The Similarity between Buddhist Logic and Assertion Theory: Exclude Pakṣa and Context

Liu Chi Yen
National Yang Ming University / Kyoto University

***Abstract**: When scholars try to compare Dignāga's Buddhist logic with Western logic, most of them take Aristotle's syllogism as the paradigm—since they propose that the canonical argument for Dignāga is a deductive argument. However, some scholars argue against this interpretation, they claim that the canonical argument cannot be a deductive one because of exclude pakṣa. In this paper, I suggest that exclude pakṣa of Dignāga's Buddhist logic are compatible with deduction from the contextual point of view.*

The canonical argument for Dignāga is:

Thesis:	*Sounds are impermanent.*
Reason:	*Because of being produced.*
Examples:	***Similar corroboration & instance:*** *what is produced is observed to be impermanent, like a pot.*
	Dissimilar corroboration & instance: *what is permanent is observed not to be produced, like space.*

The reason explains why the thesis should be accepted, and to be the right reason requires 3 specific criteria, which are called "tri-rūpa-hetu". It is believed that after satisfying tri-rūpa-hetu, we would get two universal statements as premises to derive the thesis. Thus, the canonical argument is usually reconstructed as

Major premise: *All things that are produced are impermanent.*
Minor premise: *All sounds are produced.*
Conclusion: *All sounds are impermanent.*

Then it seems that the canonical argument is deductive.

But exclude pakṣa makes things complicated. Pakṣa is the subject of the thesis, and exclude pakṣa means that when providing examples to satisfy the 2nd and 3rd rūpa, instances and corroborations cannot contain pakṣa. This provision triggers

a major disputation among contemporary Chinese Buddhist logicians. Some scholars therefore claim that exclude pakṣa keeps Dignāga's Buddhist logic out of deductive arguments.

This paper argues for the opposite. By demonstrating how to formalize Buddhist logic with the use of symbolic logic, particularly predicate logic, I explain why some scholars claim that exclude pakṣa would keep the canonical argument out of deduction. To solve the problem, I reveal the similarity between Buddhist logic and Stalnaker's assertion theory, in which exclude pakṣa relates to the domain of discourse. Finally, I provide more detail about the role of exclude pakṣa and explain why it does not compromise the deductive power of the canonical argument.

1. Introduction

Consider a canonical argument for Dignāga mentioned by S. Katsura below (cf. Katsura 2004, 143):

Thesis:	Sounds are impermanent.
Reason:	Because of being produced.
Examples:	**Similar corroboration & instance:** what is produced is observed to be impermanent, like a pot.
	Dissimilar corroboration & instance: what is permanent is observed not to be produced, like space.

Table 1.

This way of argumentation is also called "3-membered argument", for it has 3 components: thesis, reason, and example. The thesis is the conclusion of the argument, which can be divided into a subject (*pakṣa*) and a predicate (*sādhyadharma*). Theoretically, every statement can be divided into a subject and a predicate, and for predicate logic, we can also formalize a subject as a predicate. But for Buddhist logic, the thesis's truth and falsity is the most important concern, so it has a special terminology "pakṣa" for the subject of the thesis, and another terminology "sādhyadharma" for the predicate of the thesis. This paper uses these two terminologies to avoid misunderstandings.

The reason explains why the thesis should be accepted, and to be the right reason requires three specific criteria, which are called "*tri-rūpa-hetu*". Tri-rūpa-hetu is a requirement for a proper *reason* in Dignāga's Buddhist logic, which are necessary conditions for a good argument. Hetu means reason, rūpa can be understood as form, and tri-rūpa-hetu denotes three forms that a reason should have. The first rūpa is that the reason all occurs in the pakṣa. As we see in the canonical argument, the reason "being produced" satisfies this rūpa, because sounds are all produced. To understand the other two rūpa further, it would be helpful to know what example is. Before Dignāga, examples are just instances to support the reason, and they can be divided into similar ones and dissimilar ones. Similar instances are those which have the same reason and sādhyadharma as the pakṣa. In the canonical argument, a pot is a similar instance because it is both produced and impermanent. Conversely, dissimilar instances do not have the same reason and sādhyadharma as the pakṣa. Space is usually used as a dissimilar instance in the canonical argument because it is permanent and not produced as Abhidharma school claims.

