

Unit 10

Buddhist Formal Logic

The Buddhist Theory of ANUMĀNA (Inference)

Anumāna as *Pramāṇa*

In Indian context logic, used for the theory of *anumāna*, has been a part of epistemology as it is one of the modes of knowing. The epistemological thinkers in India have generally adopted a casual approach to knowledge. Knowledge is taken to be an occurrence, an outcome of a particular causal complex (*kāraṇa sāmāgrī*) in which the casual condition acting as an instrumental cause (*kāraṇa*) is known as *Pramāṇa*. *Pramāṇa* is the mode of knowing. In Indian epistemology there are two broad traditions, viz., Nyāya and Buddhist. Unlike the Nyāya thinkers the Buddhist thinkers do not entertain demarcation between *pramāṇa* and its outcome (*pramāṇa phala* = *pramā*) mainly because this demarcation is not needed in their epistemological set up. Moreover, they maintain that no rigid separation is possible between the act of cognizing and the cognition of an object. Only rough distinction can be drawn.

Anumāna as Mode of Knowing and Reasoning

In the Buddhist epistemology there are two modes of knowing, viz., *pratyakṣa* (perception) and *anumāna* (inference). The theory of *anumāna* can be regarded as logic, as a science of reasoning. It is logic in Indian context. *Anumāna* is at once a mode of knowing and a way of reasoning. Thus, it has an epistemic as well as a logical aspect both of which are inseparably coalesced into one. Study of *anumāna* is therefore called as *Pramāṇa/Nyāya śāstra* as well as *Hetu vidyā*.

Nature and Structure of *Anumāna*

The word *anumāna* (*anu+māna*) literally means 'a knowledge which follows'. This means that inferential knowledge is necessarily a knowledge which is to be preceded by some other knowledge. In other words, *anumāna* consists of two stages, one pertaining to the preceding which constitutes the causal complex and the other to the particular type of relationship known as *liṅga-liṅgī-bhāva* which implies that the succeeding one should necessarily come from the preceding. The preceding knowledge has to be in the form of *liṅga*. A *liṅga* is defined as that which is a necessary mark of something other than itself. '*Liṅgin*' stands for that which is necessarily marked by *liṅga*. Between *liṅga* and the *liṅgin* there is always a *gamaka-gamya-bhāva* which can roughly be regarded as the relation of entailment such that every case of the presence of *liṅga* is necessarily a case of the presence of *liṅgin* and every case of absence of *liṅgin* is the case of the absence of *liṅga*. This entailment relation is the basis of inference. Between any two concepts there will be *gamaka-gamya-bhāva* if and only if they have

avinābhāva/svabhāva pratibandha, i.e., necessary connection or existential tie. It is the presence of the necessary connection which is the basis for the passage from the one to the other. This relationship of *avinābhāva* is also known as *vyāpti*. *Vyāpti*, therefore, constitutes the very basis of the inferential process. It will be discussed in detail later on. The term '*hetu*' is used for *liṅga* and the term '*sādhya*' is used for *liṅgin*. Either of these terms can be used as they are synonyms. Since they are synonyms meaning remains the same. But they are to be used in pairs of *hetu-sādhya* or *liṅga-liṅgin* depending upon requirements of the situation. To avoid confusion they are used here in togetherness using a stroke. There is no definite convention for their usage but generally for *vāda* (debate) *hetu-sādhya* pair is used.

In the Buddhist tradition *hetu/liṅga* and *sādhya/liṅgin* are in the form of concepts (*vikalpas*). They are not objects or events or meta-physical reals as they are taken in the Nyāya tradition. This makes the Buddhist theory formal. Here entire thought process operates at the conceptual level only and therefore the Buddhist logicians could conceive of one concept being subsumed under or necessarily connected with another concept by the relation of analyticity. In this way they could develop a formal system of logic, of course, keeping ontology at the back. For them *anumāna* is a sort of analytical entailment.

