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Dignāga's theory of inference and Aristotle's syllogistic: A comparative study of the conditions of valid reasoning

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Abstract
This article examines Dignāga's theory of inference (*anumāna*) in comparison with Aristotle's syllogistic theory (*syllogismos*), focusing on a central question: what conditions render an inference valid and capable of justifying a conclusion? Drawing upon the *Pramāṇasamuccaya* and scholarly works by Hattori, Hayes, Katsura, and related literature, this paper analyzes the doctrine of the Three Characteristics of the Reason (*trairūpya*) - comprising *pakṣadharmatā*, *sapakṣasattva*, and *vipakṣāsattva* - as the defining conditions for the validity of an inferential sign (*hetu*/*liṅga*). On the Aristotelian side, primarily based on the *Prior Analytics* and *Posterior Analytics*, the study investigates the role of the middle term in the relationship between the major and minor terms, while distinguishing the formal validity of the *syllogismos* from the stricter epistemological requirements of scientific demonstration (*apodeixis*). The analysis reveals that while the *hetu* and the middle term can be compared regarding their mediating function, they cannot be regarded as fully equivalent concepts. Whereas Aristotle determines the validity of a syllogism through the structural relationships among terms and premises that make a conclusion follow of necessity, Dignāga evaluates the probative force of the *hetu* through its presence in the *pakṣa* and its distribution across the domains of *sapakṣa* and *vipakṣa*. In particular, *dṛṣṭānta* in Dignāga's system is not merely an illustrative example, but actively serves to express *anvaya* and *vyatireka*, thereby illuminating the relationship between *hetu* and *sādhya*. The article concludes that these two systems should be understood as two independent models of valid reasoning, formulated within distinct logical and epistemological architectures, rather than reducing one system to the categories of the other.

Keywords: Dignāga, Aristotle, anumāna, syllogismos, trairūpya, hetu, middle term, dṛṣṭānta, buddhist logic, aristotelian logic, eastern logic, western logic

Introduction

For a long time, a widespread perception among scholars treated Western philosophy as the benchmark for all academic foundations. This has inadvertently overlooked many Eastern philosophical values that have endured for thousands of years. Among the philosophical domains that have played a major role in human scholarship, logic stands out as a paramount field. In the history of classical logic, Aristotle and Dignāga represent two distinct traditions of thought developed within different philosophical contexts, yet both addressed a fundamental problem: what conditions render an inference valid - that is, allowing one to proceed from established data or premises to a well - grounded conclusion? In Aristotle, this issue is systematically developed in the *Prior Analytics* through the theory of *syllogismos* (syllogism/deductive reasoning). In its basic form, three terms are organized such that two extremes are connected through a middle term; particularly in the first figure, Aristotle defines the relations among these three terms in such a way that the conclusion follows of necessity from the premises. W. D. Ross emphasizes that the *Prior Analytics* investigates the formal conditions under which a conclusion is justified by its premises, whereas the *Posterior Analytics* goes a step further by examining demonstration (*apodeixis*) as the specific form of inference capable of producing scientific knowledge [8, 51].

Within the Indian Buddhist logical - epistemological tradition, Dignāga situated the problem of inference (*anumāna*) within a different theoretical architecture. The *Pramāṇasamuccaya* distinguishes between *svārthānumāna* (inference for oneself) and *parārthānumāna* (inference/demonstration for others), while subjecting the validity of the inferential sign (*hetu*/*liṅga*) to the conditions of the Three Characteristics of the Reason (*trairūpya*). H. N. Randle identifies the formulation of *trairūpya* in Chapter II of the *Pramāṇasamuccaya* through the famous verse *"anumeye 'tha tattulye sadbhāvo nāstitā 'sati,"* translated as: "The reason (middle term) is present in the object inferred; present again in cases similar to the object inferred; and absent in cases dissimilar to that object" [7, 6-7]. In its familiar presentation, these three conditions are articulated as *pakṣadharmatā*, *sapakṣasattva*, and *vipakṣāsattva*. Indeed, the textual tradition associated with the *Nyāyapraveśa* likewise records these three conditions as the essential characteristics of a valid *hetu*.

