Is There Anything Like Indian Logic? *Anumāna*, 'Inference' and Inference in the Critique of Jayarāśi Bhaṭṭa

Piotr Balcerowicz[1]

Abstract The paper presents an analysis of the *anumāna* chapter of Jayarāśi's *Tattvôpaplava-siṁha* and the nature of his criticism levelled against the *anumāna* model. The results of the analysis force us to revise our understanding of Jayarāśi Bhaṭṭa as a sceptic. Instead, he emerges as a highly critical (materialist) philosopher. In addition, the nature of Jayarāśi's criticism of the *anumāna* model allow us to conclude that *anumāna* should not be equated with inference, but rather is its limited subset, and may at best be rendered as 'disputational inference', 'debational inference' or even 'dialogical inference'. Jayarāśi applies a range of logical laws which clearly represent patterns of what can be classified as a priori reasoning (if we grant that there could be a priori justification for our knowledge at all) and analytical justifications for knowledge, which were traditionally not reckoned sound. Against the backdrop of Jayarāśi's criticism of *anumāna*, the paper also attempts to provide an explanation to why Indian philosophy and logic did not develop any concept of proper symbols and variables.

Keywords Materialist · Scepticics · Inference · A priori reasoning · Analytic truths · Symbols · Grammar · Variable

1. It is usually assumed that Jayarāśi Bhaṭṭa (800–840),[1] formally a proponent of the materialist school (*cārvāka*, *lokāyata*), represents some kind of scepticism, the

---

✉ Piotr Balcerowicz
  piotrbalcerowicz1@gmail.com

[1] University of Warsaw, Warsaw, Poland

foundations of which are worked out in his *Tattvôpaplava-siṁha* ('The Lion of the Dissolution of [all] Categories'). In the paper, I analyse the *anumāna* chapter (TUP₁, pp. 64.20–110.17) of Jayarāśi Bhaṭṭa's only surviving work and his criticism of *anumāna*. For reasons which will become clear towards the end of this paper, I will refrain from translating the term '*anumāna*'—usually translated as 'inference'—for the time being (unless it is in quotation marks). The findings of this paper, it is expected, will force one to seriously reconsider what so-called 'Indian logic' actually was and how its nature differed, if it at all did, from Western logic. In addition, the paper provides some evidence that certain forms of a priori reasoning were employed in India.

2. In the opening section of his work, Jayarāśi examines the realist Nyāya definition of *pratyakṣa* (perception), which is consistent with the whole scheme of his text consisting of divisions which present a critique of the most commonly found cognitive criteria (*pramāṇa*), or rather a critique of their definitions as provided by the major philosophical traditions: *pratyakṣa* (perception), *anumāna* ('inference'), *arthāpatti* (presumption), *upamāna* (analogy-based reasoning), *abhāva* (absence as negative proof), *sambhava* (equivalence), reduced to *anumāna*, *aitihya* (traditional account), reduced to *śabda*, and *śabda* (verbal cognition). As a rule, Jayarāśi begins every separate section of his work devoted to a particular cognitive criterion out of the first four, recognised by Nyāya (namely *pratyākṣa*, *anumāna*, *upamāna* and *śabda*), with a definition formulated by the Naiyāyikas, which indirectly shows that he take the Nyāya account as the standard. Such is the case also with his examination of *anumāna* ('inference') in the second chapter, which begins with the Nyāya definition of this cognitive criterion as 'that which is preceded by perception', found in the *Nyāya-sūtra*.[2] First he indicates what appears to be a paradox, though it can also be interpreted as a *reductio ad absurdum* involving the cause and effect both of which should exist at the same time in order to become the relata of a *causal* relation occurring at a particular time, a *reductio* already known from Nāgārjuna's *Mūla-madhyamaka-kārikā*[3] and *Vigraha-vyāvartanī*,[4] and its premiss reported as a *pūrva-pakṣa* in the Vṛtti-kāra section of the *Śābara-bhāṣya*.[5] The argument can be construed as based on two premisses. The first point of departure is that any relation, in this case a causal relation, should bind two *existent* relata, therefore all three—the two relata and the relation—should co-occur, which is the first premiss. The conclusion clashes with another premiss, namely that a cause has to precede or preexist its effect. Therefore, the causal relation, the way it is analysed, is not only doubtful but leads to contradiction. In the next step, the paradox is shifted from the ontological level (relation R linking two relata p and q)

---

[2] NS 1.1.5: *tat-pūrvakam anumānam*.

[3] MMK 1, 10.8–12, 20.5–8.

[4] VVy 49:

> *pitrā yady utpādyaḥ putro yadi tena câiva putreṇa /*
> *utpādyaḥ sa yadi pitā vada tatrôtpādayati kaḥ kam //*

[5] MŚBh₁ 1.1.5, p. 11.3–4=MŚBh₂ 1.1.4b, p. 32.17–18: *karma-kāle ca phalena bhavitavyaṁ, yat-kālaṁ hi marddanaṁ, tat-kālaṁ marddana-sukham.*—'The effect has to occur at the time of the act (as its cause): at the time massage [takes place], at the same time the pleasure [derived from] massage [occurs].'

to the epistemic level (the cognition of relation R linking two relata being the cognition of p and the cognition of q). In other words, he applies the same analysis of the causal relation as such to a case which involves perception as cause in time t_1 and *anumāna* as effect in time t_2: the conclusion of an inference (*anumāna*) ensues following its case (either an act of perception or a series of mental states which all lead to the conclusion).

One may know the causal relation between two cognitive acts of p and of q at least two ways. First, for *anumāna* ('inference') to be caused by perception, both acts of cognition have to exist in an observable manner, viz. perception as cause should be as existent as *anumāna*, being an effect of the latter, at the same time instant, which implies their observability at the same time. Since however both cannot co-exist in the same instance, therefore 'in the absence of this [perception], there is an absence of the *anumāna*, because the latter is preceded by this [perception]'.[6] Second, since the cause has to exist in a time instant preceding its effect, an alternative would be to establish the causal relation between the *anumāna* and the perception through some kind of reasoning or inference based on the fact that these two, the *anumāna* and the perception, are inseparably related. Such a general relation would involve a kind of the inseparable connection (*avinâbhāva*), but 'it is not possible to grasp the relation known as the inseparable connection' between these two for a range of reasons.[7]

Such a relation would be precisely the same relation which is accepted by most Indian thinkers in one form or another as operative in any causal relation, such as a relation linking the fire (cause) and smoke (effect) or the cognition of the fire and the cognition of the smoke. Such an inseparable connection (*avinâbhāva*) can theoretically relate two items, or relata, in three possible options: either two universals (*sāmānya*), or one universal and one particular (*viśeṣa*), or two particulars. The first and second alternative are not possible because Jayarāśi clearly rejects the existence of universals (*sāmānya*), and he reiterates his position on a number of occasions which are not due to rhetorical reasons of a typical sceptic. To establish a relation in the third case turns out to be likewise impossible 'due to the infinite number [of particulars such as] infinite particular fires and infinite particular smokes'[8] which should first grasped be in order to be correlated in a meaningful (logical) manner, and 'because a causal factor which both is undivided (i.e. numerically one) and runs along (i.e. relates to) infinite [particulars] is impossible'.[9] The inseparable connection cannot be established by perception[10] which would have to simultaneously grasp particulars in different times (*kāla*) and places (*deśa*) and of different natures (*svabhāva*). Also, if such a relation could be established in a singular case of two particulars serving as cause and effect, such a relation could not be generalised, i.e. transferred to other particulars, and would never become a universal principle by way of which one could justifiably reason.

---

[6] TUP$_1$, p. 65.1: *tat-abhāve tasyâbhāvaḥ tat-pūrvakatvāt.*

[7] TUP$_1$, p. 65.4–5: *avinâbhāva-sambandhasya grahītum aśakyatvāt.*

[8] TUP$_1$, p. 65.11: *dahana-dhūma-vyaktīnām ānantyāt.*

[9] TUP$_1$, p. 65.11–12: *abhinnânekânugāmi-nimittâsaṁbhavāt.*

[10] TUP$_1$, p. 65.15 ff.

The actual grounds for the rejection of the inseparable connection (*avinâbhāva*) as a logical relation are primarily of an empirical and ontological nature, not of a logical one: the universals are, ontologically speaking, non-entities and they cannot be linked to anything, whereas particulars can never be grasped in their entirety so that a valid relation be thereby established.

Thereupon, Jayarāśi moves on to refute the idea of causality-based inference (TUP$_1$, p. 66.21–67.24). In particular, he points out there are no means to know that, say, a particular smoke is an effect of a cause in general, or an effect of a particular fire.[11] In other words, Jayarāśi rejects the argument that any perceived thing per se carries along with it information about its source, i.e. about its cause, to be precise. In perception, the object presents itself in its current 'pure' form, without any additional message concerning its individual history or its origins, and no particular smoke can convey any information about its postulated causal determinants. Therefore, it is impossible to ascertain 'the inferable' (*anumeya*), i.e. fire—which is postulated in the *anumāna* ('inference')—as the cause of the smoke on the basis of the observable effect (e.g. a particular smoke). Likewise, the perception of a particular smoke does not contain the information about a termination of the existence (*sattā-viccheda*) of a cause (fire, either particular or universal) which is postulated to precede the occurrence of the smoke an instance earlier. Further, the visible smoke is perceived, and the question is whether the perception which cognises it does it in a positive manner, i.e. by way of affirmation (*vidhi-mukhena*), or a negative manner, i.e. by way of negation (*pratiṣedha-mukhena*). In the first case, all the perception can do is at best to confirm what one actually sees, i.e. the existence of a particular smoke, which however does not bring in any additional knowledge about its causes nor about the fact that a certain particular (fire) has just ceased to exist before the occurrence of the smoke in the subsequent, i.e. present instance. The latter case postulates, for instance, that the perception of smoke is accepted to provide knowledge of its cause by way of a negation, for instance to reveal the current interruption (discontinuation) of the previous existence of a real entity which is the cause, e.g. fire (*sat-sattā-khaṇḍanâvadyotyate*). Here one is faced with the formal concept of destruction (*pradhvaṁsa*) introduced to explain the idea of the termination of the existence (*sattā-viccheda*) of a cause (fire) in the moment when its effect comes into being. What is meant by it is the present non-existence of the cause as a result of its previous existence.[12] The idea behind is that, while perceiving the smoke, one is also expected to observe the absence of its cause, technically called the destruction (*pradhvaṁsa*) of something that has just

---

[11] TUP$_1$, p. 66.21–22: *dhūmasya kārya-rūpatvâsambhavāt.*

[12] This is a reference to Kaṇāda's second type of absence, namely absence after destruction (*dhvaṁsâbhāva*), found in the *Vaiśeṣika-sūtra* (VS(C) 9.2: *sad asad*): 'the existent turns into the non-existent [in the next moment]'), and explained by in Candrānanda's *Vaiśeṣika-sūtra-vṛtti*, VSV(C) 9.2: *sad-bhūtaṁ ca kāryaṁ pradhvastam uttara-kālam asad eva, na satas tiro-dhānaṁ kriyā-guṇa-vyapadeśâbhāvād eva.*—'An existent effect, which is destroyed in the next moment, is nothing but non-existent. The disappearance of the existent is in no way because of the absence of an assertion of [its] movements or qualities [as in the first case of absence described in VS(C) 9.1]'.

previously existed. Jayarāśi argues however that such an idea cannot be present in the perception of smoke or of anything else.[13]

Closely related to this argument is the case of the opposition (*virodha*),[14] which Jayarāśi now comes to examine. His critique is prompted by a preliminary defence (*pūrva-pakṣa*) of the *anumāna* ('inference') based on the assumption that the present perception of smoke is related to the destruction of its cause (fire) by way of the presently perceived opposition to what has just ceased to exist (fire) before the emergence of the currently perceived smoke: 'If [it is objected that]: "The [destruction of fire (the cause) is tantamount to] the negation of smoke (the effect) as being in opposition to smoke", [we ask:] what is then that which is designated by [the term] "opposition"?'[15] A number of possible definitions of 'opposition' are put forward and rejected as self-abortive. Accordingly, '*x* and *y* are in opposition' ('*x* is in opposition to *y*') can mean: *x* having the form of non-*y* (*atad-ākāratā*, TUP$_1$, p. 68.4); when *x* is present, there is no perception of *y* (*tat-sadbhāve tasyânupal-abdhiḥ*, TUP$_1$, p. 68.10), with a few sub-clauses; *x* being produced by *y* (*tad-janyatā*, TUP$_1$, p. 69.13); *x* and *y* being the agents executing causally efficient actions which have different ends (*bhinnârtha-kriyā-kartṛtvam*, TUP$_1$, p. 69.19); *y* is independent of *x* which is in turn dependent on it (*āśritânāśritatvaṁ*, TUP$_1$, p. 69.26). However, the notion of opposition, which is here analysed, is that in the context of causality, and not opposition or contradiction in general, or in logical sense. In fact, it is merely an extension of the idea of causality, i.e. the opposition between the present perception of the effect when the cause is no longer observed and the prior existence of the cause so that from the present non-perception of the cause one could infer its prior existence by way of the *opposition*. As Jayarāśi demonstrates, this kind of opposition either rests on empirical observation, and therefore either is fallible or cannot be established, or is not logically cogent.

