Argumentation

Jain philosophers in the debating hall of classical India

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Abstract In classical India, the practice of rational debate between thinkers from different philosophico-religious traditions, especially between Naiyāyika, Mīmāṃsaka, Buddhist and Jain thinkers, is central and shaped the whole edifice of knowledge. The core of such debates is an inferential reasoning whose premises and structure are such that it ensures that its conclusions are recognised as knowledge statements, irrespective of the obedience of the interlocutor. Around the 7th c., a pan-Indian consensus was achieved on what counts as a correct inferential reasoning. The aim of this paper is to provide an overview of the contribution of the tradition that is Jainism to the framework of philosophical disputations in India. First, by offering a historical overview of the role and nature of debates in India, focusing on the role and nature of inference in these debates, and introducing the specificities of Jain philosophers in this paradigm. Second, this paper will explore the evolution of the conceptions of inferential reasoning within the Jain tradition, from the early canonical literature to modernity, focusing on their position in the pan-Indian debating hall, as well as on their inclusion in a bigger whole that includes social and soteriological concerns.

Introductive remarks

The place of argumentation in India. The tradition of highly regulated argumentation is an old, lengthy and pivotal one in the development of Indian culture and society. Argumentation was a prevalent mode of thought elaboration as early as in the Vedic texts. For example, the *Chāndogya Upaniṣad* 7.1.2–4 (6–7 BCE) mentions the art of debate (*vākovākya*) as one of the sciences that one should master. Furthermore, the Upanishads abound in dialogues and debates between philosophy masters who are Brahmins, kings, teachers, students or women. One of the most famous of these debates is the philosophical tournament that took place between the sage Yajñavalkya and other Brahmins at the court of the king Janaka. There, the different sages, of which the second best after Yajñavalkya is a female philosopher named Gārgī, exchange arguments towards a better characterization of '*brahman*', the absolute upon which the whole world relies.[1] In this context, philosophical arguments have a practical societal impact. First, public arguments were regularly performed in order to gain social and political influence, in the tournament with Yajñavalkya, to obtain a massive financial reward. Second, philosophical arguments in the oldest narratives regularly concern the correct way of action, in such a way that those debates are seen "as a means of social progress" (Sen 2005: 15). Finally, these philosophical arguments have a deep theoretical influence, because there is the shared belief that thanks to rational debates, we can reach necessary true statements. From this, the different philosophical traditions developed in relation with the other ones in an essential way, philosophical thinking essentially includes the refutation of actual or imagined adverse positions.

Specifying the functioning of a rational debate. Because of the importance of argumentative practices, an abundant literature was devoted to the specification of the art of reasoning in public in Ancient India. The rules of reasoning were first investigated in medical treatises (*Carakasaṃhitā*), then in treatises for law courts (*Dharmaśāstra* and *Arthaśāstra*), as well as in treatises concerned with the hermeneutics of the Veda (*Mīmāṃsāsūtra*), up to their

[1] See Black (2014: 67ff).

systematic presentation in a treatise solely devoted to this purpose, the *Nyāyasūtra* (NS), *Treatise on logic*. Composed by Gautama, a Hindu philosopher from the Naiyāyika school, in the second century CE, the NS became the pan Indian inter-doctrinal reference work for epistemological and logical considerations. Manuals dealing with the art of debate focused both on strategic rules of reasoning in public and on the form a convincing reasoning should have. Strategic rules especially include the list of situations of defeat, for example failure to answer within a reasonable amount of time; and a list of tricks not allowed in a proper debate, like using double meanings to confuse the interlocutor or escaping the debate under false pretense.

This paper does not focus on the strategic rules, but on the considerations concerning the form that a convincing reasoning should have, from the formulation of an initial thesis to the establishment of this thesis following the display of reasons to adhere to it. The core of such a convincing reasoning is an inference (*anumāna*). More precisely, inference is the type of cognition through which epistemic agents acquire new knowledge by means of reasoning upon what can be concluded with certainty from previously acquired knowledge. This is what is expressed by the Sanskrit expression '*anu-māna*', 'the knowledge (*māna*) that follows (*anu*) [another knowledge]'. For example, when John[2] wants to buy mangos, he wants to know which ones taste juicy before he buys them. At this point, he is not yet allowed to taste them, but he can reason based upon the color of the mangos and upon his past experience of a given color being associated with a given taste. In such a situation, the regularity of John's past experience is not a coincidence, the co-presence of the property of having a given taste with the property of having a given color is guaranteed by the fact that both occurrences rely on the same causal complex, namely, a given stage of ripeness of the mango. This type of reasoning based on a necessary relationship between two properties is what is called 'inference'. In technical terms, there is a transmission of certainty from the established knowledge that an 'evidence-property' (*hetu*) is ascribed to a given object, to the new knowledge that a 'target-property' (*sādhya*) is ascribed to the same object. Another example will help clarify this: I am wondering whether there is a fire on a remote hill. I cannot directly perceive any fire, but I do perceive smoke coming from the hill. In this situation, 'being endowed with smoke' is the evidence-property that will enable me to infer that the target-property 'being endowed with fire' is also present on this hill.

This transmission of certainty is based on the 'invariable concomitance' (*vyāpti*) between the two inferential properties. *Vyāpti* originally means 'pervasion' and is used in this technical sense, because the model for situations of necessary co-presence of the evidence-property with the target-property are situations like 'whenever something is an oak, this thing is a tree', where the property 'being a tree' *pervades* the property 'being an oak'.[3]

Inference has been thoroughly studied and its use strictly codified by the different philosophico-religious traditions of India, Jainism included, because it provides the structure of scientific reasoning. Indeed, the conclusion of an inferential reasoning is considered as a scientific truth inasmuch as this type of reasoning relies on the emancipation from contextual parameters and on the guarantee that the isolated relations are necessary ones. What is more, inferential reasoning has a strong convincing potential, since by means of stating an inferential reasoning, it is possible to bring somebody else to the awareness of these scientific truths. Such a series of statements, even though it is not properly speaking a type of cognition by itself, is metaphorically called 'inference for others' (*parārthānumāna*), because it brings awareness to others, in opposition to the 'inference for oneself' (*svārthānumāna*) genuine type of cognition which brings awareness to oneself. An inference for others is traditionally used in a rational debate in order to convince an interlocutor of a different faith who has different

[2] The typical name for examples in the Indian framework is not 'John' or 'Mary', but 'Devadatta'.

[3] The Indian example features the Sissoo tree, a type of Indian rosewood tree.

beliefs concerning what there is. In this line, stories of conversion following those philosophical debates are commonplace in the narratives of the different traditions and regularly involve the conversion of a royal patron. Furthermore, the different traditions share the belief that from this truth-preserving argument, it is possible to define the standards of an ideally organized rational discussion the outcomes of which are necessary true statements and in the course of time, these philosophers developed a common inter-doctrinal framework of argumentation for philosophical discussions, especially Hindu –Naiyāyika and Mīmāṃsaka –, Buddhist and Jain philosophers. From these observations, it comes as no surprise that an important part of the philosophical investigations in Ancient, classical and medieval India focuses on the way to attack, respectively defend, the statement of an inference. This paper explores the evolution of these investigations within the Jain tradition.

Introduction to Jainism. As active participants to the debating-hall, Jain thinkers contributed to the development of these logical and argumentative investigations. Before we investigate their contributions, an introduction to Jainism is in order. Jainism is a philosophico-religious tradition of India, with a strongly recognisable identity since the teaching of the spiritual leader Mahāvīra (6th c. BCE). Jainism is a path towards salvation, the outcome of which is the access to a superior order of being. It involves a structured community, a set of practices (rules of life, ritual, devotional and ascetic practices), as well as a whole conception of the world deposited in monastic, liturgic, narrative and systematic literature.
Jains believe that the life of the universe is a process without beginning nor end that passes through an ongoing series of cosmic cycles, each of which is billions of years in duration. At every period, the doctrine is taught by twenty-four great spiritual leaders called "ford makers" (*tīrthaṅkara*) who mediate the passage between a mundane state of our Selves and a state of unlimited knowledge, perception, bliss and energy. Religious practices followed by Jains are practices that focus on the conquest of one's own passions towards liberation (*mokṣa*). Jain spiritual leaders are also called "conqueror" (*jina*) of their passions. The last of these Jinas is called Mahāvīra. He has reached a state of omniscience and is the last spiritual leader to teach the doctrine in the current cosmic cycle. Despite the fact that the omniscience of their spiritual leader is a favored strategy of legitimation of claims within Jainism; and despite the fact that ascetic practices can lead us to develop higher epistemic abilities, this will not suffice to convince an interlocutor from another obedience that Jainism is the best path. As a consequence, Jain philosophers too developed specific conceptions of convincing reasoning. However, despite the influence of Jain considerations in the global framework of Indian philosophy, Jain contributions have regularly been disregarded by thinkers from other traditions, and consistently under-studied by modern scholarship. To remedy this, the aim of this paper is to assess Jain conceptions of convincing reasoning and the way they contribute to pan-Indian theories of argumentation.

1. Argumentation in early Jain canonical literature

Magical powers in the debating hall The older extant Jain texts were written around the 3rd century BCE and belong to the Jain canonical corpus (*āgama*).[4] The doctrines presented in this extensive canon are often embedded in dialogues.[5] These dialogues are either didactic ones, as the stereotypical exchanges between Mahāvīra[6] and his main pupil Goyama; or argumentative ones, when heretic or rival thinkers try to refute parts of Mahāvīra's teaching.

[4] Most of this *corpus* is written not in Sanskrit, but in Ardhamāgadhī.
[5] Esposito (2015: 79–94).
[6] Mahāvīra has received many names. In the canon, he is most generally referred to as Vaddhamāṇa, 'the One who contributes to Growth'.

Let us take as a representative example of the argumentative dialogues the story of Rohagutta[7], who is considered responsible for the sixth schism in Jainism in the first centuries CE.[8] The story starts with the Jain monk Rohagutta who, upon an encounter with a conceited wandering mendicant, challenged the latter in a debate at the court of king Balasiri of Aṃtaraṃjiyā. Sensing the cleverness of Rohagutta, the mendicant chose to defend a Jain thesis, namely that the world is made of two basic types of entities, living beings (*jīva*) and non-living entities (*ajīva*), forcing his opponent to defend a thesis adverse to his Jain beliefs, namely that there is actually a third type of 'quasi-living' (*nojīva*) entity.[9] In addition to this, the mendicant was known for his magical powers. Aware of this state of affair, Rohagutta's master used *mantra* (sacred formula) spells to charge his pupil's monastic whisk brush with more powers, in order to ensure the latter's victory in the debate. Upon Rohagutta's effective victory, a schism happened in Jainism and Rohagutta's followers were called the 'Trairāśikas', the followers of the tripartite nature of the world. Hopefully, Rohagutta's master, unhappy with this turn of events, shortly challenged Rohagutta in another debate. In the course of this second debate, the master asked Rohagutta to go to the market in order to fetch a quasi-living thing. But at the market place, only dead things were presented to Rohagutta. Upon Rohagutta's unsuccessful attempt to find a quasi-living thing, the defeat was proclaimed and the schism dies out.

This story is quite exceptional. To begin with, it narrates a rational debate aiming at establishing a philosophical thesis without references to the philosophical content, nor to the formal structure, of the debate. Studying the argumentative situations described in the Jain canonical corpus yet has its importance, as it especially shows (i) that debates have concrete consequences, here, the undesired conversion of Rohagutta and the creation of a heretical school ; (ii) that ethical and soteriological considerations can play a role in the outcome of a debate presented as following the model of rational debates, since in our case, the final defeat is also linked with the violation of a principle of Jain monastic rules of conduct (going to the market) and since magical powers acquired thanks to ascetic practices are able to change the outcome of the debate. These magical powers on Rohagutta's monastic whisk brush symbolize, among other things, the fact that ascetic practices bestow the practitioner with extra-mundane epistemic abilities.

To explain, according to a pan-Indian theory, we are strongly determined by our previous acts. This is the renowned theory of karma, in which the Sanskrit expression '*karman*', 'act', is used in the technical sense of 'network of one's acts and consequences thereof, that will inform one's future Self'. Within a framework admitting the theory of karma, the distinction between ontology and ethics is blurred. For example, even a clod of earth exists as earth *because* of its previous deeds. In other words, it has earned this particular niche in the wider system of life processes, the world of nature cannot be separated from the moral order. Next to this, the distinction between epistemology and ethics is also blurred, since the acquisition of higher epistemic abilities is ensured by moral behavior and the corresponding destruction

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[7] This story is found in the canonical *Āvassaya Sutta* (ĀS), *Sacred text on obligations*, see ĀS, pp. 136ff. For more on this debate, see Balcerowicz (2016a: 193ff) and Flügel (2012: 123ff).