Nyāya analysis of *Anumāna*

In order to have a better understanding of the Buddhist analysis of '*anumāna*' it will be worthwhile if we discuss in brief the Nyāya analysis of '*anumāna*'. According to Nyāya *anumāna* is the knowledge of an object on the basis of the cognition of its mark along with a remembrance of a previous knowledge concerning an invariable and unconditional relation between the object and its mark. In other words, in every case of *anumāna* in the preceding cognition, which can be treated as a premise, there are two elements, viz., (i) perceptual cognition of the *hetu/liṅga* (*pakṣadharmatā*) and (ii) the remembrance of unconditional and invariable relation (*vyāpti*) between the *hetu/liṅga* and the *sādhya/liṅgin*. The perceptual cognition of the mark leads to the remembrance of its unconditional and invariable relationship with the *liṅgin* resulting in a synthesized knowledge. The synthesis of both these stages is named as *parāmarśa*, which is therefore defined as '*vyāpti viśiṣṭa pakṣadharmatājñānam*'. The act of *parāmarśa* can thus be said to consist of three elements, viz., the knowledge of *vyāpti*, the knowledge of *pakṣadharmatā* and the knowledge of the *vyāpti* qualifying *pakṣadharmatā*. Thus, though *vyāpti* is one of the causal conditions, and a necessary causal condition (*karāṇa*), yet it is not the sufficient condition of inference. The sufficient condition (*vyāpāra*) is *parāmarśa* only.

Buddhist rejection of *Parāmarśa*

The Buddhist logicians do not make separation between *pakṣadharmatā* and *vyāpti* in the way in which the Nyāya logicians do. According to them, *pakṣadharmatā* and *vyāpti* are both comprehended under the concept of *trairūpya liṅga* and therefore there is no point in talking of *vyāpti* qualifying *pakṣadharmatā*. Thus, the Nyāya notion of *parāmarśa* is not needed by the Buddhists.

Classification of *Anumāna*

In the Buddhist framework *anumāna* consists of a thought process which may or may not be verbalized. If it is linguistically not expressed and is purely cognitive (*jñānātmaka*) it is called *svārthānumāna*. When it is expressed in language (*ākhyāna*) it is called *parārthānumāna*. This two-fold classification was already prevalent in the Nyāya tradition but it was used in a slightly different sense as 'inference for one's own sake' and 'inference for the sake of others' respectively. Of course, generally we resort to sentential expression to communicate with others but this is not a necessary condition for using language. Moreover, according to the Buddhist viewpoint there can be non-verbalized conceptual cognition. This is in sharp contrast with the Nyāya view that no conceptual cognition can be non-verbal.

Constituents of *Anumāna*

According to the Buddhist analysis, like the analysis of other Indian systems, the process of inference involves three basic terms and their interrelations. We may first discuss the terms and thereafter their interrelations. The three terms are *pakṣa* (*anumeya*) the logical subject, *hetu/liṅga* the reason, and *sādhya/liṅgin* the logical predicate. They roughly correspond to the minor, middle and major terms of the traditional western logic.

We may take this example of *anumāna* as given under to know these terms.

"There is fire on the hill because there is smoke there". Here 'hill' is *pakṣa* because in respect of it 'fire' is inferred from presence of 'smoke' on it. 'Smoke' is *hetu/liṅga* because this provides the ground/reason for inferring 'fire on the 'hill'. 'Fire' is the *sādhya/liṅgin* because it is inferred on the hill on the basis of presence of 'smoke' there.

Pakṣa :

Pakṣa is the subject under consideration in the inferential reasoning. Every inference pertains to some individual or class of individuals about which we want to prove something. Hence *pakṣa* is that individual or class of individuals about which we want to establish something. It is also named as *anumeya* because it is the object about which something is to be inferred. In a special sense it also means the underlying substratum (*dharmīn*) to which *sādhya/liṅgin* is to be inferred/ascribed as a property on the ground of *hetu/liṅga* being its property.

Pakṣa can be regarded as the starting point of inferential inquiry. There is perceptual cognition of *pakṣa*. Though it is a concept it has some empirical reality at its back. For example, 'hill' is the *pakṣa* here. Hill is empirically real. It is not an empty or barren concept having no reality to fall back upon. Likewise 'smoke' and 'fire' are also not empty concepts. Thus, Buddhist logic is formal but not in the western sense. Not only *pakṣa* should not be an empty or barren concept, it should not be incompatible with *hetu/liṅga* and *sādhya/liṅgin*. Thus, for example, lake can not be a *pakṣa* in that case where 'smoke' is *hetu/liṅga* and 'fire' is *sādhya/liṅgin*.

Hetu/Liṅga :

The other term involved in the process of inference is *hetu/liṅga*. In fact it is the pivotal element in the process of *anumāna*. It is the necessary mark which leads to the inference of its marked object which is not directly given or perceived. Like *pakṣa*, *hetu/liṅga* is also perceptually cognized. It is also known as *sādhana* because it is a means to know its *sādhya*. In the above stated example 'smoke' is *hetu/liṅga*.

Hetu/liṅga has three formal characteristics the satisfaction of which alone enables it to act as a sufficient reason for the inference of its marked object. A *hetu/liṅga* which possesses these three characteristics is known as *sadhetu* or *trairūpya liṅga*. We shall later on discuss in details these three marks.