The next relation which could serve as a logical basis for *anumāna* ('inference') considered by Jayarāśi is the cause–effect relation (*hetu-phala-sambandha*)[16] which, as he argues, cannot be determined. It rests on two principles jointly, viz. positive concomitance (*anvaya*) and negative concomitance (*vyatireka*). The basic problem here is that in order to determine a causal correlation between a cause (fire) and an effect (smoke), one must grasp the non-existence (or existence) of the cause and the existence (or non-existence) of the effect simultaneously with one act of cognition. However, cause and effect exist at two separate instants of time by definition. If the

---

[13] For a completely different interpretation of this passage see: Solomon (1976–1978, II, pp. 573–574; 2010, pp. 136–138). My interpretation rests on the initial statement of the section: 'Also for this reason, there can be no ascertainment of the inferable object' (TUP$_1$, p. 66.21: *ito'pi nânumeya-pratipattiḥ*,…), where *anumeya* has to refer to fire, which one intends to infer on the basis of that which is being perceived, i.e. smoke. Jayarāśi demonstrates how causality-based inference cannot work, viz. why it is not possible to infer the cause on the basis of the perception of a thing postulated to be its effect. Probably the reason why Solomon offers her interpretation is influenced by the *Vaiśeṣika-sūtra-/-vṛtti* account in which, in that particular context, the idea of destruction, or discontinuity of existence, is explained by way of an effect (*kārya*).

[14] TUP$_1$, p. 67.26 ff.

[15] TUP$_1$, p. 67.26–27: *atha dhūma-virodhitvena asau dhūmasya khaṇḍanā iti cet kaḥ punar asau virodhârthaḥ.*

[16] TUP$_1$, p. 70.7–73.24.

cogniser first grasps the prior existence of the cause with one cognition, and the subsequent existence of the effect with another act of cognition, one would have to correlate these two acts of cognition with still another, numerically one and uniform (meta-)cognition in a way that would yield a knowledge of the causal relation between the two primary cognitions, the previous and the subsequent ones, but this is impossible because the contents of such a (meta-)cognition no longer consists in the actual things (case and effect) and also such a (meta-)cognition would have to combine two separate cognitions (of the cause and of the effect) existing in two separate instants of time, prior and subsequent.

The dilemma further is: 'When the reasoner perceives [what one considers] the effect, does he remember the cause or does he cognise it?'[17] One cannot remember what one has never experienced before. On seeing the effect, one can cognise the cause metaphorically (*upacārita*) or literally (*nirupacārita*). In the former case, the effect's relation to it is not real and the alleged cause is not a causal factor at all, except taken figuratively. In the latter case, the cause may be either existent (*vidyamāna*) or non-existent (*avidyamāna*). The former is impossible because the cause exists only in the moment when it produces its effect. If the cause continued through more instants of time than one, it would keep on producing infinite effects in every consecutive instant of its existence. Assuming that it does continue to exist in subsequent moments as the cause, hence retaining its capacity to produce, but it does not produce, then it cannot be regarded as a causal factor at all because the cause is necessarily defined as something which causes its effect. The latter (the non-existent cause) would be a most curious alternative: the cause would not exist and yet would be perceived (TUP₁, p. 71.25–27).

The above is just one of many problems involved in an attempt to grasp positive and negative concomitances as the basis for *anumāna*, such as the question between what items the concomitance is grasped: does it obtain either between two universals (*sāmānya*), or between one universal and one particular (*viśeṣa*), or between two particulars? None of these three alternatives is feasible for the same reasons as in the previously discussed case of the inseparable connection (*avinâbhāva*).

The ontological and empirical impossibility of correlating two items through a causal relation leads Jayarāśi to refute a number of other claims, such as the Naiyāyika's argument that whatever is produced is non-eternal (TUP₁, p. 73.25–74.9); the arguments for the existence of the soul inferred from the existence of pleasure, pain and cognition as formulated by the Naiyāyikas (TUP₁, p. 74.11–76.22), by the Jainas (TUP₁, p. 76.24–78.5) and by the Sāṁkhyas (TUP₁, p. 79.20–81.7); the idea of liberation (*kaivalya*) as formulated by Sāṁkhya (TUP₁, p. 81.9–14), Vedānta (TUP₁, p. 81.15–82.5) and Mīmāṁsā (TUP₁, p. 82.6–83.7) as well as the Jaina theory of multiplexity of reality (*anekānta-vāda*) (TUP₁, p. 78.6–79.19).

Thereupon Jayarāśi proceeds to examine the foundations of the idealist Buddhist (Yogācāra-Sautrāntika) take on *anumāna* ('inference').[18] In a similar vein, he points out at the very outset that such 'an *anumāna* cannot operate, because the relation

---

[17] TUP₁, p. 71.23–24.

[18] TUP₁, p. 83.9 ff.

cannot be known'.[19] Such a relation could theoretically link either two universals (*sāmānya*), or one universal and one unique particular (*sva-lakṣaṇa*), or two unique particulars.[20] This leads to similar problems of ontological and empirical nature as in the cases already discussed: that of the inseparable connection (*avinâbhāva*) and that of a relation based on positive concomitance and negative concomitance (*anvaya-vyatireka*), which render the Nyāya model of *anumāna* both unreliable and unwarranted. Two main differences are to be noted: in the case of the idealist Buddhist, the *viśeṣa*s, or particulars, are replaced with the *sva-lakṣaṇa*s, or unique particulars, and the situation becomes slightly more complex: the relation may hypothetically obtain between two objects, or between two cognitions, or between an object and a cognition. All these three alternatives are rejected.

In the course of his refutation of Buddhist *anumāna* ('inference'), Jayarāśi first re-examines the concept of 'inference' based on the causal relation (*kāryânumāna*), discussed before, this time however it is done in particular from the Buddhist perspective, primarily that of Dharmakīrti's tradition.[21] Such an *anumāna* involves the logical reason as effect (*kārya-hetu*) grounded in the relation of causality (*tad-utpatti*). After a lengthy discourse on idealism,[22] extreme nominalism[23] and momentariness,[24] all represented by the Buddhist Yogācāra-Sautrāntika, he returns to the other kind of the *anumāna* ('inference') postulated by Dharmakīrti's tradition, viz. the 'inference' from essential identity (*svabhāvânumāna*), which rests on the logical reason as essential nature (*svabhāva-hetu*) grounded in the relation of essential identity (*tādātmya*). He also briefly mentions the case of non-apprehension (*anupalabdhi*),[25] two kinds of which can be distinguished: non-apprehension of perceptibles (*dṛśyânupalabdhi*), considered valid by Dharmakīrti, and non-apprehension of imperceptibles (*adṛśyânupalabdhi*), considered invalid.[26] Non-apprehension is considered by Dharmakīrti the third kind of logical reason (*hetu*),

---

[19] *tāthāgatānām api anumānaṁ na pravartate sambandhânavagateḥ.*

[20] TUP₁, p. 83.10–11.

[21] TUP₁, p. 83.9 ff., esp. TUP₁, p. 87.8 ff.

[22] TUP₁, p. 83.21 ff.

[23] TUP₁, p. 90.21 ff.

[24] TUP₁, p. 105.2 ff.

[25] TUP₁, p. 94.17 ff.

[26] Dharmakīrti defines 'non-apprehension' as 'the non-operation (failure to operate) of cognitive criteria' (PV₃/PVSV₁ 3.5ab: **apravṛttiḥ pramāṇānām** anupalabdhiḥ). The valid kind of non-apprehension is that with respect to a perceptible thing, viz. such an 'object in the case of which the conditions [that make it amenable] to apprehension have been reached' (*upalabdhi-lakṣaṇa-prāpta*). Such non-apprehension determines the absence (*abhāva*) of such an object (PV₃ (PVSV₁) 3.5c: *asaj-jñāna-phalā*=PVin II 11.12-13: *med par nges pa'i'bras bu can / mi dmigs*) which is perceptible (*dṛśya*). To be precise, such non-apprehension results either in certainty that the object is not there or in such practical action which is adequate only with respect to the absence of the thing (HB 4.30, p. 21*.18-19: *upalabdhi-lakṣaṇa-prāptasyânupalabdhir abhāva-hetur abhāva-vyavahāra-hetur vā*. Cf. HB 3.33, p. 4*.13-16: *anupalabdhāv apy anvaya-niścayo'sad-vyavahārasyôpalabdhi-lakṣaṇa-prāptânupalabdhi-mātre vṛtti-sādhanaṁ nimittântarâbhāvôpadarśanāt*; PVin III: **asad-vyavahāra-yogyatā*).

beside the logical reason as effect (*kārya-hetu*) and the logical reason as essential nature (*svabhāva-hetu*).[27]

We also come across a stray mention of the relation of 'the inexplicability otherwise' (*anyathânupapatti*),[28] characteristic of the post-seventh century Jaina logic, however it is not examined.

It is in such a detailed manner that Jayarāśi puts to test several definitions of *anumāna* proposed by different philosophical traditions, and concludes that none of these holds, which casts doubt on the very concept of the cognitive criterion (*pramāṇa*).

3. There is ample and clear evidence that Jayarāśi accepts certain fundamental principles of logic, once current under the name of the laws of thought, and uses a range of laws of logic on the basis of which he draws his inferences.

(1) The first among these is the law of non-contradiction in its basic formulation: $\sim (p \wedge \sim p)$, to the effect that no statement is both true and false. We find quite a number of its instantiations, to be mentioned here but a few. Not only does he apply this principle in practice but is also aware of the reasons for its validity: two contradictory properties cannot coexist in the same substratum, since the presence of one necessarily excludes the presence of the other.

    (a) 'If [the mental form of the fire in cognition (*dahanâkaratā*)] is insentient, then it is not possible that it is not different from cognition, because **consciousness and non-consciousness cannot be consistently assumed to be one,** inasmuch as they have the properties which establish them as mutually exclusive.'[29]

    Arguably, not always two exclusive properties are contradictory so that in their case the principle of non-contradiction could be used. However, the above passage, in my opinion, clearly (with the explicit mention of the negation 'non-') mentions such two contradictory properties: consciousness and non-consciousness, in the case of which the principle of non-contradiction applies in the form that the two statements '*x* is conscious' (or '*x* has consciousness') and '*x* is not conscious' (or '*x* has no consciousness') cannot both be true. This is akin to the *ontological* version of the principle of non-contradiction formulated by Aristotle: 'It is impossible that the same thing at the same time both belongs and does not belong to the same object and in the same respect (and all other conditions which one can specify, let them be specified, so that dialectal objections be met)' (*Met* 1005b19–23).

---

[27] PVSV₁, p. 2.3=PVSV₂, p. 2.14–15: *ta ete kārya-svabhāvânupalabdhi-lakṣaṇās trayo hetavaḥ*; NB 2.10–11: *tri-rūpāṇi ca trīṇy eva liṅgāni. anupalabdhiḥ svabhāvaḥ kāryaṁ ceti.*

[28] TUP₁, p. 90.14–15.