However, the superficial similarity between the logical structures of Aristotle and Dignāga can easily lead to an inaccurate and oversimplified comparison. If one equates the *pakṣa* with the minor term, the *sādhya* with the major term, and the *hetu* with Aristotle's middle term, this identification fails to account for the specific functions of *sapakṣa* and *vipakṣa*, as well as the role of *dṛṣṭānta* in Dignāga's theory. The research of Shōryū Katsura is particularly crucial on this point. In his analysis of Chapter IV of the *Pramāṇasamuccaya*, Katsura demonstrates that in *parārthānumāna*, the statement of the *hetu* expresses the first characteristic, whereas the statement regarding the *dṛṣṭānta* serves to indicate the relation of inseparable connection (*avinābhāva*) between the reason (*hetu*) and the property to be proven (*sādhya*) through positive concomitance (*anvaya*) and negative concomitance (*vyatireka*) [6, 138-141]. Therefore, the *hetu* cannot be conflated

with Aristotle's middle term merely on the grounds that both perform a mediating function in the inferential process.
The divergence runs even deeper when considering the epistemological objectives of the two systems. Aristotle distinguishes between syllogism in general and demonstration: demonstration is a syllogism that produces scientific knowledge, thereby requiring additional conditions regarding the premises and explanatory relationships [5,71b17-25]; [8, 12]. By contrast, for Dignāga, the problem of inference was embedded from the outset within the theory of knowledge (*pramāṇa*). *Anumāna* is not merely a formal arrangement of propositions, but a mode of cognition in which the validity of the sign must be verified by the *trairūpya*. Consequently, a comparison between the two systems must move beyond formal correspondences between individual elements to investigate the specific mechanisms employed by each tradition to ensure the validity of inference.
Based on these considerations, this paper focuses on three primary issues: (1) How does Dignāga establish a valid *hetu* through *trairūpya*? (2) How does Aristotle establish the validity of the *syllogismos* through the relations among terms, particularly the middle term? and (3) To what extent are Dignāga's *hetu* and Aristotle's middle term similar, and where do the limits of this similarity lie? The method employed combines textual analysis with functional comparison, relying on the *Pramāṇasamuccaya* and scholarly studies by Hattori, Hayes, and Katsura for Dignāga, while drawing upon the *Prior Analytics*, *Posterior Analytics*, and Ross's commentary for Aristotle. The objective is not to reduce both systems to a single logical model, but rather to illuminate two distinct ways of addressing the same fundamental philosophical question: what makes an inference valid and capable of justifying a conclusion?

Two Models of Inference: Anumāna and Syllogismos

It is widely acknowledged that any comparison between distinct systems is inherently imperfect; nevertheless, from a scientific perspective, comparison remains essential for delineating the boundaries and scope of philosophical concepts. Such comparative analysis holds equal value when applied to these two theories of logic. Comparing Dignāga with Aristotle first requires correctly identifying the theoretical unit that each philosopher designates as "inference." While Dignāga's *anumāna* is situated within the broader framework of *pramāṇa* (epistemology), Aristotle's *syllogismos* is investigated as a formal structure in which a conclusion arises of necessity from established premises. Consequently, although both thinkers were fundamentally concerned with how a conclusion is established from known data, the structures and functions of their respective models do not fully correspond.