Sādhya/Liṅgin :

The third entity involved in the inferential process is *sādhya/liṅgin*. It is necessarily marked by *hetu/liṅga*. The two have necessary connection. It is *sādhya/liṅgin* which constitutes the property (*dharma*) which is to be inferred in relation to the *pakṣa* on the basis of another property of *pakṣa* which is *hetu/liṅga*. *Hetu/liṅga* is the perceived property of *pakṣa* and *sādhya/liṅgin* is the inferred property. In the above stated example 'fire' is *sādhya/liṅgin*.

Sapakṣa :

Another significant concept which is given in the analysis of the inferential process is *sapakṣa* (homologue/similar instances). *Sapakṣa* means an object similar to *pakṣa*. In other words, all those objects which possess the property which is to be inferred are known as *sapakṣa*; for example, if 'fire' is the predicate which is to be inferred in relation to a 'hill' then all those instances like 'kitchen' etc., where fire is known to be a predicate, constitute *sapakṣa*. A *sapakṣa* is similar to *pakṣa* in this sense only that both of them comprehend a common property. *Sapakṣa* is metaphorically called copartner of *pakṣa*. *Pakṣa* is something which is perceptually given but *sapakṣa* is something which is to be remembered on the basis of past indubitable experience.

Asapakṣa :

A case which is not similar to *pakṣa* is regarded as *asapakṣa* or *vipakṣa* (heterologue, dissimilar instances). In other words, *asapakṣa* is dissimilar to *sapakṣa* in that it is never a possessor of the property commonly possessed by *pakṣa* and *sapakṣa*. *Asapakṣa* can be of three types:

- (a) Different from it (*anya*)
- (b) Contrary to it (*viruddha*)
- (c) Absence of it (*abhāva*)

Of these *abhāva* is most fundamental.

Subsequently the roles of *sapakṣa* and *asapakṣa* will be discussed.

Vyāpti :

The entire inferential process, as stated above, is based upon the relation between *hetu/liṅga* and *sādhya/liṅgin*, which can be understood in terms of necessary dependence (*avinābhāvaniyama = a + vinā + bhāva*) and which is technically known as *vyāpti*. It implies absence of *hetu/liṅga* in the absence of *sādhya/liṅgin*. In other words, *hetu/liṅga* can not be present in the absence of *sādhya/liṅgin*. The Buddhist conception of *vyāpti* stands for an invariable necessary connection. *Vyāpti* is a necessary bond because of the fact that it is rooted in what is technically known as *svabhāva pratibandha*, existential dependence or existential tie. Existential dependence means dependent existence. Existential tie means the existence of one thing is tied to the other. It may be in the form of a casual relation or an analytical entailment. For example, the dependence of effect on its cause enables us to infer the cause the moment the effect is known to us. Similarly, an analytically deduced fact by its very essence depends upon the fact from which it is deduced. Thus, there is *svabhāva pratibandha* between cause and effect and between the deduced object and that from which there is deduction. The example of the former type is relation between smoke and fire and of the latter type is the relation between rose and flower. We can deduce one fact from another only if there is existential dependence. It may be asked why is it that we can deduce one fact from another only if their is existential dependence. The answer given by the Buddhist logicians is that this is so because an effect which is not dependent upon another object cannot be invariably and necessarily concomitant with the latter. In other words, if effect is not tied up by its existence to another object, it can not be necessarily concomitant with the latter. There will be no invariability (*avyabhicāra*). Thus, the possibility of deducing one fact from the other depends upon an invariable and necessary connection which precludes the existence of the one without the existence of the other. Therefore, if two facts are existentially connected we can assert that one of them can not exist independently of the other and therefore from the presence of the one follows the presence of the other.

Existential tie (or dependence) is always that of the *hetu/liṅga* with *sādhya/liṅgin*. *Hetu/liṅga* is always dependent on *sādhya/liṅgin*, whereas the *sādhya/liṅgin* is independent of *hetu/liṅga*. That is why *hetu/liṅga* is said to be 'tied to' and the *sādhya/liṅgin* is said to be 'not-tied'. That which is tied is the *gamaka* and that to which it is tied is *gamyā*. In the above example 'smoke' is tied to 'fire' and there can be no smoke without 'fire', but 'fire' can be without 'smoke'. So, 'smoke' is the *hetu/liṅga* and 'fire' is the *sādhya/liṅgin*. There is necessary connection between 'smoke' and 'fire' but not between 'fire' and 'smoke'.