[29] TUP₁, p. 85.9–11: *tad yadi jaḍâtmikā tadā jñānâvyatirekitvaṁ na saṁbhavati **cid-acidor ekatvâyogād anyonya-parihāra-sthiti-dharmatvena**.*

(b) 'If [it is argued that] the origination [of it] occurs as something non-different, then **nobody** except a shameless one can dare speak of the occurrence of **the existent and non-existent as non-different**.'[30]

Even thought one might justifiably claim that what we have here is another logical law (see 3.(6) below), I would rather argue to the contrary: we do have a case of the law of non-contradiction which here states that two contradictory properties cannot be related to one and the same object in the same way, viz. one and the same thing cannot be both P and non-P.[31]

(2) The second of such basic principles of reasoning applied by Jayarāśi is the law of excluded middle: $p \vee \sim p$. An example that follows is presented in the context of the discussion on whether the cognition assumes the form of its object. And example provided by the opponent is that of a mirror which takes the form of the object reflected in it (an extremely popular metaphor among philosophers throughout the centuries, including Richard Rorty's *Philosophy and the Mirror of Nature*):

'The mirror disc appropriates the form of the face and it does not lose the form of the mirror; similarly also cognition appropriates the form of the object and does not lose the form of cognition.''[32]

In response Jayarāśi indicates that if the mirror takes the form of the face, and this is understood in terms of the relation of essential identity of the face and the mirror, then both cannot coexist and only one of them has to be real, whereas the other can not:

'It should be explained what is [meant by] the object of the mirror disc assuming the form of the face. Is it the [mirror disc's] essential identity with the face or the [face's] origination in a place that is contiguous? If it is the essential identity, how is it possible that it would not lose its form of the mirror? For there is only just one real thing: in the case of their essential identity, **there will either be the face or the mirror**.'[33]

It should be noted that it is also possible to interpret the above argument as an instantiation of another logical principle, discussed below under 3(6). That being the case, the whole argument still requires the resort to the law of the excluded middle at the final stage: there can either be the face or the mirror.[34]

---

[30] TUP₁, p. 92.5–6: *tad yady abhedena utpādanam*, **sad-asator abhedena** *utpādanaṁ hata-trapād ṛte* **nânyo vaktum arhati**.

[31] Cf. Aristotle's remark on the nature of (non-)contradiction: 'The problem is not whether the same thing can simultaneously be and not be a man in regard to the name, but whether it can be in regard to the fact' (*Met* 1006b21–22).

[32] TUP₁, p. 85.17–20: *ādarśana-maṇḍalaṁ mukha-rūpatām svī-karoti na ca ādarśana-rūpatām parityajati, tathā jñanam api viṣaya-rūpatām svī-kurvann na vijñana-rūpatām tyajati*.

[33] TUP₁, p. 85.21–24: *ādarśana-maṇḍalasya mukha-rūpatā-svī-karaṇârtho vaktavyaḥ. kiṁ mukha-tādātmyam āhosvid avirala-deśôtpādaḥ? tad yadi tādātmyam, kathaṁ na ādarśana-rūpatām jahāti? ekaṁ hi idaṁ vastu – **tat-tādātmye mukham ādarśano vā***.

[34] Namely, applying Leibnitz's law, one may analyse the whole argument to the effect that since the properties ascribed both to the face and to the mirror are the same, therefore we cannot speak of different entities, and there has to be either the face of the mirror. Since both entities share the same set of properties, they have to be one and the same thing.

(3) The third of the basic axioms of logic employed by Jayarāśi is what is traditionally called the law of identity: $p = p$.[35] We can see it behind the reasoning below through which Jayarāśi argues that if the face is transferred to the mirror, so is its form, for there is nothing such as the face without its form: 'If the [face's] originâtion in a place that is contiguous means the appropriation of the face [by the mirror disc], then it would follow that the same originâtion [of the face] in a place that is contiguous is the appropriation of the form [of the face]; [consequently] **it is not possible to make a difference between the objects through the form**.'[36]

(4) In addition, we come across an interesting case of what can be termed the transfer of negation, which assumes the following form: Ux: $p \equiv_{df} \sim$ Ux: $p \rightarrow$ Ux: $\sim p$. It does not seem to fall within the purview of classical logic, though. According to it, given certain background conditions (prerequisites that make an apprehension of an object possible) being fulfilled, the non-apprehension ($\sim$ U) of an object (p) equals the apprehension (U) of non-object ($\sim p$)′, with $p =$ *upalabdhi-lakṣaṇa-prāpta* ('an object in the case of which the conditions that make it amenable to apprehension have been reached'), and U = *upalabdhi* (apprehension):

'If there is a non-apprehension of an object in the case of which the conditions [that make it amenable] to apprehension have been reached, then there is an apprehension of an object in the case of which the conditions [that make it amenable] to apprehension have not been reached.'[37]

(5) Jayarāśi also makes use of what is known as De Morgan's laws:

  (a) $\sim (p \lor q) \equiv \sim p \land \sim q$, in the form: $p \land q \rightarrow \sim (\sim p \lor \sim q)$,
  (b) $(\sim p \lor \sim q) \equiv \sim (p \land q)$, in the form: $(\sim p \lor \sim q) \rightarrow \sim (p \land q)$.

These are used in the context of the repudiation of the Yogācāra idealist claim postulating that 'since there is the simultaneous apprehension of [both the object and its cognition], both being objects of self-illuminating awareness, the cognition and the object are one and the same.'[38]

In response, Jayarāśi argues: 'Suppose that [the simultaneous apprehension of the object and its cognition] is a property of both the object and its cognition]. (a) **If [the simultaneous apprehension] is a property of both the object and its cognition], how could there possibly be the elision (elimination) of either of them**? (b) **If there is an elision of either of them, then [the simultaneous apprehension] being a property of both is not explicable**. Consequently, it has to be indicated that [to have both] "being a property of both" as well as "the elision of one of these" is contradictory.'[39]

---

[35] Nowadays it is understood as one of three principles expressing identity relation.

[36] TUP$_1$, p. 85.24–86.1: *atha avirala-deśôtpādo mukhasya svī-karaṇam, tadānīm ākārasyâpi svī-karaṇam avirala-deśôtpada eva prāptaḥ,* **nâkāreṇa pratikarma-vyavasthā kriyate**.

[37] TUP$_1$, p. 94.3–25: *upalabdhi-lakṣaṇa-prāptasya yadi anupalambhaḥ, anupalabdhi-lakṣaṇa-prāptasya tarhi upalambhaḥ.*

[38] TUP$_1$, p. 102.3–4: *sva-saṁvedyatve sahôpalambhād vijñānârthayor eikyam.*

[39] TUP$_1$, p. 102.13–15: *atha ubhaya-dharmaḥ,* (a) **katham ubhaya-dharmatve anyatara-lopaḥ?** (b) **anyatara-lopaś cet nôbhaya-dharmatā upapadyate**. *ubhaya-dharmatā ca anyatara-lopaś ca iti vyahatam apadiśyate.*

(6) With Jayarāśi, we find formulations of what is now known as Leibniz's law (the indiscernibility of identicals): $x=y\rightarrow\forall P\,(Px\leftrightarrow Py)$, or 'if x is identical to y, then, for every property P, x has P if and only if y has P', i.e. x and y have the same properties.[40]

(a) 'If [the mental form of the fire in cognition (*dahanâkaratā*)] is insentient, then **it is not possible that it is not different from cognition, because consciousness and non-consciousness cannot be consistently assumed to be one,** inasmuch as **they have the properties which establish them as mutually exclusive.**'[41]

The above instance is found in a passage already referred to in 3.1(a) above. The argument runs as follow:

If consciousness x and non-consciousness y have different, or even exclusive properties, such as P and non-P, then consciousness x and non-consciousness y cannot be one, viz. they have to be accepted as different entities:

(1) $(Px \wedge -Py)\rightarrow x\neq y$

Its contrapositive is:

(2) $x=y\rightarrow -(Px \wedge - Py)$

which is equivalent to:

(3) $x=y\rightarrow (Px\rightarrow Py)$

And (3) is precisely a variant of Leibnitz's law: $x=y\rightarrow\forall P\,(Px\leftrightarrow Py)$.

(b) 'One thing does not have two natures, and **if there are two natures [of a thing], there cannot be oneness**.'[42]

This is also another formulation of the same law. Like in the case of 3.1(a)/6(a), we can distinguish two logical steps. One part of the argument, which formally constitutes here a thesis (*pratijñā*: 'one thing does not have two natures'), can be interpreted as an expression of the law of non-contradiction: one and the same thing cannot have two exclusive, or contradictory natures, viz. it cannot be both p and non-p. This is very similar to the classical understanding of non-contradiction expressed by Aristotle: 'So it cannot be true to say that the same thing both is and is not man at the same time' (*Met* 1006b).

The step that follows is the justification for the thesis, and it has the form which a is a variant of Leibnitz's law, viz. $(Px \wedge - Py)\rightarrow x\neq y$, namely if there are two natures, or different properties, then we have to have to distinct objects, not one. The remaining two passages—(c) and (d)—present similar variants of Leibniz's law.

(c) 'And the learned ones do **not** speak of the **oneness of that which has an apprehended form and of that which has a non-apprehended form**.'[43]

---

[40] I would like to thank Brendan Gillon for drawing my attention to Leibnitz's law.

[41] TUP$_1$, p. 85.9–11: *tad yadi jaḍâtmikā tadā jñānâvyatirekitvaṁ na saṁbhavati **cid-acidor ekatvâyogād anyonya-parihāra-sthiti-dharmatvena**.*

[42] TUP$_1$, p. 87.1–2: *ekasya svabhāva-dvayâbhavāt. svabhāva-dvaye ca ekatânupapannā.*

[43] TUP$_1$, p. 103.21: ***na** ca **avadhāritânavadhāritayoḥ ekatvaṁ** bahuvido vadanti.*

(d) 'How is essential identity between something that manifests itself and something that does not manifest itself possible?'[44]

(7) There are two other interesting cases of a priori reasoning, which I find difficult to classify under any standard axiom of logic.

(a) The first of them occurs in a section examining the idea of momentariness, postulated by the Buddhists:

'[It may be argued that] "If destruction is not possible, it follows that what has been produced is permanent". [We respond:] **the existence with a limit is impermanent, however the existence without a limit is permanent.**'[45] In other words, 'the being' (existence) can be either finite or infinite. The finite being is impermanent, whereas the infinite one is permanent. Being finite/infinite entails the idea of having a/no limit, because finiteness/infinity can be understood variously, for instance with respect to time, space, power (e.g., omnipotence), potentiality, knowledge (e.g., omniscience) etc. With respect to time, we can speak of temporal finiteness or infinity, i.e. impermanence (an extreme form of which is momentary character) or permanence (eternity). Accordingly, 'having a temporal limit' is equivalent to 'being impermanent', and 'having no temporal limit' equals 'being permanent'. These two renderings of the term 'existence' (sattā, 'the being'),especially the one from limitedness to permanence, can hardly be explained as a posteriori or synthetic: it is not grounded in experience, for we do not have any experience of infinity of any kind directly. The reasonings above are therefore clearly independent of experience in the sense that all one needs to establish the concept of 'unlimitedness' is alone one's understanding of the concept with no recourse to the outside world, except for the two empirically observable facts such as 'limit' and 'limitedness'. 'Unlimitedness' is never experienced. Accordingly, the reasoning from limitedness to permanence, presented by Jayarāśi, follows the proper understanding of the abstract ideas themselves. Similarly, all one needs to reason from limitedness to impermanence is the mere comprehension of the terms.

In addition, neither of these reasonings will fit into any standard form of anumāna, inasmuch as it would be difficult, or rather impossible, to determine what inferable property (sādhya) and the logical reason (hetu) could be and through what kind of positive concomitance (anvaya) and negative concomitance (vyatireka) they could be related or excluded, respectively.

(b) The second case of an a priori reasoning is found in a section in which Jayarāśi levels his criticism against the Mīmāṃsakas' claim that the Veda is authorless (apauruṣeya), with respect to which he argues as follows:

'[The author of the Veda] is **not remembered by some people**. It perforce entails [the conclusion] that the Veda is [a text] the author of which **is**

---

[44] TUP₁, p. 108.11–12: kathaṁ pratibhāsāmānâpratibhāsāmānayos tādātmyam?