1. Anumāna in Dignāga's Epistemological System

In the *Pramāṇasamuccaya*, Dignāga recognizes only two basic means of valid cognition (*pramāṇa*): *pratyakṣa* (direct perception) and *anumāna* (inference). Hattori emphasizes that this dichotomy is strictly tied to a distinction between their objects: perception apprehends particulars (*svalakṣaṇa*), whereas inference apprehends universals (*sāmānyalakṣaṇa*). This indicates that, from the outset, Dignāga did not treat *anumāna* merely as a mode of presenting an argument, but as an integral part of a broader theory regarding how human beings acquire valid knowledge [3, 79].
More significantly, Dignāga divides inference into *svārthānumāna* (inference for oneself) and *parārthānumāna* (inference/demonstration for others). *Svārthānumāna* is the cognition of an object through an inferential sign or reason (*hetu*), whereas *parārthānumāna* consists of conveying to others what one has inferred for oneself by explicitly stating the thesis (*pakṣa*/*sādhya*), the reason (*hetu*), and the example (*dṛṣṭānta*). This distinction is particularly crucial: *svārthānumāna* belongs to the cognitive dimension, while *parārthānumāna* belongs to the realm of linguistic expression and proof intended for another subject.
In Chapter II of the *Pramāṇasamuccaya*, Dignāga defines *svārthānumāna* along these lines: inference for oneself is the cognition of an object inferred through a sign that possesses three characteristics (*trirūpa*/*trairūpya*) (*Pramāṇasamuccaya* II.1). Thus, a *hetu* possesses the capacity to lead to the *anumeya*/*sādhya* only when it fulfills specific, rigorous conditions. Hattori summarizes these three conditions as follows: the reason must be a property of the subject under consideration (*pakṣadharmatva*); it must exist in all or some homogeneous instances (*sapakṣe sattvam*); and it must not exist in any heterogeneous instances (*vipakṣe 'sattvam eva*) [3, 4].
In the context of *parārthānumāna*, this cognitive structure is transposed into a linguistic format designed to produce a corresponding conviction in others. Katsura points out that Dignāga distinguishes three components in a formal proof: *pakṣa-vacana* (statement of the thesis), *hetu-vacana* (statement of the reason), and *dṛṣṭānta-vacana* (statement of the example) [6, 138]. He further demonstrates that *hetu-vacana* expresses the first characteristic (*pakṣadharmatva*), whereas *dṛṣṭānta-vacana* expresses the second and third characteristics through positive concomitance (*anvaya*) and negative concomitance (*vyatireka*) [6, 141]. Thus, Dignāga's three-part formulation is not merely a reduction in the number of propositions; rather, each component performs a specific function in establishing the requisite conditions of the *hetu*.

2. Syllogismos in Aristotle

The Aristotelian model is organized around a different axis. In the *Prior Analytics*, the *syllogismos* is constructed upon the structural relationships between premises and three terms, in which the middle term serves to link the two extremes. Ross notes that the *Prior Analytics* investigates the syllogism in general—that is, it determines the forms of relationships among propositions and terms in which a conclusion follows of necessity; the *Posterior Analytics* subsequently utilizes this formal framework to examine a specialized type: scientific demonstration (*apodeixis*) [8, 1-2, 12]. In the first figure, Aristotle presents the relationship among three terms according to the following structure: if the third term belongs to the middle term, and the middle term belongs to (or is excluded from) the first term under appropriate conditions, the two extremes are necessarily joined in a perfect syllogism [8, 300-301]. The essential point here is not simply the presence of three propositions in a naive sense, but rather the structural placement and relational role of the middle term with respect to the two extremes. The middle term appears in both premises but is absent from the conclusion; it is precisely through this mediating term that the relationship between the minor term and the major term is established. However, one should not conclude from this that Aristotle was concerned solely with formal validity. In the *Posterior Analytics*, he explicitly

differentiates the syllogism in general from demonstration. Aristotle defines demonstration as a "scientific syllogism"—that is, a syllogism capable of producing scientific knowledge . To fulfill this function, the premises must do more than merely guarantee the logical validity of the conclusion; they must be true, primary, immediate, better known than, prior to, and explanatory causes of the conclusion [8, 507-508].

Consequently, comparing these two theories reveals a fundamental similarity alongside a crucial theoretical boundary. Both *anumāna* and *syllogismos* require a mediating element capable of connecting what is known with what is to be established. However, Dignāga's *hetu* is verified via *trairūpya* within the threefold domain structure of *pakṣa-sapakṣa-vipakṣa*, whereas Aristotle's middle term operates through structural relations among terms and premises within the syllogism. This structural divergence makes any direct conflation of the *hetu* with the middle term unsatisfactory, thereby establishing the foundation for the subsequent analysis of the specific conditions governing a valid *hetu* and a valid Aristotelian syllogism.

