

smnyato drstam anumnam : analogical reasoning in early Nyaya-Vaiesika

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sāmānyato dr̥ṣṭam anumānam
– ANALOGICAL REASONING IN EARLY NYĀYA-VAIŚEṢIKA

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From early times on Indian authors have put forward various distinctions of different kinds of reasoning (*anumāna*) which have been quite a riddle to ancient as well as modern scholars. This paper presents a new attempt to understand these distinctions better, at least as they are met with in some early Nyāya and Vaiśeṣika texts. Special attention is given to the *sāmānyato dr̥ṣṭa* kind of *anumāna* as this title occurs constantly among the several conceptions which otherwise differ in terminology as well as in content. The procedure is to analyse the examples given for this mode of reasoning and thereby try to isolate what might count as its most characteristic features. Of course any theoretical explanations of the texts in question are considered as well. The findings are then screened against the background of modern specifications of inductive logic in order to determine the exact position this mode of reasoning holds within the field of logic. Once we have thus recognized the theoretical nature of this very kind of reasoning we can ask why it has been propounded in the way it actually has been.

Discussing *anumāna* in his Padārthadharmasamgraha Praśastapāda propounded the twofold distinction of *dr̥ṣṭam* and *sāmānyato dr̥ṣṭam anumānam*.¹ We know of quite many such and similar distinctions drawn in other early Indian texts discussing logic such as the Vaiśeṣikasūtras, Vārṣaganya's Ṣaṣṭitantra or, quite prominently, Nyāyasūtra 1.1.5. As is well known, these different kinds of *anumāna* have been quite a riddle to ancient as well as modern scholars. The Nyāyasūtra's inexplicit text, for example, has been explained in different and conflicting ways even by its oldest extant commentary itself, the Bhāṣya of Pakṣilasvāmin.² In the case of Praśastapāda

- 1 The Sanskrit text of Praśastapāda's chapter on *anumāna* together with a translation into German can be found in my book *Aus gutem Grund – Praśastapādas anumāna-Lehre und die drei Bedingungen des logischen Grundes*, Reinbek 1992, which takes into account variants of four editions. As in so many cases, a critical edition is still missing though there is one under preparation by Harunaga Isaacson, Groningen.
- 2 The later commentator Uddyotakara accepted neither of Pakṣilasvāmin's interpretations and offered his own solution. Modern scholars who discussed the problem are G. Oberhammer: *Zur Deutung von Nyāyasūtram 1.1.5*, Wiener Zeitschrift für die Kunde Süd- und Ostasiens, 10 (1966), p. 66-72, answered by A. Wezler: *Die "dreifache" Schlußfolgerung im Nyāyasūtra 1.1.5*, Indo-Iranian Journal, 11,3 (1969), p. 190-211 and A. Wezler: *Dignāga's Kritik an der Schlußlehre des Nyāya und die Deutung von Nyāyasūtra 1.1.5*, Zeitschrift der Deutschen Morgenländischen Gesellschaft, Sup. 1 (1969), p. 836-842. Further literature is mentioned in footnote 7 to p. 184 of K. Potter's *Encyclopedia of Indian Philosophies*, vol. 2, Delhi 1977.

we are in a better situation, as he himself explains and exemplifies the kinds of *anumāna* he distinguishes in rather clear words. So by taking him as our starting point we may reasonably hope to advance towards an understanding of this elusive distinction which apart from mere philological and historical features will also illuminate its theoretical nature. For if we fail in the latter point we are, to begin with an analogy, like excavators of some future generation who have neatly reconstructed by laborious puzzle work some machine but do not know that if one turns the key the thing will drive.

