious scholars, My Lord, the pride of their country, and the Pillars of this empire, will record Your name in many a language, and secure Your fame for ever. Your name is already recorded in their hearts. The whole body on youth of this Service hail You as their Father and their Friend. Your honour will be ever safe in their hands. No revolution of opinion, or change of circumstances, can rob You of the solid glory derived from the humane, just, liberal and magnanimous principle which have been embodied by Your Administration.

To whatever situation the course of future events may call You, the youth of this service will ever remain the pledges of the wisdom and purity of Your Government. Your evening of Life will be constantly cheered with new Testimonies of their reverence and affection; with new proofs of the advantages of the education You have afforded them; and with a demonstration of the numerous benefits, moral, religious and political, resulting from this Institution - benefits which will consolidate the happiness of millions in Asia, with the glory and welfare of our country *(Primitiae Orientalis* III: pp. 112-120).

His peroration was a fine discourse of oratorical skill which was rhetorically impressive as well as revealing at a personal level for a person who received an opportunity to carry forward the legacy of the Oriental personalities who arrived at India before him (Kopf p. 90). Therefore Carey proved to be,

> ... a man of no ordinary powers of mind; that he was endowed with prompt and acute apprehension; that he must have been capable of vigorous and enduring application: that his tastes were varied, and his attainments vast; and that he perseveringly and zealously devoted all his faculties and acquirements to the intellectual and spiritual improvement of his fellow-creatures in the East (Wilson p. 610).

Accordingly William Carey was "the pioneer who revived interest in the Vernaculars" (Carey, *William Carey* p. 203) of India and thereby played an important role towards the development of modem Indian

vernaculars, and especially Bengali literature. T. W. Clark stated very clearly that the,

> Bengali prose ... was born at the beginning of the century, mainly as a result of the work of William Carey. It was taken up by Ram Mohan Ray, lsvarchandra Gupta, and others, and by the seventh decade was partly accepted as a vehicle of expression for general subjects ("The Role of Bankimchandra" p. 429).

In spite of several criticisms by scholars[12] regarding the existence of the prose in Bengal, Assam and Bhutan, before the arrival of the missionaries (Sen, *Prachin Bangla Patra Songkolon* p. 84), we can never deny that though in a nascent form yet Carey being able to discern the force of the language becomes the first European who ploughed the lonely furrow for the harvest in the Bengali language (Nag p. 152) substantiated through his creative pursuits which also played an important role in inspiring Europeans to undertake future studies of the orient, as for example, John Robinson's *Vangabhāshār Vyākaran* (1846) which was a translation of Carey's *A Grammar of the Bengalee Language* and Duncan Forbes's *A Grammar of the Bengalee Language: To Which is Added A Selection of Easy Phrases and Useful Dialogues* (1861). Duncan Forbes[13] in the Preface of his book royally acknowledges William Carey's *A Grammar of the Bengalee Language* as an important source book along with Nathaniel Brassey Halhed's *A Grammar of Bengal Language* (1778), Graves Chamney Haughton's *Rudiments of Bengali Grammar* (1821) and Dr Yates and Dr Wenger's *Bengali Grammar* (1885). Carey's literary and linguistic creations and translations played a momentous role as he possessed a vigorous intellect, capable of strenuous and enduring application, with his tastes being varied and his attainment vast *(Bengali Literature 1757-1857* pp. 138, 139). William Wilberforce reflected that it was due to Carey's sublime thought, hard labour and firm determination to spread the 'Word' that millions of people were able to receive the *Bible* in their own languages which had undoubtedly become the most effective manner of propagating the Gospel among all classes of people (Armitage 2: p. 582). These

reinvigorated the literature but also enabled the people to express themselves clearly (Mookerjee p. 349). Hayman Wilson was of the opinion that,

> Dr Carey may claim the merit of having raised it [Bengali language] from the condition of a rude and unsettled dialect to the character of a regular and a permanent form of speech, possessing something of a literature, and capable, through its intimate relation to the Sanscrit, of becoming a refined and comprehensive vehicle for the diffusion of sound knowledge and religious truth ("Remarks on the Character" p. 589).

Therefore William Carey and his fellow missionaries at Serampore brought in before the Indian world the beauty and the literary possibilities of pure Bengali as it existed on the lips of the people, as a result it is valid to rightly regard Carey as one of the Europeans who facilitated the creation of the modem Bengali prose *(A History of Christianity in India* p. 192), at least an initiative which got developed with the passage of time through several literary pioneers.

Though William Carey's mission to India is often considered to be a catalyst for a great missionary awakening throughout the church ("William Carey and the Great Commission" p. 7), yet his life became an embodiment as a true Christian (Sen, "William Carey" p. 230) based on fellow-feeling and humanism which were his aids for the establishment of justice and reconciliation in the human society. For the development of the country Carey emphasized the need for individuals trained in "a liberal course of general culture, sound learning, genuine piety and sterling character" for the necessary cultivation of human sympathy irrespective of caste and creed. His was an open and ecumenical vision of a new India where people would strive to understand the heritage and resources of their motherland with "uniform mildness and unobtrusive modesty" (Brown p. xxii). In the history of Christianity Carey stands as the bridge figure connecting the cultures; his approach was a major departure from a

kind of cultural imperialism which has impeded several attempts at world evangelization. His was a life dedicated to,

> ... the service of his Redeemer, and the Lord was pleased to make him an instrument of much usefulness; but notwithstanding all that he was enabled to do, he never ceased to exclaim that he was an unprofitable servant...active and faithful in the discharge of his duties as a minister and a translator; and was in his element in the study of botany and other scientific pursuits, but always humble in his views regarding his own abilities and acquirements ("Death of Dr. Carey" p. 37).

In his heart Carey bore the message of salvation through repentance and ardent faith upon the true God that could remove mountains and subdue kingdoms; wonderful intellectual powers and an ability to conquer strange and difficult tongues enabled him [Carey] to become a crusader of the [Indian] vernaculars *(Awakening* p. 76). Once Carey was aware of the ancient culture and heritage of the country he not only revered it but also took measures to develop it as he had a great respect for the "antiquity and beauty of the cultural legacy" *(Faithful Witness* p. 175) of India. Of all the great men who have laboured to bring home to India the love and the humanism of Christ[ianity], William Carey, in influence and achievement, is the greatest (Ogilvie p. 333) harbinger of a change in perspective towards world missions (Wayland p. xii). His love for India and her languages as evident through his social and literary activities throughout his life in India inspire the necessity to nurture "the centre of the creative life of the national mind" *(The Centre of Indian* p. 35), thereby authenticating his being the pioneer in education and reforms as a humanitarian citizen of the world (Chatterji p. 296) as,

> Many days
> Passed on before he had his heart's desire:-
> And then, behold, in far off Serampore
> The man of Moulton: honoured, learned, praised,
> Professor in the college; translator
> Of the most Holy Rock he loved so well,

Leader of modem missions, whose good name
Was spoken in our English Parliaments
And in the homes of India; so he lived:
And, like a tree whose leaves fur healing grow
In stately strength and beauty reared his head,
Because his great true heart was brave for God (Farningham p. 607).

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Notes

[1] This is the ninth sentence from the tribute penned by Captain D. L. Richardson [Professor and later Principal, Hindu College] dedicated to David Hare. It is present on a mural table at the Hare School, erected in 1847 A.D. This sentence has been used in the beginning of this essay as the message inherent in it is applicable not only for David Hare but also for William Carey who loved Bengal [India] as his own land.

[2] William Carey wrote this in his letter to Mr Dyer from Serampore on December 9, *1825 (Memoir* pp. 560 - 562).

[3] In his early life, Carey pursued shoe-making along with his self studies (Mitchell p. 23). The manner in which he had rejected his Anglican upbringing and joined the Dissenters has been well documented in *William Carey* (Drewery p. 25).

[4] Carey practiced throughout his own life that which he once urged on his son, "Consider yourself as devoted to the work of the Lord; and in your power the cause of the great Redeemer" (Fraser p. 16).