The Three Characteristics of the Reason and the Conditions for a Valid *Hetu* in Dignāga

At the center of Dignāga's theory of inference lies the problem of determining when an inferential sign (*liṅga*/*hetu*) possesses the requisite validity to lead cognition from what is known to what is to be proven (*sādhya*). The answer is systematically articulated through the Three Characteristics of the Reason (*trairūpya*). Hattori expresses these three conditions with utmost clarity: the reason must (1) be a property of the subject of the thesis (*pakṣadharmatva*); (2) exist in all or some homogeneous instances (*sapakṣe sattvam*); and (3) never exist in any heterogeneous instance (*vipakṣe 'sattvam eva*) [3, 4]. Notably, Hattori also points out that these fundamental conditions were already foreshadowed in the works of Asaṅga and Vasubandhu; Dignāga's distinctive contribution lay in systemizing them - most prominently through the *Hetucakra* (Nine-fold Wheel of Reasons) - to establish a structured distinction between valid and invalid reasons.

This basic structure can be represented as follows:

Pakṣadharmata → sapakṣasattva → vipakṣasattva

These three characteristics do not constitute three independent pieces of evidence, but rather three simultaneous conditions required for a valid *hetu*. If any single condition is lacking, the inferential sign risks falling into the category of *hetvābhāsa* (pseudo-reason or fallacy).

1. *Pakṣadharmatā*: The Reason Must Be Present in the Subject to Be Proven

The first characteristic, *pakṣadharmatā*, literally translates to "the property-ness of the *pakṣa*." The *pakṣa* here is the subject or locus (*dharmin*) in which an unestablished property is yet to be proven; the *hetu* must be verified as actually existing in that very subject. Thus, *pakṣadharmatā* establishes the initial relation:

$$\text{Hetu} \in \text{Pakṣa}$$

For instance, consider the classic formulation of the inferential argument: *The hill has fire, because it has smoke.* Here, "the hill" is the *pakṣa*; "having fire" is the *sādhya-dharma* (the property to be proven); and "smoke" is the *hetu*. Before inferring fire from smoke, one must establish that smoke actually exists on the specific hill under examination. If this is not established, even if smoke is closely correlated with fire elsewhere, it cannot serve as a reason to prove that *this* hill has fire. Katsura confirms this sequence in his reconstruction of the inferential process in the *Pramāṇasamuccaya*: the first step is apprehending the presence of the inferential sign (*liṅga*, e.g., smoke) in the specific object under consideration; this constitutes the first essential characteristic of a valid sign, *pakṣadharmatā* [6, 136]. However, the mere presence of the *hetu* in the *pakṣa* is insufficient to constitute a valid inference. Smoke present on the hill merely establishes a relation between the sign and the subject; one must further prove that the sign is genuinely connected with the property to be proven. This is the precise function of the subsequent two characteristics.

2. *Sapakṣasattva*: The Reason Must Exist in the Homogeneous Domain

The second characteristic is *sapakṣasattva*. This condition requires that the *hetu* be established within *sapakṣa* instances - that is, appropriate cases in which the *sādhya-dharma* is already recognized to exist. In the smoke–fire example, a kitchen containing fire can serve as a *sapakṣa*; the presence of smoke there demonstrates that the sign does not merely happen to occur on the hill by coincidence, but is also found in an instance where the property to be proven (fire) is established.

A point that must be articulated with precision is that the second characteristic does not require the *hetu* to be present in *every* object that possesses the property to be proven (*sādhya*). Hattori notes that the *hetu* must exist in "all or some homogeneous instances" [3, 4]. Consequently, *sapakṣasattva* should not be misunderstood as an extensional identity between the *hetu* and the *sādhya*. For instance, inferring "impermanence" from "being produced" (*kṛtakatva*) does not require every impermanent thing to be produced in the exact same sense; what is required is that the reason has a proper distribution within the homogeneous domain.

Katsura situates this characteristic in relation to *anvaya* (positive concomitance). After perceiving the sign in the *pakṣa*, the cognitive subject recalls instances in which both the sign and the property to be proven co-occur; it is precisely the combination of *anvaya* with *vyatireka* that enables the sign to transcend mere accidental co-occurrence [6, 136-137].