Before investigating into the Indian texts, however, it seems advisable to clarify some logical notions which will be used in the following discussion.³ One presupposition of this paper is that we can understand many features of early Indian theories of reasoning within the context of inductive logic.⁴ Inductive arguments share as their common nature that they draw from previous experience. It is a step from known facts (the inductive basis) to an uncertain state of affairs. The latter is decided by assuming that it stands in accordance with what we know so far. Of course, the inductive basis must have something in common with the state of affairs under consideration. Nobody would argue, for example, that fire is hot because all birds we know of lay eggs. Instead, one would adduce other instances of the very same kind, namely other fires which we have experienced as hot in order to draw this conclusion. The latter argument is an instance of what is called '*inductive generalization*' exhibiting the following form:

All observed entities which are H are S.

Thus: All entities which are H are S.⁵

- 3 What I shall say about inductive logic in this paragraph is mainly based on Wesley C. Salmon: *Logic*, Foundations of Philosophy Series, Englewood Cliffs 1963.
- 4 Some justification for this can be found in my book *Aus gutem Grund*. Even after the introduction of the *trairūpya* theory the early Indian *anumāna* was not a deductive argument, as the fulfillment of the *trairūpya* conditions did not as such ensure the truth of the conclusion but (as in the case of *Praśastapāda*) only rendered the assumption that the *vyāpti* relation of *hetu* and *sādhya* holds highly probable. The shift towards purely deductive logic came with Dharmakīrti.
- 5 Salmon 1963, p. 56: "Z per cent of the observed members of F are G. [Thus:] Z per cent of F are G. ... If the conclusion is "100 per cent of F are G" (i.e., "All F are G") or "0 per cent of F are G" (i.e., "No F are G"), it is a *universal generalization*. If Z is some percentage other than 0 or 100, the conclusion is a *statistical generalization*." The Indian logicians never considered the latter case, as far as I know. Salmon includes both cases under what he calls '*induction by enumeration*'. I have deliberately changed Salmon's letters to 'H' and 'S' which, of course, should remind us of '*hetu*' and '*sādhya*'.

A sub-kind of the above case is what we may call '*inductive prediction*'; its form is:

All observed entities which are H are S.
Thus: This (or: the next) H is S.⁶

Besides inductive generalizations, however, there is another widely used form of inductive arguments which might be called '*analogical*'. Here the inductive basis is in fact different in kind from the case under consideration, yet the argument draws from some relevant similarity, some feature both sides have in common. Salmon provides the following example:

"A medical researcher makes experiments upon rats to determine the effects of a new drug upon humans. He finds that the rats to which the new drug has been administered develop undesirable side effects. By analogy, he may argue that since rats and humans are physiologically quite similar, the new drug will probably have undesirable side effects if used by humans."

The form of such analogical arguments is:

Objects of type X have properties A, B etc. and H
Objects of type Y have properties A, B etc. and H
Objects of type X have property S.
Thus: Objects of type Y have property S.⁷

The above three types of inductive arguments have been introduced with regard to the subsequent discussion of the Indian material and are by no means meant as a complete enumeration. It should also be noted that the terms '*analogical argument*' or '*argument by analogy*' are used differently by different authors.⁸ The point of importance is that there are inductive

6 This form of inductive argument is not explicitly dealt with by Salmon.

7 cf. Salmon 1963, p. 70ff. It is clear from what Salmon says elsewhere that type X and type Y may not be identical. Mapped onto the example objects of type X are rats while those of type Y are humans. A, B etc. are the physiological properties both have in common. H is the property of having taken the new drug, S the property of developing side effects. Again I have slightly modified Salmon's original scheme.

8 Thus J.M. Copi's *Introduction to Logic*, London 1968, applies the term '*argument by analogy*' to what I have called '*inductive prediction*', while the inductive generalization kind of argument is called '*simple enumeration*' by him. Also cf. J. Agassi: *Analogies as Generalizations*, *Philosophy of Science*, 31,4, p. 351. While terms as such are of no importance, it seems a theoretical deficiency to me not to distinguish between the types of inductive arguments as shown above.

arguments (called ‘analogical’ in this paper) which exhibit a difference of kind between the entity or state of affairs which the conclusion is about and those entities or states of affairs which form the inductive basis. These can be contrasted to those inductive arguments which proceed from the known to the unknown without thereby shifting from one kind of entities or states of affairs to another, different one.