Hetu/liṅga is also known as *vyāpya* and *sādhya/liṅgin* is known as *vyāpaka*. Accordingly, it is said that the presence of *vyāpaka* is necessary for the presence of *vyāpya*, and *vyāpya* can exist only when *vyāpaka* exists. These two conditions are, respectively, known as *anvaya* and *vyatireka*. These two conditions are necessary for *vyāpti* relation. Thus, in short, the *vyāpti* relation stands for the regulation that *hetu/liṅga* can be present only in the presence of *sādhya/liṅgin* and that absence of *sādhya/liṅgin* implies necessary absence of *hetu/liṅga*.

According to the Buddhist logicians the positive relation of *vyāpti* is of two types, namely, *tādātmya* (analytical entailment) and *tadutpatti* (causal). There can be analytical entailment relation between two concepts such that one of them can not be conceived without the other and has necessary dependence on the other. For example, 'rose' and 'flower' are two such concepts such that 'rose' can not be conceived without its being a 'flower'. So there is analytical entailment relation between 'rose' and 'flower'. The concept of 'rose' entails the concept of 'flower'. The other type of *vyāpti* is causal. The effect necessarily presupposes its cause. Here it must be noted that whenever there is an effect there must be its cause, but it is not necessary that whenever there is a cause there must be its effect. The analytical relation is a relation of simultaneity or coexistence whereas the causal relation is a relation of succession. It must be noted here that according to the Buddhist logicians *vyāpti* relation is mental construction though stimulated by perceptual cognition.

Kinds of *Liṅga*

There are three varieties of *hetu/liṅga*, viz., *anupalabdhi*, *svabhāva* and *kārya*. The *sādhya/liṅgin* is a sort of predicate and a predicate is either denied or affirmed. When it is denied, this is done on the basis of the non-existence of its mark. Such a mark is known as *anupalabdhi hetu* or *anupalabdhi liṅga*. When it is affirmed, its mark is either existentially identical with it or if different, it is its effect. In the former case its *hetu/liṅga* is known as *svabhāva hetu* or *svabhāva liṅga* and in the latter case it is known as *kārya hetu* or *kārya liṅga*.

Anupalabdhi:

Anupalabdhi has been defined as non-cognition of such an object which otherwise fulfils the conditions of cognizability. For example, a 'jar' is an object which fulfils the condition of cognizability. If at a particular place there is non-cognition of a 'jar', this enables us to infer its non-existence. So here non-cognition of the 'jar' is the *hetu/liṅga* and non-existence of the 'jar' is the *sādhya/liṅgin*. The non-cognition (of a thing) is to be regarded as *hetu/liṅga* for the non-existence (of that thing) which is its *sādhya/liṅgin* on the ground that if the 'jar' were present, it would have necessarily been perceived when all other conditions of perceptibility are fulfilled. In spite of all the conditions of perceptibility being present, if the 'jar' is not perceived, we can legitimately infer its non-existence.

Svabhāva hetu or *Svabhāva Liṅga*:

The second type of *hetu/liṅga* is known as *svabhāva hetu* or *svabhāva liṅga*. It is defined as that whose mere existence is sufficient for the deduction of *sādhya/liṅgin*. For example, in the judgment, "It is a flower because it is a rose" the reason, namely, 'rose' is sufficient for the deduction of 'flower'. As stated earlier, the terms 'rose' and 'flower' have one and the same object for their reference though they may have different meanings. It is this sameness of reference known as *tādātmya* which is responsible for the existential tie between rose and flower.

Kārya hetu or Kārya Liṅga:

The third type of *hetu/liṅga* is *kārya hetu* or *kārya liṅga* which is in the form of an effect. It necessarily presupposes its cause like smoke necessarily implies the existence of fire. The causal connection is given to us in our experience of both *anvaya* and *vyatireka* types, i.e., on the basis of agreement in presence and agreement in absence between two phenomena.

Three types of *Anumāna*

Since there are three types of *hetu/liṅga*, there are three types of *anumāna*, viz., *Anupalabdhi*, *Svabhāva* and *Kārya*. *Kārya* is also known as *Tadutpatti*.

There are five types of propositions which may be involved in an inference. They are as follows:

1. That which is to be proved is stated as *Pratijñā*.
2. That on the basis of which something is proved is stated as *Hetu*.
3. The supporting examples, positive and negative, are stated as *Udāharaṇa*,
4. Subsuming the case to be proved under a general principle is stated as *Upanaya*
5. The conclusion deduced after proof is stated as *Nigamana*.