[5] Carey was chosen preacher at the meetings of the Northamptonshire Baptist Association at Nottingham. His sermon on this occasion has been called

the "Deathless Sermon". Its text was Isaiah 54.2-3 and its powerful argument was summed up in the tremendous couplet which was the motto of his life till his death - "Expect great things from God. Attempt great things for God" (Middlebrook p. 21).

[6] On June 15, 1801, Carey wrote to Dr Ryland from Serampore stating about the invitation he had received for joining as a faculty at the College of Fort William. He wrote:

> To my great surprise I was asked to undertake the Bengali Professorship. One morning a letter from Mr Brown came inviting me to cross the water, to have some conversation with him upon this subject. I had but just time to call our brethren together, who were of opinion that, for several reasons, I ought to accept it, provided it did not interfere with the work of the mission. I also knew myself to be incapable of filling such a station with reputation and propriety. I, however, went over, and honestly proposed all my fears and objections. Both Mr Brown and Mr Buchanan [Anglian Chaplains] were of opinion that the cause of the mission would be furthered by it; and I was not able to reply to their arguments. I was convinced that it might. As to my ability they could not satisfy me: but they insisted upon it that they must be judges of that. I therefore consented, with fear and trembling. They proposed me that day or the next, to the Governor-General, who is patron and visitor of the College. They told him that I had been a missionary in the country for seven years or more, and as a missionary, I was appointed to the office *(Memoir* pp. 452, 453).

[7] Carey was appointed as a teacher of Bengali in April 1801 at a monthly salary of 500 rupees, with Marathi being added to his responsibilities from 1804; while after Colebrooke's resignation as a Professor of Sanskrit towards the end of July 1806; Carey was appointed Professor of Sanskrit and Bengali from January I, 1807 with a salary doubled to 1000 rupees per month which he believed will be financially very helpful for the Mission. Carey mentions these in his letter written on February 11, 1807 to John Sutcliffe *(Memoir* p. 492).

[8] The literary dynamism of the College of Fort William was comprised through the scholarship of G. H. Burlow, H. T. Colebrook, Dr John Gilchrist, William Carkpatrick, N. B. Edmondstone, Francis Gladwin, John Bailey, Claudius Buchanan, Lt. William Price and the talent of Pundit Mrityunjoy Vidyalankar, Ramnath Bachaspati, Sripati Mukhopadhyay, Ramjay Tarkalankar, Kaliprosad Tarkasiddhanta, Ram Ram Basu, Anandachandra Rajivlochan Mukhopadhyay, Kashinath (Tarkalankar?), Padmalochan Churamoni, Shibchandra Tarkalankar, Ramkishore Tarkachuramoni, Ramkumar Shiromani, Gadadhar Tarkabagish, Ramchandra Roy, Narottam Basu, Kalikumar Roy, Mohan Prosad Thakur, Chandi Charan, Lalluji Lal, Sadal Mishra, Mir Amman, Vidyanath, and Sher Ali Afsos.

[9] Other articles and tracts written by William Carey are translation of Samuel Pearce's *A Letter to the Lascars in the Bengali Language* and it is supposed to be the first booklet by him (Das, *William Carey* p. 28); his 'Remarks on the State of AGRICULTURE, in the District of Dinajpur' published as Chapter

I in the *Asiatic Researches Vol. X* in 1812 establish his intricate geographical knowledge of the particular region and his ability to analyze with scientific arguments the pros and cons of agriculture of the region; many historians and indologists believe that the essay 'A CATALOGUE of Indian Medicinal Plants and Drugs with Their Names in the Hindustani and Sanscrit Languages' (Chapter III), written by John Fleming M. D. and published in *Asiatic Researches Vol. XI* in 1818, was originally written by William Carey; from H. H. Wilson's essay we come to know of *Sankhya Probachan Bhasya* [The Doctrine of the Sankhya School of Philosophy] in the Deva Nagari character, we are not aware of its existence in the form of a book though the manuscript of this text which was written in the Sanskrit language by Carey was made ready for being printed at the Serampore Mission Press (Wilson p. 595; Khan p. 144).

[10] In respect to Carey and his fellow missionaries' contributions towards the development of the Bengali language, Sushil Kumar De is of the opinion that though none of the works of the missionaries can be considered to be classical by the Bengali authors and readers but it can never be denied that,

> Bengal had a language and literature of its own long before the missionaries even dreamt of coming out to this country; yet this language had decayed, and the literature had been forgotten. It was at this time that Carey came to Bengal. In order to understand what he did for our literature, we must recollect in what state he found it when he made the first start. There was hardly any printed book; manuscripts were rare; and all artistic impulse or literary tradition was almost extinct. To Carey belongs the credit of having raised the language from its debased condition of an unsettled dialect, to the character of a regular and permanent form of speech, capable as in the past of becoming the refined and comprehensive vehicle of a great literature in the future. Poetry there was enough in ancient Bengali literature; there was a rudiment of prose too, not widely known or cultivated. But Carey's was indeed one of the earliest attempts to write simple and regular prose for the expression of everyday thoughts of the nation. Other writers contemporaneous with him like Ram Basu, or Mrityunjay Vidyalankar took Persian or Sanskrit as their model and their prose in consequence became somewhat quaint, affected and elaborate; but the striking feature of Carey's prose is its simplicity. It is pervaded by a strong desire for clearness and for use, and by a love of the language itself. Such pioneer Carey was, and eminently fitted for this work he was by his acquirements, as well as by his position *(History of Bengali Literature 1800-1825* pp. 156, 157).

[11] In *Primitiae Orientalis Vol. III* Carey's speech in the Sanskrit language is present. The other speeches transcribed in this volume are by Mr John Romer in the Hindi language, Mr George Swinton in the Persian language, reply to him in Persian by Mr William Oliver, Mr A. B. Tod in the Bengali language, Mr William Oliver in the Arabic language, Mr C. Gowan in the Sanskrit language and by Mr William Carey also in the Sanskrit language. I had discovered and accessed this volume at the David Reading Room,

Weston Library, Bodleian Libraries, University of Oxford.

[12] Professor Ramkrishna Bhattacharya in his essay "William Carey O Bangla Gadya: Ekti Otikotha" published in *Ebong Ei Samay* (March-April 2014) criticizes the fact that Carey and the Pundits and the Munshis of the College of Fort William played an important role towards the evolution and development of the prose in the Bengali language.

[13] Duncan Forbes states that though he has drawn in inspiration from the grammar books by Halhed, Carey, Yates and Wenger, but he also differs from them in certain aspects:

> I have used every exertion to render it at once the simplest, the plainest, and the most copious work of the kind as yet in existence. I have freely availed myself of whatever I found useful and satisfactory in the Grammars of Halhed, Carey, Haughton and Yates, and that of the anonymous Pandit alluded to. I have in many instances ventured to differ from these gentlemen; and have endeavoured to rectify what I have considered to be erroneous or defective on their part (p. vii).

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XXIV.

THE SECOND ANNIVERSARY DISCOURSE,

DELIVERED 24 FEBRUARY 1785,

BY THE PRESIDENT.

GENTLEMEN,

IF the Deity of the *Hindus*, by whom all their juſt requeſts are believed to be granted with ſingular indulgence, had propoſed laſt year to gratify my warmeſt wiſhes, I could have deſired nothing more ardently than the ſucceſs of your inſtitution; becauſe I can deſire nothing in preference to the general good, which your plan ſeems calculated to promote, by bringing to light many uſeful and intereſting tracts, which, being too ſhort for ſeparate publication, might lie many years concealed, or, perhaps, irrecoverably periſh: my wiſhes are accompliſhed, without an invocation to CA'MADHE'NU; and your Society, having already paſſed its infant ſtate, is advancing to maturity with every mark of a healthy and robuſt conſtitution. When I reflect, indeed, on the variety of ſubjects, which have been diſcuſſed before you, concerning the hiſtory, laws, manners, arts, and antiquities of *Aſia*, I am unable to decide whether my pleaſure or my ſurpriſe be the greater; for I will not diſſemble, that your progreſs has far exceeded my expectations: and, though we muſt ſeriouſly deplore the loſs of thoſe excellent men, who have lately departed from this Capital, yet there is a proſpect ſtill of large contributions to your ſtock of *Aſiatick*

learning, which, I am perſuaded, will continually increaſe. My late journey to *Benares* has enabled me to aſſure you, that many of your members, who reſide at a diſtance, employ a part of their leiſure in preparing additions to your archives; and, unleſs I am too ſanguine, you will ſoon receive light from them on ſeveral topicks entirely new in the republick of letters.