[45] TUP₁, p. 107.7–8: atha kṛtakasya nityatvaṁ prāpnoti vināśâsaṁbhave sati, sāvadhikā sattā anityā, niravadhikā tu nityā.

remembered by other people, because **the negation of a particular is equivalent to the recognition of the rest**.'[46] Therefore, the Veda cannot be *apauruṣeya* (authorless), *ergo* the Veda must have an author.

Following the traditional square of opposition, and given that P is 'the one who remembers the author of the Veda' and S is 'person', what we have here is another case of an a priori reasoning, in which Jayarāśi infers (2) from (1):

(1) 'Some S are not P' $\exists x(Sx \wedge \neg Px)$

ergo

(2) Some S is P $\exists x(Sx \wedge Px)$.

This reasoning however is plainly false for two reasons. First, because (1) and (2) are subcontraries, and two propositions which are subcontraries, as we know, cannot both be false, but at best they only *can* both be true, although do not have to be both true.

In addition, the fallacy in Jayarāśi's reasoning contains a *petitio principii*: for (1) and (2) to be both true, or to infer (2) from (1), one requires a hidden premiss, namely that there is the 'the author of the Veda' to be remembered at all.[47] However, an additional premiss 'there is the author of the Veda' is required for (1) and (2) to be both meaningful and true (and not merely not to be both false), and thus the conclusion of Jayarāśi's complete reasoning ('the Veda is not authorless') rests not on the validity of the a priori reasoning from (1) to (2), but also on the hidden premiss ('there is the author of the Veda'). The required premiss that an author or creator of any output is necessarily remembered can easily be empirically falsified: most authors and creators are well forgotten.

The obvious flaw in this argument to the effect that 'the author is necessarily remembered by some other people', could perhaps not be due to Jayarāśi himself and his 'temporary loss of logical acumen', but be ascribed to the Mīmāṃsakas, in particular to the Vṛttikāra commenting on the *Jaimini-sūtra*, against whom Jayarāśi argues and who provides the context. The Vṛttikāra namely states the following rule concerning the human memory of the author/creator (an argument which both is faulty and conflates perception and memory) – if something of importance is created, the creator will necessarily be remembered by at least some people:

'[An opponent may argues against our Mīmāṃsā view of the authorless character of the Veda]: Since the creator existed very long ago, he cannot be the object of perception of the people living nowadays." [We respond:] It is not possible that [an author who] existed very long ago is not remembered [now]. For in the case of the Himalayas and other [significant things], [their creator] could not remain forgotten as in the case of [creators of such trivial things] as a well or a garden etc., in the case of

---

[46] TUP₁, p. 117.19–21: *katipayaiḥ puruṣair na smaryate arthād āpadyate puruṣântara-smaryamāṇa-kartṛko vedaḥ, viśeṣa-pratiṣedhasya śeṣâbhyanujñā-viṣayatvāt.*

[47] The point becomes even clearer if we replace the phrase 'the author of the Veda' with 'the present king of France'.

which their oblivion is due to either the destruction of the place or to the destruction of the population [when people stop using these creations].'[48] '[Just like with other creations,] if a person created a relation [between a word and its object] and put it to usage, then such a relation would have to necessarily be remembered in the time or actual usage.'[49]

Despite the apparent fallacious character of Jayarāśi's argument, it is notable that this again is not the case of *anumāna*, but an instance of an a priori reasoning.

(8) Interestingly, among various patterns of reasoning and analysis, Jayarāśi accepts the fourfold division of logically possible alternatives of p, i.e. the tetralemma (*catuṣ-koṭi*), as sound: p, $\sim p$, $p \wedge \sim p$, $\sim (p \wedge \sim p)$. He uses it himself at least on one occasion, while refuting the Yogācāra criticism of the concept of whole and the idea, expressed in the *Abhidharma-kośa* 6.4,[50] namely that anything which is analysable either spatially or conceptually does not ultimately exist but is, instead, an instance of the conventionally real. In response, Jayarāśi employs the quaternary scheme to analyse the idea behind 'the pot':

---

[48] MŚBh₁ 1.1.5, p. 15.22–16.1=MŚBh₂ 1.1.5, p. 42.21–23: *nanu cira-vṛttatvāt pratyakṣasya aviṣayo bhaved idānīntanānām. — na hi cira-vṛttaḥ san na smaryeta. na ca himavad-ādiṣu kūpârāmâdivad asmaraṇaṁ bhavitum arhati. puruṣa-viyogo hi teṣu bhavati deśôtsādena kulôtsādena vā.*

[49] MŚBh₁ 1.1.5, p. 16.1–5=MŚBh₂ 1.1.5, p. 44.2–4: *yadi hi puruṣaḥ kṛtvā samandhaṁ vyavahārayet, vyavayhāra-kāle' vaśyaṁ smartavyo bhavet.*

[50] Interestingly, Jayarāśi quotes the *Abhidharma-kośa* verse with a conspicuous omission of the term/idea of *apoha* ('semantic exclusion') and other notable *variae lectiones* and metrical deficiencies (e.g., *pāda* B has 5 syllables):

> TUP₁, p. 98.17–18:
> *yatra bhinne na tad-buddhir dhiyā ca na sā /*
> *tad ghaṭaṁ tu saṁvṛti-sat paramârtha-sad anyathā //* –

– 'When something is fragmented, there is no [longer] a cognition of it. And there is no [longer a cognition of it when it is fragmented] by means of the mind. However, such pot is [only] the conventionally real. The ultimately real is [that which exists] in a different manner, [viz. is neither spatially nor conceptually fragmented (analysable)].'

His own comments on the contents of the verse confirm that this was the text he had before him. The actual reading of AK 6.4 is:

> *yatra bhinne na‡ tad-buddhir anyâpohe dhiyā ca tat /*
> *ghaṭâmbuvat† saṁvṛti-sat paramârtha-sad anyathā //* –
> [‡ AK₂: *bhinne na· * † AK₂: *ghaṭārthavat*]

– 'The conventionally real is that of which no cognition [arises any longer] when it is fragmented [spatially in its constituent parts] and that [is remains] when everything else (e.g. its properties) [different from it] was excluded by means of the mind, for instance the pot, [which is spatially analysable into shards,] or water, [which is conceptually analysable, i.e. distinguishable from its properties]. The ultimately real is [that which exists] in a different manner, [viz. is neither spatially nor conceptually analysable].'

A serious possibility is that the source of what he actually quotes is not Vasubandhu's *Abhidharma-kośa* but another Buddhist text, no longer extant, which Vasubandhu improved and invested with a new idea of exclusion (*apoha*). This possibility, however, does not explain the omissions in the verse.

Also in this case, the meaning of the examination [of 'the pot'] should be explicitly stated. What is achieved by it? Is it: the pot's non-existence ($\sim p$), existence (p), both ($p \wedge \sim p$) or neither ($* \sim (p \vee \sim p)$[51])?[52]

As before, also this kind of a priori reasoning does not fit into any form (*prayoga*) of Indian *anumāna*.

It is quite probable that Jayarāśi applies the tetralemma, accepting its validity only provisionally, since the context is a debate with the Buddhists. However, the opponent is not a Mādhyamika, when the use of the tetralemma were well justified, but a representative of the Abdhidharma tradition, where the tetralemma was not a commonly applied tool of analysis.

As we can see, while rejecting basic rules governing various patterns of reasoning based on the *anumāna* theory, Jayarāśi grounds his inferences in independent axioms or laws of logic and in a range of a priori justification of non-experiential character, which are clearly distinguishable from *anumāna* inference types.

4. A pertinent question now arises as to what extent *anumāna* can justifiably be equated with inference, and if it can, in what sense? Inference can broadly be defined as any kind of reasoning which is based on logic principles and on a range of rules (formulated as laws of logic) through which one derives true conclusions from true premises. In a valid inference, the truth of the premises is preserved in, and guarantees, a true conclusion that necessarily follows so that it is impossible for the conclusion to be true without its premises being true as well. This makes an argument valid. This issue will be expounded slightly later.

Another question that naturally follows is this: of what nature are the problems concerning *anumāna* which Jayarāśi indicates? As we can see, these are of primarily empirical nature, not of logical one. Quite importantly, Jayarāśi lists the *empirical* problems to establish the validity of *anumāna* in the *anumāna* chapter of his work, not in the chapter on perception the primary concern of which is the empirically perceived world. It is *anumāna* that is generally assumed to deal with the domain of reason and reasoning, therefore it should not be surprising that he accumulates such a list difficulties in the *anumāna* chapter, not elsewhere.

In his examination of *anumāna*, Jayarāśi critically analyses two aspects of it: (1) the definitions of *anumāna* as formulated by other philosophers, and (2) empirical conditions for the validity of *anumāna* as defined by different philosophical schools. And he consequently rejects both. The definitions offered by various parties are rejected by him not because these definitions are considered faulty on primarily logical grounds but rather because such logical relations which these definitions entail, or on which they rest, cannot be empirically established or verified as rigorously consistent and absolutely invariable, which is a prerequisite for the logician. The justification for such relations is of experiential and synthetic nature.

---

[51] I use this formalisation of the fourth option (*koṭi*) provisionally, It is, of course, debatable how this should be understood and symbolically rendered.

[52] TUP₁, p. 100.4–7: *tatrâpi vivecanârtho vaktavyaḥ. tayā kiṁ kriyate. kiṁ ghaṭasyâsattvaṁ pradyotyate āhosvit sattvam ubhayaṁ vā na kiṁcid vā?*

In addition, nowhere in his work does Jayarāśi endeavour to found his own arguments on any of the relations postulated to be the basis for *anumāna*, such as the positive/negative concomitance (*anvaya/vyatireka*) relationship, the relation of essential identity (*tādātmya*), the relation of causality (*tad-utpatti*), the inseparable connection (*avinâbhāva*), relation of 'the inexplicability otherwise' (*anyathânupa-patti*), etc., which all he criticises and rejects. Stray passages containing such 'inferential' schemes as positive concomitance (*anvaya*) etc. are instances occurring solely within the context of the argumentation of Jayarāśi's opponents, as for instance the following passage in a section on verbal testimony (*śabda*) derived from the Veda the nature of which being claimed to be authorless (*apauruṣeya*), as postulated by Mīmāṁsā as still another cognitive criterion (*pramāṇa*): 'What is sublated at another place or time that is false, like the cognition of water with respect to the a multitude of rays of light (mirage).'[53] What we have here is a presentation of positive concomitance (*anvaya*), accompanied by an example (*dṛṣṭānta*). It does not follow, however, that Jayarāśi himself subscribes to this kind of inferential pattern. He uses it solely in the context of the debate with the Mīmāṁsaka who himself endorses the scheme as a part of a legitimate proof formula (*prayoga*). On another occasion, Jayarāśi uses the term *vipakṣa* (unsub-jectlike class, heterologue), as a contrasting class of objects different from the logical subject (*pakṣa*). The term is a part and parcel of the standard 'inferential' procedures of the *anumāna* model, endorsed by Indian logicians deriving their patterns of reasoning from the Ānvīkṣikī-Nyāya-Vaiśeṣika tradition, including the Mīmāṁsakas. And indeed, this is precisely the context in which the term occurs in the *Tattvôpaplava-siṁha*. As for himself, Jayarāśi never employs this kind of terminology in his own arguments.