In Buddhist system of logic it is not necessary to employ all the five types in an inference or argument. First three or last three can be used depending upon the logical requirements. Sometimes an abbreviated form consisting of two propositions is used.

The examples of the three types of *anumāna* can be as under:

Anupalabdhi:

Whatever is present and is perceptible is necessarily perceived, like a jar.

But there is no such a jar being perceived here.

Therefore, a jar is not present here.

Svabhāva:

All roses are flowers.

This is a rose.

Therefore, this is a flower.

Kārya:

Wherever there is smoke there is fire.

There is smoke here in the next room.

Therefore, there is fire here in the next room.

Doctrine of Trairūpya:

Though a *hetu/liṅga* may be either in the form of *anupalabdhi* or *svabhāva* or *kārya*, every *hetu/liṅga* necessarily possesses three marks. The doctrine of three marks of a *hetu/liṅga*, technically known as *trairūpyavāda*, is of great logical significance in the Buddhist theory of inference.

According to Buddhist logic the *hetu/liṅga* is characterized by three essential characteristics. In fact in the history of Indian Logic we find different views with regard to the essential characteristics of *hetu/liṅga*. Whereas the Nyāya tradition insists on five characteristics and the Jaina tradition regards only one characteristic, the Buddhist tradition maintains that there are three and only three essential characteristics of a *hetu/liṅga*. Every *hetu/liṅga* must possess all the three characteristics simultaneously (*trilakṣaṇa hetu*). Then and then only it can be regarded as a *hetu/liṅga*, and be made use of in the process of inference.

The three characteristics (*rūpas*) are as under:

1. Pervasive presence of *hetu/liṅga* in the *pakṣa* in its totality. Symbolically it can be expressed as "hetu is present in every *pakṣa*"
 "'h' is present in every 'p'"
 "every 'p' is 'h'".
2. Necessary presence (never absence) of *hetu/liṅga* in *sapakṣa* although not in their totality.
 "*Hetu* has to be present in at least one *sapakṣa* and at most in all *sapakṣas*. Symbolically it can be expressed as "at least one 's' and at most every 's' is 'h'".
3. Pervasive absence (never presence) of *hetu/liṅga* in all *asapakṣas*. *Hetu/liṅga* must be absent in every *asapakṣa*. Symbolically it can be expressed as "No 'a' is 'h'".

Here *Hetu* = h

Sapakṣa = s

Asapakṣa = a

This is distribution of quantification of *hetu* in its extension with regard to *pakṣa*, *sapakṣa* and *asapakṣa*

In short it can be stated as under :

1. In *pakṣa* wholly
2. In *sapakṣa* only
3. In *asapakṣa* never

Laws of Extension :

1. If a term is related to another term by its presence in its extension, then it is known as *vṛtti*. If it is absent in the extension of another term, then it is known as *avṛtti*.
2. If the extension of one term is pervading the entire extension of another term, then it is known as *vyāpaka/sakaladeśavṛtti* (*sakala + deśa + vṛtti*). If the extension of one term is only a part of the extension of another term, then it is known as *ekadeśavṛtti* (*eka + deśa + vṛtti*)

There are corollaries of these two laws but we need not discuss them here.

'Hetu Cakra Damaru' of Diñnāga

The doctrine of *trairūpya* has been explicated by *Diñnāga* in his work '*Hetu Cakra Damaru*', a primer of Buddhist formal logic. In this work nine different conceivable relations of *hetu* with *pakṣa*, *sapakṣa*, and *asapakṣa* are presented. This presentation of the doctrine of *trairūpya* in a wider context was named by him as the doctrine of *hetucakra*. Both these doctrines refer to the extension of *hetu*. This doctrine of *trairūpya* represents only three valid relations of *hetu* with *pakṣa*, *sapakṣa*, and *asapakṣa*, whereas the doctrine of *hetucakra* takes for granted the presence of *hetu* in *pakṣa*, and its relations with *sapakṣa* and *asapakṣa* are alone taken into consideration. Here three possible ways of the relation between *hetu* and *sapakṣa* and *hetu* and *asapakṣa* are conceived and analyzed, namely, *vyāpaka* (pervasive presence), *avṛtti* (pervasive absence), and *ekadeśavṛtti* (partial presence). He gives a formal schema of nine valid and invalid types of *anumāna* based on three possible relations of *hetu* with *sapakṣa* and *asapakṣa*. Since the text is very short we can have the advantage of giving it here in full, for those who take interest in it. Since in the text *Diñnāga* uses the word *hetu* and not *liṅga* and likewise *sādhya* and not *liṅgin*, we follow him here.