It was principally with a deſign to open ſources of ſuch information, that I long had meditated an expedition up the *Ganges* during the ſuſpenſion of my buſineſs; but, although I had the ſatisfaction of viſiting two ancient ſeats of *Hindu* ſuperſtition and literature, yet, illneſs having detained me a conſiderable time in the way, it was not in my power to continue in them long enough to purſue my inquiries; and I left them, as Æneas is feigned to have left the ſhades, when his guide made him recollect *the ſwift flight of irrevocable time*, with a curioſity raiſed to the height, and a regret not eaſy to be deſcribed.

Whoever travels in *Aſia*, eſpecially if he be converſant with the literature of the countries through which he paſſes, muſt naturally remark the ſuperiority of *European* talents: the obſervation, indeed, is at leaſt as old as Alexander; and, though we cannot agree with the ſage preceptor of that ambitious Prince, that "the *Aſiaticks* are born to be ſlaves," yet the *Athenian* poet ſeems perfectly in the right, when he repreſents *Europe* as a *ſovereign Princeſs*, and *Aſia* as *her Handmaid:* but, if the miſtreſs be tranſcendently majeſtick, it cannot be denied that the attendant has many beauties, and ſome advantages peculiar to herſelf. The ancients were accuſtomed to pronounce *panegyricks* on their own countrymen at the expenſe of all other nations, with a political view, perhaps, of

ſtimulating them by praiſe, and exciting them to ſtill greater exertions; but ſuch arts are here unneceſſary; nor would they, indeed, become a ſociety, who ſeek nothing but truth unadorned by rhetorick; and, although we muſt be conſcious of our ſuperior advancement in all kinds of uſeful knowledge, yet we ought not therefore to contemn the people of *Aſia*, from whoſe reſearches into nature, works of art, and inventions of fancy, many valuable hints may be derived for our own improvement and advantage. If that, indeed, were not the principal object of your inſtitution, little elſe could ariſe from it but the mere gratification of curioſity; and I ſhould not receive ſo much delight from the humble ſhare, which you have allowed me to take, in promoting it.

To form an exact parallel between the works and actions of the Weſtern and Eaſtern worlds, would require a tract of no inconſiderable length; but we may decide on the whole, that reaſon and taſte are the grand prerogatives of *European* minds, while the *Aſiaticks* have ſoared to loftier heights in the ſphere of imagination. The civil hiſtory of their vaſt empires, and of *India* in particular, muſt be highly intereſting to our common country; but we have a ſtill nearer intereſt in knowing all former modes of ruling *theſe ineſtimable provinces*, on the proſperity of which ſo much of our national welfare, and individual benefit, ſeems to depend. A minute *geographical* knowledge, not only of *Bengal* and *Bahar*, but, for evident reaſons, of *all the kingdoms bordering on them*, is cloſely connected with an account of their many revolutions: but the *natural* productions of theſe territories, eſpecially in the *vegetable* and *mineral* ſyſtems, are momentous objects of reſearch to an *imperial*, but, which is a character of equal dignity, a *commercial*, people.

If *Botany* may be deſcribed by metaphors drawn from the ſcience itſelf, we may juſtly pronounce a minute acquaintance with *plants*, their *claſſes*, *orders*, *kinds*, and *ſpecies*, to be its *flowers*, which can only produce *fruit* by an application of that knowledge to the purpoſes of life, particularly to *diet*, by which diſeaſes may be avoided, and to *medicine*, by which they may be remedied: for the improvement of the laſt mentioned art, than which none ſurely can be more beneficial to mankind, the virtues of *minerals* alſo ſhould be accurately known. So highly has medical ſkill been prized by the ancient *Indians*, that one of the *fourteen Retna's*, or *precious things*, which their Gods are believed to have produced by churning the ocean with the mountain *Mandara*, was *a learned phyſician*. What their old books contain on this ſubject, we ought certainly to diſcover, and that without loſs of time; leſt the venerable but abſtruſe language, in which they are compoſed, ſhould ceaſe to be perfectly intelligible, even to the beſt educated natives, through a want of powerful invitation to ſtudy it. Bernier, who was himſelf of the Faculty, mentions approved medical books in *Sanſcrit*, and cites a few aphoriſms, which appear judicious and rational; but we can expect nothing ſo important from the works of *Hindu* or *Muſelman* phyſicians, as the knowledge, which experience muſt have given them, of *ſimple* medicines. I have ſeen an *Indian* preſcription of *fifty-four*, and another of *ſixty-ſix*, ingredients; but ſuch compoſitions are always to be ſuſpected, ſince the effect of one ingredient may deſtroy that of another; and it were better to find certain accounts of a ſingle leaf or berry, than to be acquainted with the moſt elaborate compounds, unleſs they too have been proved by a multitude of ſucceſsful experiments. The noble deobſtruent oil, extracted from the *Eranda* nut, the whole family of *Balſams*, the incomparable ſtomachick root from *Columbo*, the fine aſtringent ri-

diculouſly called *Japan* earth, but in truth produced by the decoction of an *Indian* plant, have long been uſed in *Aſia*; and who can foretel what glorious diſcoveries of other oils, roots, and ſalutary juices, may be made by your ſociety? If it be doubtful whether the *Peruvian* bark be *always* efficacious in this country, its place may, perhaps, be ſupplied by ſome indigenous vegetable equally antiſeptick, and more congenial to the climate. Whether any treatiſes on *Agriculture* have been written by experienced natives of theſe provinces, I am not yet informed; but ſince the court of *Spain* expect to find uſeful remarks in an *Arabick* tract preſerved in the *Eſcurial*, on *the cultivation of land in that kingdom*, we ſhould inquire for ſimilar compoſitions, and examine the contents of ſuch as we can procure.

THE ſublime ſcience of Chymiſtry, which I was on the point of calling *divine*, muſt be added, as a key to the richeſt treaſuries of nature; and it is impoſſible to foreſee how greatly it may improve our *manufactures*, eſpecially if it can fix thoſe brilliant *dyes*, which want nothing of perfect beauty but a longer continuance of their ſplendour; or how far it may lead to new methods of *fluxing and compounding metals*, which the *Indians*, as well as the *Chineſe*, are thought to have practiſed in higher perfection than ourſelves.

IN thoſe elegant arts, which are called *fine* and *liberal*, though of leſs general utility than the labours of the mechanick, it is really wonderful how much a ſingle nation has excelled the whole world: I mean the ancient *Greeks*, whoſe *Sculpture*, of which we have exquiſite remains both on gems and in marble, no modern tool can equal; whoſe *Architecture* we can only imitate at a ſervile diſtance, but are unable to make one ad-

dition to it, without deſtroying its graceful ſimplicity; whoſe *Poetry* ſtill delights us in youth, and amuſes us at a maturer age; and of whoſe *Painting* and *Muſick* we have the concurrent relations of ſo many grave authors, that it would be ſtrange incredulity to doubt their excellence. *Painting*, as an art belonging to the powers of the imagination, or what is commonly called *Genius*, appears to be yet in its infancy among the people of the Eaſt: but the *Hindu* ſyſtem of *muſick* has, I believe, been formed on truer principles than our own; and all the ſkill of the native compoſers is directed to the great object of their art, *the natural expreſſion of ſtrong paſſions*, to which *melody*, indeed, is often ſacrificed; though ſome of their tunes are pleaſing even to an *European* ear. Nearly the ſame may be truly aſſerted of the *Arabian* or *Perſian* ſyſtem; and, by a correct explanation of the beſt books on that ſubject, much of the old *Grecian* theory may probably be recovered.