[8] In fact, Rohagutta is the figure of a strategy of appropriation of Vaiśeṣika theses, an adverse philosophical Brahmanical school. The function of this story is to show that Vaiśeṣika theses are but heretic and quickly refuted offspring of the Jain teaching.

[9] It is hard to define what a quasi-being is. Examples of quasi-beings are scarce and subjects to different interpretations, but the main consensus is that a bird (in Sanskrit 'the one endowed with wings') with cut wings would be such a quasi-living being. One could also think of the empirical self, which is a mix of self and of karmic matter. Besides, it should be noted that Vaiśeṣika philosophers do not hold such a tripartite theory of reality. But since they are famous for their theory of categories, this controversy mainly shows an example of categorial mistake along its undesired consequences.

of karma. Let us try to be more clear on this link. In Jainism, karma is more specifically conceived as a subtle type of matter that expresses and develops the consequences of our acts. Then, due to passions which act as a glue, karmic matter sticks to the soul and obstructs its (epistemic) potency. A metaphor will help to explain this process: my reflect in a mirror is a type of expression of myself. Now, imagine that the mirror is red (with the pun that the Sanskrit expression '*rāga*', means both 'red' and 'attachment'). In such a situation, I will have a red distorted vision of myself. Karmic matter function likewise: it has the shape of my own impetus towards limited heterodox objects and, as such, it impedes my epistemic competence. We can now understand that through ascetic practices and monastic behavior, it is possible to acquire extra-mundane epistemic capacities and powers.

In the philosophical debate that we have just investigated, the strength of the mantra is also used as a clear indication to readers that the lineage promoting it is a powerful one and that its teaching should be followed. This, as well as the performance of the debate at a royal court, is a sign that social and political influence are what is primarily sought by means of these accounts. Jain scriptures promote the social status of the dialecticians (*vādin*) who participated in courtly debates.[10] In conclusion, it seems that, building on a very old tradition of rational debates, Jain writers did not feel the need to develop the details of their arguments and, instead, focus on the elements that will more likely appeal to a large crowd of followers, namely magical powers, who are symbols of the possibility to reach a better life in a straightforward way.

Considerations on inferential reasoning in the canon Now, besides this types of debate found in early narratives promoting monastic rules of ethics and given lineages, there are also debates developing philosophical content. Notably, the arguments developed in Jain councils, aiming at settling disputes between different points of view concerning religious principles and practices. This is the type of practice that led Jain thinkers to the formulation of rules of language and of debates.[11] The next paragraph is a short overview of the considerations on the form of convincing reasoning found in the Śvetāmbara[12] canonical and post-canonical corpus. These considerations are scarce, not systematic and are largely indebted to other traditions.

First, in the *Viyāhapannatti Sutta* (Viy.), *Exposition of explanations*, also called *Bhagavaī Sutta*, *Verses of the venerable* [*exposition of explanations*], inference is mentioned as the second type of cognition (*pramāṇa*), next to perception (*pratyakṣa*), analogy (*upamāna*) and testimony (*śabda*).[13] This classification comes from the Nyāya tradition and is atypical in canonical Jainism.[14]

Second, the types of inference are more thoroughly investigated in the *Aṇuogaddārāīṃ Sutta* (AṇD), *Introduction to analysis*. There, they are classified into three main types, called 'inference as before' (*pūrvavat*), when John can infer the co-presence of the two properties 'having a given taste' and 'having a given color' thanks to his past experience of a similar necessary copresence ; 'inference the rest will be alike' (*śeṣavat*), when from tasting one cooked grain of rice from a pot, John can infer that the other grains in this pot are cooked as well; and 'inference from similarity' (*dṛṣṭasādharmyavat*), as in the case of the laws of

[10] Solomon (1976: 10).

[11] See for example Bronkhorst (2011: 70–79). Something similar happened with Buddhist councils.

[12] The Śvetāmbara and the Digambara traditions are the two main branches of Jainism, distinguished mainly by differences in their monastic practices.

[13] See Viy. 5.4.68, p. 171.

[14] Traditionally, five types of cognition (*jñāna*), namely ordinary knowledge (*mati*), testimony (*śruta*), cosmic perception (*avadhi*), mental perception (*manaḥparyāya*) and omniscience (*kevala*), are granted as sources of knowledge in Jainism. It is only after the 7th c. that Jain thinkers will plainly engage with the Naiyāyika classification, merging it with Jain traditional conceptions.

movement of celestial bodies, inferred from the laws of movement of bodies seen in everyday life situations.[15] This classification also is rare for Jain texts and can be first found in the *Mīmāṃsāsūtra*, followed by the NS.[16]
Besides, in the *Ṭhāṇaṃga Sutta* (Ṭhāṇ), *Canonical treatise*, four types of inference are presented, differentiated on the basis of the affirmative, respectively negative, character of their premise and conclusion.[17] But again, something similar is to be found in the *Vaiśeṣikasūtra*.[18]
Finally, Bhadrabāhu (date unknown, probably between 1st and 5th c. CE) in his *Daśavaikālikaniryukti* (DVN), *Commentary to the ten evening treatises*, is the first Jain to examine the role and function of the members of an inference, and to acknowledge correct inferences with either 2, 3, 5 or 10 members following the *Nyāyasūtrabhāṣya* (NSBh), *Commentary to the Treatise on Logic* of Vātsyāyana (450–500).[19]

2. Systematic considerations on argumentation

These conceptions get systematized and investigated in a specifically Jain way around the 7th century. What follows is an overview of the conceptions of Jain thinkers on inferential reasoning and on its role in argumentation, stressing the meeting points and disagreements with the views of the Naiyāyika, Mīmāṃsaka and Buddhist traditions.
One last remark before we do so is that the two series of works traditionally considered as seminal for classical Jainism are particularly unconcerned by the topic of inference. First, the *Tattvārthasūtra* (TS), *Treatise on what there is*, written around 350–400 CE ; and the *Tattvārthasūtrabhāṣya* (TSBh), *Commentary on the treatise on what there is*, written around 400–450 CE by Umāsvāti, merely mention inference as part of a list of sources of knowledge, without any development. Second, 'Kundakunda'[20] is contemptuously in opposition with most of the pan-Indian philosophical paradigm when, for example in his *Samayasāra* (SSā), *Essence of the Self*, he claims that knowledge of the categories that are relevant for soteriology does not rely primarily on inference.[21] From this observation, he centers his investigation around other types of knowledge (Gorisse 2019). Worth noticing that his works will be the basis for mystical trends in Jainism.
The more systematic analysis of inference in Jainism is really undertaken beginning with the philosopher Siddhasena Mahāmati (710–770) and his younger contemporary Akalaṅka Bhaṭṭa (720–780), and subsequently in works of later authors, such as Vidyānandin (940), Māṇikyanandin (9th c.) and Prabhācandra (980–1065), as well as by Siddharṣigaṇi (10th c.) and Vādi Devasūri (1143).

The constituents of inference The first main inter-doctrinal line of discussions and controversies in this conceptual framework is to determine the linguistic form a probative inferential argument should have. In Gautama's NS, the only good way to express a probative inferential argument consists of a group of five statements. In his NSBh, Vātsyāyana offers examples of this group of five statements and Jain authors take over these Naiyāyika traditional examples, as in Māṇikyanandin's *Parīkṣāmukham* (PM), *Introduction to*

[15] In AṇD 440.
[16] See, respectively, Solomon (1976: 11) and the verse 1.1.5 in NS, p. 280.
[17] Ṭhāṇ 4.3.336.
[18] *Vaiśeṣikasūtra* 3.1.9–13 and 1.2.1.
[19] DVN 142 and NSBh 11–12, in Shah (1967: 30-32).
[20] This name actually designates a collective authorship of a textual tradition composed between the late third and eight centuries.
[21] SSā 49; trans. Chakravarti, pp. 237–238. Know that the Self (*jīva*) is […] not knowable by any inferential evidence and without a definite manifestation.

philosophical investigation, a compendium of Akalaṅka's *Laghīyastraya* (LT), *Three short* [*treatrises*]:

[THESIS] Sound is impermanent,
[EVIDENCE] Because it is a product.
[ACCOUNT] Whatever is such (i.e. is a product) is alike (i.e. is impermanent), like a pot.
[APPLICATION] And this is a product.
[CONCLUSION] Therefore it is impermanent.[22]

The core of argumentative practices in Indian is this five-statements presentation of an inferential reasoning and consists in stating that we are legitimate to infer that the target-property 'being impermanent' characterises the sound (THESIS and CONCLUSION), because we already all agree on the fact that the evidence-property 'being a product' characterises the sound (EVIDENCE and APPLICATION), and that we also all agree on the fact that the necessary relationship between 'being a product' and 'being impermanent' is such that nothing can be a product without also being impermanent (ACCOUNT).
By isolating these five statements as necessary and sufficient steps to express an inferential reasoning that will convince one's interlocutor, the Naiyāyikas have brought an old model recognizing many more necessary statements, including explicit psychological conditions like doubt (I am not sure that sound is impermanent) and desire to know (I want to know whether sound is impermanent), to this model linked only with *the structure* of the argument. But other Indian philosophers, who are looking for the minimal necessary form of a convincing argument, will challenge even this conception. In this quest, Jain philosophers are traditionally considered as the ones who go the furthest (Gorisse 2017), as they claim that only the first two statements, namely the THESIS and the EVIDENCE, are necessary to ensure the adhesion of the interlocutor, and that the remaining three statements are only pedagogical.
More precisely, in his *Nyāyāvatāra* (NA), *Guide of logic*, the Jain Siddhasena Mahāmati makes it clear, first, that the EVIDENCE is the central cog of the inferential reasoning. Because people draw inferences by means of relying on the evidence-property. In the situation in which there is smoke on a hill, this is the very perception of that smoke that prompts people to infer that there is fire on the hill.[23] Second, Siddhasena Mahāmati proves that in the absence of the THESIS, inferring would be like observing an archer without knowing what his target is, that is to say without the possibility to know whether he is skillful or not.[24] On this matter, Buddhist thinkers disagree with Jains. Especially, in his *Pramāṇavārttika* (PV), *Verses on knowledge*, Dharmakīrti (c. 600) defends that stating the THESIS is one condition of possibility of the performance of an inferential process only in the same way that desire to overcome doubt is, that is to say *as a psychological condition*, not *as a formal requirement*.[25] The Buddhist philosopher considers that psychological conditions have to be stated separately and not be considered as part of the argument, otherwise stating a truth-preserving argument would be an infinite process.
One interesting point in these discussions is that, recognizing only the first two statements as necessary steps, Jain philosophers get rid of the necessity to utter the ACCOUNT (here, 'whatever is a product is impermanent, like a pot'). This represents a step further towards only formal considerations, because it involves the rejection of the necessity to give an example ('like a pot'). To explain, the idea behind the requirement of an example can be traced back to

[22] PM 3.64; trans. Ghoshal, p. 127; see also NSBh 1.1.39; trans. Angot, pp. 329–330.
[23] NA 5; trans. Balcerowicz, p. 38.
[24] NA 14–16, pp. 59–60.
[25] PV 4.15.

the need to show that there is at least one case other than the case under consideration in which the evidence-property 'being a product' occurs when the target-property 'being impermanent' also occurs. Otherwise, if the object under consideration is the only *locus* of the evidence-property, one can never be sure that there is an essential (and not only an accidental) relationship between the two properties. The classical example is that 'sound is eternal, because it is audible'. In this example, since sound is the only audible thing, it is not possible to find any other example of another audible thing that would be also eternal. Therefore, the argument (although it is valid) is not a convincing one, because nothing is known about the relationship between audibility and eternality. In other words, providing an example is a necessary argumentative step only in a framework in which what is first aimed at is not the validity of the argument, but its convincing character.

The grounds of inference The second major line of inter-doctrinal discussions and controversies in this conceptual framework is to aim towards a theory of the proper relationship between the target-property (e.g. 'being impermanent') and the evidence-property (e.g. 'being a product'). A first attempt to distinguish between arbitrary and necessary relationships is offered by the Buddhist Dignāga (480–540), according to which the evidence-property is necessarily concomitant with the target-property if and only if it is possible to prove that the evidence-property is present (i) in the case under consideration, (ii) in similar cases and (iii) in no dissimilar cases (Hayes 1988: 238). In our example, it means that the property 'being a product' has to characterise (i) sound, (ii) at least one other impermanent thing like pots, and (iii) no permanent thing like souls.