As we see in the canonical argument, besides instances, Dignāga adds two more elements into the category of examples, the universal statements "similar corroboration" and "dissimilar corroboration". In the canonical argument, the similar corroboration means all produced things are impermanent, and the dissimilar corroboration means all permanent things are not produced. This move is considered as a substantial improvement in Buddhist logic in that it makes the canonical argument appear to be deductive. But how can we get these two corroborations? The answer lies in the other two rūpa.

The second rūpa is that the reason must occur in a similar kind of sādhyadharma. Here, similar kind refers to things having the same sādhyadharma as the pakṣa. Thus, this rūpa requires that something possesses the same reason and sādhyadharma as the pakṣa must exist, that is to say, at least one similar instance must be provided. As we already have seen, a pot is a similar instance of both being impermanent and produced, so the 2nd rūpa is satisfied in the canonical argument.

The third rūpa is that the reason cannot be found in the dissimilar kind of the sādhyadharma. This means all things which do not possess the same sādhyadharma as the pakṣa cannot have the reason either. Now we can see that to provide the dissimilar corroboration is to satisfy the 3rd rūpa.

So far, we have shown how a similar instance and dissimilar corroboration relate to the 2nd and 3rd rūpa, but how about the dissimilar instance and similar

corroboration? Intriguingly, Dignāga explicitly says that it is unnecessary to provide the dissimilar instance for the argument, but he does not provide enough explanation for this. For the similar corroboration, it is believed that Dignāga is inclined to derive the similar corroboration from the dissimilar corroboration, and this means that Dignāga needs at least one direction of contraposition (Matilal 1986).

Whether Dignāga should admit contraposition or not is still debatable, but this paper focuses on one special provision Dignāga seems to require: exclude pakṣa (from examples).[1] Exclude pakṣa says that when providing examples to satisfy the 2nd and 3rd rūpa, our instance and corroboration cannot contain pakṣa—the subject of the thesis, and this provision provokes a major disputation among contemporary Chinese Buddhist logicians (Shen 1994; Yao 1990; Zheng 1990). Some scholars claim that exclude pakṣa keeps Dignāga's Buddhist logic out of deductive arguments. The reasoning is that under the constraint of exclude pakṣa, similar corroboration cannot be a universal statement. When discussing Dignāga's Buddhist logic, Richard Hayes distinguishes two domains: the domain of the subject and the induction domain (Hayes 1988). The domain of the subject is the domain of pakṣa; the induction domain is the domain without pakṣa. Hayes' question is: while both similar corroboration and dissimilar corroboration apply to the induction domain, is this sufficient to make a universal statement including pakṣa? Hayes says: "To this question it is clear that we must give a negative reply" (Hayes 1988, 122). Zheng further argues that since exclude pakṣa makes it impossible for similar corroboration to be a universal statement, the canonical argument cannot be a deductive one (Zheng 1990).

Despite of Zheng's' argument, this paper suggests the opposite, which is that exclude pakṣa and deduction are compatible from the contextual point of view. Therefore, it is crucial to show that exclude pakṣa does not prevent the similar corroboration from being a universal statement. To achieve my goal, I would demonstrate how to formalize Buddhist's logic from symbolic logic in section 2, particularly from predicate logic. As soon as a precise formalization is obtained, I would discuss why some scholars claim that exclude pakṣa would keep the canonical argument out of deduction. In section 3, I reveal the similarity between Buddhist logic and Stalnaker's assertion theory and how exclude pakṣa relates to it, particularly to the domain of discourse. Finally, in section 4, more details about the

[1] The original text is Chinese "除宗有法". Interestingly, Dignāga never explicitly mentions this provision. As far as we know, it was first mentioned in a Chinese text—因明入正理論疏(*Commentary on Nyāyapraveśa*)—written by Wengui 文軌.

role of exclude pakṣa and the reason why it does not compromise the deductive power of the canonical argument would be provided.