THE *poetical* works of the *Arabs* and *Perſians*, which differ ſurpriſingly in their ſtyle and form, are here pretty generally known; and, though taſtes, concerning which there can be no diſputing, are divided in regard to their merit, yet we may ſafely ſay of them, what ABULFAZL pronounces of the *Mahábhárat*, that, "although they abound with extrava-" gant images and deſcriptions, they are in the higheſt degree entertain-" ing and inſtructive." Poets of the greateſt genius, PINDAR, ÆSCHYLUS, DANTE, PETRARCA, SHAKESPEAR, SPENSER, have moſt abounded in images not far from the brink of abſurdity; but, if their luxuriant fancies, or thoſe of ABULOLA, FIRDAUSI, NIZA'MI, were pruned away at the hazard of their ſtrength and majeſty, we ſhould loſe many pleaſures by the amputation. If we may form a juſt opinion of the *Sanſcrit* poetry from the ſpecimens already exhibited, (though we can only judge perfectly by

conſulting the originals), we cannot but thirſt for the whole work of VYA'SA, with which a member of our ſociety, whoſe preſence deters me from ſaying more of him, will in due time gratify the publick. The poetry of *Mathurà*, which is the *Parnaſſian* land of the *Hindus*, has a ſofter and leſs elevated ſtrain; but, ſince the inhabitants of the diſtricts near *Agra*, and principally of the *Duab*, are ſaid to ſurpaſs all other *Indians* in eloquence, and to have compoſed many agreeable tales and love-ſongs, which are ſtill extant, the *Bháſhá*, or *vernacular idiom* of *Vraja*, in which they are written, ſhould not be neglected. No ſpecimens of genuine *Oratory* can be expected from nations, among whom the form of government precludes even the idea of *popular eloquence;* but the art of writing, in elegant and modulated periods, has been cultivated in *Aſia* from the earlieſt ages: the *Véda's*, as well as the *Alkoran*, are written in meaſured proſe; and the compoſitions of ISOCRATES are not more highly poliſhed than thoſe of the beſt *Arabian* and *Perſian* authors.

OF the *Hindu* and *Muſelman* architecture there are yet many noble remains in *Bahar*, and ſome in the vicinity of *Malda;* nor am I unwilling to believe, that even thoſe ruins, of which you will, I truſt, be preſented with correct delineations, may furniſh our own architects with new ideas of beauty and ſublimity.

PERMIT me now to add a few words on the *Sciences*, properly ſo named; in which it muſt be admitted, that the *Aſiaticks*, if compared with our Weſtern nations, are mere children. One of the moſt ſagacious men in this age, who continues, I hope, to improve and adorn it, SAMUEL JOHNSON, remarked in my hearing, that, "if NEWTON had "flouriſhed in ancient *Greece*, he would have been worſhipped as a divi-

" nity:" how zealouſly then would he be adored in *Hinduſtan*, if his incomparable writings could be read and comprehended by the *Pandits* of *Caſhmír* or *Benares!* I have ſeen a mathematical book in *Sanſcrit* of the higheſt antiquity; but ſoon perceived from the diagrams, that it contained only ſimple elements: there may, indeed, have been, in the favourable atmoſphere of *Aſia*, ſome diligent obſervers of the celeſtial bodies, and ſuch obſervations, as are recorded, ſhould indiſputably be made publick; but let us not expect any new *methods*, or the analyſis of new *curves*, from the geometricians of *Iran*, *Turkiſtan*, or *India*. Could the works of ARCHIMEDES, the NEWTON of *Sicily*, be reſtored to their genuine purity by the help of *Arabick* verſions, we might then have reaſon to triumph on the ſucceſs of our ſcientifical inquiries; or could the ſucceſſive improvements and various rules of *Algebra* be traced through *Arabian* channels, to which CARDAN boaſted that he had acceſs, the modern Hiſtory of *Mathematicks* would receive conſiderable illuſtration.

THE Juriſprudence of the *Hindus* and *Muſelmans* will produce more immediate advantage; and, if ſome ſtandard *law-tracts* were accurately tranſlated from the *Sanſcrit* and *Arabick*, we might hope in time to ſee ſo complete a Digeſt of *Indian* Laws, that all diſputes among the natives might be decided without *uncertainty*, which is in truth a diſgrace, though ſatirically called a *glory*, to the forenſick ſcience.

ALL theſe objects of inquiry muſt appear to you, Gentlemen, in ſo ſtrong a light, that bare intimations of them will be ſufficient; nor is it neceſſary to make uſe of *emulation* as an incentive to an ardent purſuit of them: yet I cannot forbear expreſſing a wiſh, that the activity of the *French* in the ſame purſuits may not be ſuperior to ours, and that the re-

ſearches of M. SONNERAT, whom the court of *Verſailles* employed for ſeven years in theſe climates, merely to collect ſuch materials as we are ſeeking, may kindle, inſtead of abating, our own curioſity and zeal. If you aſſent, as I flatter myſelf you do, to theſe opinions, you will alſo concur in promoting the object of them; and a few ideas having preſented themſelves to my mind, I preſume to lay them before you, with an entire ſubmiſſion to your judgement.

No contributions, except thoſe of the literary kind, will be requiſite for the ſupport of the ſociety; but, if each of us were occaſionally to contribute a ſuccinct deſcription of ſuch manuſcripts as he had peruſed or inſpected, with their dates and the names of their owners, and to propoſe for ſolution ſuch *queſtions* as had occurred to him concerning *Aſiatick* Art, Science, and Hiſtory, natural or civil, we ſhould poſſeſs without labour, and almoſt by imperceptible degrees, a fuller catalogue of Oriental books, than has hitherto been exhibited, and our correſpondents would be appriſed of thoſe points, to which we chiefly direct our inveſtigations. Much may, I am confident, be expected from the communications of *learned natives*, whether lawyers, phyſicians, or private ſcholars, who would eagerly, on the firſt invitation, ſend us their *Mekámát* and *Riſálahs* on a variety of ſubjects; ſome for the ſake of advancing general knowledge, but moſt of them from a deſire, neither uncommon nor unreaſonable, of attracting notice, and recommending themſelves to favour. With a view to avail ourſelves of this diſpoſition, and to bring their latent ſcience under our inſpection, it might be adviſable to print and circulate a ſhort memorial, in *Perſian* and *Hindi*, ſetting forth, in a ſtyle accommodated to their own habits and prejudices, the deſign of our inſtitution; nor would it be impoſſible hereafter, to give a medal annually, with in-

ſcriptions, in *Perſian* on one ſide, and on the reverſe in *Sanſcrit*, as the prize of merit, to the writer of the beſt eſſay or diſſertation. To inſtruct others is the preſcribed duty of learned *Bráhmans*, and, if they be men of ſubſtance, without reward; but they would all be flattered with an honorary mark of diſtinction; and the *Mahomedans* have not only the permiſſion, but the poſitive command, of their law-giver, *to ſearch for learning even in the remoteſt parts of the globe*. It were ſuperfluous to ſuggeſt, with how much correctneſs and facility their compoſitions might be tranſlated for our uſe, ſince their languages are now more generally and perfectly underſtood than they have ever been by any nation of *Europe*.

I HAVE detained you, I fear, too long by this addreſs, though it has been my endeavour to reconcile comprehenſiveneſs with brevity: the ſubjects, which I have lightly ſketched, would be found, if minutely examined, to be inexhauſtible; and, ſince no limits can be ſet to your reſearches but the boundaries of *Aſia* itſelf, I may not improperly conclude with wiſhing for your ſociety, what the Commentator on the Laws, prays for the conſtitution, of our country, that IT MAY BE PERPETUAL.

A Note on Sir William Jones and his second Anniversary Discourse delivered on February 24, 1785.