No mention is found in Siddhasena Mahāmati or in Akalaṅka of the Jain challenge to this dominant conception (Balcerowicz 2016b). But in their commentarial traditions, starting with the *Nyāyāvatāravivṛtti* (NAv), *Commentary to the guide of logic*, by Siddharṣigaṇi and the *Prameyakamalamārtaṇḍa* (PKM), *The sun which opens the lotus of the knowable*, of Prabhācandra, Jain authors show that the three conditions of Dignāga are neither necessary, nor sufficient.[26] First, because there are cases of good inference for which the second condition is not fulfilled, as in the case of 'sound is permanent, because it is audible'; second, because there are cases in which the three conditions are accidentally fulfilled, as in 'Devadatta has a green complexion (sometimes 'is a simpleton'), because he is the son of this man, whose other sons also have a green complexion (are simpletons)', because the green complexion can be due to their diet (and the idiocy to an accidental cause) and that this man could perfectly well have sons with another skin complexion (intellectual abilities) (Gorisse 2015).[27] The traditional Buddhist reply to this attack consists in saying that in such an example, the possibility for a person with a different skin complexion or intellectual abilities to be the son of this man is another way to say that the third condition is not fulfilled. At this point, Prabhācandra claims that this Buddhist defense is the equivalent of defending that what ultimately counts is that the evidence-property cannot be thought of otherwise than in the presence of the target-property. From this, continues Prabhācandra, Buddhists should abandon Dignāga's theory of the three conditions and adopt the Jain theory according to which the only single relevant condition for the correctness of an inference is that the presence of the evidence-property is 'impossible otherwise' (*anyathānupapatti*) than in the presence of the target-property (Balcerowicz 2003).[28]

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[26] NAv 5.2, p. 39; see also Vādi Devasūri's *Pramāṇanaya-tattvālokālaṃkāra* (PNT), *Ornament of the light on the nature of knowledge and perspectives* in PNT. 3.12-13; trans. Bhattacharya, pp. 193–202.

[27] PKM 3.15.

[28] NA 22, p. 66.

One specificity of the Jain tradition is to consider that the 'impossibility otherwise', that is, the necessary copresence of, for example, 'being a product' and 'being impermanent' is known thanks to a specific type of cognition called '*tarka*'. Here, '*tarka*' is not used in its usual technical sense of 'suppositional reasoning, conjecture', but has to be understood as a direct discernment of universals.[29] In Jainism, in the same situation in which one grasps a particular product, one can also grasp the common properties shared by all products. This is linked with the Jain epistemological theory of particular-in-universal, according to which an object of knowledge is a complex having both universal aspects and particular aspects. Therefore, although the necessary copresence of two properties cannot be known by the repetition of past observations, since perception deals only with particulars, and that even the biggest list of particular instances would not suffice to reach certainty on future events, infallible predictions are possible for the one who masters this discernment of not only the particular, but also the general characteristics of the object of knowledge.

The types of inference The Buddhist Dharmakīrti refutes such an extra type of cognition and makes his renowned breakthrough when offering a novel method to distinguish between arbitrary and necessary universal relationships. More precisely, he claims that the evidence-property is necessarily concomitant with the target-property *if and only if* it can be shown that there is an essential or a causal relationship between them. Claiming so, he provides "the ontic foundation for valid reasoning" (Katsura 1992: 223). In *Pramāṇavārttika* 1, Dharmakīrti grants only three types of inferential evidence. These are (i) natural properties (*svabhāva*); (ii) effects (*kārya*); and (iii) the non-cognition [of a relevant element] (*anupalabdhi*). To explain, it is not accidental that whenever there is an oak, there is also a tree, this is due to the fact that being a tree is *a natural property* of an oak ; this is not accidental that whenever there is smoke, there is fire, this is due to the fact that smoke is an *effect* of fire ; and cases of non-cognition are consequences of the two former cases, since it is not accidental that whenever there is no tree, there is no oak, and that whenever there is no fire, there is no smoke. The difference between Jain and Buddhist accounts seems to be that for the Buddhists, the 'being a tree' is known thanks to a reasoning upon the 'being an oak', whereas for the Jains, this is known by a direct type of knowledge.
In the tradition stemming from Siddhasena Mahāmati and Akalaṅka, Jain philosophers anyway build upon Dharmakīrti's pan-Indian theory, after having proposed some amendments to it. Especially, they consider that there are not three, but six situations in which the necessary copresence of two properties is known, namely when the evidence-property is (i) a property pervaded (*vyāpya*) by the target-property; (ii) an effect (*kārya*) of it; (iii) a cause (*kāraṇa*) of it; (iv) a predecessor (*pūrvacara*) of it; (v) a successor (*uttaracara*) of it; or (vi) a co-existent (*sahacara*) with it.[30] Indeed, it is sufficient to know that there is a shadow in order to infer that there is an umbrella; to know the colour of a fruit in order to infer its taste; or to know that the Pleiades are rising in order to infer that Aldebaran will rise soon.[31] As for the non-cognition [of a relevant element], Jains do not considered it as a type of good inferential evidence. Instead, they treat it as a negation, in line with Jain canonical treatises, in which four types of inference were presented, differentiated on the basis of the affirmative, respectively negative, character of their premise and conclusion. The structure of truth-preserving arguments therefore becomes a concern in Jainism when negations are introduced, as the expression of inferences involving absences. This led the Jains to single out four main types of inferential reasoning, namely the affirmation of the thesis when compatible evidence

[29] See Bagchi (1953: 126) and Daye 1979.

[30] PM 59; trans. Ghosal, p. 122.

[31] See Clavel 2014; Gorisse 2015.

is known, its negation when incompatible evidence is known, its negation when compatible evidence is not known and its affirmation when incompatible evidence is not known (Gorisse; forthcoming).[32]

Implementation Let us now see how these theories of inference were implemented in philosophical debates, by taking as a representative example the debate over the existence of a Demiurge God in the *Tarkarahasyadīpikā* (TRD), *Lights on the concealed doctrines*, of the Jain Guṇaratna, 14th c. (Van Den Bossche 1998).
The goal of this text is to refute the following inferential reasoning presented by the Naiyāyika philosophers:
[Thesis] The subject under discussion (the mountains, etc.) is produced by a conscious being.
[Evidence] Because it is a product.
[Account] Whatever is a product is produced by a conscious one, like a pot.
[Application] And this [subject under discussion] is a product.
[Conclusion] Therefore [it] is produced by a conscious one.[33]

Here, we are legitimate to infer that the target-property 'being produced by a conscious being' characterises not only artifacts like pots, but also natural products like mountains. First, because we already all agree on the fact that the evidence-property 'being a product' characterises these mountains.[34] Second, because we also all agree on the fact that the necessary relationship between 'being a product' and 'being produced by a conscious being' is such that nothing can be a product without also being produced by a conscious being.[35]
First, this inferential reasoning aims at proving that Īśvara, The Lord, created the world, because only such an omnipotent being could possibly be the creator of mountains and similar natural products. Second, the way in which this inferential reasoning has been attacked and defended is a nice indicator of the evolution of debates. Philosophers first challenge it by indicating counter-examples,[36] respectively defend it by showing that these are no genuine counter-examples.[37] Then, the discussion switches from a search of counter-examples to an investigation on the meaning of the concepts involved. In our case, it is asked whether the concept of product includes the concept of an efficient cause. In the Indian technical terms, philosophers question the relevance – or not – of drawing a line of distinction in the concept 'being a product' as far as its relation with the concept of 'being-made-by-a-conscious-maker' is concerned. No one would one draw a line of distinction between 'products with a beginning' and 'products without a beginning', since a product, by definition has a beginning. This is in a similar way that no one should draw a line of distinction between 'products with a conscious producer' and 'products without a conscious producer' inasmuch as it is inbuilt in

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[32] PM 59, 71, 78, 86; pp. 122, 129, 131, 133. I would like to thank an anonymous referee who suggested that the two last forms could be seen as types of hypothetical reasoning.
[33] In the *Īśvarasādhanadūṣaṇam* (ĪSD), Refutation of the proof of God [as the creator of the world] of Ratnakīrti. ĪSD 32. 14–18: *vivāda-adhyāsitaṃ buddhimadd-hetukam. kāryatvāt. yat kāryaṃ tad buddhimadd-hetukam. yathā ghaṭaḥ. kāryaṃ ca idam. tasmād buddhimad-hetukam iti*, p. 32.
[34] All Indian philosophers agree that whatever is made of parts is a product, in the sense that it has come to existence at one point of time, it is not eternal.
[35] For Naiyāyika philosophers, in the same way that we all agree that whatever is produced has a material cause (even this material cause is subtle), in the same way we should all agree that whatever is produced has an efficient cause. This last part is what will be denied by Jains and Buddhists.
[36] Namely, grass is a product that grows without the help of a conscious producer.
[37] Namely, when we perceive smoke, we do not perceive the fire that we infer due to its spatial remoteness ; when we perceive a pot, we do not perceive the potter that we infer due to its temporal remoteness ; when we perceive grass growing, we do not perceive its creator that we infer due to its essential remoteness (i.e. the fact that it is sublte).

the concept of product that it has an efficient cause. All in all, the core of logical analyses in the classical Indian hall of philosophical debate after Dharmakīrti is the following question: what are the exact properties (having a conscious producer on one side; and being a product, or an artifact, or something else on the other side) between which the invariable concomitance holds? And which type of invariable concomitance does hold (essential, causal, etc.)? Once this is answered, it is mechanical to see whether the initial thesis is established, respectively refuted.

3. Other types of sophistication in rational debates

Before concluding, I would like to present a specifically Jain way of expressing an inferential reasoning, namely by making use of riddles. This technique was introduced by the Jain Vidyānanda (10th c.) in his *Patraparīkṣā* (PP), the *Investigation on puzzle-argument*. It was then developed and linked with Jain perspectivism by Prabhācandra in his PKM and, except in the works of Prabhācandra's commentators, it was soon forgotten. A '*patra*', which I translate here by 'puzzle-argument', is an inferential reasoning expressed by means of word plays. The gain of such a display is that it is not directly comprehensible and that the process of interpretation of the riddles involved is linked with practices of self-realisation, in the sense that it brings the debater to an awareness of and practice upon the rich existing network of multiple meanings of a given linguistic unit. In his PP, Vidyānandin gives the example of an inferential reasoning starting in the following way:

> [Thesis] What is to be pronounced [when one reads what is] followed by '*yad*', this is wandering into diversity,
> [Evidence] Because its nature is that of what is followed by 'doubt'.[38]

With proper knowledge of lists found in grammatical treatises (where the pronoun 'yad' is listed just after the expression 'everything') and with proper knowledge of lists found in epistemological treatises (where the category 'knowable' is listed just before 'doubt'), as well as with proper alternative analysis of the Sanskrit compounds and attribution of proper alternative meaning to root words, one is able to understand that this equals the Jain thesis according to which:

> [Thesis] Everything is non-one-sided,
> [Evidence] Because everything is knowable.

First, the practice of puzzle-arguments is in perfect alignment with the Jain theory of non-one-sidedness (*anekāntavāda*), since by improving one's skill to generate a multiplicity of meanings and by training the debaters to see things from a multiplicity of perspectives, it contributes to strengthening our awareness of an existing global network of connections (Gorisse 2018).
Second, one of the common meanings of '*patra*' in Sanskrit is 'epistle'. In the context of Jainism, there is one specific practice of epistle writing that is called '*patra*', so its use by Vidyānanda is not neutral. In fact, from the 8th c., there is a wide tradition in Jainism on riddles, in which the stylistic sophistication is close to that of poetry. Furthermore, these riddles are regularly in the form of epistles, like in the case of the letters of solicitation (*vijñapti-patra*) sent by mails from one community to the other. As established by Balbir, the process of disambiguation of the riddles contained in these letters serves specific purposes, for

[38] PP 10.1, p. 10.

example to show the devotion of the monk towards his superior, because understanding these riddles presupposes to know the biography of the latter (Balbir 2003: 196).
Third, there is in India at that period a general tradition of making an impression at royal courts by means of displaying one's literary skills in composing sophisticated forms, especially poetical ones, but we can easily imagine that this puzzle-argument method could be thought of in such a line that would, again, be considered as a means towards social and political empowerment.