2. Formalization of Dignāga's Buddhist Logic

In an attempt to compare Buddhist logic with Western logic, most scholars take Aristotle's syllogism as the paradigm. Thus, they reconstruct the canonical argument as:

> **Major premise:** All things that are produced are impermanent.
> **Minor premise:** All sounds are produced.
> **Conclusion:** All sounds are impermanent.

As we have shown in the introduction, to satisfy the 1st rūpa is to give us the minor premise. Satisfying the 3rd rūpa gives us the dissimilar corroboration, and applying contraposition to it can derive the similar corroboration, that is, the major premise. From this point of view, Dignāga's tri-rūpa-hetu tries to give us a deductive argument, or more precisely, a valid and sound argument. Astute readers may wonder about the role of 2nd rūpa now. I discussed this issue in another unpublished paper, but due to being irrelevant to the main point of this paper, we need to skip this.

However, some scholars may complain about the above reconstruction because of the limited expressive power of Aristotle's logic (Ho 2002). So, I suggest a reconstruction of the canonical argument from predicate logic, and this can help us to formalize it under the constraint of exclude pakṣa latter, which Aristotle's logic cannot. Let S_x means x is a sound; E_x means x is permanent; P_x means x is produced. In this setting, we can reconstruct the canonical argument roughly as follows:[2]

1. $(x)(S_x \supset P_x)$	premise, by 1st rūpa
2. $(x)(E_x \supset \neg P_x)$	premise, by 3rd rūpa
3. $(x)(P_x \supset \neg E_x)$	from 2, by contraposition
4. $(x)(S_x \supset \neg E_x)$	from1 & 3, by hypothetical syllogism

[2] Some inference rules relating to quantifiers are omitted from this proof: universal instantiation and universal generalization.

To make things simpler, I use material conditionals to formalize general statements. Thus, $(x)(S_x \supset P_x)$ means "sounds are produced", $(x)(E_x \supset \neg P_x)$ means "permanent things are not produced", $(x)(P_x \supset \neg E_x)$ means "produced things are impermanent", and $(x)(S_x \supset \neg E_x)$ means "sounds are impermanent.

But things get more complicated if we consider the requirement of exclude pakṣa that Dignāga asks. Exclude pakṣa demands that when testing whether the reason satisfies the 2nd and 3rd rūpa, pakṣa cannot be taken as the similar or dissimilar kind. Thus, some scholars claim that exclude pakṣa makes both similar and dissimilar corroborations not general statements anymore, and that would compromise the deductive reasoning of the canonical argument.

If exclude pakṣa is a semantic requirement for the 3rd rūpa, the meaning of the 3rd rūpa would be: the reason cannot be found in things which are the dissimilar kind of the sādhyadharma but not pakṣa. Hence, even though satisfying the 3rd rūpa, the dissimilar corroboration itself would not be related to pakṣa at all. The similar corroboration, which is derived from the dissimilar corroboration, is not related to pakṣa either, and it also means that the similar corroboration in the canonical argument cannot be a general statement.

Following this line of thought, the canonical argument should be formalized as

1. $(x)(S_x \supset P_x)$	premise, by 1st rūpa
2*. $(x)((E_x \wedge \neg S_x) \supset \neg P_x)$	premise, by 3rd rūpa
2.1. $(x)((\neg S_x \wedge E_x) \supset \neg P_x)$	from 2*, by commutation
2.2. $(x)(\neg S_x \supset (E_x \supset \neg P_x))$	from 2.1, by exportation
2.3. $(x)(\neg S_x \supset (P_x \supset \neg E_x))$	from 2.2, by contraposition
3*. $(x)((\neg S_x \wedge P_x) \supset \neg E_x)$	from 2.3, by exportation
4. $(x)(S_x \supset \neg E_x)$	from?