After these preliminary remarks I shall now survey the Indian material. Praśastapāda’s example of the *dr̥ṣṭam anumānam* runs as follows: “As in the case when we have noticed the dewlap only with the cow [we then have] the cognition of a cow also at some other place on account of seeing only the dewlap.” According to his general description this case is such that “the thing known (*prasiddha*) and the thing to be inferred (*sādhyā*) are of the same kind (*jātyabheda*).”⁹ Technically speaking the structure of this example is as follows: The animal one partly sees at present is the *pakṣa* (the object under consideration), its having a dewlap is the *liṅga* (the logical mark) and its being a cow is the *anumeyadharmā* (the property to be inferred). Now the question has to be answered as to how the two terms ‘*prasiddha*’ and ‘*sādhyā*’ mentioned by Praśastapāda fit into this scheme. Śrīdhara tells us that the *prasiddha* is the *anumeyadharmā* as observed within the examples, while the *sādhyā* is the *anumeyadharmā* as presumed in the *pakṣa*. In both cases there is – as Praśastapāda demands – no difference of kind as we deal with the same entity, namely the universal of being a cow (*gotva*).¹⁰

9 “*tatra dr̥ṣṭam prasiddhasādhyayor atyantajātyabhede ’numānam / yathā gavy eva sāsnaṁmātram upalabhya deśāntare ’pi sāsnaṁmātradarśanād gavi pratipattiḥ.*” All my quotations are according to G. Kavirāj’s edition *The Praśastapādabhāṣyam*, Benares 1930, p. 562-616 (including Vyomaśiva’s *Vyomavati*). The first ‘*mātra*’ is somewhat strange here. As I have been told by Harunaga Isaacson it will not be adopted in his critical edition. The same is true of the component ‘*atyanta*’ in ‘*atyantajātyabhede*’. Thus both terms do not occur in my translation above.

10 “*prasiddham yat pūrvaṁ liṅgena saha dr̥ṣṭam sādhyam yat sampraty anumeyam...*” (according to Dvivedin’s edition of the *Nyāyakandalī*, Benares 1895, Delhi 1984, p. 212). Vyomaśiva offers a somewhat different solution, explaining the two terms as ‘*dr̥ṣṭānta*’ and ‘*dārṣṭāntika*’ respectively, i.e. as the examples and the *pakṣa* themselves. Thus the *sādhyā* would be the very animal of which we can see only the dewlap now and the *prasiddha* all the other animals which we previously experienced as having a dewlap. The term ‘*jāti*’ is understood by Vyomaśiva to denote the *sādhyadharmā*. Thus the result of his interpretation is more or less the same as that of Śrīdhara: In the case of *dr̥ṣṭam anumānam* there is no difference between the *sādhyadharmā* as exemplified by the *pakṣa* and the *sādhyadharmā* as exemplified by the examples (cf. Gaurinath Shastri’s edition of the *Vyomavati*, Varanasi 1984, vol. 2, p. 161).

The *sāmānyato dr̥ṣṭam anumānam*, on the other hand, is characterized by Praśastapāda as the opposite case where “the thing known and the thing inferred are of absolutely different kinds (*atyantajātibheda*)” This is exemplified by the inference that a ritual act which is performed without envisaging any observable result will bear some unobservable heavenly fruit, just as the labour of let’s say farmers leads to results adequate to it.¹¹ We may again restate this example using the technical terminology of *anumāna*. The *pakṣa* is a ritual act (or maybe the totality of those acts¹²), the *liṅga* its being an act which is performed without a worldly motive and the *anumeyadharmā* its bearing an imperceptible result in heaven. The examples, however, on which this inference is based are of a quite different nature. They are acts of every day life having worldly purposes and worldly results. While in the case of *dr̥ṣṭam anumānam* Praśastapāda’s description strongly suggests its interpretation as a kind of inductive generalization where the same relations we find within the previously experienced examples are taken to hold in the present situation, the *sāmānyato dr̥ṣṭam anumānam* presents itself as an analogical inference which transposes relations holding in one field to a situation basically different to this inferential basis. Such an inference can be justified by pointing out some relevant similarities between the different fields and quite in accordance with this Praśastapāda claims that such a *sāmānyato dr̥ṣṭam anumānam* is based on *liṅgānumeyadharmasāmānyānuvṛtti*. This compound is rather ambiguous and different commentators have analyzed it in different ways.¹³ It seems