Conclusion

In the introductive section of this paper, I have established that in India, highly regulated argumentation is a prevalent mode of thought elaboration already in the 6–7th centuries BCE, that it influenced society and politics, and that it shaped the whole edifice of knowledge. Secondly, I have described how in this paradigm, arguing consists in attacking, respectively defending, in a codified way an inferential reasoning. Third, acknowledging that Jain conceptions of inferential reasoning and the way they contributed to the development of pan-Indian theories of argumentation, have consistently been under-studied, I have conceived this paper as a contribution to overcome this state of affair.
First of all, the doctrines presented in early Jain canonical literature are routinely embedded in argumentative dialogues. In these early conceptions, apologetic motives are commonplace. However, Jain canonical literature conjointly features systematic concerns, but these are largely indebted to texts from the Brahmanical tradition. A thorough specifically Jain concern for inferential reasoning is shown only from the 7th c. onwards. I gave an overview of Jain conceptions of inferential reasoning of this period, quoting from the texts that constitute the landmark of the discipline. From this overview, we can formulate the following conclusions:
. Inferential reasoning in classical India traditionally consists in a series of five statements, which combines a bottom-up and a top-down presentation of the *modus ponens*.
. Indian philosophers attempt to bring the inferential reasoning to its minimal form, which leads them to distinguishing between psychological and formal considerations. In these attempts, Jain philosophers are the ones who go the further.
. Indian philosophers were not interested in varying the logical forms, like Aristotle did in his syllogistic. More generally, Indian philosophers did not develop a logical formalism.
. The form of the inferential reasoning only becomes a concern for Jains when negations are introduced as the expression of reasoning involving the acknowledgment of absences.
. The core of logical investigations in India pertains to question the scope of predicates, as well as the types of necessary relation that hold between two properties (natural property, effect, cause, predecessor, successor, co-existent).
. A general survey of the types of necessary relation that hold between two properties reveals that in an attempt towards a formal representation of these theories, the material implication would not do, but that a plurality of logical connectors would be needed. Besides, most of these relations are transitive, but not symmetric, due to the presence of epistemological concerns.
. Jain conceptions grant higher epistemic abilities as in principle accessible to human beings, and link epistemological considerations with soteriological ones.
. The systematic discipline by excellence in India is not mathematics, but grammar.
. In general, logical considerations in India are part of a bigger whole that includes social, political and soteriological concerns.

Primary literature

AṇD = *Aṇuogaddārāīṃ*. Muni Puṇyavijaya, Dalsukh Mālvaṇiā, Amritlāl Mohanlāl Bhojak (eds.): *Nandisuttaṃ and Aṇuogaddārāiṃ*. Jaina Āgama Series 1, Shri Mahāvira Jaina Vidyālaya, Bombay 1968.

ĀS = *Āvassaya Sutta*. Muni Dīpartnasāgar (ed.): *Āgama-suttāṇi, bhāgaḥ* 24. *Āvaśyaka-mūla-sūtram, niryukti, bhāṣya*, *vṛttiḥ*. 2 vols. Āgama Śruta Prakāśan, Ahmedabad 2000.

DVN = *Daśavaikālikaniryukti* of Badrabāhu. *The Daśavaikālikasūtra by Sayyambhava and the Daśavaikālikaniryukti by Bhadrabāhu*. *Journal of the German Oriental Society* 45 (1892): 581-663.

ĪSD = *Īśvarasādhanadūṣaṇam* of Ratnakīrti. In: Thakur, A (ed.). *Ratnakīrtinibandhāvaliḥ*. *Buddhist Nyāya Works of Ratnakīrti*. Patna: Kashi Prasad Jayaswal Research Institute, 1975, 32–57.

LT = *Laghīyastrayam* of Akalaṅka. Mahendra Kumar Shastri (ed.): *Akalaṅkagranthatrayam*. Sarawasti Oriental Series 8, Saraswati Pustak Bhandar, Ahmedabad 1939.

NA = *Nyāyâvatāra* of Siddhasena Mahāmati. Piotr Balcerowicz (ed. tr.): *Jaina Epistemology In Historical And Comparative Perspective – A Critical Edition And An Annotated Translation Of Siddhasena Mahāmati's Nyāyâvatāra, Siddharṣigaṇin's Nyāyâvatāra-vivṛti And Devabhadrasūri's Nyāyâvatāra-ṭippana*. 2 vols. Second revised edition. Delhi 2009. [1st ed.: Stuttgart 2001].

NAv = *Nyāyâvatāra-vivṛti* of Siddharṣigaṇin. See NA.

NS = *Nyāyasūtra* of Gautama. Michel Angot (ed. tr.): *Le Nyāyasūtra de Gautama Akṣapāda. Le Nyāyabhāṣya d'Akṣapāda Pakṣilasvāmin*. Les Belles Lettres, Paris 2009.

NSBh = *Nyāyasūtrabhāṣya* of Vātsyāyana. See NS.

PKM = *Prameyakamala-mārtaṇḍa* of Prabhācandra. Mahendra Kumar Shastri (ed.): *Prameyakamalamārtaṇḍa by Shri Prabha Chandra*. Garib Dass Oriental Series 94, Sri Satguru Publication, Delhi 1912.

PM = *Parīkṣāmukham* of Māṇikyanandin. S. C. Ghoshal (ed. tr.): *Parīkṣāmukham*. The Central Jaina Publishing House, Lucknow 1940 (Reprinted in The Sacred Books of the Jainas 11, Today's and Tomorrow's Printers and Publishers, Delhi 1990).

PNT = *Pramāṇanaya-tattvālokālaṃkāra* of Vādi Devasūri. Hari Satya Bhattacharya (ed. tr.): *Vādi Devasūri's Pramāṇanayatattvālokālaṃkāra*. Jain Sahitya Vikas Mandal, Bombay 1967.

PP = *Patraparīkṣā* of Vidyānandin. Gajādharalāla Jaina (ed.): *Syādvādavidyāpati-śrīmadvidyānandasvāmiviracitā Āptaparīkṣā Patraparīkṣā ca*. *Sanātanajainagranthamālā* 1–2, Pannālāla Jāina, Kāśī 1913.

PV = *Pramāṇavārttika* of Dharmakīrti. Ranielo Gnoli (ed.): *The Pramāṇavārttika of Dharmakīrti. The first chapter with the auto commentary*. Serie Orientale Roma 23, Istituto Italiano per il Medio ed Estremo Oriente, Roma 1960.

SSā = *Samayasāra* of Kundakunda. Chakravarti, A (ed. tr.): *Ācārya Kundakunda's Samayasāra*. Benares 1950 (5th ed. Bharatiya Jnanpith, New Delhi 2008).

Ṭhāṇ = *Ṭhāṇaṃgasutta*. Muni Jambūvijaya (ed.): *Sthānāṅgasūtra* (3 vols.). Jaina Āgama Series 19, Shri Mahāvira Jaina Vidyālaya, Bombay 2002–3.

TRD = *Tarkarahasyadīpikā* of Guṇaratna. In: Suali, L (ed.): *Shaḍdarśana-samuchchaya by Haribhadra with Guṇaratna's commentary Tarkarahasya-dīpikā*. Calcutta: Asiatic Society of Bengal, 1914.

TS = *Tattvārthasūtra*. In Tatia, Nathmal (tr.): *That which is. Tattvārthasūtra. A Classic Jain Manual for Understanding the True Nature of Reality*. New York: Harper Collins Publishers, 1994.

TSBh = *Tattvārthasūtrabhāṣya* of Umāsvāti. See TS.

Viy. = *Viyāhapannatti* = *Bhagavaī*. K.C. Lalwani (ed. tr.): *Sudharma Svāmi's Bhāgavatīsūtra*, vol. 2. Jain Bhawan, Calcutta 1973.

Secondary literature

Bagchi, Sitansusekhar. *Inductive reasoning. A study of tarka and its role in Indian logic*. Calcutta: Calcutta Oriental Press Ltd, 1953.

Balbir, Nalini. 2003. "Gurubhakti through word-puzzle in the Jain Context." *Vāṇi-jyotiḥ* 17–18: *Prof. Dr. Gopinath Mohapatra Felicitation Volume* (2003) 181–203.

Balcerowicz, Piotr. *Early Asceticism in India. Ājīvikism and Jainism*. London and New York: Routledge, 2016a.

Balcerowicz, Piotr. "Siddhasena Mahāmati and Akalaṅka Bhaṭṭa: A revolution in Jaina epistemology." *Journal of Indian Philosophy* 44 (2016b): 993–1039.

Balcerowicz, Piotr. "Is 'inexplicability otherwise' (*anyathānupapatti*) otherwise inexplicable?" *Journal of Indian Philosophy* 31(2003): 343–380.

Black, Brian. *Priests, Kings and Women in the Early Upaniṣads. The Character of the Self in Ancient India*. Delhi: Motilal Banarsidass, 2014.

Bronkhorst, Johannes. *Language and Reality. On an episode in Indian Thought*. Leiden: Brill, 2011.

Clavel, Anne. "Can the Rise of Rohiṇī be Inferred from the Rise of Kṛttikā? A Buddhist-Jaina Controversy." *Lumbini International Research Institute Proceedings Series* 6 (2014): 341–366.

Daye, Douglas. "Circularity in the inductive justification of formal argument (*tarka*) in twelfth century Indian Jain logic." *Philosophy East and West* 29/2 (April 1979): 177–188.

Esposito, Anna Aurelia. “Didactic Dialogues: Communication of Doctrine and Strategies of Narrative in Jain Litterature”. Dialogue in Early South Asian Religions. Hindu, Buddhist, and Jain Traditions. B.Black and L.Patton (eds.). London and New York: Routledge, 2015, 79–94.

Flügel, Peter. “Sacred Matter: Reflections on the Relationship of Karmic and Natural Causality in Jaina Philosophy.” *Journal of Indian Philosophy* 40 (2012) 119–176.

Gorisse, Marie-Hélène. “Jaina conceptions of non-cognition: A dialogue with Dharmakīrti on inferential evidence”. In *Proceedings of the Fifth Dharmakīrti Conference Heidelberg 25*486–506*30 August 2014*, edited by Sara McClintock, Horst Lasic, Patrick McAllister, Birgit Kellner. Forthcoming(a).

Gorisse, Marie-Hélène. “Characterising the Self: Knowledge and liberation in the *Samayasāra*.” In *Cāruśrī. Essays in honour of Svastiśrī Carukīrti Bhaṭṭāraka Paṭṭācārya*, Hampasandra Naganarajaiah and Jayandra Soni (eds.). Bangalore: Sapna Book House, 2019, pp. 95–107.

Gorisse, Marie-Hélène. “Concealing meaning in inferential statements : The practice of patra in Jainism.” In *Jaina Studies. Select Papers presented in the ‘Jaina Studies’ Section at the 16th World Sanskrit Conference, Bangkok Thailand and the 14th World Sanskrit Conference, Kyoto Japan*, edited by Nalini Balbir and Peter Flügel, 111–126. New Delhi: DK Publishers, 2018.

Gorisse, Marie-Hélène. “Jain logic in the tradition of Prabhācandra.” In *Oxford Handbook of Indian philosophy*, Jonardon Ganeri (ed.) 486–506. Oxford: Oxford University Press, 2017.

Gorisse, Marie-Hélène. “The taste of the mango : a Jaina-Buddhist controversy on evidence.” *International Journal of Jaina Studies* 11/3 (2015): 1–19: https://www.soas.ac.uk/ijjs/file100876.pdf

Hayes, Richard P. *Dignāga on the Interpretation of Signs*. Studies in Classical India 9. Dordrecht: Kluwer, 1988.

Katsura, Shoryu. “Dignāga and Dharmakīrti on adarśanamātram and anupalabdhi.” In Asiatische studien/ études asiatiques 47, Zurich: Zeitschrift der Scheizerischen Asiengesellschaft/ Revue de la société Suisse (1992): 222– 231.

Sen, Amartya. *The argumentative Indian. Writings on Indian history, culture and identity*. New York: Farrar, Straus and Giroux, 2005.

Shah, Nagin J. *Akalaṅka’s Criticism of Dharmakīrti Philosophy: A Study*. Ahmedabad: L.D. Institute of Indology, 1967.

Solomon, Esther A. *Indian dialectics. Methods of Philosophical Discussion* (vol.1&2). Ahmedabad: B.J. Institute of Learning and Research. Gujarat Vidya Sabha, 1976

Van Den Bossche, Franck. “Jain arguments against Nyāya theism. A translation of the Īśvarotthāpaka Section of Guṇaratna’s Tarka-rahasya-dīpikā.” *Journal of Indian Philosophy* 26 (1998): 1–26.