3. *Vipakṣāsattva*: The Reason Must Be Absent from All Heterogeneous Instances

The third characteristic is *vipakṣāsattva*, which provides a vital check on the validity of the sign: the *hetu* must not exist in any *vipakṣa* instances—that is, cases where the *sādhya* is entirely absent. Hattori expresses this condition through a strong formulation: the *hetu* "must never exist in any heterogeneous instance" [3, 4].

In the smoke–fire example, this condition can be articulated as follows: wherever there is no fire, there must be no smoke (in the sense of serving as an inferential sign). This represents the dimension of *vyatireka* - negative concomitance or co-absence.

Katsura demonstrates that Dignāga's *dṛṣṭānta-vacana* (statement of the example) does not merely provide a concrete entity for illustration; rather, its structural function is to express the relation of inseparable connection (*avinābhāva*) between *hetu* and *sādhya* via *anvaya* and

vyatireka. Therefore, in a proof for others (*parārthānumāna*), the statement of the reason expresses the first characteristic, whereas the statement of the example expresses the second and third characteristics [6, 139-141)].
It becomes clear that the combination of these three characteristics creates a two-tiered verification mechanism. *Pakṣadharmatā* ensures the applicability of the sign to the specific case under consideration, while *sapakṣasattva* and *vipakṣāsattva* test the sign's connection with the property to be proven across homogeneous and heterogeneous domains. A valid *hetu* must not only be "present here," but must also exhibit a distribution pattern that excludes instances where the sign appears without the *sādhya*.
This precise mechanism explains the logical significance of the *trairūpya*: it does not merely list three properties of a "middle term," but provides a criteria-based test for the validity of an inferential reason. Dignāga's *Hetucakra* (Nine-fold Wheel of Reasons) was developed upon this exact principle by examining the nine possible combinations of a *hetu*'s presence or absence in *sapakṣa* and *vipakṣa*, thereby systematically isolating valid reasons from uncertain or fallacious ones. Hattori regards this systematic classification as one of Dignāga's most outstanding contributions to Indian logic [3, 4]. This framework also sets the stage for comparison with Aristotle: the issue is not simply whether the *hetu* resembles a "middle term," but more fundamentally, how two distinct logical traditions construct different conditions to endow a mediating element with probative force.

The Middle Term and the Conditions of the Syllogism in Aristotle

If Dignāga's theory centers on evaluating the validity of the *hetu* through the *trairūpya*, Aristotle's *Prior Analytics* approaches the problem from the structural relationships among terms within the premises. Aristotle defines a *syllogismos* as a discourse in which, certain things having been supposed, something different from the things supposed results of necessity from their being so [8, 288]. This indicates that the fundamental criterion of a syllogism is not merely the presence of three propositions, but that the structural relationship among the premises makes the conclusion follow of necessity.

1. The Role of the Middle Term

An Aristotelian syllogism operates fundamentally with three terms: the major term (P), the middle term (M), and the minor term (S). In standard modern notation, P is the predicate of the conclusion, S is the subject of the conclusion, and M is the mediating term that appears in both premises but is absent from the conclusion. It is precisely M that establishes the connection between S and P.
First Figure Model:
Major premise: Every M is P.
Minor premise: Every S is M.
Conclusion: Therefore, every S is P.
Or symbolically:
$M \rightarrow P$
$S \rightarrow M$
$S \rightarrow P$

Aristotle sets forth this principle in *Prior Analytics* I.4: when three terms are so related to one another that the last is contained in the middle as in a whole, and the middle is either contained in or excluded from the first as in a whole, there must be a perfect syllogism of the extremes [8, 300-301]. The middle term is thus not merely "a term positioned in the middle" spatially or syntactically, but a structural bridge that allows the relation between the two extremes to be established.
In the classic syllogism:
All humans are mortal.
Socrates is a human.
Therefore, Socrates is mortal.