As we can see, all of these logical relations postulated by Indian philosophers, which Jayarāśi refutes, are not of strictly extensional nature and about purely logical relations, but rather they all concern the derivability of regular patterns from empirical observation which then serve as principles of reasoning. Jayarāśi indicates that in order to have valid *anumāna* ('inference'), we need to deal with abstract entities, the universals (*sāmānya*), or rather sets which would comprise *all* individual instances. Throughout his work, however, he consistently denies the existence of such universals.[54] All one can relate through *anumāna* are individual entities, particulars, called *viśeṣa*s, *vyakti*s or *sva-lakṣaṇa*s. And these cannot be related in a consistent way which would yield a universal pattern of reasoning, transferrable to other instances. Such a pattern of reasoning could relate only two particulars and therefore would be inoperative in any other case, therefore useless. It is thus apparent that *one* of a number of the problems in the background of the invalidity of such types of empirically grounded reasoning is the question of induction, and this is a difficulty which Jayarāśi repeatedly points out: it is impossible to establish a universally valid relation (logically necessary) on the basis of an observation of singular instances, no matter how many of these we take into account: 'Neither is it possible [to grasp the relation known as the inseparable

---

[53] TUP$_1$, p. 116.16–17: *yad deśântarâdau bādhyate tad mithyā, yathā marīci-nicaye ambu-jñānam.*

[54] This is one of his positive theses, see: Balcerowicz (forthcoming).

connection] between two unique particulars, because the particulars of fire and particulars of smoke are infinite [in number], and because a causal factor which both is undivided (i.e. numerically one) and runs along (i.e. relates to) infinite [particulars] is impossible',[55] an idea reiterated on a number of other occasions.

At the same time, as I demonstrated above, while rejecting the schemata of *anumāna*, Jayarāśi clearly accepts the basic laws of logic and applies various rules of inference, sometimes quite complex ones. In addition, as a number of instances provided above reveal, he directly applies a range of a priori deductive reasonings, which in itself does seem to present a kind of novelty in the approach among Indian philosophers who apparently neither resorted to such arguments nor considered them as valid in their own right.[56] In his *prasaṅga* arguments which present undesired consequences of opponents' theses, he also employs such inferential schemata as suppositional reasoning (*tarka*) and *reductio ad absurdum* on many occasions as legitimate argumentative devices in full right (vide infra).

Are we therefore justified in claiming that, while rejecting the *anumāna* theory as its underlying principles were defined, Jayarāśi rejects *inference* as such, and further, that he solely relies on the evidence of perception in accordance with the stereotypic portrayal of the materialists in India, to whom he also belonged? Certainly not.

At best, what he rejects—while fully *endorsing* certain valid patterns of inference—is precisely the feasibility of defining *anumāna*, one of the cognitive criteria/ cognitive tools, as a kind of inference which is based on empirical verification and on certain rules which have to be tested empirically for their validity and which are external to logic. The 'inference' he criticises provides the patterns of reasoning that are not valid per se, viz. irrespective of the actual meanings of the terms or their denotata and of the actual state of affairs, and therefore which are not necessarily valid, as logical truths should be. At the same time, it is quite difficult to conclude whether he rejects the feasibility of the *anumāna* theory as such, in other words, whether his claim is that no *anumāna* theory can ever be developed which could serve the purpose, for he never proposes new *anumāna* rules or alternative relations on which one could found it. On a weak interpretation, he can be interpreted as rejecting all current definitions and rules of *anumāna*. A strong interpretation would have him deny the very feasibility of ever establishing a coherent a reliable *anumāna* model. His silence on whether such a model could ever be devised may be an indication that the strong interpretation is more appropriate, and this in itself does not have to be equated with his alleged scepticism.

---

[55] TUP₁, p. 65.11–12: *nâpi sva-lakṣaṇayoḥ dahana-dhūma-vyaktīnām ānantyāt, abhinnânekânugāmi-nimittâsaṁbhavāc ca.*

[56] See for instance Mohanty (1992, pp. 120–122), who demonstrates that the cases which, when taken out of context, could be interpreted as a priori principles of reasoning (e.g. the principles of non-contradiction and excluded middle in Udayana), do not present instances of a priori reasoning. See also Matilal (1982, pp. 128–151) and Taber (forthcoming). It may be argued, after Mohanty (2000, p. 23) that 'Dharmakīrti went further into the nature of this relation and distinguished between two types of *vyāpti*: in one case, y is the own-nature or essence of x, or there is an identity between the two (and the relation is analytic)', *ergo* that the concept of analytic and a priori reasoning was at least partially recognized in India. However, it is questionable whether the actual basis of the *tādātmya* relation was actually analytic. Contrary to this, it was also of experimental character.

Of note is that while rejecting the validity *anumāna*, Jayarāśi does not create the ground for a typical paradox of the sceptic, who is sceptical about cognitive tools, or rejects their validity and usefulness, but at the same time (s)he employs them in one's own arguments. For instance, one may mistrust the veracity of the data/information derived through one's own sense organs, but one nonetheless follows it. Similarly, with respect to inference, the paradox of the sceptic would amount to rejecting the validity of inference as such and at the same time to draw conclusions based on it, also with the effect of refuting others' claims. Such a paradox would be an epistemological equivalent of the *apraxia* objection to scepticism: a consistent application of scepticism to life should result in total inactivity. Similarly, in the case of epistemology, scepticism with respect to cognitive faculties and cognitive tools should result in the suspension of one's reliance on both and in rejection of their meaningful application in any analysis. In particular with respect to inference, the sceptic could not at the same time rely on inferences drawn from premises and reject the very validity both of such inferential principles and procedures and of conclusions. The actual situation which we can determine as regards Jayarāśi's approach is that the paradox, or the *apraxia* objection, does not apply to him: he raises challenges against the *anumāna* theory and its empirical grounding and consistently does not resort to its principles of drawing conclusions, whereas he raises no criticism against other rules of logic and of inference which he uses throughout. This can hardly be called scepticism, at least not with respect to *anumāna* and inference, unless we completely remodel our understanding of 'scepticism'.

Scepticism can be broadly defined in a number of ways, but certain elements are crucial, irrespective of how we construe its definition. It may either be understood as entertaining a persistent, irrevocable doubt either about the possibility of any *knowledge*, an aspect emphasised in the case of modern forms of scepticism, or about adhering to any *belief*, for any belief should be considered ultimately groundless, bereft of any rational justification. For these reasons, a core element of scepticism is also the suspension of judgement due to the equipollence (*isostheneia*)[57] of opposing appearances, views and reasons for and against a given view. In other words, the sceptic may raise doubts (irremovable by default) whether we can *know* anything (of non trivial nature[58]), or even deny such possibility, either because (s)he has independent justified grounds for perforce doubting any knowledge claim or because (s)he maintains one can demonstrate that for any argument in favour of one particular opinion we may present an equally justified argument against it of equal force, i.e. equipollent. To be more precise, the sceptic may either assent to the claim that we cannot know anything epistemologically

---

[57] See, e.g., Annas–Barnes (1985, p. 24): 'The Pyrrhonist holds that "we arrive at suspension of judgement because of the equipollence (*isostheneia*) of the opposed objects and arguments" (*PH* 18), where "by equipollence we mean an equality with regard to credibility and incredibility" (*PH* 110).'

[58] By 'non trivial' I mean to exclude here such cases of pieces of knowledge with respect to situations which can hardly find an exact explanation under ordinary conditions. In other words, there are certain beliefs which inherently lack positive epistemic status such as 'What will precisely the weather be like on 3rd January 2185 at 9:04 am?' or 'how many grains of sand are there exactly in the Solar System excluding Mars and this sadbox?', and doubt with respect to such beliefs is not emblematic of scepticism.

important, on the grounds that our means of knowledge lack certitude and are inherently inadequate, or abstain from a claim that we can arrive at such knowledge as well as from a contrary claim that we cannot have such knowledge. This inability to ascertain anything, alleged to be an inherent component of our ways of knowing and our epistemic states, is followed by sweeping uncertainty concerning our conclusions and the eventual suspension of judgement. Genuine scepticism is not about particular knowledge claims under particular circumstances, such as 'one cannot know with certitude the 2016 USA presidential election results before the closing of the polling stations' or 'one cannot know whether Higgs boson exists before conclusive experiments', for these are the matters which will most probably be known at a certain point of time, be it distant, when new and sufficient data are collected. Genuine scepticism in such situations would rather concern the fundamental impossibility to know these facts even when new data (generally assumed to be adequate enough to determine the results of the elections or the existence of Higgs boson) surface. The sceptic rather puts to doubt the very question whether such data will ever be sufficient to determine anything with certainty, or asserts that one will never arrive at a situation in which the available data will tilt one's knowledge towards one explanation rather than towards the other.

None of these elements can be traced in Jayarāśi's account of *anumāna*. He does, indeed, argue against a range of extant definitions of relations which form the fundaments of the *anumāna* theory, and eliminates them all one by one. But at no single occasion does he argue in favour of any such principle, be it for the sake of sheer argument, say, in favour of Dharmakīrti's relations of essential identity (*tādātmya*) and of causality (*tad-utpatti*) as against, say, the Jaina relation of 'the inexplicability otherwise' (*anyathânupapatti*), playing one against the other. Nowhere does he even attempt to demonstrate the equipollence of arguments in favour of and against a given type of *anumāna* theory. In other words, he never contrasts two opposing solutions to a particular problem and argues that both have their own explanatory virtues, but since these are of equal strength, both have to be consequently abandoned. What he does is, within a particular scheme of epistemology based on the *anumāna* theory, merely refutes all the models *factually* offered by proponents of various philosophical systems. His criticism of epistemology, and consequently of ontologies which given epistemological solutions entail, is not sweeping in the sense that he does not argue against having any kind of epistemology or inference theory, but is rather particularised, viz. formulated against particular solutions. He does not conduct even a single mental experiment, reminiscent of Descartes's who resorts to a theoretical likelihood of an evil demon conjuring up an illusory external world, in order to cast doubt on the existence of all the external world or, most relevantly in the chapter devoted to the critique of *anumāna*, to demonstrate that we cannot reason legitimately or draw valid inferences at all. On the contrary, he does draw inferences based on certain principles of logic, but not on the rules of the *anumāna* theory, and does not seem to question his own conclusions.

The nature of his criticism of the *anumāna* theory casts doubt on the widespread claim that Jayarāśi is a genuine representative of Indian scepticism. He does reject the validity of one domain, that of *anumāna* (either the *anumāna* theory per se or

particular models of the *anumāna* theory as it was defined by various philosophers), but he grounds his logical apparatus in quite a different domain the validity of which he neither questions nor discusses, apparently taking it for granted. He employs a whole set of the rules of inference and basic axioms of logic, including a range of patterns of a priori reasoning. However, 'his' logic and rules of inference are by no means those of the *anumāna* theory.

5. Two important consequences follow from this. First, Jayarāśi's rejection of the *anumāna* theory, or rather particular models of the *anumāna* theory as represented by particular philosophical schools in India, does not have to make him a sceptic at all. On the contrary, the evidence suggests that the nature of his systematic criticism directed against *anumāna* as one of basic forms of knowing, or cognitive criteria (*pramāṇa*) universally accepted in India, can hardly be reconciled with any standard version of scepticism, and the doubts he raises with respect to the validity or soundness of *anumāna* are not indicative of a sceptic but rather of a highly discerning philosopher how carefully and consistently re-examines the foundations of traditional epistemologies and ontologies. Throughout Jayarāśi remains committed to basic principles of logic, albeit not necessarily to rules entailed by the *anumāna* theory and to realism implied by it (vide infra). Having the above in mind, we have no reason, to put it plainly, consider Jayarāśi a sceptic.

The second outcome is quite far-reaching for any student of Indian logic and does not concern Jayarāśi's philosophical enterprise alone but goes far beyond it. It appears that, while dealing with Indian logic and epistemology, we should clearly distinguish *anumāna*, or 'inference' (sc. inference in a restricted sense) and the *anumāna* theory, on the one hand, from inference per se and from logic as such, on the other. The *anumāna* theory, which is characterised by a range of distinctive features that distinguish it from the standard logic as it developed in Ancient Greece and the West[59] and which does not exhaust what constituted Indian logic, should not be regarded as a comprehensive theory of logic but rather as a sub-theory(-ies) of logic, of rather narrower scope, applied to empirically relevant claims and inferential models designated to advance arguments involving the problem of induction, which excludes deduction and all varieties of a priori reasoning and analytic judgements, and—on the positive site—with a strong component of the emphasis on the content and nature of the cognitive act.[60] Consequently, *anumāna* should not be translated straightforwardly as 'inference', but rather understood as a kind of inference in a qualified sense. Since the *anumāna* theory originated in the context of debate and dispute, I would suggest to call it 'disputational inference' or 'debational inference'.[61]

Whenever we therefore stick to the rendering 'inference' we may to it only in restricted sense in the same when when we translate *dharma* as 'law' or 'moral law'.