Now the dissimilar corroboration is reformulated as 2*, which means "permanent things except sounds are not produced". As I show, the similar corroboration 3*, which means "produced things except sounds are impermanent", can be derived from 2*.[3] Hence, the problem of exclude pakṣa is not that Dignāga cannot derive the similar corroboration from the dissimilar corroboration (Zheng 1990), but rather that we can easily conceive that even if premises 1 and 2* are true, conclusion 4 could still be false.

[3] Claus Oetke has a similar formalization (cf. Oetke 1996, 472–473).

This means that under the constraint of exclude pakṣa, to satisfy tri-rūpa-hetu would not make the canonical argument a deductive one. This is a fair objection if exclude pakṣa is a semantic constraint. However, inspired by Stalnaker's account of assertion, I argue that the exclude pakṣa is not a semantic constraint but rather a pragmatic one. The similarity between Stalnaker's assertion theory and Buddhist logic is hardly noticed by contemporary Buddhist logicians (Chen 2006; Ho 2002; Katsura 1996; Matilal 1986; Mohanty 1992; Shen 1994; Yao 1990; Zheng 1990), and I would explore this in the next section.

3. Assertion

The role of the thesis in Buddhist logic reminds us of the role of assertion elaborated by Stalnaker (Stalnaker 1999). For Buddhist logic, the thesis should be accepted by the proponent but not accepted by the opponent.[4] During the debate, the proponent provides the reason which satisfies tri-rūpa-hetu to persuade the opponent of the thesis. This kind of process was surprisingly captured by Stalnaker's assertion theory.

For Stalnaker, to make an assertion is to assert a proposition against a context. A proposition is a set of possible worlds, that is, the set of possible worlds where the proposition is true. Here, let us interpret possible worlds as our epistemic states: the current state of our knowledge about the actual world. The context is a set of possible worlds in which we make assertions as the background, and it has two parts: presupposed propositions and worlds which are compatible with presupposed propositions. Presupposed propositions are known, believed, or assumed for the conversation by participants, and it means that they are true in all the possible worlds in the context set.

In other words, a context is speakers' presuppositions, which can be represented as follows:

[4] This is what Dignāga calls "不顧論宗 (thesis regardless of the opponent's stance)" in his *Hetuvidyā-nyāya-dvāra-śāstra* 因明正理門論.

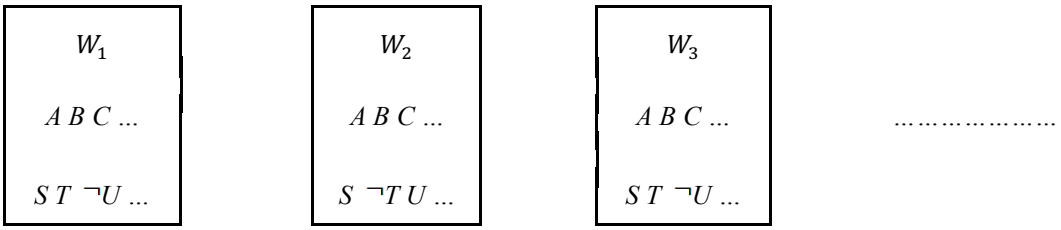

Figure 1.

The middle line in figure 1 is the presupposed propositions: *A*, *B*, *C*, etc., and as we see it, they should be true in all worlds in the context. The bottom line is propositions that are compatible with the presupposed ones, and their truth values may be different in different worlds. The function of making an assertion is "to reduce the context set in a particular way, provided that there are no objections from the other participants in the conversation" (Stalnaker 1999, 86). Ideally, Figure 1 can be represented as our knowledge states, and to reduce the context set means that we eliminate our ignorance and know more about the actual world.

To fulfill the goal of assertion, as Stalnaker demands: "A proposition asserted is always true in some but not all of the possible worlds in the context set" (Ibid., 88). This means that we should not assert propositions which are incompatible with presupposed propositions, because "one wants to reduce the context set, but not to eliminate it altogether" (Ibid., 89). We should not assert presupposed propositions either, because "to assert something which is already presupposed is to attempt to do something that is already done" (Ibid.). Interestingly, these accounts of assertions perfectly explain the requirement of the thesis in Buddhist logic.