Nibedita Ganguly

In his second Anniversary Discourse Sir William Jones congratulated the audience in the names of Gods and Goddesses of the Hindus for the success of the Asiatic Society. He believed that he could not be in rest other than yearning for the Society's work concerning publishing of new knowledge about Asia. Interestingly he used the instance of praying to 'Camadhenu' of Indian mythology that could fulfill his desire. Jones was satisfied that his cherished Society had 'already passed its infant state' and had got matured in terms of a 'healthy and robust constitution' for which he dreamt since day one of its foundation. He had been to Benaras where he met learned members of the Society and collected valuable manuscripts only to be added to the archive collection of the Society.

William Jones was one of the many travelers and adventurers who came to Asia and narrated the experiences and adventures of the unknown or the least known lands mixed with fact and fiction. He believed in the superiority of the Europeans and the myth developed around Alexander, the Great. He was very much an eighteenth century proud European with a false impression about Asians. He travelled a lot, learnt the languages, met with learned persons, conversed with their art, literature and science. At the end he realized and remarked, " although we must be conscious of our superior advancement in all kinds of useful knowledge, yet we ought not therefore to condemn

the people of *Asia,* from whose researches into nature, works of art, and inventions of fancy, many valuable hints may be derived for our own improvement and advantage ".

Jones compared the Western and Eastern worlds where he classified the 'reason and taste' as the prerogative of the western world. He observed, "the Asiaticks have soared to loftier heights in the sphere of imagination". The notion of a degenerate contemporary culture coloured the views of Jones in many domains from botany, medicine or music. He greatly admired ancient medical books, but distrusted contemporary physicians. He remarked, "So highly has medical skill been prized by the ancient Indians, that one of the fourteen Retna's, or precious things, which their Gods are believed to have produced by churning the ocean with the mountain Mandara, was a learned physician. What their old books contain on this subject, we ought certainly to discover, and that without loss of time". But Jones was apprehensive about the 'Hindu or Muselman physicians' who did prepare medicines with multiple ingredients and warned his audience about the effectiveness of those medicines 'unless they too have been proved by a multitude of successful experiments'.

He was highly enthusiastic about the chemistry of dyes or compounding metals. He scaled the painting and sculpture of the Asia as in its infancy comparing with that of the Grecian standard. He was however appreciative about Hindu music and melody. He had high faith on the Hindu system of music and studied all texts on music available in Sanskrit and Persian. His paper "On the musical Modes of the Hindus" proves his interest and he remarked in this context that 'some of their tunes are pleasing even to a European ear'.

Sir William Jones was extremely conversant with the works of Sanskrit, Arabic and Persian and was also aware of the extravagancy with descriptions and images in those works. But he was concerned of unjust pruning that might lose the charm of the poetical works. He remarked, "If we may form a just opinion of the Sanscrit poetry from

the specimens already exhibited…., we cannot but thirst for the whole work of VYASA…". Jones expressed his high admiration for the tales and love-songs of Vraja dialects of Agra and Mathura, still in practice by people, as articulate and eloquent in style. He justified in this discourse that the languages of the Vedas and 'AlCoran' had been written in 'measured prose'. Significantly Jones drew similar parallels between these two creations though these had been written at different ages and distant time period.

Besides language and literature, Jones was also enthusiastic about the art and architecture of India. He toured a lot in and around India. In this discourse he mentioned about the architectural remains in Bihar and Malda. He stated about India's contribution in mathematics and geometry, and compared that with the superior European standard. He believed that various rules of Algebra had been traced through Arabian channels. It was a misconception. Nehru wrote, "Highly intellectual and given to abstract thinking as they were, one would expect the ancient Indians to excel in mathematics. Europe got its early arithmetic and algebra from the Arabs - hence the Arabic numerals - but the Arabs themselves had previously taken them from India" (J L Nehru, *The Discovery of India*).

Sir William Jones arrived in this country as a Puisne Judge in the Supreme Court of Calcutta. Being a judicial person he had his intense legal training in England. It was thus obvious that he would be interested in this country's laws. He had the expectation that from the ancient Sanskrit and Arabic resources one 'standard law-tracts' might be developed for this country. But what Jones like other contemporary British lawmakers had mistaken was that they had mixed up religion with law. Moreover the Sanskrit shastras with Brahminical laws were very old comparing with that of Islamic law texts.

The Europeans, who came to India, were not only interested in trading purpose but also in the rich art and culture. Undoubtedly Jones considered the orient as a dazzling rich mine of cultural treasures

and he addressed the literary audience saying that "to collect such materials as we are seeking, may kindle, instead of abating, our own curiosity and zeal". He made it clear to the learned gathering that contributions of literary kind on the Asiatic art, science, and history, natural and civil within the boundary of Asia, would be the most sought after essay or dissertation. In his concluding remark he hoped that the Society would endure its activities and its constitution would be perpetual in its effort.

Chakraborty, A., Chowdhury, S., Banerjee, S., & Mahmood, Z. *Limits of Bargaining: Capital, Labour and the State in Contemporary India*. Cambridge: Cambridge University Press, 2019; Price 550/-.

Very few books are there on West Bengal industrial relation between capital, labour, trade unions and state based on a fairly advanced understanding of theory and empirics. This is the area and method of book's investigation with particular emphasis on the post-liberalization period. Its focus is on the organized sector, the issues of bargaining therein and its limits even though, quite understandably, the matter of unorganized sector always serves as a shadowy presence in determining not only the structure of organized structure but also the relative strength of trade union's bargaining power and limits. The conclusions are backed by nuanced analysis of detailed secondary data on the condition of labour in West Bengal along with primary survey of sample firms conducted in three industrial districts of West Bengal in the districts of Bardhaman, Hoogli and Howrah.

The trajectory of the book is the following. Setting the context by reviewing the literature on collective bargaining in India, it first examines in details the everyday process of bargaining in West Bengal. The discussion then interrogates the so-called 'truth' claim that industrial stagnation in West Bengal transpired due to labour militancy. Furthermore, the relation between workers, working class politics with trade unions is dealt with. Finally, the role of state, including that of resolving industrial disputes is analysed. The presence of and the role of the state though is present in some form or other throughout the book.

I contend that this book's contribution is partly methodological. There is often a tendency to study firm-level and macro-level industrial relations as an outcome of bargaining and struggle between the two homogenous classes – capitalist class and working class. The approach taken in this book shifts the analytical space away from this dyadic structure towards that of a more complex field of capital-labor relation wherein both 'classes' exist in disaggregated forms. Let me put my point across in a simple way by taking the organized, industrial sector, the focus of the discussed book. Labour is performed by industrial

workers to produce a commodity in the labour process, part of what it produces is returned to the labourers as wage and the rest is appropriated by those who personify capital, the capitalists. Capital-labor relation may be circumscribed within this direct relation. However, the point is that the latter kind of industrial capitalists in organizing and directing the labour process must secure various conditions of existence for the labour process to be operationalized and for surplus/profits to be created/appropriated. In other words, the direct labor-capital relation in the labor process can only transpire if other conditions of existence necessary to guarantee its production is secured. These crucial conditions of existence include the other kinds of individual and social actors – holders of finance capital (financial capitalists), merchant capital (trading capitalists), land (landlords), political and legal security (state), etc. They also, importantly for this book, include other kinds of laborers who impart labor to secure both the latter set of conditions on behalf of these resource holders as also provide other necessary conditions of existence through their labour (in totality, the world of managers, sales-person, accountants, auditors, security guards, state bureaucrats, judicial personnel, etc.). That is, for a firm to exist and function, along with the resource holders, all kinds of labour must fulfil their necessary role, and only in their combined effects, is the capital-labour relation created and reproduced. As these constituting processes change, so does the firm and so does the industry and economy and so. Rather than being static, the firm and industrial relations within it are thus to be seen as being in a state of flux. The world of labour is thus differentiated, albeit in connection with each other, even if the unit of analysis is a single firm. Scaling up to an industry or the industrial sector as such, we can infer that 'working class' is neither centred nor reducible to this or that kind of labour or labour relationship. It refers to all kinds of doers, often in conflict with another. This means that, even if the focus may be upon the direct capital-labour relation in the organized sector firms, its understanding cannot be fathomed unless the effects from these other processes and the relations between them and the subjects occupying them can be foregrounded. Quite evidently,

if the differentiation of these kinds of labouring and labour positions deepens over time, so will the differentiation within the 'working class'. Any attempt to organize the working into a unified social force of action would evidently become more complicated. This is one way to understand the methodological approach taken in the book and the nuanced lens through which it interrogates the changing capital-labour relation and that of the composition, strength and character of trade unions in West Bengal.