---

[59] Compare the distinction into logic$_1$ (the standard use of the term 'logic' in the Western context) and logic$_2$ (the *anumāna* theory), in Mohanty (1992, pp. 106–125).

[60] Cf. Mohanty (1992, pp. 108–114).

[61] Or even 'dialogical inference', with the caveat that it should not be directly associated with what is known as dialogical logic.

Certain deficiencies among those which Jayarāśi points out in the *anumāna* theory are symptomatic of limitedness of Indian logic in various ways. Logic as such is primarily concerned with forms of valid inference, and the logical form, which incorporates patterns of valid reasoning, is fundamental to it. The contents of such patterns, or the actual meanings of particular terms featuring in such patterns, are irrelevant to the validity of the argument itself: its validity is solely determined by its logical form. In stark contrast to formal logic so understood, the contents of inferential patterns and the meanings of terms are central in the *anumāna* theory and in Indian logic. It does not mean, of course, that Indian logic was grounded on foundations in which formal patterns are entirely absent: the very form of the five-membered (*pañcâvayava*) proof formula (*prayoga*) is a best example of such forms. Their inherent feature is however structured differently. The concept of formal validity was if perhaps not entirely absent, then certainly not thematised in it at all, and the concept of tautology, a logical formula which remains true irrespective of the values of its variables, never consciously adopted. Consequently, the idea of logical truths as necessary truths was also absent in India. What remained was factual truths, but these were merely contingent truths. What follows, the ideas of logical variables and of the replacement were likewise not reflected in the theoretical framework of the *anumāna* theory, in fact they were completely absent.

The only approximation to logical variables, a corollary of which is the idea of the replacement in any logical formula, were certain standardised non-logical expressions of the natural language, such 'the pot' (*ghaṭa*), which stood for a range of similar object that are produced and therefore necessarily destructible and impermanent, or 'the smoke' (*dhūma*), which represented another (similar) class of objects that have a cause and therefore are necessarily effects of their causes. However, each such term carried a whole semantics and ontology with it. Such 'logical' terms were not as innocuous and barren as variables: they meant and denoted. For instance, 'the pot' or 'the smoke' could not be easily replaced with another term, seemingly similar in nature, such as 'audible sound' (*śabda*), which to some (e.g., the Naiyāyika-Vaiśeṣika) could replace 'the pot' and 'the smoke', but to others (e.g. the Mīmāṁsakā) represented quite a different category of objects: uncreated, hence indestructible, immutable and permanent. The terms within any logical formula were ontologically embedded, and what mattered were their actual meanings and denotations. For instance, the following argument was arguably considered legitimate in India:

F1 '[Premiss 1:] If any thing has smoke, then the same thing has fire, [premiss 2:] the hill has smoke, [conclusion:] therefore the hill has fire'.

However, the following reasoning, logically valid and having the identical structure as F1, would be straightforwardly rejected in India:

F2 '[Premiss 1:] If any fire quenches thirst, then the same thing plays Scrabble,
    and [premiss 2:] the fire quenches thirst, [conclusion:] therefore it thing plays
    Scrabble'.

As we can see, typical of Indian logic was the lack of recognition of the validity
of certain reasoning patterns encapsulated in a repeatable schema of a logical form
of sentence S, which could be freely replaced with other sentences, which are formal
instances of S, i.e. share the same formal logical structure.

One of few popular formal schemata found in Indian logic is the following, with
all its certain variations in Mīmāṁsā, Buddhism and Jainism:

F3 [thesis:] *a* is P,
    [reason:] because *a* is Q,
    [positive example:] like in the case of R, [positive concomitance:] inasmuch
    as for all *x*s which are R: such *x*s are Q and hence P,
    [negative example:] unlike in the case of S, [negative concomitance:] inasmuch
    as for all *x*s which are S: such *x*s are not P and hence not Q;
    [hidden premiss: and *a* is an instance of *x*s];
    [application:] and indeed *a* is Q,
    [conclusion:] therefore *a* is P.'

But is this schema sentence valid in any way? The answer is not as
straightforward: it depends. On what? It depends on the *meanings* of P, Q, R and
S, viz. on conditions purely extraneous to logic. If *a* is 'this particular hill', *x* is
'anything', P is 'having fire', Q is 'having smoke', R is 'hearth in the kitchen' and S
is 'lake', then it is indeed true.[62] The whose argument turns for the Indian logician
blatantly false, or even absurd, if P means 'playing Scrabble', Q—'quenching
thirst', R—'tournament game' and S—'beer in a pub', or anything similar.

At first, the schema, alongside the *upanaya*, or application, appears to rest on (but
is not identical with)[63] the patterns of *modus ponendo ponens*, $((p \rightarrow q) \wedge p) \rightarrow q$, in
its positive concomitance (*anvaya*), and of *modus tollendo tollens*, $((p \rightarrow q) \wedge \sim q)$
$\rightarrow \sim p$, in its negative concomitance (*vyatireka*), with a substitution of an individual
variable *a* (say, 'this particular hill') for *x* ('anything'). This is also how the schema
is often interpreted.[64] However, the pattern based on the *avyaya-vyatireka* relations
and application (*upanaya*) is not a conditional of the form 'if any *x* …, then …',
which would allow for it to be interpreted as a tautology, similar to *modus*
(*ponendo*) *ponens* and *modus* (*tollendo*) *tollens*, but it is a non-conditional assertion
(or negation, respectively) of the form: 'whichever *x* is …, it is…'/'whichever *x* is
not …, it is not …'. The difference in formulation is quite significant because the
Indian pattern is clearly *not* a tautology. The truth value of the proposition does not

---

[62] For instance, *anvaya*: *yatra dhūmas tatra agniḥ yathā mahānasaḥ*, *vyatireka*: *yatra vahnir nâsti tatra dhūmo'pi nâsti yathā mahā-hradaḥ*.

[63] Cf. also Schayer (2001b, p. 42, n. 16).

[64] See, for instance, Schayer (2001a, p. 25; 2001b, p. 42), Mohanty (1992, pp. 104–106), Ganeri (2001, p. 31), Siderits (2003, p. 317), Phillips (2012, pp. 52–53); cf. also Gillon (2016: '3.1 Reasoning Used').

remain constant, viz. true, irrespective of the meanings of the terms employed in it but depends on the actual empirical context to which the schema is applied. This structural feature reflects its a non-a priori, non-deductive character: the validity, or rather soundness of the proposition (vide infra), rests not on its logical form but rather on actual facts empirically verifiable.

In Indian logic, not only the terms of a particular logical formula are not replaceable with others, viz. cannot be classified as variables of a formula, but also the formulas themselves are actually not logical formulas proper which could be instantiated, or replaced, with various propositions having the same formal structure and would retain their truth values.

This brings us to still another point, namely the validity and soundness of an argument. As hinted above, an argument is considered *valid* if and only if, given its form, it is impossible for the conclusion to be false when the premises are true. In other words, whenever the premises are true, the form of the argument warrants that the conclusion is also true. Also, given that the premises are actually false, the form of the argument makes it that if the premises were true, then the conclusion would have to be true as well. The validity of such an argument depends solely on the structure of reasoning and the rules of logic, and is independent of the meanings of the terms used in the argument and of the actual experience and observed facts. The concept of validity has never been a constituent part of what we know as Indian logic.[65] In contrast, a *sound* argument is such which is both valid and its all premises have to be actually true. In other words, the soundness of any argument has to depend *also* on criteria other than strictly internal. Take for instance the following valid argument:

F4   'All lady-birds wear kilts, this particular bird is a lady, therefore this
      particular bird wears a kilt'.

This argument is certainly not sound because the premises are false, and so is the conclusion, albeit it is valid. Let us take another argument which has precisely the same form of 'all A which are B are also C, and this is B, therefore this is C':

F4′   'All smoky things are fiery, this particular thing is smoky, therefore this
      particular thing is fiery'.

Whereas F4′ was considered a genuinely proper and sound argument by Indian logicians,[66] valid arguments such as F4, of the identical logical form, would have been rejected as completely false by them. In fact, Indians were entirely oblivious to

---

[65] See, e.g., Mohanty (1992, p. 115): 'A commonplace claim about logic$_2$ (i.e. Indian logic – P.B.) has been that it did not have a concept of formal validity as distinguished from material truth.'

[66] The soundness of the argument could easily be contradicted empirically whenever one attends, say, a rock concert to see 'smoke on the water, fire in the sky' and to realise that smoke and fire do not have to be causally related. This would be the case classifiable as the *upādhi*, or an extraneous *condition* which invalidates an inference and subverts the invariable concomitance (*vyāpti*), sometimes translated as 'undercutter', 'inferential undercutter' (Phillips 2012, p. 69) or 'additional condition' (Phillips forthcoming).

this important distinction between arguments valid and sound. This complete absence of interest in (and of the awareness of the character of) valid patterns of reasoning was, at least in part, responsible for the obvious lack of any deductive calculus which would comprise certain axioms and rules of inference which both are expected to produce logical truths. Consequently, it is no wonder that no proper idea of derivability of new truths from axioms is to be found in Indian logic. Since also the notion of the replacement was completely absent in Indian logic, it is likewise not surprising that there was no fertile ground from which the need for logical symbols and variables could arise, inasmuch as both entail the idea of replacement, viz. the replacement of variable items symbolised thereby.

At first, it may seem quite astonishing that Indian thinkers did not develop logical symbols proper. After all, they did make use of a range of abstract symbols, or semi-symbolic abbreviations, in traditional grammar (*vyākaraṇa*), which served as a paradigm for philosophical enquiry in India, in a way similar to the role performed by mathematics for Greek and Western logic and philosophy. Suffices to say, such logically central concepts as the positive concomitance (*anvaya*) and negative concomitance (*vyatireka*) were adopted by Indian logician from grammar, where they originated.[67] While explaining philosophical terminology, Indian philosophers first provide traditional grammatical derivations of terms discussed.[68] It is hard to imagine an Indian philosopher who did not undergo any training in traditional grammar. And Indian grammarians did know and widely apply symbols. One such category of symbols, or rather semi-symbols, functions as abbreviations of larger categories, for instance a whole catalogue of 41 abbreviations (*pratyāhāra*) which group various selections of phonemes (*akṣara-samāmnāya*).[69] These are semi-symbolic abbreviations for larger classes, and their names relate directly to a phoneme (often the first or the last sound in a group), but these are certainly not variables. Another category of the names of affixes (*pratyaya*) are mostly also abbreviations, and they include for instance *suP* (declension terminations), *strī* (feminine suffixes), *kṛt* (primary suffixes), *taddhita* (secondary suffixes), *tiṄ* (conjugation endings), *saN* (desiderative suffixes), etc. Most of these are again not actual symbols but rather abbreviations which derive their names from an ending or its constituent part. The category of tokens first known as *it*, and later as *anubandha*, i.e. markers, are certainly abstract symbols proper which, broadly speaking, distinguish between homophonic expressions performing different grammatical functions and which attach to a range of other abbreviations, symbols or phonemes grouping them into certain other categories, and once finite forms of words are formed, they are elided. These are again not variables proper but rather abbreviations.[70] However, we do find certain classes of symbols which somehow approximate the idea of variables inasmuch as they not only are *not* abbreviations (i.

---

[67] See Cardona (1967, 1981).

[68] For instance, *pacyata iti pakṣaḥ*—'that which is cooked (sc. further developed) is the thesis', what simply means that the term *pakṣa* ('thesis') is derived from the verbal root √*pac* ('to cook').

[69] See, e.g., Cardona (1997, pp. 80–82, § 129).

[70] Cf. Cardona (1997, pp. 49–50, § 83).

e. they in no way relate to phonemes or phonetic segments they represent) but involve replacement through a set of limited endings:

> The basic verb endings *jhi*, *jha* … contain a segment *jh,* which does not occur in any actual ending; instead, one has *anti*, *ati*, *anta*, *ata*, and so on. Similarly, *yu* and *vu* of affixes like **l***yu* …, **l***yuṭ* …, **ṇ***vul* …, **ṣ***vun* … are not found in actual usage, where one has instead *ana* and *aka*. As can be seen from these examples, these segments are like markers used with various items …, except that, instead of being deleted, they are replaced by other elements.[71]

However, these cannot be regarded as true variables the values of which may derive from an (unlimited) set of arbitrary or unknown individuals which instantiate the variable. Rather, they represent a strictly limited set of grammatical endings, and should be treated as a kind of semi-variables at the most.