For Buddhist logic, the thesis is accepted by the proponent but rejected by the opponent. The purpose of the proponent to establish the thesis is to persuade the opponent to accept it, and in that sense, they are just like participants in a conversation with their context. Just like an assertion, the thesis should be true in some but not all of the worlds in the context of a conversation, and that is why to establish a thesis agreed or rejected by both parties is to commit a fallacy for Buddhist logic.

To persuade the opponent, the proponent must show the reason he provides satisfying tri-rūpa-hetu. To satisfy a rūpa is to make an assertion to successfully eliminate possible situations which are not compatible with it. In the end, ideally, the thesis would be true in all of the worlds in the context set. We would see this in more detail in the next section. This is a dynamic process, as Stalnaker says: "A

conversation is a process taking place in an ever-changing context" (Ibid., 86); "The context—what is presupposed in it—is constantly changing as things are said" (Ibid., 101). This idea of "ever-changing context" may also relate to exclude pakṣa, because it relates to universal statements.

It is well known that the interpretation of a universal statement depends on the domain of discourse. When I say "The burglar took everything", I do not mean everything in the world, of course; only a specific domain is relevant, say, all the valuable objects in my house. Likewise, the subject in "all produced things are permanent" may refer to different things based on different domains. François Recanati proposes that we can also apply the ever-changing aspect of context to the domain of discourse. He says:

> It is therefore to be expected that the domain of discourse itself can change in mid-utterance. This means that there can be more than one domain, more than one 'situation', corresponding to a given utterance. (Recanati 1996, 454)

This gives us a hint that during the reasoning process of Buddhist logic, we do not have to stick to a fixed domain of discourse. This opens up the possibility to interpret exclude pakṣa differently from previous research.

As we have discussed in section 2, it seems that to satisfy the 3rd rūpa will not give us a universal statement due to exclude pakṣa. Now, we can see that this comes from the assumption that pakṣa is in the domain of discourse which is fixed during the reasoning process; however, Recanati reminds us that it may not be the case. In other words, we do not have to suppose that pakṣa is always in the domain of discourse when considering different rūpa. Thus, it is arguable that to satisfy the 3rd rūpa could give us a universal statement, which is true relative to a domain without pakṣa.

The reader may wonder that if the domain of discourse is not always the same for different universal statements, how can they be put together to form an argument? After all, we need to evaluate an argument based on the same domain. Consequently, we need a new perspective to see the reasoning process in Buddhist logic. Let us see how this can work in the next section.

4. What Kind of Reasoning?

What is the role of exclude pakṣa? While Daqi Chen thinks it is to avoid circular argument (Chen 2006), I suggest it is to avoid begging the question. Buddhist logic requires that what is similar and dissimilar kind must be commonly recognized by both parties concerning the topic in question, therefore, to which kind pakṣa belongs cannot be commonly recognized by default. Under this constraint of exclude pakṣa, Dignāga tries to establish a universal statement without mentioning pakṣa. I try to explain how Dignāga can do this.

Let us consider the canonical argument again. We can image an initial situation such that the proponent believes that sounds are impermanent, but the opponent holds that sounds are permanent. Suppose that the proponent knows that all produced things are impermanent and sounds are produced—but his opponent is not aware of this yet—the proponent provides "being produced" as the reason. To convince his opponent of the similar corroboration, the proponent needs to start from a smaller domain of discourse without sounds, otherwise the opponent would reject the universal statement immediately. Intriguingly, Buddhist logicians propose to achieve this goal by satisfying the 3rd rūpa instead.

As more objects are demonstrated to satisfy the similar corroboration, it becomes more and more plausible. Finally, after investigating all the objects in the domain, the proponent can convince the opponent that all produced things are impermanent. Now, by reminding the opponent that all sounds are produced, since the 1st rūpa is satisfied, the proponent brings sounds into the domain of discourse. Should the opponent still believe the similar corroboration after this expansion? Normally he should, unless he can provide a really good reason rejecting it. This may look like Katsura's idea (cf. Katsura 1996, 12), but since Katsura does not consider the problem of exclude pakṣa, it is unlikely he would consider the domain of discourse may change during the reasoning process.