Here '*hetu*' is translated as 'reason'

'*Sādhya*' is translated as 'probandum'

Sapakṣa is translated as 'similar instance'

Asapakṣa is translated as 'dissimilar instance'.

Hetu Cakra Damaru (The Wheel of Reasons)

Homage to *Mañjuśrīkumārabhūta*.

Homage to the Omniscient One, who is

The destroyer of the snare of ignorance.

I am expounding the determination of

The reason with three-fold characteristics

Among the three possible, cases of “presence, “absence“and “both”

Of the reason in the probandum,

Only the case of its “presence” is valid.

While its “absence” is not.

The case of “both presence and absence” is inconclusive,

It is therefore not valid either.

The “presence,” “absence” and “both.”

Of the reason in similar instances,

Combined with those, in dissimilar instances,

There are three combinations in each of three,

The top and the bottom are valid,

The two sides are contradictory.

The four corners are inconclusive because they are “too broad.”

The centre is inconclusive because it is “too narrow”.

Knowable, produced, non-eternal,

Produced, audible, effort-made,

Eternal, effort-made and incorporeal,

Are used to prove the properties of being:

Eternal, non-eternal, effort-made,

Eternal, eternal, eternal,

Non-effort-made, non-eternal and eternal.

When two tops or two bottoms meet,

The reason is valid.

When two corresponding sides meet,

It is inconclusive because it is “too narrow.”

Since there are nine classes of reason,

Accordingly we have nine sets of example:

Space-pot, pot-space,

Pot-lightning-space

Space-pot-lightning,

Lightning-space-pot,

Pot-lightning-space,

Space-action-pot.

The above concerns the “determined reason” only;

A regards the “doubtful” ones,

There are also nine combinations of

“Presence,” “absence” and “both.”

Here the presence of *hetu* in *pakṣa* is taken for granted and it is combined with different types of relations that a *hetu* may possess with *sapakṣa* and *asapakṣa*. The combination of these possibilities gives rise to nine types. Among these nine possible relations between *hetu* and *sādhya*, only two are valid, and these constitute the II and III *rūpas* of the doctrine of *trairūpya*, and the remaining seven are graded as invalid as they are at variance with the doctrine of *trairūpya*. The nine possible relations are as follows:

I. *Sapakṣāsapakṣavyāpaka*: Pervasive presence in similar and dissimilar instances.

- II. *Sapakṣavyāpaka asapakṣāvṛtti*: Pervasive presence in similar instances and necessary absence in dissimilar instances.
- III. *Sapakṣavyāpaka asapakṣaikadeśāvṛtti*: Pervasive presence in similar instances and partial presence in dissimilar instances.
- IV. *Sapakṣāvṛtti asapakṣavyāpaka*: Necessary absence in similar instances and pervasive presence in dissimilar instances.
- V. *Sapakṣāsapakṣāvṛtti* : Necessary absence in similar and dissimilar instances.
- VI. *Sapakṣāvṛtti asapakṣaikadeśāvṛtti*: Necessary absence in similar instances and partial presence in dissimilar instances.
- VII. *Sapakṣaikadeśāvṛtti asapakṣavyāpaka*: Partial presence in similar instances and pervasive presence in dissimilar instances.
- VIII. *Sapakṣaikadeśāvṛtti asapakṣāvṛtti*: Partial presence in similar instances and necessary absence in dissimilar instances.
- IX. *Sapakṣāsapakṣaikadeśāvṛtti* : Partial presence in similar and dissimilar instances.

Hetu may be present in all, some or none of the *sapakṣa* and *asapakṣa*. Accordingly the above stated nine possibilities are conceived. They may be put in the form of a chart as under:

No.	Relation of <i>hetu</i> with <i>sapakṣa</i>	Relation of <i>hetu</i> with <i>asapakṣa</i>	Logical status of <i>hetu</i>
1.	Wholly Present	Wholly present	Invalid (inconclusive)
2.	Wholly present	Wholly absent	Valid
3.	Wholly present	partly present	Invalid (contradictory.)
4.	Wholly absent	Wholly present	invalid (inconclusive)
5.	Wholly absent	Wholly absent	invalid (contradictory.)
6.	Wholly absent	partly present	invalid (inconclusive)
7.	Partly present	Wholly present	Invalid(inconclusive)
8.	Partly present	Wholly absent	Valid
9.	Partly present	Partly present	invalid (inconclusive)

In short this implies that:

- (i) If *hetu* is wholly or partly present in *sapakṣa* but wholly absent from *asapakṣa*, then it is valid.