"Human" (M) is the middle term; "Socrates" (S) is the minor term; and "mortal" (P) is the major term. Although M does not appear in the conclusion, without the S-M and M-P relations, the S-P relation could not be established by this syllogism.
However, it should be noted that the designations "major," "minor," and "middle" in Aristotle are determined strictly in relation to the structure of each figure, rather than through simple linguistic word order. For example, when presenting the second figure, Aristotle identifies the middle term as the common predicate of both premises, whereas in the third figure it becomes the common subject [8, 306,-311]. This point becomes particularly crucial when compared with Dignāga's *hetu*: Aristotle's middle term shifts its structural position according to the figure, whereas Dignāga establishes the conditions of the *hetu* through its relations to the *pakṣa*, *sapakṣa*, and *vipakṣa*.

2. Validity and Syllogistic Form

The starting point of syllogistic logic is the premise (*protasis*). Aristotle defines a premise as a statement affirming or denying something about something, and in terms of quantity, a premise may be universal, particular, or indefinite [8, 287]. Thus, the validity of a syllogism depends not only on the content of the terms, but also on the quantity and quality of the propositions.
From this framework emerge two primary dimensions of classification: figure and mood. Figure is determined by the position of the middle term relative to the two extremes in the premises. Aristotle investigates three figures in *Prior Analytics* I.4-6; Ross similarly organizes this section under "Assertoric syllogisms in the three figures" [8, 300-311]. In the first figure, M serves as the subject of the major premise and the predicate of the minor premise; in the second figure, M is the predicate in both premises; in the third figure, M is the subject in both. Within each figure, mood depends on the combination of quantity and quality across the two premises and the conclusion. For instance, in the first figure, Aristotle validates the forms later traditionally named Barbara (AAA), Celarent (EAE), Darii (AII), and Ferio (EIO), while other combinations fail to yield valid syllogistic conclusions [8, 300 - 305]. In other words, merely possessing three terms and two premises is insufficient: they must be distributed within an appropriate structure.
This leads to Aristotle's central criterion: the necessity of the conclusion. In his definition of *syllogismos*, the conclusion must "follow of necessity" from what has been laid down. Furthermore, Aristotle distinguishes between a perfect syllogism and an imperfect syllogism: a perfect syllogism requires no additional propositions beyond the given premises to render the necessity of the conclusion evident, whereas an imperfect syllogism requires proof through additional steps [8, 288].

Accordingly, validity in Aristotelian syllogistic can be understood through a chain of linkages:

Premises → quantity/quality arrangement of terms → figure → mood → necessary conclusion.

This structural sequence highlights a critical difference from Dignāga. Aristotle asks whether the structural relation among S-M-P in the premises forces the conclusion to follow necessarily. Dignāga evaluates the *hetu* by verifying its presence in the *pakṣa* and its distribution across the *sapakṣa* and *vipakṣa* domains. Consequently, although the middle term and the *hetu* both perform a mediating function, the conditions that endow them with probative force are not established upon the same theoretical model - a distinction that will be directly analyzed in the comparative section that follows.

***Hetu* and the Middle Term: Similarities and Differences**

Placing Dignāga's *hetu* alongside Aristotle's middle term is highly suggestive, as both systems feature a mediating element that enables the transition from what is established to what is to be proven. However, this similarity resides primarily in their shared mediating function and should not be viewed as a conceptual identity. Dignāga embeds the *hetu* within the theory of *anumāna* and evaluates it through the *trairūpya*. Aristotle's middle term, by contrast, is defined by its structural placement and relational role among the three terms in a syllogism. Therefore, an adequate comparison requires distinguishing at least three dimensions: function, structure, and epistemological foundation.

1. Points of Similarity

The most fundamental point of similarity is that both the *hetu* and the middle term perform the function of mediating proof. In *Pramāṇasamuccaya* II, Dignāga defines *svārthānumāna* as the cognition of an object inferred through a reason (*hetu*) possessing three characteristics. Hayes explains that *liṅga* is a property that serves as evidence for another property co-present in the same property-bearer; hence, in the context of inference, *liṅga* is virtually interchangeable with *hetu* [4, 118]. Thus, the *hetu* is that which is already apprehended, through which an unestablished property becomes the object of inferential cognition.

In Aristotle, the middle term likewise functions to connect the two extremes. In the first figure, if S belongs to M and M belongs to P under appropriate conditions, the S - P relation is established through M . Ross notes that the *Posterior Analytics* repeatedly takes for granted that the middle term is a necessary element for inference, as demonstrated in the *Prior Analytics*, while Aristotle presumes that a syllogism consists of three terms [8, 6-7].