Jain philosophers in the debating hall of classical India

Abstract In classical India, the practice of rational debate between thinkers from different philosophico-religious traditions, especially between Naiyāyika, Mīmāṃsaka, Buddhist and Jain thinkers, is central and shaped the whole edifice of knowledge. The core of such debates is an inferential reasoning whose premises and structure are such that it ensures that its conclusions are recognised as knowledge statements, irrespective of the obedience of the interlocutor. Around the 7th c., a pan-Indian consensus was achieved on what counts as a correct inferential reasoning. The aim of this paper is to provide an overview of the contribution of the tradition that is Jainism to the framework of philosophical disputations in India. First, by offering a historical overview of the role and nature of debates in India, focusing on the role and nature of inference in these debates, and introducing the specificities of Jain philosophers in this paradigm. Second, this paper will explore the evolution of the conceptions of inferential reasoning within the Jain tradition, from the early canonical literature to modernity, focusing on their position in the pan-Indian debating hall, as well as on their inclusion in a bigger whole that includes social and soteriological concerns.

Introductive remarks

The place of argumentation in India. The tradition of highly regulated argumentation is an old, lengthy and pivotal one in the development of Indian culture and society. Argumentation was a prevalent mode of thought elaboration as early as in the Vedic texts. For example, the *Chāndogya Upaniṣad* 7.1.2–4 (6–7 BCE) mentions the art of debate (*vākovākya*) as one of the sciences that one should master. Furthermore, the Upanishads abound in dialogues and debates between philosophy masters who are Brahmins, kings, teachers, students or women. One of the most famous of these debates is the philosophical tournament that took place between the sage Yajñavalkya and other Brahmins at the court of the king Janaka. There, the different sages, of which the second best after Yajñavalkya is a female philosopher named Gārgī, exchange arguments towards a better characterization of '*brahman*', the absolute upon which the whole world relies.[1] In this context, philosophical arguments have a practical societal impact. First, public arguments were regularly performed in order to gain social and political influence, in the tournament with Yajñavalkya, to obtain a massive financial reward. Second, philosophical arguments in the oldest narratives regularly concern the correct way of action, in such a way that those debates are seen "as a means of social progress" (Sen 2005: 15). Finally, these philosophical arguments have a deep theoretical influence, because there is the shared belief that thanks to rational debates, we can reach necessary true statements. From this, the different philosophical traditions developed in relation with the other ones in an essential way, philosophical thinking essentially includes the refutation of actual or imagined adverse positions.

Specifying the functioning of a rational debate. Because of the importance of argumentative practices, an abundant literature was devoted to the specification of the art of reasoning in public in Ancient India. The rules of reasoning were first investigated in medical treatises (*Carakasaṃhitā*), then in treatises for law courts (*Dharmaśāstra* and *Arthaśāstra*), as well as in treatises concerned with the hermeneutics of the Veda (*Mīmāṃsāsūtra*), up to their systematic presentation in a treatise solely devoted to this purpose, the *Nyāyasūtra* (NS),

[1] See Black (2014: 67ff).

Treatise on logic. Composed by Gautama, a Hindu philosopher from the Naiyāyika school, in the second century CE, the NS became the pan Indian inter-doctrinal reference work for epistemological and logical considerations. Manuals dealing with the art of debate focused both on strategic rules of reasoning in public and on the form a convincing reasoning should have. Strategic rules especially include the list of situations of defeat, for example failure to answer within a reasonable amount of time; and a list of tricks not allowed in a proper debate, like using double meanings to confuse the interlocutor or escaping the debate under false pretense.

This paper does not focus on the strategic rules, but on the considerations concerning the form that a convincing reasoning should have, from the formulation of an initial thesis to the establishment of this thesis following the display of reasons to adhere to it. The core of such a convincing reasoning is an inference (*anumāna*). More precisely, inference is the type of cognition through which epistemic agents acquire new knowledge by means of reasoning upon what can be concluded with certainty from previously acquired knowledge. This is what is expressed by the Sanskrit expression '*anu-māna*', 'the knowledge (*māna*) that follows (*anu*) [another knowledge]'. For example, when John[2] wants to buy mangos, he wants to know which ones taste juicy before he buys them. At this point, he is not yet allowed to taste them, but he can reason based upon the color of the mangos and upon his past experience of a given color being associated with a given taste. In such a situation, the regularity of John's past experience is not a coincidence, the co-presence of the property of having a given taste with the property of having a given color is guaranteed by the fact that both occurrences rely on the same causal complex, namely, a given stage of ripeness of the mango. This type of reasoning based on a necessary relationship between two properties is what is called 'inference'. In technical terms, there is a transmission of certainty from the established knowledge that an 'evidence-property' (*hetu*) is ascribed to a given object, to the new knowledge that a 'target-property' (*sādhya*) is ascribed to the same object. Another example will help clarify this: I am wondering whether there is a fire on a remote hill. I cannot directly perceive any fire, but I do perceive smoke coming from the hill. In this situation, 'being endowed with smoke' is the evidence-property that will enable me to infer that the target-property 'being endowed with fire' is also present on this hill.

This transmission of certainty is based on the 'invariable concomitance' (*vyāpti*) between the two inferential properties. *Vyāpti* originally means 'pervasion' and is used in this technical sense, because the model for situations of necessary co-presence of the evidence-property with the target-property are situations like 'whenever something is an oak, this thing is a tree', where the property 'being a tree' *pervades* the property 'being an oak'.[3]

Inference has been thoroughly studied and its use strictly codified by the different philosophico-religious traditions of India, Jainism included, because it provides the structure of scientific reasoning. Indeed, the conclusion of an inferential reasoning is considered as a scientific truth inasmuch as this type of reasoning relies on the emancipation from contextual parameters and on the guarantee that the isolated relations are necessary ones. What is more, inferential reasoning has a strong convincing potential, since by means of stating an inferential reasoning, it is possible to bring somebody else to the awareness of these scientific truths. Such a series of statements, even though it is not properly speaking a type of cognition by itself, is metaphorically called 'inference for others' (*parārthānumāna*), because it brings awareness to others, in opposition to the 'inference for oneself' (*svārthānumāna*) genuine type of cognition which brings awareness to oneself. An inference for others is traditionally used in a rational debate in order to convince an interlocutor of a different faith who has different beliefs concerning what there is. In this line, stories of conversion following those

[2] The typical name for examples in the Indian framework is not 'John' or 'Mary', but 'Devadatta'.

[3] The Indian example features the Sissoo tree, a type of Indian rosewood tree.

philosophical debates are commonplace in the narratives of the different traditions and regularly involve the conversion of a royal patron. Furthermore, the different traditions share the belief that from this truth-preserving argument, it is possible to define the standards of an ideally organized rational discussion the outcomes of which are necessary true statements and in the course of time, these philosophers developed a common inter-doctrinal framework of argumentation for philosophical discussions, especially Hindu –Naiyāyika and Mīmāṃsaka –, Buddhist and Jain philosophers. From these observations, it comes as no surprise that an important part of the philosophical investigations in Ancient, classical and medieval India focuses on the way to attack, respectively defend, the statement of an inference. This paper explores the evolution of these investigations within the Jain tradition.

Introduction to Jainism. As active participants to the debating-hall, Jain thinkers contributed to the development of these logical and argumentative investigations. Before we investigate their contributions, an introduction to Jainism is in order. Jainism is a philosophico-religious tradition of India, with a strongly recognisable identity since the teaching of the spiritual leader Mahāvīra (6th c. BCE). Jainism is a path towards salvation, the outcome of which is the access to a superior order of being. It involves a structured community, a set of practices (rules of life, ritual, devotional and ascetic practices), as well as a whole conception of the world deposited in monastic, liturgic, narrative and systematic literature.
Jains believe that the life of the universe is a process without beginning nor end that passes through an ongoing series of cosmic cycles, each of which is billions of years in duration. At every period, the doctrine is taught by twenty-four great spiritual leaders called "ford makers" (*tīrthaṅkara*) who mediate the passage between a mundane state of our Selves and a state of unlimited knowledge, perception, bliss and energy. Religious practices followed by Jains are practices that focus on the conquest of one's own passions towards liberation (*mokṣa*). Jain spiritual leaders are also called "conqueror" (*jina*) of their passions. The last of these Jinas is called Mahāvīra. He has reached a state of omniscience and is the last spiritual leader to teach the doctrine in the current cosmic cycle. Despite the fact that the omniscience of their spiritual leader is a favored strategy of legitimation of claims within Jainism; and despite the fact that ascetic practices can lead us to develop higher epistemic abilities, this will not suffice to convince an interlocutor from another obedience that Jainism is the best path. As a consequence, Jain philosophers too developed specific conceptions of convincing reasoning. However, despite the influence of Jain considerations in the global framework of Indian philosophy, Jain contributions have regularly been disregarded by thinkers from other traditions, and consistently under-studied by modern scholarship. To remedy this, the aim of this paper is to assess Jain conceptions of convincing reasoning and the way they contribute to pan-Indian theories of argumentation.

1. Argumentation in early Jain canonical literature

Magical powers in the debating hall The older extant Jain texts were written around the 3rd century BCE and belong to the Jain canonical corpus (*āgama*).[4] The doctrines presented in this extensive canon are often embedded in dialogues.[5] These dialogues are either didactic ones, as the stereotypical exchanges between Mahāvīra[6] and his main pupil Goyama; or argumentative ones, when heretic or rival thinkers try to refute parts of Mahāvīra's teaching. Let us take as a representative example of the argumentative dialogues the story of

[4] Most of this *corpus* is written not in Sanskrit, but in Ardhamāgadhī.
[5] Esposito (2015: 79–94).
[6] Mahāvīra has received many names. In the canon, he is most generally referred to as Vaddhamāṇa, 'the One who contributes to Growth'.

Rohagutta[7], who is considered responsible for the sixth schism in Jainism in the first centuries CE.[8] The story starts with the Jain monk Rohagutta who, upon an encounter with a conceited wandering mendicant, challenged the latter in a debate at the court of king Balasiri of Aṃtaraṃjiyā. Sensing the cleverness of Rohagutta, the mendicant chose to defend a Jain thesis, namely that the world is made of two basic types of entities, living beings (*jīva*) and non-living entities (*ajīva*), forcing his opponent to defend a thesis adverse to his Jain beliefs, namely that there is actually a third type of 'quasi-living' (*nojīva*) entity.[9] In addition to this, the mendicant was known for his magical powers. Aware of this state of affair, Rohagutta's master used *mantra* (sacred formula) spells to charge his pupil's monastic whisk brush with more powers, in order to ensure the latter's victory in the debate. Upon Rohagutta's effective victory, a schism happened in Jainism and Rohagutta's followers were called the 'Trairāśikas', the followers of the tripartite nature of the world. Hopefully, Rohagutta's master, unhappy with this turn of events, shortly challenged Rohagutta in another debate. In the course of this second debate, the master asked Rohagutta to go to the market in order to fetch a quasi-living thing. But at the market place, only dead things were presented to Rohagutta. Upon Rohagutta's unsuccessful attempt to find a quasi-living thing, the defeat was proclaimed and the schism dies out.

This story is quite exceptional. To begin with, it narrates a rational debate aiming at establishing a philosophical thesis without references to the philosophical content, nor to the formal structure, of the debate. Studying the argumentative situations described in the Jain canonical corpus yet has its importance, as it especially shows (i) that debates have concrete consequences, here, the undesired conversion of Rohagutta and the creation of a heretical school ; (ii) that ethical and soteriological considerations can play a role in the outcome of a debate presented as following the model of rational debates, since in our case, the final defeat is also linked with the violation of a principle of Jain monastic rules of conduct (going to the market) and since magical powers acquired thanks to ascetic practices are able to change the outcome of the debate. These magical powers on Rohagutta's monastic whisk brush symbolize, among other things, the fact that ascetic practices bestow the practitioner with extra-mundane epistemic abilities.

To explain, according to a pan-Indian theory, we are strongly determined by our previous acts. This is the renowned theory of karma, in which the Sanskrit expression '*karman*', 'act', is used in the technical sense of 'network of one's acts and consequences thereof, that will inform one's future Self'. Within a framework admitting the theory of karma, the distinction between ontology and ethics is blurred. For example, even a clod of earth exists as earth *because* of its previous deeds. In other words, it has earned this particular niche in the wider system of life processes, the world of nature cannot be separated from the moral order. Next to this, the distinction between epistemology and ethics is also blurred, since the acquisition of higher epistemic abilities is ensured by moral behavior and the corresponding destruction of karma. Let us try to be more clear on this link. In Jainism, karma is more specifically

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[7] This story is found in the canonical *Āvassaya Sutta* (ĀS), *Sacred text on obligations*, see ĀS, pp. 136ff. For more on this debate, see Balcerowicz (2016a: 193ff) and Flügel (2012: 123ff).