- (ii) Their opposites are contradictory.
 (iii) Rest are inconclusive.

These nine *rūpas* of the *hetucakra* have been represented by *Diñnāga* in the form of this diagram:

I	II	III
IV	V	VI
VII	VIII	IX

Referring to this diagram, he writes:

The top and the bottom are valid,

The two sides are contradictory,

The four corners are inconclusive because they are “too narrow”

The center is inconclusive because it is “too narrow”

Keeping this in view, we can explicate the diagram as follows:

I (corner)	II (top)	III (corner)
IV (side)	V (center)	VI (side)
VII (corner)	VIII (bottom)	IX (corner)

After stating the *hetucakra*, *Diñnāga* proceeds to illustrate the different *rūpas* with the help of the following example:

Nine *hetus*:

Knowable	Produced	Non-eternal
Produced	Audible	Effort-made
Eternal	Effort-made	Incorporeal

Nine *Sādhyā* :

Eternal	Non-eternal	Effort-made
Eternal	Eternal	Eternal
Non-effort-made	Non-eternal	Eternal

With the help of these examples we can explain the earlier mentioned verse like this:

Two Tops Meet:

Whatever is produced is non-eternal: **Valid.**

Two Bottoms Meet:

Whatever is effort-made is non-eternal: **Valid.**

Two Corresponding Sides Meet:

Whatever is produced is eternal: **Contradictory.**

Whatever is effort-made is eternal: **Contradictory.**

Corresponding Corners Meet:

Whatever is knowable is eternal: **Inconclusive, “too broad.”**

Whatever is eternal is non-effort-made **Inconclusive, “too broad.”**

Whatever is non-eternal is effort-made: **Inconclusive, “too broad.”**

Whatever is incorporeal is eternal: **Inconclusive, “too broad.”**

Two Centers Meet:

Whatever is audible is eternal: **Inconclusive, “too broad.”**

The statement of the *hetucakra*, because of its cryptic wording, is unintelligible by itself, but with the help of examples given by *Diñnāga* it can be better understood. Here we take an example of *anumāna* consisting of three steps because Buddhists accept only three steps. The three steps are *pratijñā*, *hetu*, and *udāharaṇa* of *sapakṣa* and *asapakṣa*. The three terms of *anumāna* are *pakṣa*, *hetu*, and *sādhya*. It is presumed that *hetu* is present in *pakṣa* (i.e., *pakṣadharmatva*). The relation of *hetu* with *sapakṣa* is conceived to be of three possible types, namely, *vyāpaka*, *avṛtti*, and *ekadeśavṛtti*. Similarly, the relation of *hetu* with *asapakṣa* can also be conceived of in the preceding manner. On the basis of the preceding stipulations the *hetu cakra* can be exemplified in the following way:

Statement of the example of First Form:

Pratijñā : Sound is eternal.

Hetu : because it is knowable.

Udāharaṇa of *sapakṣa* and *asapakṣa* : like space and unlike pot.

The three terms are:

Pakṣa : sound

Hetu : knowable

Sādhya : eternal.

In this example the *hetu*, apart from being present in *pakṣa*, is also present in both *sapakṣa* and *asapakṣa*. It renders this argument invalid. Here there is a fallacy of *sādhāraṇa anekāntika* (inconclusive, too broad), because the *hetu* is present in all three, whereas as per rule it should be present only in the first two.

Statement of the example of Second Form :

Pratijñā : sound is non-eternal.

Hetu : because it is produced

Udāharaṇa of *sapakṣa* and *asapakṣa* : like a pot and unlike space.

The three terms are :

Pakṣa : sound.

Hetu : produced.

Sādhya : non-eternal.

In this example the *hetu* is present in *pakṣa*, is also present in *sapakṣa*, and is absent in *asapakṣa*. Thus, it satisfies all the three requirements of *trairūpya*. So it is valid.

Satatement of the example of Third Form :

Pratijñā : Sound is effort-made.

Hetu : because it is non-eternal.

Udāharaṇa of *sapakṣa* and *asapakṣa* : like pot and unlike lightning and space.

The three terms are :

Pakṣa : sound.

Hetu : Non-eternal.

Sādhya : effort-made.

In this example, the *hetu* is no doubt *present* in *pakṣa* and *sapakṣa* but is absent in some instances of *asapakṣa* and is present in others. The *hetu* has *asapakṣaikadesavṛtti* because (1) some non-effort-made things are non-eternal like lightening whereas (2) some non-effort-made thing are eternal like ether. Thus, the presence of *hetu* in some *asapakṣas* renders this argument invalid. Here there is a fallacy of *sādhāraṇa anekāntika* (inconclusive, too broad).