In this methodological context, the trade unions are after all provider of conditions of existence of capital-labour relation and the labour process they shape. This means that the bargaining strength of the trade unions vis a vis capital, and of the workers vis a vis the trade unions (supposed to be their representative) is not only determined by the immediacy of these direct processes but additionally by the effects of all the other constituting processes, including those stemming from state, market, technology, disciplinary apparatuses, strength of unorganized sector, dispute settlement mechanisms, local politics, conflicting interests of multiple unions, etc. As a condition provider to labour-capital relation, the same is true for the state as well. Analysing these myriad constitutive processes and relations based on the primary fieldwork of the already mentioned three industrial areas of West Bengal, chapter 3 of the book paints a picture of the everyday process of collective bargaining and its limits. The relative strength of trade unions in the working politics and their leverage with state too are shown to be outcome of these mutually constituting process, something that is addressed in chapter 5.

What is interesting is that some of the claims they make on the basis of their evidence based analysis is often counter to the common sense understanding of industrialization and industrial relation in West Bengal and can be a matter of debate.

For example, the often-made claim on labour militancy is faced headlong. One ongoing belief suggest that the major cause for the lack/stagnancy of industrialization in West Bengal is due to the Left parties led labour militancy that drove away capital from West Bengal. This book details a systematic refutation of this claim in chapter 4.

Rather than labour militancy, the authors demonstrate, how during the planning period, the Congress led central government policy of distributing licenses among the states (favouring states other than West Bengal) and the freight equalization policy (which eradicated the resources cost advantage of West Bengal) were principally responsible for the flight of industrial capital from 1960s onwards in West Bengal. They also show that in the last two decades of Left Front rule marked by the period of neoliberal globalization and market driven reform, West Bengal was one of the least labour militant states, something that was part of the redirection of the government's development strategy towards capital-friendly policy and environment. Instead of showing an increase, number of industrial disputes have in fact declined.

Chapter 6 spells out the changing outlook of the state on collective bargaining which in fact reflects its policy reorientation towards favouring capital. Rather than being on the side of workers and trade unions, the state became the facilitator for capitalists which in turn indicate a policy of pacification of the trade union movement. Regarding settling industrial disputes that do appear, the trend indicates a move away from it taking a proactive stance of achieving conciliation between capital and labour. Despite set of laws for workers, the nature of dispute settlement mechanisms and outcomes is also shown to have changed. Bipartite settlement and adjudication seem to lead to a long drawn process of settlement through labour tribunals and courts. While the labour tribunal judgments seem to be relatively favourable to labour, the courts have shown an increasing inclination in favour of capital. Therefore, the functioning of the various apparatuses of the state signals only one conclusion - state's crucial role in the process of bargaining between capital and trade unions is compromised in favour of the former thereby leading to a weakening of the trade unions and generally of workers in facing capital.

Throughout the book, attention is also drawn to the importance of locating the change in economic structure and of the character of working class in West Bengal. The book's analysis reveals that along with the combination of licensing system and freight equalization

policy of central government, the post-globalization shifts in the business organization structure, technology and market structure tilted not only the relative power in industry in favour of capital but forced the hand of the state to pacify its interest to retain and attract capital, both national and global. Crucially, in West Bengal, the changing combination of economic structure, business model and policy paradigm not only helped to restructure labour-capital relation in organized sector, it stymied any possibility of the growth of organized sector workers. In fact, the economic structure turned in favour of unorganized sector, with workers increasingly drawn from there through casualization and contractualization. While this may be true overall in India, for what was a relatively advanced industrial state, this observation needs to be noted. Given that trade union movement in industry and as a socio-political force in West Bengal grew out of organizing industrial, organized sector workers, the debilitating effect of this structural change on the growth and influence of trade union and on the bargaining process within the industry can be imagined.

The relation between trade union and working class politics is analysed in chapter 5 as also the challenges that both structural changes, differentiation of 'working class' and the developmental role of state poses for trade union movement and possibilities of its revival. The state's unwillingness to match its rhetoric favouring working class with actions to side with it in conflict with capital made apparent to the workers the weakness of the trade unions as a socio-political force. The hold of trade unions over industrial organized sectors workers got loosened and their bargaining position increasingly compromised. Beginning with the Left Front, the state government in fact adopted a different policy. To protect the working class without compromising on its pro-capital policy shift, it increasingly adopted a set of redistributive policy to address the social needs of the workers, especially the vast unorganized segment. This shift in policy has remained unchanged even with the alteration in the political power in the state from Left Front to TMC. From today's vantage point, one may see this as an attempt to maintain a low wage regime, a necessary condition to attract capital in an increasingly globalized and

competitive world. Nonetheless, one of the contradictory effects of this pro-development role of state was to erode the legitimacy, power and need for the trade union itself. Instead of the trade unions, it is now the state which emerges as the guarantor and facilitator of maintaining the worker's subsistence basket of goods and services. This is a contrary scenario to what the trade union achieved worldwide in its initial period of growth and power in the twentieth century industrial capitalism. Not surprisingly, this replacement of trade union by the state, of the mechanism to maintain/increase standard of living through class struggle of trade unions by the need struggle guaranteed by the state led to a gradual process of weakening of the link of trade unions with working class politics.

One way to judge the value of a book is in terms of the questions it raises and the possibility of debates it may give rise to. By that criterion, this book is a valuable reading.

Anjan Chakrabarti

Bijnani Meghnad Saha : Rachana Sankalan,
(A collection of articles on science & society by Meghnad Saha),
Editor : Syamal Chakrabarti, Dey's Publishing, Price: Rs. 650/-

A collection of Meghnad Saha's Bengali writings and some articles on the scientist has been published recently. It is true that almost all of Saha's essays are available in other such anthologies, notably one edited and compiled by Santimay Chattopadhyay and Enakshi Chattopadhyay. However, this particular book has a number of articles on Saha not available in those collections. The editor of the compilation, Syamal Chakrabarti, has written in the preface that it is not a biography of the scientist but expresses the hope that future biographers of Saha will find it useful. Useful is not a proper word in this context; in the opinion of this reviewer this book contains some articles which will prove invaluable to a future biographer of Meghnad Saha. Indeed, no biography of Saha will be complete without reference to the reminiscence by Chitra Roy, Meghnad Saha's daughter.

Though Meghnad Saha was a prolific writer, most of his writings are in English. The number of his Bengali essays is twenty nine, a few of them being texts of speeches delivered on different occasions. In this compilation, the essays are grouped under different headings, viz. Biographies of Scientists, Science in History, Science Culture, Purana and Hinduism in the Light of Science, Nation and Development, and Discoveries and Expeditions. The articles were written over a span of three and a half decades starting from 1922 and obviously bear references to persons not easily recognizable by a common Bengali reader today. A few letters have also been included in the collection where the writer or the recipient may not be a household name today. The editor has added footnotes briefly introducing the relatively obscure, and sometimes not-so-obscure, persons. These will help the reader to understand the context in which the essays and the letters were written.