Thus, at the functional level, a structural analogy can be observed:

Dignaga: pakṣa →› hetu →› sadhya

Aristotle: S → M → P

In both cases, the mediating element cannot be an arbitrarily chosen property; it must maintain a sufficiently rigorous relation with what is to be proven. However, the precise question of *how* that "sufficiently rigorous relation" is established reveals the fundamental divergence between the two systems.

2. Structural Differences

The first divergence is that the *hetu* cannot be fully identified with M . Aristotle defines the middle term through its structural position within the premises, where its role shifts according to the figures. In the first figure, M is the subject of the major premise and the predicate of the minor premise; in the second figure, M is the common predicate; in the third figure, M is the common subject [8, 31-32].

On the contrary, Dignāga's *hetu* is defined primarily through three evaluative relations:

1. *pakṣadharmatā* - presence in the *pakṣa*;
2. *sapakṣasattva* - proper presence in the *sapakṣa*;
3. *vipakṣāsattva* - absolute absence from the *vipakṣa*.

Hattori expresses these three conditions as follows: the *hetu* must be a property of the subject under consideration, must exist in all or some homogeneous instances, and must never exist in any heterogeneous instance [3, .4]. Consequently, the domains of *sapakṣa* and *vipakṣa* have no direct structural counterpart in Aristotle's S-M-P schema.

A second structural difference involves the *dṛṣṭānta* (example). If one naively transposes Dignāga's three-part proof into an Aristotelian syllogism, one might treat the *dṛṣṭānta* as merely an illustrative example appended to a syllogism. Katsura shows that this interpretation is inadequate. According to Katsura, in *parārthānumāna*, the *hetu-vacana* expresses the first characteristic, whereas the *dṛṣṭānta-vacana* expresses the second and third characteristics - namely, *anvaya* and *vyatireka*. The function of the *dṛṣṭānta* is therefore to reveal the relation of inseparable connection (*avinābhāva*) between *hetu* and *sādhya* [6, 147]. Katsura further demonstrates that Dignāga uses positive examples (*sādharmya-dṛṣṭānta*) and negative examples (*vaidharmya-dṛṣṭānta*) to express the two aspects of this relation. Thus, Dignāga's formulation cannot be reduced to a three-term Aristotelian model; it incorporates an investigation of the domain distribution of the sign.

These structural differences are summarized in the following table:

Dignāga	Aristotle	Structural Comparison
pakṣa	Minor term (S)	Only partially analogous in role
sādhya-dharma	Major term (P)	Analogous only at the functional level
hetu / *liṅga*	Middle term (M)	Analogous only at the functional level
sapakṣa - vipakṣa	—	No direct structural counterpart
trairūpya	—	No direct equivalent in figures or moods
dṛṣṭānta	—	Not merely an Aristotelian term or premise

This summary illustrates that functional similarity by no means implies structural identity between the two theories.

3. Deeper Divergences: Epistemology vs. Syllogistic Form

A more profound divergence emerges when both systems are evaluated within their broader philosophical objectives. For Dignāga, *anumāna* is a *pramāṇa* (valid means of cognition). Chapter II of the *Pramāṇasamuccaya* opens by distinguishing between inference for oneself and inference for others; *svārthānumāna* is the apprehension of an object through a sign possessing three characteristics. Hayes notes that *anumāna* can denote both the process of inferring and the cognition resulting from that process [4, 107]. This reveals that Dignāga's inquiry is not merely "which proposition follows from which premise?", but rather "under what conditions can a sign serve as the foundation for inferential cognition?".

Parārthānumāna must also be properly understood in this light. Katsura explains that the objective of a proof for others is to produce in the listener the exact same conviction that the inferrer achieved through their own inference [6, 138]. Thus, the linguistic form of a proof serves a cognitive process.