Another important aspect requires to be clarified is the role of premises in a deductive argument. When Katsura discusses the canonical argument, he claims that it is "fundamentally the results of an Inductive Reasoning" (Ibid., 8). We should say that the premises are fundamentally the results of induction instead. To determine whether an argument is deductive or not, our concern is only whether the truths of the premises can guarantee the truth of the conclusion. How the truth of a premise is obtained is irrelevant to its role in a deductive argument.

For contemporary Chinese Buddhist logicians, exclude pakṣa is the main reason why the canonical argument is not a deductive one. According to Zheng the similar corroboration cannot be a universal claim because of exclude pakṣa, thus the

canonical argument cannot be a deductive argument (Zheng 1990). On the contrary the opposite camp insists that the similar corroboration is a universal statement (Shen 1994; Yao 1990), since Dignāga never explicitly claims that we should exclude pakṣa from the similar corroboration. However, they both presuppose a fixed domain of discourse and this is what this paper tries to point out: We do not have to consider the whole reasoning process based on a fixed domain. This may help Shen and Yao to defend their position.

In other words, exclude pakṣa is just a pragmatic strategy. It suspends pakṣa in the beginning of the conversation for the proponent to make the reasoning easier or even possible so as to establish a general statement to convince the opponent in the second stage. In the final stage, the proponent can then bring the main subject into our conversation, and in this sense, the two premises—sounds are produced and all produced things are impermanent—share the same domain of discourse now.

Some scholars suggest Indian logic is a kind of logic of cognitions (Mohanty 1992, 130), or logic of knowledge acquiring (Ho 2002, 32). But how does it work? Unfortunately, the details are never provided. Here I try to connect Buddhist logic to context, and by that we can see how it relates to epistemic states of participants in a debate or conversation. This gives us a new perspective to see the relation between Buddhist logic and contemporary Western logic, and that may help us to understand Mohanty and Ho's perspective.

For example, Stalnaker notices that if we take context into consideration, we may evaluate inferences from a different angle. Stalnaker has an interesting account for this:

> An inference from a sequence of assertions or suppositions (the premises) to an assertion or hypothetical assertion (the conclusion) is reasonable just in case, in every context in which the premises could appropriately be asserted or supposed, it is impossible for anyone to accept the premises without committing himself to the conclusion. (Stalnaker 1975, 138)

Though this account is proposed to deal with inferences involving indicative conditionals, it can be seen as a general account of our reasoning regarding contexts.

According to Stalnaker, some reasonable inferences involving conditionals are not deductive arguments, but almost all deductive arguments are reasonable inferences. In this paper I argue that if we analyze the canonical argument from the contextual point of view, exclude pakṣa just indicates that the domain of discourse is

flexible. Thus, exclude pakṣa would not keep the canonical argument out of deductive one.

5. Conclusion

This paper reveals that the interpretation of Dignāga's exclude pakṣa in Buddhist logic relies on how we consider the domain of discourse. If we interpret it based on a fixed domain of discourse as some scholars does, we cannot insist that the similar corroboration is a universal statement anymore. The spirit of Buddhist logic has a surprising similarity to Stalnaker's account of assertion, which is ignored by contemporary scholars. This reminds us that Buddhist logic actually evolves from debating strategy, and we should take context into consideration. By doing this, we should interpret exclude pakṣa based on a flexible domain of discourse changing with context, as Recanati suggests.

This paper suggests the role of exclude pakṣa is to suspend the main subject from the debate to avoid unnecessary dispute in the beginning. Dignāga never used the term "exclude pakṣa" in his remarkable work *Hetuvidyā-nyāya-dvāra-śāstra*, though this idea occurred in his discussion of tri-rūpa-hetu. However, this could only indicate that Dignāga does not consider pakṣa at this stage at all, because it is completely removed out from the domain of discourse. But after showing the reason can satisfy *tri-rūpa-hetu*, the pakṣa can be brought back into the domain. And this kind of everchanging context in the conversation may just be too common in their practice, so they do not have to mention or explain it at all.