11 “*prasiddhasādhyayor atyantajātibhede liṅgānumeyadharmasāmānyānuvṛttito ’numānam sāmānyato dr̥ṣṭam / yathā karṣakavaṇigrājapurūṣāṇām ca pravṛtteḥ phalavattvam upalabhya varṇāśramiṇām api dr̥ṣṭam prayojanam anuddiśya pravartamānānām phalānumānam iti.*” It is difficult to understand why Praśastapāda calls this difference ‘*atyanta*’ as this cannot mean ‘absolute’ (if that is in fact what is meant by this term) in any strong sense which might rule out any common features of the two cases which are, however, needed as the very basis for this inference.

12 Praśastapāda does not clearly distinguish between singular and plural *pakṣa*’s.

13 Vyomaśiva thinks that it denotes an *anuvṛtti* between *liṅga* and *anumeyadharmā* insofar as some entities similar to them always occur together. He says: “*liṅgam ca anumeyadharmas ca tayoh sāmānyānuvṛttiḥ, yatra yatredam sādhanasāmānyam, tatra tatredam sādhyasāmānyam iti, tad grahaṇe ’numānam pravartata eva*” (Shastri’s edition, p. 161). Śrīdhara, on the other hand, takes the *anuvṛtti* to hold between the similar entities. He says: “*liṅgam cānumeyadharmas ca liṅgānumeyadharmau tayoh sāmānye liṅgānumeyadharmasāmānye tayor anuvṛttiḥ liṅgānumeyadharmasāmānyānuvṛttiḥ tato liṅgasāmānyasya sādhyasāmānyena sahāvinābhāvāt yad anumānam tat sāmānyato dr̥ṣṭam*” (Dvivedin’s edition, p. 212). Thus he understands ‘*anuvṛtti*’ in the sense of ‘*avinābhāva*’, the occurrence of one thing together with another without exception. And Vyomaśiva’s understanding of that term comes very close to this, too. But if

clear, however, that what justifies this kind of inference is some similarity, something the *liṅga* and the *anumeyadharmā* have in common with those entities which, though different in kind, correspond to them within the examples. Thus being a ritual act and being a worldly act both have the common nature of being an act and worldly as well as heavenly fruits have in common that they result from such acts.¹⁴

A serious problem, however, arises if we take into account Praśastapāda's general theoretical standpoint with regard to *anumāna* which crystallizes in the three famous conditions of correctness (*trairūpya*). Broadly speaking, these demand of a correct inference that 1) the *pakṣa* has to be endowed with the *liṅga*, 2) the *liṅga* must be known to occur with instances of the *anumeyadharmā* and 3) we must be sure that the *liṅga* never occurs without the *anumeyadharmā*.¹⁵ But obviously the second condition is not fulfilled in the case of *sāmānyato dr̥ṣṭam anumānam*. For how could we ever know this? After all it's not the *liṅga* and not the *anumeyadharmā* as such which

Praśastapāda really meant this special relation, the question arises why he did not use its technical expression which was known to him as he employed it before. So I think one has to consider the possibility that the term '*anuvṛtti*' denotes a conformity which consists in the common nature both the *liṅga* and the *anumeyadharmā* have with the entities similar to them which are met with in the examples. Also note that the expression '*sāmānyā*' embedded in the compound in all probability does not mean 'universal' in the technical Vaiśeṣika sense as some of the *dharma*'s in question (like *phalavattva*) would hardly fall under this concept (this was indicated to me by Harunaga Isaacson).