[8] In fact, Rohagutta is the figure of a strategy of appropriation of Vaiśeṣika theses, an adverse philosophical Brahmanical school. The function of this story is to show that Vaiśeṣika theses are but heretic and quickly refuted offspring of the Jain teaching.

[9] It is hard to define what a quasi-being is. Examples of quasi-beings are scarce and subjects to different interpretations, but the main consensus is that a bird (in Sanskrit 'the one endowed with wings') with cut wings would be such a quasi-living being. One could also think of the empirical self, which is a mix of self and of karmic matter. Besides, it should be noted that Vaiśeṣika philosophers do not hold such a tripartite theory of reality. But since they are famous for their theory of categories, this controversy mainly shows an example of categorial mistake along its undesired consequences.

conceived as a subtle type of matter that expresses and develops the consequences of our acts. Then, due to passions which act as a glue, karmic matter sticks to the soul and obstructs its (epistemic) potency. A metaphor will help to explain this process: my reflect in a mirror is a type of expression of myself. Now, imagine that the mirror is red (with the pun that the Sanskrit expression '*rāga*', means both 'red' and 'attachment'). In such a situation, I will have a red distorted vision of myself. Karmic matter function likewise: it has the shape of my own impetus towards limited heterodox objects and, as such, it impedes my epistemic competence. We can now understand that through ascetic practices and monastic behavior, it is possible to acquire extra-mundane epistemic capacities and powers.
In the philosophical debate that we have just investigated, the strength of the mantra is also used as a clear indication to readers that the lineage promoting it is a powerful one and that its teaching should be followed. This, as well as the performance of the debate at a royal court, is a sign that social and political influence are what is primarily sought by means of these accounts. Jain scriptures promote the social status of the dialecticians (*vādin*) who participated in courtly debates.[10] In conclusion, it seems that, building on a very old tradition of rational debates, Jain writers did not feel the need to develop the details of their arguments and, instead, focus on the elements that will more likely appeal to a large crowd of followers, namely magical powers, who are symbols of the possibility to reach a better life in a straightforward way.

Considerations on inferential reasoning in the canon Now, besides this types of debate found in early narratives promoting monastic rules of ethics and given lineages, there are also debates developing philosophical content. Notably, the arguments developed in Jain councils, aiming at settling disputes between different points of view concerning religious principles and practices. This is the type of practice that led Jain thinkers to the formulation of rules of language and of debates.[11] The next paragraph is a short overview of the considerations on the form of convincing reasoning found in the Śvetāmbara[12] canonical and post-canonical corpus. These considerations are scarce, not systematic and are largely indebted to other traditions.
First, in the *Viyāhapannatti Sutta* (Viy.), *Exposition of explanations*, also called *Bhagavaī Sutta*, *Verses of the venerable* [*exposition of explanations*], inference is mentioned as the second type of cognition (*pramāṇa*), next to perception (*pratyakṣa*), analogy (*upamāna*) and testimony (*śabda*).[13] This classification comes from the Nyāya tradition and is atypical in canonical Jainism.[14]
Second, the types of inference are more thoroughly investigated in the *Aṇuogaddārāīṃ Sutta* (AṇD), *Introduction to analysis*. There, they are classified into three main types, called 'inference as before' (*pūrvavat*), when John can infer the co-presence of the two properties 'having a given taste' and 'having a given color' thanks to his past experience of a similar necessary copresence ; 'inference the rest will be alike' (*śeṣavat*), when from tasting one cooked grain of rice from a pot, John can infer that the other grains in this pot are cooked as well; and 'inference from similarity' (*dṛṣṭasādharmyavat*), as in the case of the laws of movement of celestial bodies, inferred from the laws of movement of bodies seen in everyday

[10] Solomon (1976: 10).

[11] See for example Bronkhorst (2011: 70–79). Something similar happened with Buddhist councils.

[12] The Śvetāmbara and the Digambara traditions are the two main branches of Jainism, distinguished mainly by differences in their monastic practices.

[13] See Viy. 5.4.68, p. 171.

[14] Traditionally, five types of cognition (*jñāna*), namely ordinary knowledge (*mati*), testimony (*śruta*), cosmic perception (*avadhi*), mental perception (*manaḥparyāya*) and omniscience (*kevala*), are granted as sources of knowledge in Jainism. It is only after the 7th c. that Jain thinkers will plainly engage with the Naiyāyika classification, merging it with Jain traditional conceptions.

life situations.[15] This classification also is rare for Jain texts and can be first found in the *Mīmāṃsāsūtra*, followed by the NS.[16]
Besides, in the *Ṭhāṇaṃga Sutta* (Ṭhāṇ), *Canonical treatise*, four types of inference are presented, differentiated on the basis of the affirmative, respectively negative, character of their premise and conclusion.[17] But again, something similar is to be found in the *Vaiśeṣikasūtra*.[18]
Finally, Bhadrabāhu (date unknown, probably between 1st and 5th c. CE) in his *Daśavaikālikaniryukti* (DVN), *Commentary to the ten evening treatises*, is the first Jain to examine the role and function of the members of an inference, and to acknowledge correct inferences with either 2, 3, 5 or 10 members following the *Nyāyasūtrabhāṣya* (NSBh), *Commentary to the Treatise on Logic* of Vātsyāyana (450–500).[19]

2. Systematic considerations on argumentation

These conceptions get systematized and investigated in a specifically Jain way around the 7th century. What follows is an overview of the conceptions of Jain thinkers on inferential reasoning and on its role in argumentation, stressing the meeting points and disagreements with the views of the Naiyāyika, Mīmāṃsaka and Buddhist traditions.
One last remark before we do so is that the two series of works traditionally considered as seminal for classical Jainism are particularly unconcerned by the topic of inference. First, the *Tattvārthasūtra* (TS), *Treatise on what there is*, written around 350–400 CE ; and the *Tattvārthasūtrabhāṣya* (TSBh), *Commentary on the treatise on what there is*, written around 400–450 CE by Umāsvāti, merely mention inference as part of a list of sources of knowledge, without any development. Second, 'Kundakunda'[20] is contemptuously in opposition with most of the pan-Indian philosophical paradigm when, for example in his *Samayasāra* (SSā), *Essence of the Self*, he claims that knowledge of the categories that are relevant for soteriology does not rely primarily on inference.[21] From this observation, he centers his investigation around other types of knowledge (Gorisse 2019). Worth noticing that his works will be the basis for mystical trends in Jainism.
The more systematic analysis of inference in Jainism is really undertaken beginning with the philosopher Siddhasena Mahāmati (710–770) and his younger contemporary Akalaṅka Bhaṭṭa (720–780), and subsequently in works of later authors, such as Vidyānandin (940), Māṇikyanandin (9th c.) and Prabhācandra (980–1065), as well as by Siddharṣigaṇi (10th c.) and Vādi Devasūri (1143).

The constituents of inference The first main inter-doctrinal line of discussions and controversies in this conceptual framework is to determine the linguistic form a probative inferential argument should have. In Gautama's NS, the only good way to express a probative inferential argument consists of a group of five statements. In his NSBh, Vātsyāyana offers examples of this group of five statements and Jain authors take over these Naiyāyika traditional examples, as in Māṇikyanandin's *Parīkṣāmukham* (PM), *Introduction to*

[15] In AṇD 440.
[16] See, respectively, Solomon (1976: 11) and the verse 1.1.5 in NS, p. 280.
[17] Ṭhāṇ 4.3.336.
[18] *Vaiśeṣikasūtra* 3.1.9–13 and 1.2.1.
[19] DVN 142 and NSBh 11–12, in Shah (1967: 30-32).
[20] This name actually designates a collective authorship of a textual tradition composed between the late third and eight centuries.
[21] SSā 49; trans. Chakravarti, pp. 237–238. Know that the Self (*jīva*) is […] not knowable by any inferential evidence and without a definite manifestation.

philosophical investigation, a compendium of Akalaṅka's *Laghīyastraya* (LT), *Three short* [*treatrises*]:

[THESIS] Sound is impermanent,
[EVIDENCE] Because it is a product.
[ACCOUNT] Whatever is such (i.e. is a product) is alike (i.e. is impermanent), like a pot.
[APPLICATION] And this is a product.
[CONCLUSION] Therefore it is impermanent.[22]

The core of argumentative practices in Indian is this five-statements presentation of an inferential reasoning and consists in stating that we are legitimate to infer that the target-property 'being impermanent' characterises the sound (THESIS and CONCLUSION), because we already all agree on the fact that the evidence-property 'being a product' characterises the sound (EVIDENCE and APPLICATION), and that we also all agree on the fact that the necessary relationship between 'being a product' and 'being impermanent' is such that nothing can be a product without also being impermanent (ACCOUNT).
By isolating these five statements as necessary and sufficient steps to express an inferential reasoning that will convince one's interlocutor, the Naiyāyikas have brought an old model recognizing many more necessary statements, including explicit psychological conditions like doubt (I am not sure that sound is impermanent) and desire to know (I want to know whether sound is impermanent), to this model linked only with *the structure* of the argument. But other Indian philosophers, who are looking for the minimal necessary form of a convincing argument, will challenge even this conception. In this quest, Jain philosophers are traditionally considered as the ones who go the furthest (Gorisse 2017), as they claim that only the first two statements, namely the THESIS and the EVIDENCE, are necessary to ensure the adhesion of the interlocutor, and that the remaining three statements are only pedagogical.
More precisely, in his *Nyāyāvatāra* (NA), *Guide of logic*, the Jain Siddhasena Mahāmati makes it clear, first, that the EVIDENCE is the central cog of the inferential reasoning. Because people draw inferences by means of relying on the evidence-property. In the situation in which there is smoke on a hill, this is the very perception of that smoke that prompts people to infer that there is fire on the hill.[23] Second, Siddhasena Mahāmati proves that in the absence of the THESIS, inferring would be like observing an archer without knowing what his target is, that is to say without the possibility to know whether he is skillful or not.[24] On this matter, Buddhist thinkers disagree with Jains. Especially, in his *Pramāṇavārttika* (PV), *Verses on knowledge*, Dharmakīrti (c. 600) defends that stating the THESIS is one condition of possibility of the performance of an inferential process only in the same way that desire to overcome doubt is, that is to say *as a psychological condition*, not *as a formal requirement*.[25] The Buddhist philosopher considers that psychological conditions have to be stated separately and not be considered as part of the argument, otherwise stating a truth-preserving argument would be an infinite process.
One interesting point in these discussions is that, recognizing only the first two statements as necessary steps, Jain philosophers get rid of the necessity to utter the ACCOUNT (here, 'whatever is a product is impermanent, like a pot'). This represents a step further towards only formal considerations, because it involves the rejection of the necessity to give an example ('like a pot'). To explain, the idea behind the requirement of an example can be traced back to

[22] PM 3.64; trans. Ghoshal, p. 127; see also NSBh 1.1.39; trans. Angot, pp. 329–330.
[23] NA 5; trans. Balcerowicz, p. 38.
[24] NA 14–16, pp. 59–60.
[25] PV 4.15.

the need to show that there is at least one case other than the case under consideration in which the evidence-property 'being a product' occurs when the target-property 'being impermanent' also occurs. Otherwise, if the object under consideration is the only *locus* of the evidence-property, one can never be sure that there is an essential (and not only an accidental) relationship between the two properties. The classical example is that 'sound is eternal, because it is audible'. In this example, since sound is the only audible thing, it is not possible to find any other example of another audible thing that would be also eternal. Therefore, the argument (although it is valid) is not a convincing one, because nothing is known about the relationship between audibility and eternality. In other words, providing an example is a necessary argumentative step only in a framework in which what is first aimed at is not the validity of the argument, but its convincing character.

The grounds of inference The second major line of inter-doctrinal discussions and controversies in this conceptual framework is to aim towards a theory of the proper relationship between the target-property (e.g. 'being impermanent') and the evidence-property (e.g. 'being a product'). A first attempt to distinguish between arbitrary and necessary relationships is offered by the Buddhist Dignāga (480–540), according to which the evidence-property is necessarily concomitant with the target-property if and only if it is possible to prove that the evidence-property is present (i) in the case under consideration, (ii) in similar cases and (iii) in no dissimilar cases (Hayes 1988: 238). In our example, it means that the property 'being a product' has to characterise (i) sound, (ii) at least one other impermanent thing like pots, and (iii) no permanent thing like souls.