Before taking context into account for exclude pakṣa, it is difficult to see the dynamic aspect of Buddhist logic. It is believed that dynamic semantics is motivated by Stalnaker's assertion theory, and I try to point out that this kind of idea is hidden in Dignāga's Buddhist logic. The role of exclude pakṣa is also a noteworthy aspect that may present real situation when we try to convince people who disagree with us. How to develop a logic model to capture this process would be very interesting. In sum, I hope that this would indicate the strong connection between Buddhist logic and contemporary Western logic, and by that they may benefit from each other.

Acknowledgments

I would like to thank three anonymous reviewers and the editor for their careful reading and inspiring comments. I also thank Ministry of Science and Technology of Taiwan (108-2911-I-010-507) and Major Program of National Social Science Foundation of China (18ZDA031) for support.

References

Chen, Daqi 陈大齐 (2006) *Observations on the Great Commentary on Hetuvidyā* 因明大疏蠡测. (Bejing: Zhonghua Book Company).

Hayes, Richard (1988) *Dignāga on the interpretation of signs.* (Studies of Classical India: 9) (Dordrecht: Kluwer).

Ho, Chien-hsing 何建興 (2002) On Dignāga's logic. *Journal of the Center for Buddhist Studies* 佛學研究中心學報, 7, 27–47.

Katsura, Shoryu (1996) *How did the Buddhists prove something? The nature of Buddhist logic. The Numata Yehan Lecture in Buddhism.* (Calgary: The University of Calgary).

Katsura, Shoryu (2004) The role of dṛṣṭānta in Dignāga's logic, in Shoryu Katsura and Ernst Steinkellner (eds.) *The role of the example (dṛṣṭānta) in classical Indian logic*, (*Wiener Studien zur Tibetologie und Buddhismuskunde*: 58) (Vienna: Arbeitskreis für Tibetische und Buddhistische Studien), 135–174.

Matilal, Bimal K. (1986) Buddhist Logic and Epistemology, in Bimal K. Matilal and Robert D. Evans (eds.) *Buddhist Logic and Epistemology*, (D. Reidel, Dordrecht), 1–30.

Mohanty, Jitendra N. (1992) *Reason and Tradition in Indian Thought*. (New York: Oxford University Press).

Oetke, Claus (1996) Ancient Indian logic as a theory of non-monotonic reasoning. *Journal of Indian Philosophy*, 24, 447–539.

Recanati, François (1996) Domains of discourse. *Linguistics and Philosophy*, 19 (5), 445–475.

Shen, Jian-ying 沈劍英 (1994). *Buddhist logic* 佛家邏輯. (Taipei: Shinning Culture).

Stalnaker, Robert (1968) A theory of conditionals, in Nicholas Rescher (ed.) *Studies in Logical Theory, American Philosophical Quarterly monograph series, 2*, (Oxford: Basil Blackwell), 98–112.

Stalnaker, Robert (1975) Indicative Conditionals. *Philosophia*, 5, 269–286.

Stalnaker, Robert (1999) *Context and Content: Essays on Intentionality in Speech and Though*. (Oxford: Oxford University Press).

Yao, Nan-qiang 姚南強 (1990) On the essence of Dignāga's 3-membered logic 论陈那三支式的逻辑本质. *Fudan Journal (Social Sciences Edition)*, 6, 40–43.

Zheng, Wei-hong 鄭偉宏 (1990) Is Dignāga's new Hetuvidya deductive argument? 陳那新因明是演繹論證嗎？ *Nei Ming* 內明, 216, 27–34.

Hetuvidyā-nyāya-dvāra-śāstra《因明正理門論》, CBETA, Vol. 32, no. 1628.

Commentary on Nyāyapraveśa《因明入正理論疏》, CBETA, X53