It is not possible to comment on all the essays in the book for want of space. Meghnad reminisced about two of his teachers in Presidency College, who were among the first scientists of modern India, Jagadish Chandra Bose and Prafulla Chandra Ray. Saha was the favourite

pupil of the latter and was deeply influenced by his philosophy. Prafulla Chandra took him to work on flood relief; the first hand experience that he gained was useful in his later work on river planning. In the preface, the editor has drawn our attention to the article on Aston, the Nobel laureate in Chemistry in 1921 for his work on the measurement of masses of isotopes. It opens with a comment that a third class in Masters Examination of Calcutta University is sufficient to discourage one to try for a doctorate. Aston, who failed a number of times in Cambridge, and was treated as a mere mechanic by many, went on to win the coveted prize. There is a tendency among us to consider experimental work as second rate, a result of our caste system as pointed out by Prafulla Chandra. Aston made his own instruments singlehandedly, laboured for sixteen years in a medium size room, and was not considered to be good for the position of a professor anywhere. Saha concluded with the comment, "If our professors, who are ever ready to blame the government or others for their own ineptitude, follow the example of Aston, the darkness of their ignorance will be alleviated." Has the situation changed in the last century?

Two essays in the section on Science in History contain personal reminiscences of Meghnad's journey to Italy, to attend the Volta conference and, to Norway to observe solar eclipse, as well as lucid introduction to the relevant science. The article on Physics in Medicine was co-authored with Paresh Kishore Sen Chaudhury; there is no information about him, perhaps he is forgotten now. It brings to our mind the debate about the atomic policy research in the country between Saha and another great scientist, Homi Jehangir Bhabha. While Bhabha stressed on generation of atomic power, Saha was of the opinion that nuclear science in a poor country like India will be more useful for medical purposes. Prime Minister Nehru decided in Bhabha's favour and the influence of Saha on scientific policy waned. What strikes the reader is the level of science that Saha has brought to many of his popular articles. I doubt that the description and picture of the Van de Graff generator that Saha presented will find a

place in any Bengali essay even now, ninety years after its invention. Saha's articles are testament to the statement that popularizing science does not mean that it has to be trivialized.

There are two articles in the section on Science and Culture. Poetry and Science is a translation of an essay from the Golden Book of Tagore. The other essay, Science and Religion, is also a translation, the original being included in the third volume of the Cultural Heritage of India.

The section on Puran and Hinduism in the Light of Science contains his most famous essays. There is an interesting history behind them. Meghnad was against Gandhi's over-reliance on charkha and cottage industry and tried to influence Nehru in favour of heavy industry through Rabindranath Tagore. His lecture in Shantiniketan was actually a criticism of Gandhi's policy. However, opposition to it came from unexpected quarters. Anilbaran Roy, a close companion of Sri Aurobindo took umbrage at Saha's alleged assault on Hinduism and went on to rebuke Saha about his perceived ignorance of Indian scriptures. Saha's famous ire came to the fore and what resulted was a masterpiece in five parts. His knowledge of the scriptures and Sanskrit, and his deep musings on the currents of world history were revealed in the process. His ideas about the importance of labour in social progress were evidently influenced by Prafulla Chandra's *History of Hindu Chemistry*. Saha's satirical phrase in the essay, 'Everything is in the Vedas', pronounced in an East Bengali accent, has passed into legend. Roy's article, and another such essay with Saha's disdainful answer to it, are included in this collection.

Meghnad was not a scientist confined to the ivory tower of the academia. In this compilation, there are seven essays which deal with development of the country. A single strand runs through all of them, the proper use of science to alleviate the distress of the people. In a number of places, Meghnad has opposed the Gandhian model of development and stressed that only heavy industry can lift the masses out of their poverty. His opposition to the proposal for unification of Bengal and Bihar and his concern for the refugees coming from East

Pakistan are well known to the historians. One can see his scientific mind at work in these articles, analyzing the data and drawing conclusions from them.

The essays on expedition and discoveries were written for school children, a rare example of a towering genius of a scientist taking the trouble. In simple prose, Meghnad described how the idea about the shape of the earth developed, and the attempts and successes of the nations of Western Europe to circumvent the globe and discover new lands. Meghnad has described the inventions like the astrolabe, chronometer which made these possible.

The editor has done a commendable work in retrieving an article by Saha from the archives of Swadhinata, the organ of the Communist Party of India. In many instances, such as the problem of rehabilitation of the refugees, the importance of public sector, the opposition against Bengal-Bihar unification, Meghnad's ideas coincided with the leftists. We are all aware that when he successfully ran for the Parliament, all the left parties supported him. Swadhinata reported on Meghnad's speech on January 6, 1952, calling for an end to Congress rule. The appeal of Professors of Calcutta University to elect Meghnad to Parliament is interesting; the signatories include such names as Satyendranath Bose, Sisir Kumar Miitra, Priyadaranjan Roy and Niharranjan Roy. Swadhinata reported extensively on the death of Maghnad Saha, cremation of the body, the tributes that were paid to him after his death and carried a brief biography. Future biographers of Saha will be indebted Syamal Chakrabarti for retrieval of these reports.

As the editor pointed out, this collection is not a biography of Saha, yet it contains three invaluable articles on his life, two of them being reprints. Maghnad's student and close friend, Samarendra Nath Sen reminisced about his teacher in the Institute of Nuclear Physics founded by Saha. Sen was in charge of the volume that came out on the sixtieth birthday of Saha, his article (in English) touches upon all aspects of his works.

Meghnad's daughter-in-law, Rama Saha, wrote an article in the 1980's on Saha. While Sen's article describes Saha the socially conscious

scientist, glimpses of the man comes through the article by his daughter-in-law and the next one by Chitra Roy, his daughter. The reminiscence of the daughter about his father is invaluable. It is difficult to do justice to this long and excellent essay in the short space available to a review, and the readers are advised to judge it for themselves. The love of a father for his children, the sense of responsibility of a member of a large family, the scientist's taste in literature, the expert's knowledge of areas beyond his domain, the love of a patriot for the people of his country – all these and more comes out in the article and one can really get a glimpse of the private persona which has been overshadowed by the towering figure of the scientist. This reviewer would humbly point out one mistake in the otherwise excellent essay; Henry Norris Russel and Arthur Milne, two scientists who took Saha's ideas forward, never received the Nobel prize.

The compilation contains lists of Meghnad's scientific papers and other articles published in various periodicals, congratulations sent to Saha on his sixtieth birthday by eminent scientists including thirteen Nobel laureates. Some letters written to Saha have been included in this compilation; these are from well known personalities like Asutosh Mukherjee, Satyendranath Bose, Jnan Chandra Ghosh, Subramanian Chandrashekhar and others. Some personal letters written by Saha to his wife, children, friends and students also can be found in the compilation. Two of his letters need particular mention. The scientist H H Plaskett made a comment that Saha discovered his famous ionization equation when he was working in the laboratory of Alfred Fowler in London. Meghnad took exception to this and in two letters to Plaskett clearly pointed out that the work was accomplished in Calcutta University before he went to England. These two letters have already proven to be very important to the historians of science as they shed light not only on the circumstances of the discovery but also the thought process of Saha before the discovery and afterwards.

This volume has a Bengali translation of a research article by Satyendranath and Meghnad, the tribute to Meghnad Saha on his sixtieth birthday and his obituary in the famous journal *Nature*, and an English essay by Saha not found in any previous compilation. The

book ends with a chronology of Saha's life. A number of photographs have added value to the compilation, some of them not available in any other book.

The editor mentions in the preface that Saha's ideas are important in the contemporary scenario. Now that myth is being peddled as history and the spirit of inquiry is being throttled, his writings must be taken to the people. Dey's Publishing and the editor, Syamal Chakrabarti, deserve our appreciation for bringing out the volume.

This compilation was published on the occasion of the 125th birth anniversary of the scientist. This year marks the centenary of the Saha ionization equation. Can there be a more appropriate occasion?