No mention is found in Siddhasena Mahāmati or in Akalaṅka of the Jain challenge to this dominant conception (Balcerowicz 2016b). But in their commentarial traditions, starting with the *Nyāyāvatāravivṛtti* (NAv), *Commentary to the guide of logic*, by Siddharṣigaṇi and the *Prameyakamalamārtaṇḍa* (PKM), *The sun which opens the lotus of the knowable*, of Prabhācandra, Jain authors show that the three conditions of Dignāga are neither necessary, nor sufficient.[26] First, because there are cases of good inference for which the second condition is not fulfilled, as in the case of 'sound is permanent, because it is audible'; second, because there are cases in which the three conditions are accidentally fulfilled, as in 'Devadatta has a green complexion (sometimes 'is a simpleton'), because he is the son of this man, whose other sons also have a green complexion (are simpletons)', because the green complexion can be due to their diet (and the idiocy to an accidental cause) and that this man could perfectly well have sons with another skin complexion (intellectual abilities) (Gorisse 2015).[27] The traditional Buddhist reply to this attack consists in saying that in such an example, the possibility for a person with a different skin complexion or intellectual abilities to be the son of this man is another way to say that the third condition is not fulfilled. At this point, Prabhācandra claims that this Buddhist defense is the equivalent of defending that what ultimately counts is that the evidence-property cannot be thought of otherwise than in the presence of the target-property. From this, continues Prabhācandra, Buddhists should abandon Dignāga's theory of the three conditions and adopt the Jain theory according to which the only single relevant condition for the correctness of an inference is that the presence of the evidence-property is 'impossible otherwise' (*anyathānupapatti*) than in the presence of the target-property (Balcerowicz 2003).[28]

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[26] NAv 5.2, p. 39; see also Vādi Devasūri's *Pramāṇanaya-tattvālokālaṃkāra* (PNT), *Ornament of the light on the nature of knowledge and perspectives* in PNT. 3.12-13; trans. Bhattacharya, pp. 193–202.

[27] PKM 3.15.

[28] NA 22, p. 66.

One specificity of the Jain tradition is to consider that the 'impossibility otherwise', that is, the necessary copresence of, for example, 'being a product' and 'being impermanent' is known thanks to a specific type of cognition called '*tarka*'. Here, '*tarka*' is not used in its usual technical sense of 'suppositional reasoning, conjecture', but has to be understood as a direct discernment of universals.[29] In Jainism, in the same situation in which one grasps a particular product, one can also grasp the common properties shared by all products. This is linked with the Jain epistemological theory of particular-in-universal, according to which an object of knowledge is a complex having both universal aspects and particular aspects. Therefore, although the necessary copresence of two properties cannot be known by the repetition of past observations, since perception deals only with particulars, and that even the biggest list of particular instances would not suffice to reach certainty on future events, infallible predictions are possible for the one who masters this discernment of not only the particular, but also the general characteristics of the object of knowledge.

The types of inference The Buddhist Dharmakīrti refutes such an extra type of cognition and makes his renowned breakthrough when offering a novel method to distinguish between arbitrary and necessary universal relationships. More precisely, he claims that the evidence-property is necessarily concomitant with the target-property *if and only if* it can be shown that there is an essential or a causal relationship between them. Claiming so, he provides "the ontic foundation for valid reasoning" (Katsura 1992: 223). In *Pramāṇavārttika* 1, Dharmakīrti grants only three types of inferential evidence. These are (i) natural properties (*svabhāva*); (ii) effects (*kārya*); and (iii) the non-cognition [of a relevant element] (*anupalabdhi*). To explain, it is not accidental that whenever there is an oak, there is also a tree, this is due to the fact that being a tree is *a natural property* of an oak ; this is not accidental that whenever there is smoke, there is fire, this is due to the fact that smoke is an *effect* of fire ; and cases of non-cognition are consequences of the two former cases, since it is not accidental that whenever there is no tree, there is no oak, and that whenever there is no fire, there is no smoke. The difference between Jain and Buddhist accounts seems to be that for the Buddhists, the 'being a tree' is known thanks to a reasoning upon the 'being an oak', whereas for the Jains, this is known by a direct type of knowledge.
In the tradition stemming from Siddhasena Mahāmati and Akalaṅka, Jain philosophers anyway build upon Dharmakīrti's pan-Indian theory, after having proposed some amendments to it. Especially, they consider that there are not three, but six situations in which the necessary copresence of two properties is known, namely when the evidence-property is (i) a property pervaded (*vyāpya*) by the target-property; (ii) an effect (*kārya*) of it; (iii) a cause (*kāraṇa*) of it; (iv) a predecessor (*pūrvacara*) of it; (v) a successor (*uttaracara*) of it; or (vi) a co-existent (*sahacara*) with it.[30] Indeed, it is sufficient to know that there is a shadow in order to infer that there is an umbrella; to know the colour of a fruit in order to infer its taste; or to know that the Pleiades are rising in order to infer that Aldebaran will rise soon.[31] As for the non-cognition [of a relevant element], Jains do not considered it as a type of good inferential evidence. Instead, they treat it as a negation, in line with Jain canonical treatises, in which four types of inference were presented, differentiated on the basis of the affirmative, respectively negative, character of their premise and conclusion. The structure of truth-preserving arguments therefore becomes a concern in Jainism when negations are introduced, as the expression of inferences involving absences. This led the Jains to single out four main types of inferential reasoning, namely the affirmation of the thesis when compatible evidence

[29] See Bagchi (1953: 126) and Daye 1979.

[30] PM 59; trans. Ghosal, p. 122.

[31] See Clavel 2014; Gorisse 2015.

is known, its negation when incompatible evidence is known, its negation when compatible evidence is not known and its affirmation when incompatible evidence is not known (Gorisse; forthcoming).[32]

Implementation Let us now see how these theories of inference were implemented in philosophical debates, by taking as a representative example the debate over the existence of a Demiurge God in the *Tarkarahasyadīpikā* (TRD), *Lights on the concealed doctrines*, of the Jain Guṇaratna, 14th c. (Van Den Bossche 1998).
The goal of this text is to refute the following inferential reasoning presented by the Naiyāyika philosophers:
[Thesis] The subject under discussion (the mountains, etc.) is produced by a conscious being.
[Evidence] Because it is a product.
[Account] Whatever is a product is produced by a conscious one, like a pot.
[Application] And this [subject under discussion] is a product.
[Conclusion] Therefore [it] is produced by a conscious one.[33]

Here, we are legitimate to infer that the target-property 'being produced by a conscious being' characterises not only artifacts like pots, but also natural products like mountains. First, because we already all agree on the fact that the evidence-property 'being a product' characterises these mountains.[34] Second, because we also all agree on the fact that the necessary relationship between 'being a product' and 'being produced by a conscious being' is such that nothing can be a product without also being produced by a conscious being.[35]
First, this inferential reasoning aims at proving that Īśvara, The Lord, created the world, because only such an omnipotent being could possibly be the creator of mountains and similar natural products. Second, the way in which this inferential reasoning has been attacked and defended is a nice indicator of the evolution of debates. Philosophers first challenge it by indicating counter-examples,[36] respectively defend it by showing that these are no genuine counter-examples.[37] Then, the discussion switches from a search of counter-examples to an investigation on the meaning of the concepts involved. In our case, it is asked whether the concept of product includes the concept of an efficient cause. In the Indian technical terms, philosophers question the relevance – or not – of drawing a line of distinction in the concept 'being a product' as far as its relation with the concept of 'being-made-by-a-conscious-maker' is concerned. No one would one draw a line of distinction between 'products with a beginning' and 'products without a beginning', since a product, by definition has a beginning. This is in a similar way that no one should draw a line of distinction between 'products with a conscious producer' and 'products without a conscious producer' inasmuch as it is inbuilt in

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[32] PM 59, 71, 78, 86; pp. 122, 129, 131, 133. I would like to thank an anonymous referee who suggested that the two last forms could be seen as types of hypothetical reasoning.
[33] In the *Īśvarasādhanadūṣaṇam* (ĪSD), Refutation of the proof of God [as the creator of the world] of Ratnakīrti. ĪSD 32. 14–18: *vivāda-adhyāsitaṃ buddhimadd-hetukam. kāryatvāt. yat kāryaṃ tad buddhimadd-hetukam. yathā ghaṭaḥ. kāryaṃ ca idam. tasmād buddhimad-hetukam iti*, p. 32.
[34] All Indian philosophers agree that whatever is made of parts is a product, in the sense that it has come to existence at one point of time, it is not eternal.
[35] For Naiyāyika philosophers, in the same way that we all agree that whatever is produced has a material cause (even this material cause is subtle), in the same way we should all agree that whatever is produced has an efficient cause. This last part is what will be denied by Jains and Buddhists.
[36] Namely, grass is a product that grows without the help of a conscious producer.
[37] Namely, when we perceive smoke, we do not perceive the fire that we infer due to its spatial remoteness ; when we perceive a pot, we do not perceive the potter that we infer due to its temporal remoteness ; when we perceive grass growing, we do not perceive its creator that we infer due to its essential remoteness (i.e. the fact that it is sublte).

the concept of product that it has an efficient cause. All in all, the core of logical analyses in the classical Indian hall of philosophical debate after Dharmakīrti is the following question: what are the exact properties (having a conscious producer on one side; and being a product, or an artifact, or something else on the other side) between which the invariable concomitance holds? And which type of invariable concomitance does hold (essential, causal, etc.)? Once this is answered, it is mechanical to see whether the initial thesis is established, respectively refuted.

3. Other types of sophistication in rational debates

Before concluding, I would like to present a specifically Jain way of expressing an inferential reasoning, namely by making use of riddles. This technique was introduced by the Jain Vidyānanda (10th c.) in his *Patraparīkṣā* (PP), the *Investigation on puzzle-argument*. It was then developed and linked with Jain perspectivism by Prabhācandra in his PKM and, except in the works of Prabhācandra's commentators, it was soon forgotten. A '*patra*', which I translate here by 'puzzle-argument', is an inferential reasoning expressed by means of word plays. The gain of such a display is that it is not directly comprehensible and that the process of interpretation of the riddles involved is linked with practices of self-realisation, in the sense that it brings the debater to an awareness of and practice upon the rich existing network of multiple meanings of a given linguistic unit. In his PP, Vidyānandin gives the example of an inferential reasoning starting in the following way:

> [Thesis] What is to be pronounced [when one reads what is] followed by '*yad*', this is wandering into diversity,
> [Evidence] Because its nature is that of what is followed by 'doubt'.[38]

With proper knowledge of lists found in grammatical treatises (where the pronoun 'yad' is listed just after the expression 'everything') and with proper knowledge of lists found in epistemological treatises (where the category 'knowable' is listed just before 'doubt'), as well as with proper alternative analysis of the Sanskrit compounds and attribution of proper alternative meaning to root words, one is able to understand that this equals the Jain thesis according to which:

> [Thesis] Everything is non-one-sided,
> [Evidence] Because everything is knowable.

First, the practice of puzzle-arguments is in perfect alignment with the Jain theory of non-one-sidedness (*anekāntavāda*), since by improving one's skill to generate a multiplicity of meanings and by training the debaters to see things from a multiplicity of perspectives, it contributes to strengthening our awareness of an existing global network of connections (Gorisse 2018).
Second, one of the common meanings of '*patra*' in Sanskrit is 'epistle'. In the context of Jainism, there is one specific practice of epistle writing that is called '*patra*', so its use by Vidyānanda is not neutral. In fact, from the 8th c., there is a wide tradition in Jainism on riddles, in which the stylistic sophistication is close to that of poetry. Furthermore, these riddles are regularly in the form of epistles, like in the case of the letters of solicitation (*vijñapti-patra*) sent by mails from one community to the other. As established by Balbir, the process of disambiguation of the riddles contained in these letters serves specific purposes, for

[38] PP 10.1, p. 10.

example to show the devotion of the monk towards his superior, because understanding these riddles presupposes to know the biography of the latter (Balbir 2003: 196).
Third, there is in India at that period a general tradition of making an impression at royal courts by means of displaying one's literary skills in composing sophisticated forms, especially poetical ones, but we can easily imagine that this puzzle-argument method could be thought of in such a line that would, again, be considered as a means towards social and political empowerment.