As we can see, the paradigm of grammar did provide Indian philosophers and logicians not only with the *potential* for an abstract idea of the symbol or a semi-symbolic abbreviation but also with the concept, albeit to a limited degree, of replacement of particular individuals for a symbol or abbreviation. But even in the grammatical tradition the notion of the variable proper was absent. Despite this, both the ideas of the symbol and replacement were there in the grammatical tradition for Indian logicians to easily adopt them. This never materialised. One of the probable reasons was that the experience-based *anumāna* theory simply did not require any symbols or variables because inferential patterns were not deductive and the inferences were not drawn as independent of the meanings of the non-logical expressions they contained. The expressions had to have their objective referents in the actual world. And such objective referents are not replaceable: a pot, smoke and the world (*loka*) are not interchangeable substitutes for 'a thing produced' (*kṛtaka*) by an agent (*kartṛ*) *y*, such as a potter *p* or god *g* (likewise not replaceable), in the same way as particular *a*, *b* and *c* can substitute for variable *x*.

Perhaps, as regards the trajectory the *anumāna* theory in India took and as to why Indian logic never developed a proper deductive bent we should turn for an explanation to the strong ontological realism of those who first developed it. The foundations of Indian logic and the *anumāna* theory were laid by the philosophers who belonged to the Ānvīkṣikī tradition, which comprised—beside the materialists (*lokāyata*)—also the traditions of a proto-Nyāya and a proto-Vaiśeṣika, termed by Kauṭilya 'Yoga'.[72] All these three traditions represented ontological realism in its different forms. Expressions, terms and ideas were required to refer to some kind of tangible, concrete reals, either particulars or universals (the latter at least for the Naiyāyikas and Vaiśeṣikas, if not for the materialists). Also Buddhist logicians developed their alternative *anumāna* theory against the realist backdrop of the Abhidharma ontology, and its early presuppositions remained also with Buddhist idealist schools. Neither logical terms as abstract symbols which referred to nothing concrete could therefore find any room in Indian logic nor variables as terms of unspecified meaning could be incorporated into the 'logical semantics' of the

---

[71] Cardona (1997, p. 330, § 509).

[72] See Balcerowicz (2012).

anumāna theory developed by the realists. Just as theories of perception reflected particular ontologies in India, so did theories of other cognitive criteria (*pramāṇa*), such as those of *anumāna*. For instance, the Naiyāyika-Vaiśeṣika constructed their epistemological theory of perception as based on the ontological notion of direct contact (*sannikarṣa*) and were obliged to postulate special light rays (*cakṣū-raśmi*) emitted from the eyes to come into such direct contact with visible objects. Jaina theory of multiplexity of reality (*anekānta-vāda*), an epistemological-semantic-logical comprising of the method of the standpoints (*nikṣepa-vāda, nyāsa-vāda*), the method of viewpoints (*naya-vāda*) and the method of the sevenfold modal description (*sapta-bhaṅgī, syād-vāda*), was conceived to handle complex, multi-layered ontology.[73] Dignāga's insistence on strictly two cognitive criteria, perception and inference, was to reflect the ontology in which he postulated the existence of two kinds of reals alone: unique particulars ('the individually marked', *sva-lakṣaṇa*) and universal things ('the generally marked', *sāmānya-lakṣaṇa*). The Bhāṭṭa Mīmāṃsakas' postulate of still one more cognitive criterion of the absence as negative proof (*abhāva*) was a reflection of their realist demand that only positive reals can enter our cognition or become epistemic referents of our cognitive acts in a meaningful way, whereas a pure absence cannot perform the role of an object of cognition. Indian logic and the *anumāna* theory was not an exception: it was developed in a particular context of certain realist ontological pre-requirements, in which 'the Indian philosopher was not concerned with bare possibilities, with counterfactual conditionals (the Nyāya looks upon arguments which make use of counterfactuals (*tarka*) as invalid (*a-pramā*)), with possible worlds, but rather with what allegedly is the case.'[74] The conscious and explicit exclusion of suppositional reasoning (*tarka*), and *reductio ad absurdum*[75] often associated with it,[76] from the catalogue of cognitive criteria (*pramāṇa*) is also quite telling.[77] At best, these are recognised as auxiliaries that lend some support to knowledge derived from

---

[73] See, e.g., Balcerowicz (2015, pp. 181–184).

[74] Mohanty (1992, p. 20).

[75] See Matilal (1986, p. 79; 1998, p. 46), Mohanty (1992, pp. 115–118), and Ganeri (2001, pp. 151–168).

[76] For an example of suppositional reasoning, see NB 1.1.1, p. 4.20–5.3. The structure of this example shows that it is not quite identical with a standard *reductio ad absurdum*:

> Is *x* P, Q or R?
> If *x* is P, then falsehood / absurdity,
> If *x* is Q, then falsehood / absurdity,
> If *x* is R, then falsehood / absurdity.
> Therefore *x* is not P, not Q, not R.
> Conclusion: x is S.

[77] See NV$_1$ 1.1.1, p. 18.19–20=NV$_2$, p. 16.9 (NB 1.1.1, p. 4.19): *tarko na pramāṇa-saṃgṛhītaḥ na pramāṇa-antaram aparicchedakatvāt. pramāṇam paricchedakam, na tarkaḥ.*—'Suppositional reasoning is not included among the cognitive criteria, *ergo* it is not another cognitive criterion, because it does not lead to determinate cognition (*aparicchedaka*, lit. "does not determine"). Cognitive criterion leads to determinate cognition, but not suppositional reasoning.'

cognitive criteria on certain occasions.[78] Such arguments based on suppositional reasoning and *reductio* are valid, but not sound and not considered proper in India, because the terms employed in them have no actual denotata, an anathema for the realist. Instead of referring to actual objects as do cognitive criteria (*pramāṇa*), recognised as legitimate means to know the world, they refer to 'something of undetermined nature',[79] i.e. to hypothetical ideas or counterfactuals. The system of cognitive criteria has also its realistic foundations and develops cognitive tools and cognitively valid procedures to know what there is. Unlike suppositional reasoning (*tarka*), cognitive criteria—including *anumāna*—determine what actually exist, and lead to determinate cognition (*paricchedaka*). In the given historical context, to draw inferences the terms of which would have no actual referents or meanings, and instead their values would draw from an undetermined, unspecified set, would appear meaningless to the Indian logician and philosopher.

Arguments based on suppositional reasoning (*tarka*) as well as arguments drawn within the framework of the *anumāna* theory are both inferences. Since the former are clearly excluded from the method of the latter, both being different categories of inference, this is one more reason to take *anumāna* as 'inference' in a restricted or qualified sense, and to translate it, for instance, as suggested above: 'disputational inference' or 'debational inference' to emphasise its special, idiosyncratic, perhaps uniquely Indian character. Indian logic was so strongly dependent on the meanings of the terms employed and on their necessarily objective reference that this may explain why Indian logicians never developed either a notion of a variable or a logical symbolism, so important in the development of formal logic.

Jayarāśi was the man of his times and his culture. Like all other philosophers in India, he couldn't have been aware of the distinction between validity and soundness of a logical argument, since there was no background and context in which such awareness could emerge. Nevertheless, a range of problems and inconsistencies which the *anumāna* theory involve and which he points to, seem to related to its experiential, a posteriori and non-deductive nature. His criticism was intended to make his fellow reasoners aware of the fact that something was rotten in the state of *anumāna*, even though he couldn't have had the extensive machinery of formal logic at his disposal to offer a new working model.

6. Conclusions. It appears that, against the generally held opinions ascribing an unreserved criticism (and wholesale rejection) of all categories, which should therefore also include a rejection of the validity of inferential rules and logic, the essence of Jayarāśi's criticism primarily concerns certain empirical and theoretical problems that involve the establishing of logical relations (such as *avinâbhāva*), not the inconsistencies of such logical relations per se. His criticism is not directed against logic as such, albeit no Sanskrit equivalent for the term exists, but rather

---

[78] NV₁ 1.1.1, p. 18.21=NV₂, p. 16.10: *pramāṇa-viṣaya-vibhāgāt tu pramāṇānām anugrāhakaḥ.*—'Since suppositional reasoning is distinguished from cognitive criteria in terms of its scope, it is an auxiliary of cognitive criteria.'

[79] NB 1.1.1, p. 4.21: *evam avijñāta-tattve'rthe karaṇôpapattyā ūhaḥ pravartate.*—'In such cases [when one does not know the exact cause], with respect to an object, the nature of which is not known, presumptive reasoning (*ūha=tarka*) is employed as something which examines [possible] causes.'

against the *anumāna* theory as based on empirical observation. Accordingly, Jayarāśi emerges not as a dogmatic or methodological sceptic but rather a thinker who questions the limits (and the validity of the sources) of our knowledge which are primarily of empirical nature, whereas the logical concepts and relations which are employed may not necessarily be of self-contradictory nature or fallacious. Consequently, we have no reason, it seems, to classify him as a sceptic, but rather as a (highly) critical materialist. The implications of my discussion of Jayarāśi's critique of *anumāna* also bear on the actual understanding of what *anumāna*, experiential in its nature, really is and is not: it is less about formal logic as such or about the validity of logical rules (inference), but rather about (feasibility of) the actual application of certain theoretical rules which do not necessarily constitute what we understand under 'logic'. The *anumāna* theory does not offer any compressive theory of inference, and should instead be understood in a limited, restricted sense, with a strong realistic background.

References

AK = Vasubandhu: *Abhidharma-kośa*. (1) Swāmī Dwārikādās Shastri (Ed.), *Abhidharmakośa and Bhāṣya of Ācārya Vasubandhu with Sphuṭārthā Commentary of Ācārya Yaśomitra*. Bauddha Bharati Series 5, 6, 7, 9, Bauddha Bharati, Vārāṇasī 1987 [1st edition: 1970: Part I (1 and 2 *Kośa-sthāna*); 1971: Part II (3 and 4 *Kośa-sthāna*); 1972: Part III (5 and 6 *Kośa-sthāna*); 1973: Part IV (7 and 8 *Kośa-sthāna*). (2) Prahlad Pradhan (ed.): *Abhidharma-Koshabhāṣya of Vasubandhu*. 2nd revised edition with introduction and indices by A. Haldar. Tibetan Sanskrit Works Series 8, Kashi Prasad Jaysawal Research Institute, Patna 1975 (1st edition: 1967).

Annas, J., & Barnes, J. (1985). *The modes of scepticism: Ancient texts and modern interpretations*. Cambridge: Cambridge University Press.

Balcerowicz, P. (2005). Akalaṅka und die buddhistische Tradition: Von der Nichtwahrnehmung von Unsichtbarem (*adṛśyānupalabdhi*) zu Allwissenheit. *Wiener Zeitschrift für die Kunde Südasiens, 49*, 151–226.

Balcerowicz, P. (2012). When Yoga is not Yoga. The Nyāya-Vaiśeṣika tradition and the *Artha-śāstra*. In P. Balcerowicz (Ed.), *World view and theory in Indian philosophy*. Delhi: Manohar.

Balcerowicz, P. (2015). Do attempts to formalise the *syād-vāda* make sense? In P. Flügel & O. Qvarnström (Eds.), *Jaina scriptures and philosophy* (pp. 181–248). London: Routledge.

Balcerowicz, P. (2016). Jayarāśi Bhaṭṭa. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (spring 2016 edition). http://plato.stanford.edu/entries/jayaraasi (first version published in 2011).

Balcerowicz, P. (forthcoming). Jayarāśi Bhaṭṭa—A sceptic or materialist? *Journal of Indian Philosophy*.

Cardona, G. (1967–1968). *Anvaya* and *vyatireka* in Indian grammar. *Adyar Library Bulletin (Madras), 31–32*, 313–352.