Aristotle, in the *Prior Analytics*, focuses more directly on the necessary consequence derived from premises. The definition of *syllogismos* requires that, certain things having been supposed, something else follows "of necessity" from them [8, 288]. However, this does not mean Aristotle was concerned solely with formal logic. In the *Posterior Analytics*, he elevates the inquiry from valid inference to scientific demonstration: a demonstration is a syllogism that produces scientific knowledge, requiring premises that are true, primary, immediate, prior to, better known than, and explanatory of the conclusion [8, 507-508].

Thus, the opposition cannot be reduced to a simplistic contrast between "Dignāga as epistemology" and "Aristotle as formal logic." Such a dichotomy is oversimplified. More accurately: the *Prior Analytics* analyzes the formal structures that make a conclusion follow of necessity from premises, while the *Posterior Analytics* supplies the additional conditions required for a syllogism to become a scientific demonstration that produces knowledge. Meanwhile, Dignāga situates the analysis of the *hetu* directly within the theory of *pramāṇa* and determines the validity of the sign through the *trairūpya*.

A final notable difference lies in how the two systems approach necessity. Aristotle locates necessity in the structural relations among terms and premises across valid moods. Dignāga seeks the guarantee of the sign through *pakṣadharmatā*, *anvaya*, and *vyatireka*. Katsura even observes that Dignāga does not offer an independent justification for the ultimate foundation of *vyāpti* (universal concomitance); rather, the universal relation is established through the non -observation of counter-examples in the heterogeneous domain (*vipakṣa*) [6, 148]. This represents a limitation, *yet al*so a defining feature of Dignāga's model prior to Dharmakīrti's deeper development of the ontological foundations of necessary connections.

In summary, while the *hetu* and the middle term can be placed side by side as mediating mechanisms of inference, they belong to two distinct theoretical architectures. Aristotle primarily asks what formal structure forces a conclusion to follow necessarily from its premises, whereas Dignāga asks what conditions a sign must fulfill to establish the property to be proven and generate valid inferential cognition. Recognizing this fundamental distinction - rather than merely counting the structural components of an argument - yields the most philosophically significant insight in comparing Dignāga and Aristotle.

Conclusion

This comparative theoretical analysis between two major traditions representing Eastern and Western scholarship demonstrates that Dignāga's *anumāna* and Aristotle's *syllogismos* address a shared, fundamental question of logic: under what conditions can known data justify the establishment of an unproven conclusion? At the functional level, both the *hetu* and the middle term act as mediating elements that construct reasonable conditions for a proposition or thesis to be correctly cognized.

However, this functional similarity is insufficient to identify the two concepts as identical. In Dignāga's system, a *hetu* becomes a valid reason only when it fully satisfies the *trairūpya*. It must exist in the *pakṣa*, possess an appropriate presence in the *sapakṣa*, and be entirely absent from the *vipakṣa*. Hattori accurately summarizes these three conditions while highlighting Dignāga's major contribution: systemizing the relational possibilities between the *hetu* and the *sādhya-dharma* through the *Hetucakra* [3, 4]. In *parārthānumāna*, this relation is expressed through *pakṣa-vacana*, *hetu-vacana*, and *dṛṣṭānta-vacana*, where the example is not an arbitrary illustration, but actively serves to express *anvaya* and *vyatireka* [6, 147].

Aristotle, meanwhile, establishes the validity of the syllogism through relations among three terms and the structural form of premises, in which the middle term joins the two extremes. In the first figure, when three terms are arranged in appropriate relations, the two extremes are joined in a perfect syllogism [8, 300-301]. Validity is thus tied to the conclusion following of necessity from the premises; when moving to the *Posterior Analytics*, Aristotle introduces stricter requirements for a syllogism to function as a demonstration capable of producing scientific knowledge.

Therefore, the principal finding of this comparison is that the *hetu* is not an Indian version of the Aristotelian middle term, nor is the *trairūpya* merely another variant of syllogistic logic. While they can be meaningfully compared regarding their mediating function, they are formulated within fundamentally distinct logical and epistemological architectures. Comparative research on Dignāga and Aristotle is most valuable when it does not attempt to reduce one system to the categories of the other, but instead illuminates two independent pathways that classical Indian and Greek philosophy developed to address the conditions of valid reasoning and the justification of knowledge.

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