Conclusion

In the introductive section of this paper, I have established that in India, highly regulated argumentation is a prevalent mode of thought elaboration already in the 6–7th centuries BCE, that it influenced society and politics, and that it shaped the whole edifice of knowledge. Secondly, I have described how in this paradigm, arguing consists in attacking, respectively defending, in a codified way an inferential reasoning. Third, acknowledging that Jain conceptions of inferential reasoning and the way they contributed to the development of pan-Indian theories of argumentation, have consistently been under-studied, I have conceived this paper as a contribution to overcome this state of affair.
First of all, the doctrines presented in early Jain canonical literature are routinely embedded in argumentative dialogues. In these early conceptions, apologetic motives are commonplace. However, Jain canonical literature conjointly features systematic concerns, but these are largely indebted to texts from the Brahmanical tradition. A thorough specifically Jain concern for inferential reasoning is shown only from the 7th c. onwards. I gave an overview of Jain conceptions of inferential reasoning of this period, quoting from the texts that constitute the landmark of the discipline. From this overview, we can formulate the following conclusions:
. Inferential reasoning in classical India traditionally consists in a series of five statements, which combines a bottom-up and a top-down presentation of the *modus ponens*.
. Indian philosophers attempt to bring the inferential reasoning to its minimal form, which leads them to distinguishing between psychological and formal considerations. In these attempts, Jain philosophers are the ones who go the further.
. Indian philosophers were not interested in varying the logical forms, like Aristotle did in his syllogistic. More generally, Indian philosophers did not develop a logical formalism.
. The form of the inferential reasoning only becomes a concern for Jains when negations are introduced as the expression of reasoning involving the acknowledgment of absences.
. The core of logical investigations in India pertains to question the scope of predicates, as well as the types of necessary relation that hold between two properties (natural property, effect, cause, predecessor, successor, co-existent).
. A general survey of the types of necessary relation that hold between two properties reveals that in an attempt towards a formal representation of these theories, the material implication would not do, but that a plurality of logical connectors would be needed. Besides, most of these relations are transitive, but not symmetric, due to the presence of epistemological concerns.
. Jain conceptions grant higher epistemic abilities as in principle accessible to human beings, and link epistemological considerations with soteriological ones.
. The systematic discipline by excellence in India is not mathematics, but grammar.
. In general, logical considerations in India are part of a bigger whole that includes social, political and soteriological concerns.

Primary literature

AṇD = *Aṇuogaddārāīṃ*. Muni Puṇyavijaya, Dalsukh Mālvaṇiā, Amritlāl Mohanlāl Bhojak (eds.): *Nandisuttaṃ and Aṇuogaddārāiṃ*. Jaina Āgama Series 1, Shri Mahāvira Jaina Vidyālaya, Bombay 1968.

ĀS = *Āvassaya Sutta*. Muni Dīpartnasāgar (ed.): *Āgama-suttāṇi, bhāgaḥ* 24. *Āvaśyaka-mūla-sūtram, niryukti, bhāṣya*, *vṛttiḥ*. 2 vols. Āgama Śruta Prakāśan, Ahmedabad 2000.

DVN = *Daśavaikālikaniryukti* of Badrabāhu. *The Daśavaikālikasūtra by Sayyambhava and the Daśavaikālikaniryukti by Bhadrabāhu*. *Journal of the German Oriental Society* 45 (1892): 581-663.

ĪSD = *Īśvarasādhanadūṣaṇam* of Ratnakīrti. In: Thakur, A (ed.). *Ratnakīrtinibandhāvaliḥ*. *Buddhist Nyāya Works of Ratnakīrti*. Patna: Kashi Prasad Jayaswal Research Institute, 1975, 32–57.

LT = *Laghīyastrayam* of Akalaṅka. Mahendra Kumar Shastri (ed.): *Akalaṅkagranthatrayam*. Sarawasti Oriental Series 8, Saraswati Pustak Bhandar, Ahmedabad 1939.

NA = *Nyāyâvatāra* of Siddhasena Mahāmati. Piotr Balcerowicz (ed. tr.): *Jaina Epistemology In Historical And Comparative Perspective – A Critical Edition And An Annotated Translation Of Siddhasena Mahāmati's Nyāyâvatāra, Siddharṣigaṇin's Nyāyâvatāra-vivṛti And Devabhadrasūri's Nyāyâvatāra-ṭippana*. 2 vols. Second revised edition. Delhi 2009. [1st ed.: Stuttgart 2001].

NAv = *Nyāyâvatāra-vivṛti* of Siddharṣigaṇin. See NA.

NS = *Nyāyasūtra* of Gautama. Michel Angot (ed. tr.): *Le Nyāyasūtra de Gautama Akṣapāda. Le Nyāyabhāṣya d'Akṣapāda Pakṣilasvāmin*. Les Belles Lettres, Paris 2009.

NSBh = *Nyāyasūtrabhāṣya* of Vātsyāyana. See NS.

PKM = *Prameyakamala-mārtaṇḍa* of Prabhācandra. Mahendra Kumar Shastri (ed.): *Prameyakamalamārtaṇḍa by Shri Prabha Chandra*. Garib Dass Oriental Series 94, Sri Satguru Publication, Delhi 1912.

PM = *Parīkṣāmukham* of Māṇikyanandin. S. C. Ghoshal (ed. tr.): *Parīkṣāmukham*. The Central Jaina Publishing House, Lucknow 1940 (Reprinted in The Sacred Books of the Jainas 11, Today's and Tomorrow's Printers and Publishers, Delhi 1990).

PNT = *Pramāṇanaya-tattvālokālaṃkāra* of Vādi Devasūri. Hari Satya Bhattacharya (ed. tr.): *Vādi Devasūri's Pramāṇanayatattvālokālaṃkāra*. Jain Sahitya Vikas Mandal, Bombay 1967.

PP = *Patraparīkṣā* of Vidyānandin. Gajādharalāla Jaina (ed.): *Syādvādavidyāpati-śrīmadvidyānandasvāmiviracitā Āptaparīkṣā Patraparīkṣā ca*. *Sanātanajainagranthamālā* 1–2, Pannālāla Jāina, Kāśī 1913.

PV = *Pramāṇavārttika* of Dharmakīrti. Ranielo Gnoli (ed.): *The Pramāṇavārttika of Dharmakīrti. The first chapter with the auto commentary*. Serie Orientale Roma 23, Istituto Italiano per il Medio ed Estremo Oriente, Roma 1960.

SSā = *Samayasāra* of Kundakunda. Chakravarti, A (ed. tr.): *Ācārya Kundakunda's Samayasāra*. Benares 1950 (5th ed. Bharatiya Jnanpith, New Delhi 2008).

Ṭhāṇ = *Ṭhāṇaṃgasutta*. Muni Jambūvijaya (ed.): *Sthānāṅgasūtra* (3 vols.). Jaina Āgama Series 19, Shri Mahāvira Jaina Vidyālaya, Bombay 2002–3.

TRD = *Tarkarahasyadīpikā* of Guṇaratna. In: Suali, L (ed.): *Shaḍdarśana-samuchchaya by Haribhadra with Guṇaratna's commentary Tarkarahasya-dīpikā*. Calcutta: Asiatic Society of Bengal, 1914.

TS = *Tattvārthasūtra*. In Tatia, Nathmal (tr.): *That which is. Tattvārthasūtra. A Classic Jain Manual for Understanding the True Nature of Reality*. New York: Harper Collins Publishers, 1994.

TSBh = *Tattvārthasūtrabhāṣya* of Umāsvāti. See TS.

Viy. = *Viyāhapannatti* = *Bhagavaī*. K.C. Lalwani (ed. tr.): *Sudharma Svāmi's Bhāgavatīsūtra*, vol. 2. Jain Bhawan, Calcutta 1973.

Secondary literature

Bagchi, Sitansusekhar. *Inductive reasoning. A study of tarka and its role in Indian logic*. Calcutta: Calcutta Oriental Press Ltd, 1953.

Balbir, Nalini. 2003. "Gurubhakti through word-puzzle in the Jain Context." *Vāṇi-jyotiḥ* 17–18: *Prof. Dr. Gopinath Mohapatra Felicitation Volume* (2003) 181–203.

Balcerowicz, Piotr. *Early Asceticism in India. Ājīvikism and Jainism*. London and New York: Routledge, 2016a.

Balcerowicz, Piotr. "Siddhasena Mahāmati and Akalaṅka Bhaṭṭa: A revolution in Jaina epistemology." *Journal of Indian Philosophy* 44 (2016b): 993–1039.

Balcerowicz, Piotr. "Is 'inexplicability otherwise' (*anyathānupapatti*) otherwise inexplicable?" *Journal of Indian Philosophy* 31(2003): 343–380.

Black, Brian. *Priests, Kings and Women in the Early Upaniṣads. The Character of the Self in Ancient India*. Delhi: Motilal Banarsidass, 2014.

Bronkhorst, Johannes. *Language and Reality. On an episode in Indian Thought*. Leiden: Brill, 2011.

Clavel, Anne. "Can the Rise of Rohiṇī be Inferred from the Rise of Kṛttikā? A Buddhist-Jaina Controversy." *Lumbini International Research Institute Proceedings Series* 6 (2014): 341–366.

Daye, Douglas. "Circularity in the inductive justification of formal argument (*tarka*) in twelfth century Indian Jain logic." *Philosophy East and West* 29/2 (April 1979): 177–188.

Esposito, Anna Aurelia. “Didactic Dialogues: Communication of Doctrine and Strategies of Narrative in Jain Litterature”. Dialogue in Early South Asian Religions. Hindu, Buddhist, and Jain Traditions. B.Black and L.Patton (eds.). London and New York: Routledge, 2015, 79–94.

Flügel, Peter. “Sacred Matter: Reflections on the Relationship of Karmic and Natural Causality in Jaina Philosophy.” *Journal of Indian Philosophy* 40 (2012) 119–176.

Gorisse, Marie-Hélène. “Jaina conceptions of non-cognition: A dialogue with Dharmakīrti on inferential evidence”. In *Proceedings of the Fifth Dharmakīrti Conference Heidelberg 25*486–506*30 August 2014*, edited by Sara McClintock, Horst Lasic, Patrick McAllister, Birgit Kellner. Forthcoming(a).

Gorisse, Marie-Hélène. “Characterising the Self: Knowledge and liberation in the *Samayasāra*.” In *Cāruśrī. Essays in honour of Svastiśrī Carukīrti Bhaṭṭāraka Paṭṭācārya*, Hampasandra Naganarajaiah and Jayandra Soni (eds.). Bangalore: Sapna Book House, 2019, pp. 95–107.

Gorisse, Marie-Hélène. “Concealing meaning in inferential statements : The practice of patra in Jainism.” In *Jaina Studies. Select Papers presented in the ‘Jaina Studies’ Section at the 16th World Sanskrit Conference, Bangkok Thailand and the 14th World Sanskrit Conference, Kyoto Japan*, edited by Nalini Balbir and Peter Flügel, 111–126. New Delhi: DK Publishers, 2018.

Gorisse, Marie-Hélène. “Jain logic in the tradition of Prabhācandra.” In *Oxford Handbook of Indian philosophy*, Jonardon Ganeri (ed.) 486–506. Oxford: Oxford University Press, 2017.

Gorisse, Marie-Hélène. “The taste of the mango : a Jaina-Buddhist controversy on evidence.” *International Journal of Jaina Studies* 11/3 (2015): 1–19: https://www.soas.ac.uk/ijjs/file100876.pdf

Hayes, Richard P. *Dignāga on the Interpretation of Signs*. Studies in Classical India 9. Dordrecht: Kluwer, 1988.

Katsura, Shoryu. “Dignāga and Dharmakīrti on adarśanamātram and anupalabdhi.” In Asiatische studien/ études asiatiques 47, Zurich: Zeitschrift der Scheizerischen Asiengesellschaft/ Revue de la société Suisse (1992): 222– 231.

Sen, Amartya. *The argumentative Indian. Writings on Indian history, culture and identity*. New York: Farrar, Straus and Giroux, 2005.

Shah, Nagin J. *Akalaṅka’s Criticism of Dharmakīrti Philosophy: A Study*. Ahmedabad: L.D. Institute of Indology, 1967.

Solomon, Esther A. *Indian dialectics. Methods of Philosophical Discussion* (vol.1&2). Ahmedabad: B.J. Institute of Learning and Research. Gujarat Vidya Sabha, 1976

Van Den Bossche, Franck. “Jain arguments against Nyāya theism. A translation of the Īśvarotthāpaka Section of Guṇaratna’s Tarka-rahasya-dīpikā.” *Journal of Indian Philosophy* 26 (1998): 1–26.