Cardona, G. (1981). On reasoning from *anvaya* and *vyatireka* in Early Advaita. In D. Malvania, N. J. Shah (eds.) *Studies in Indian philosophy: A memorial volume in Honour of Pandit Sukhlalji Sanghvi*. L.D. Series 84. Ahmedabad: L.D. Institute of Indology.

Cardona, G. (1997). Pāṇini: *His work and its traditions. Background and introduction* (Vol. I, 2nd ed.), revised and enlarged. Delhi: Motilal Banarsidass.

Franco, E. (1987). *Perception, knowledge and disbelief: A study of Jayarāśi's scepticism*. Alt- und Neu-Indische Studien 35. Stuttgart: Franz Steiner Verlag (reprinted: Motilal Banarsidass, New Delhi, 1994).

Ganeri, J. (2001). *Philosophy in classical India: The proper work of reason*. London: Routledge.

Gillon, B. (2016). Logic in classical Indian philosophy. In E. N. Zalta (Ed.), *The Stanford encyclopedia of philosophy* (fall 2016 edition). https://plato.stanford.edu/archives/fall2016/entries/logic-india/.

HB=Dharmakīrti: *Hetubindu*. See: Steinkellner (1967a, b).

Matilal, B. K. (1982). *Logical and ethical issues of religious belief: Stephanos Nirmalendu Ghosh lectures on comparative religion*. Calcutta: Calcutta University.

Matilal, B. K. (1986). *Perception: An essay on classical Indian theories of knowledge*. Oxford: Clarendon Press.

Matilal, B. K. (1998). In J. Ganeri & H. Tiwari (Eds.), *The character of logic in India*. Albany, NY: State University of New York Press.

Met = Jaeger, W. (Ed.) (1957). *Aristotelis Metaphysica*. Oxford classical texts. Oxford: Clarendon Press.

MMK=Nāgārjuna: *Mūla-madhyamaka-kārikā*. (1) Louis de la Vallée Poussin (ed.): *Madhyamakavṛttiḥ Mūlamadhyamaka-kārikās de Nāgarjuna avec la Prasannapadā Commentaire de Candrakīrti*. *Bibliotheca Buddhica* 4, Pétersbourg 1903–1913 (reprinted: Osnabrück, 1970). (2) Mark Siderits; Shoryu Katsura (ed., tr.): *Nāgārjuna's Middle Way: The Mūlamadhyamakakārikā*. Classics of Indian Buddhism, Wisdom Publications, Somerville 2013.

Mohanty, J. N. (1992). *Reason and tradition in Indian thought: An essay on the nature of Indian philosophical thinking*. Oxford: Oxford University Press.

Mohanty, J. N. (2000). *Classical Indian philosophy*. New Delhi: Oxford University Press.

MŚBh=Śabarasvāmin: *Mīmāṁsā-śābara-bhāṣya*. (1) Maheśachandra Nyáyaratna (ed.): *The aphorisms of the Mimámsá. Mīmaṁsā darśanam by Jaimini with the commentary of Śavara Svámin*. Bibliotheca Indica, Ganeśa Press, Calcutta 1863–1887. (2) Erich Frauwallner: *Materialien zur ältesten Erkentnislehre der Karmamīmāṁsā*. Österreichische Akademie der Wissenschaften, Philosophisch-Historische Klasse, Sitzungsberichte 259,2. Veröffentlichungen der Kommission für Sprachen und Kulturen Süd- und Ostasiens, Heft 6. Kommissionsverlag der Österreichischen Akademie der Wissenschaften, Wien 1968.

MŚV=Kumārila Bhaṭṭa: *Mīmāṁsā-śloka-vārttika*. Dvārikādāsa Śāstrin (ed.): *Ślokavārttika of Śrī Kumārila Bhaṭṭa with the Commentary Nyāya-ratnâkara of Śrī Pārthasārathi Miśra*. Prāchyabhārati Series 3, Tārā Publications, Varanasi 1978.

NB=Dharmakīrti: *Nyāyabindu*. Pt. Dalsukhbhai Malvania (ed.): *Paṇḍita Durveka Miśra's Dharmottara-pradīpa* [*being a subcommentary on Dharmottara's Nyāya-bindu-ṭīkā, a commentary on Dharmakīrti's Nyāya-bindu*]. Patna: Kashi Prasad Jayaswal Research Institute, 1955 (reprinted: 1971).

NBh=Vātsyāyana Pakṣilasvāmin: *Nyāya-bhāṣya*. See: NS.

NS=Akṣapāda Gautama: *Nyāya-sūtra*. Anantalal Thakur (ed.): *Gautamīyanyāyadarśan with Bhāṣya of Vātsyāyana*. Indian Council of Philosophical Research, New Delhi 1997.

NV=Uddyotakara: *Nyāya-[bhāṣya]-vārttika*. (1) Pt. Vindhyeśvarī Prasāda Dvivedin (ed.): *Nyâyavârttika, A Critical Gloss on Nyàya Darśana, Vàtsyàyanabhàshya, by Bhâradwâja Uddyotakara*. The Chowkhamba Sanskrit Series Office, Benares 1915–1918 (reprinted: Eastern Book Linkers, Delhi 1986). (2) Anantalal Thakur (ed.): *Nyāyabhāṣyavārttika of Bhāradvāja Uddyotakara*. Indian Council of Philosophical Research, New Delhi 1997.

Phillips, S. (2012). *Epistemology in classical India: The knowledge sources of the Nyāya School*. New York: Routledge.

Phillips, S. (forthcoming). The logics of counterinference and the "Additional Condition" (*upādhi*) in Gaṅgeśa's defense of the Nyāya theistic inference from effects. In: P. Balcerowicz, B. Gillon (eds.) *Logic and religion in India*, a special issue of the *Journal of Indian Philosophy*.

PV=Dharmakīrti: *Pramāṇa-vārttika*. (1) Svāmī Dvārikādās Śāstri (ed.): *Dharmakīrtti Nibandhawali (1): Pramāṇa-vārttika of Acharya Dharmakīrti with the Commentary 'Vṛtti' of Acharya Manoratha-nandin*. Bauddha Bharati Series 3, Bauddha Bharati, Vārāṇasī 1968 (reprinted: 1984). (2) Ram Chandra Pandeya (ed.): *The Pramāṇa-vārttikam of Ācārya Dharmakīrti with Sub-commentaries:*

Svôpajña-vṛtti of the Author and Pramāṇa-vārttika-vṛtti of Manorathanandin. Motilal Banarsidass, Delhi 1989. (3) See: PVSV₁. (3) See: PVSV₂.

PVin II=Dharmakīrti: *Pramāṇaviniścaya*, Chapter II (*svârthānumāna*). (1a) Tibetan and Sanskrit text. See: Steinkellner (1973). (1b) German translation, notes. See: Steinkellner (1979).

PVSV=Dharmakīrti: *Pramāṇavārttikasvavṛtti*. (1) Dalasukha Mālavaṇiyā (ed.): *Ācārya Dharmakīrti kṛta Svārthānumānapariccheda*. General Edition: V.S. Agarwala, Hindu Vishvavidyalaya Nepal Rajya Sanskrit Series 2, Varanasi (1959). (2) Raniero Gnoli (ed.): *The Pramāṇavārttikam of Dharmakīrti, the First Chapter with the Autocommentary. Text and Critical Notes.* Serie Orientale Roma 23, Roma: Ismeo, 1960.

Schayer, S. (2001a). Studies on Indian logic (translated from the German original by P. Balcerowicz). In P. Balcerowicz & M. Mejor (Eds.), *Materials of the international seminar: Argument and reason in Indian logic* (pp. 23–33). Warsaw: Instytut Orientalistyczny, Uniwersytet Warszawski. http://www.balcerowicz.eu/indology/schayer2001.pdf.

Schayer, S. (2001b). On the method of the *Nyāya* research (translated from the German original by P. Balcerowicz). In P. Balcerowicz & M. Mejor (Eds.), *Materials of the international seminar: Argument and reason in Indian logic* (pp. 35–43). Warsaw: Instytut Orientalistyczny, Uniwersytet Warszawski. http://www.balcerowicz.eu/indology/schayer2001.pdf.

Siderits, M. (2003). Deductive, inductive, both or neither? *Journal of Indian Philosophy,* 1–3, 303–321 (= *Proceedings of the International Seminar "Argument and Reason in Indian Logic" 20–24 June, 2001 —Kazimierz Dolny, Poland*, edited by P. Balcerowicz).

Solomon, E. A. (1976, 1978). *Indian dialectics. Methods of philosophical discussion*. 2 Vols. Ahmedabad.

Solomon, E. (2010). *Tattvopaplavasiṁha (an introduction, Sanskrit text, English translation and notes)*. Parimal Sanskrit Series 111. Delhi: Parimal Publications.

Steinkellner, E. (1967a). *Dharmakīrti's Hetubinduḥ. Teil I. Tibetischer Text und rekonstruierter Sanskrit-Text*. Wien: Veröffentlichungen der Kommission für Sprachen und Kulturen Süd- und Ostasiens, Österreichische Akademie der Wissenschaften, Heft 4.

Steinkellner, E. (1967b). *Dharmakīrti's Hetubinduh. Teil II. Übersetzung und Anmerkungen*. Wien: Veröffentlichungen der Kommission für Sprachen und Kulturen Süd- und Ostasiens, Österreichische Akademie der Wissenschaften, Heft 5.

Steinkellner, E. (1973). *Dharmakīrti's Pramāṇaviniścayaḥ, 2. Kapitel: Svārthānumānam. Teil I. Tibetischer Text und Sanskrittexte*. Wien: Veröffentlichungen der Kommission für Sprachen und Kulturen Südasiens, Österreichische Akademie der Wissenschaften, Heft 12.

Steinkellner, E. (1979). *Dharmakīrti's Pramāṇaviniścayaḥ, 2. Kapitel: Svārthānumānam. Teil II. Übersetzung und Anmerkungen*. Wien: Veröffentlichungen der Kommission für Sprachen und Kulturen Südasiens, Österreichische Akademie der Wissenschaften, Heft 15.

Taber, J. (forthcoming). Some remarks on the apparent absence of a priori reasoning in Indian philosophy. In P. Balcerowicz & B. Gillon (Eds.), *Logic and religion in India*, a special issue of the *Journal of Indian Philosophy*.

TSa=Śāntarakṣita: *Tattva-saṅgraha*. Embar Krishnamacharya (ed.): *Tattvasaṅgraha of Śāntarakṣita with the commentary of Kamalaśīla*. 2 Vols, Gaekwad's Oriental Series 30–31. Oriental Institute, Baroda 1926 (reprinted: 1984, 1988).

TUP=Jayanta Bhaṭṭa: *Tattvôpaplava-siṁha*. (1) Saṁghavī, Sukhlāljī; Pārīkh, Rasiklāl C. (eds.): *Śrī-jayanta-bhaṭṭa-viracitaḥ Tattvôpaplava-siṁhaḥ. Tattvopaplavasimha of Shri Jayarasi Bhatta. Edited with an introduction and indices*. Gaekwad Oriental Series 87. Oriental Institute, Baroda 1940 (reprinted: Bauddha Bharati Series 20, Varanasi 1987). (2) Franco (1987).

VS(C)=Kaṇāda: *Vaiśeṣika-sūtra*. Muni Jambuvijaya (ed.): *Vaiśeṣikasūtra of Kaṇāda with the commentary of Candrānanda*. With the Introduction by Anantalal Thakur. Gaekwad's Oriental Series 136. Oriental Institute, Baroda 1961.

VSV(C)=Candrānanda: *Vaiśeṣika-sūtra-vṛtti*. See: VS(C).

VVy=Nāgārjuna: *Vigraha-vyāvartanī*. (1) E. H. Johnston & A. Kunst (ed): Kamaleswar Bhattacharya (tr.): *The dialectical method of Nāgārjuna (Vigrahavyāvartanī)*. Motilal Banarsidass, Delhi–Varanasi–Patna 1986. (2) Jan Westerhoff (tr.): *The dispeller of disputes Nāgārjuna's Vigrahavyāavartanī*. Translation and Commentary by …. Oxford University Press, Oxford 2010.