Statement of the example of Fourth Form :

- Pratijñā* : sound is eternal.
Hetu : because it is produced.
Udāharaṇa of *sapakṣa* and *asapakṣa* : like ether and unlike pot.

The three terms are :

- Pakṣa* : sound.
Hetu : produced.
Sādhya : eternal.

In this example, the *hetu* is present *pakṣa*, is absent in *spakṣa* and present is *asapakṣa*. Thus, *hetu* is contradictory of *sādhya*. This renders it invalid. Here there is a fallacy of *viruddha* (contradictory).

Statement of the example of Fifth Form :

- Pratijñā* : sound is eternal.
Hetu : because it is audible.
Udāharaṇa of *sapakṣa* and *asapakṣa* : Like space and unlike pot.

The three terms are :

- Pakṣa* : sound.
Hetu : audible.
Sādhya : eternal.

Here the *hetu* is present only in *pakṣa* and is absent not only in *asapakṣa* but also in *sapakṣa*. Here there is a fallacy of *asādhāraṇa anekāntika* (inconclusive, too narrow).

Statement of the example of Sixth Form :

- Pratijñā* : sound is eternal.
Hetu : because it is effort made.
Udāharaṇa of *sapakṣa* and *asapakṣa* : like space and unlike pot and lightning.

The three terms are :

- Pakṣa* : sound
hetu : effort made

Sādhya : eternal

Here the *hetu* is present only in *pakṣa*, absent in *sapakṣa*, but present in some instances of *asapakṣa* and absent in others. Here there is a fallacy of *viruddha* (contradictory).

Statement of the example of Seventh Form :

Pratijñā : Sound is non-effort made.

Hetu : because it is non-eternal.

Udāharaṇa of *sapakṣa* and *asapakṣa* : Like lightning and space and unlike pot.

The three terms are :

Pakṣa : sound

Hetu : non-eternal

Sādhya : non-effort-made.

Here the *hetu* apart from its presence in *pakṣa* is present in some instances of *sapakṣa* and absent in others, whereas it is present in *asapakṣa*. Here there is a fallacy of *sādhāraṇa anekāntika* (inconclusive, too broad).

Statement of the example of Eighth Form :

Pratijñā : sound is non-eternal.

Hetu : because it is effort made.

Udāharaṇa of *sapakṣa* and *asapakṣa* : Like pot and lightning and unlike space.

The three terms are :

Pakṣa : sound

Hetu : effort made

Sādhya : non-eternal.

Here the *hetu* is present in *pakṣa*, present in some instances of *sapakṣa* and absent in others, whereas it is absent in all the cases of *asapakṣa*. Thus, the argument satisfies all the three requirements of the *trairūpya*. So it is valid.

Statement of the example of Ninth Form :

Pratijñā : Sound is eternal.

Hetu : because it is incorporeal.

Udāharaṇa of *sapakṣa* and *asapakṣa* : like space and infinitesimal particles and unlike action and pot.

The three terms are :

Pakṣa : sound.

Hetu : incorporeal

Sādhya : eternal

Here, no doubt, *hetu* is present in *pakṣa* and in some instances of *sapakṣa* but is also present in some instances of *asapakṣa*. This renders it inconclusive (too broad). Here there is a fallacy of *sādhāraṇa anekāntika*.

Because of lack of interest in later times the Buddhist formal logic did not develop further. But there are immense possibilities of development and refinement. Here it must be clarified that Buddhist Logic has ontological commitment in the sense that it has been formulated to substantiate the basic tenets and key doctrines of Buddhist philosophy propounded by Gautama, the Buddha. So even though it is formal it takes into account the nature of empirical reality which has to be known correctly to realize wisdom, the liberating knowledge. Therefore, it has a necessary practical orientation and applied dimension.

Questions

1. Point out the nature of *anumāna*.
2. How many terms are involved in the process of *anumāna* ? Explain each of them.
3. What is the relation of *pakṣa* with *sapakṣa* and *asapakṣa*?
4. Discuss the nature and role of *vyāpti* in the process of *anumāna*.
5. Discuss the types of *hetu/liṅga* and types of *anumāna*.
6. Explain the theory of *trairūpya liṅga (trilakṣaṇa hetu)*.
7. In the following example point out which are *hetu/liṅga*, *sādhya/liṅgin* and *pakṣa*.
"Pot is non-eternal because it is produced".
8. Point out the *vyāpti* relation in the following argument :
" The cloth is perishable because it is a product" .