Gautam Gangopadhyay

CONTRIBUTORS

Anjan Chakrabarti
Professor, Department of Economics
Calcutta University

Buddhadev Bhattacharya
Assistant Professor, Department of Philosophy,
Nava Nalanda Mahavihara (Deemed University)
Ministry of Culture, Govt. of India, Nalanda
Bhiar

Doel De
Independent Researcher
Kolkata

Gautam Gangopadhyay
Professor, Department of Physics
University of Calcutta

Nibedita Ganguly
Former Deputy Librarian
Library, Documentation and Information Science Division
Indian Statistical Institute, Kolkata

Rajkumar Roychoudhury
Retired Professor
Indian Statistical Institute, Kolkata
& Physical Science Secretary
The Asiatic Society, Kolkata

Saptarshi Mallick
Assistant Professor, Department of English
Sukanta Mahavidyalaya, Dhupguri, Jalpaiguri

Sibansu Mukherjee
Linguist, Society for Natural Language Technology
Research, Kolkata

Shreedevi Nair Pal
Independent Researcher

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Books :
Rhys Davids, *Buddhist India,* London, 1933, 7.

Articles in Books :
H.V. Trivedi, "The Geography of Kautilya", *Indian Culture,* Vol. 1, 202ff.

Edited Volumes :
C.W. Troll, ed. *Muslim Shrines in India : Their Character, History and Significance,* Delhi, 1989.

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G. Hambly, "A Note on the Trade in Eunuchs in Mughal Bengal", *Journal of the American Oriental Society* (hereafter *JAOS*), Vol. 94(1), 1974, 125-29.

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P. Gaeffke, "Alexander and the Bengal Sufis", in Alan W. Entwistle and Francoise Mallison, eds, *Studies in South Asian Devotional Literature, Research Papers, 1988-1991,* New Delhi/Paris, 1994, 278-84.

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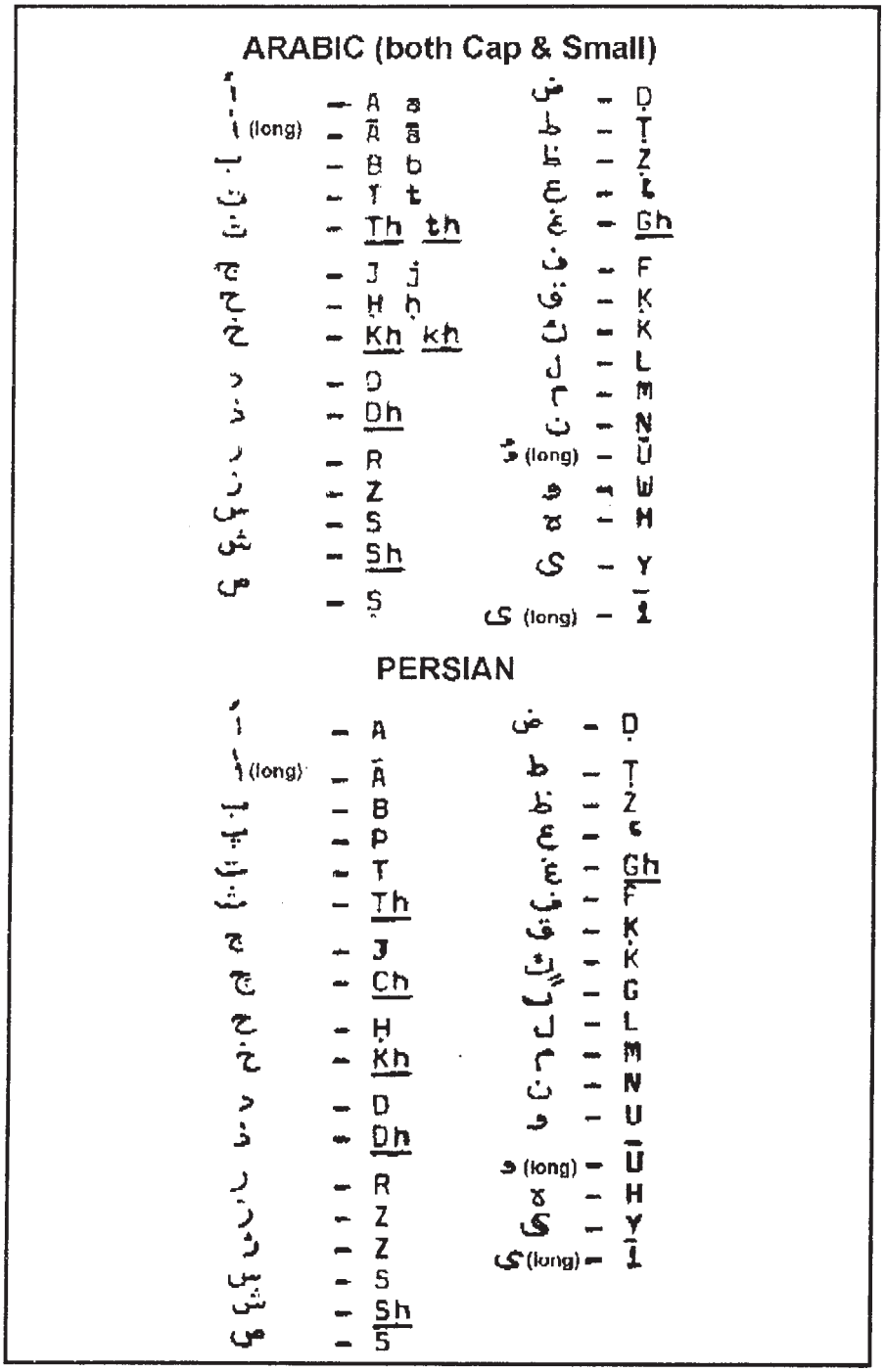
SANSKRIT

आ = ā		ई = ī	
ऊ = ū		ऋ = ṛ	
ङ = ṅa		च = ca	
छ = cha		ञ = ña	
ट = ṭa		ठ = ṭha	
ड = ḍa		ढ = ḍha	
ण = ṇa		श = śa	
ष = ṣa		ं = ṁ	

TIBETAN

ཀ = ka	ཁ = kha	ག = ga	ང = ṅa/nga
ཅ = ca	ཆ = cha	ཇ = ja	ཉ = ña/nya
ཏ = ta	ཐ = tha	ད = da	ན = na
པ = pa	ཕ = pha	བ = ba	མ = ma
ཙ = tsa	ཚ = tsha	ཛ = dza	ཝ = wa
ཞ = zha	ཟ = za	འ = 'a	ཡ = ya
ར = ra	ལ = la	ཤ = śa/sha	ས = sa
ཧ = ha	ཨ = a		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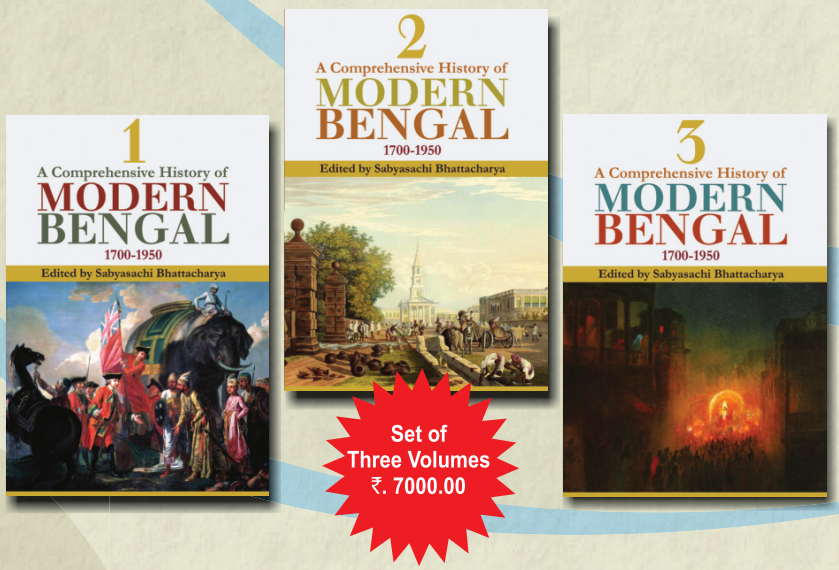

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It will flourish, if naturalists, chemists, antiquaries, philologers and men of science, in different parts of Asia, will commit their observations to writing, and send them to the Asiatick Society at Calcutta; it will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease.

Sir William Jones
on the publication of the Asiatic Society

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