- 14 That Praśastapāda has ritual acts in mind is indirectly expressed by the phrase '*varṇāśramiṇām*'. It is true that the imperceptibility of the inferred fruits of these acts is not explicitly predicated of them but again indirectly referred to by the phrase '*dr̥ṣṭam prayojanam anuddiśya*'. It is Śrīdhara who explicitly speaks of heavenly fruits. Maybe this vagueness on the side of Praśastapāda indicates that he himself somehow felt the difficulties discussed below. The *anumeyadharmā*, however, must be determined as the property of having unobservable fruits as otherwise this inference would not be any different from the *dr̥ṣṭam anumānam*. But no interpretation can be accepted which does not allow for any difference between the two kinds of *anumāna*, for this would blur the very gist of the whole discussion. It is also not enough to think that the case of *sāmānyato dr̥ṣṭam anumānam* is only distinguished by the fact that here the *dr̥ṣṭānta* and *dār̥ṣṭāntika* are different in kind while their respective *dharma*'s (understood as the properties of being an act = *liṅga* and leading to a result = *anumeyadharmā*) do not differ. For why would Praśastapāda then justify this kind of *anumāna* on the basis of some *dharma*'s which are *similar* to *liṅga* and *anumeyadharmā*? Just as the difference of individual cows is of no importance as long as it does not affect the characteristic to be inferred (*gotva*), the fact that worldly and ritual acts differ in kind only bears on the argument if this has an effect on the *anumeyadharmā* as well. Also cf. fn. 29.
- 15 "*yad anumeyenārthena deśaviśeṣe kālaviśeṣe vā saharitām anumeyadharmānvite cānyatra sarvasminn ekadeśe vā prasiddham anumeyaviparīte ca sarvasmin pramāṇato 'sad eva tad aprasiddhārthasyānumāpakaṃ liṅgaṃ bhavattī.*"

are observed together in the examples and so we have no experience of *their* joint occurrence at all. We couldn't have, as the fruit of ritual acts is something unobservable by nature. What we do have experienced together is some common feature of a higher degree, namely the properties of being an act and leading to some result. Thus if we apply the *trairūpya* conditions to Praśastapāda's own example, all that we can strictly infer by the rules of *anumāna* is that ritual acts lead to some results, but not that these are unobservable results of a special kind attained in heaven.

In the Vaiśeṣikasūtra we come across a distinction corresponding to that of Praśastapāda, namely that between *dr̥ṣṭam* and *sāmānyato dr̥ṣṭam liṅgam*.¹⁶ VS 2.1.15-16 introduce an objection against the inference of wind on the basis of touch (or anything else). First it is stated that no *dr̥ṣṭam liṅgam* is found as no connection with wind has been observed – wind being imperceptible such an observation is quite impossible. A second possibility would be that the existence of wind is proved by a *sāmānyato dr̥ṣṭam liṅgam* which, however, is also not accepted by the opponent on the ground that in this case we would have no specification (*aviśeṣa*).¹⁷ We may understand this as claiming that touch as *sāmānyato dr̥ṣṭam liṅgam* might only serve to infer that there is some substance or other in which it inheres, but not that this substance is wind and nothing else. Unfortunately the *sūtra* does not shed much light on its conception of the nature of the inference in question as it gives us no information as to how it would work in practice. VS 2.1.18 finally rebuts the objection by saying that we do have a mark in the form of the namegiving of those who are distinguished from us.¹⁸ It seems as if

16 The latter has been equated by some scholars with yet another variety called *adr̥ṣṭaliṅga* but Wezler has quite convincingly shown that this identification is mistaken as one is confronted here with terms of two different historical levels (A. Wezler: *A Note on Concept Adr̥ṣṭa as Used in the Vaiśeṣikasūtra*, Datta/Sharma/Vyas (ed.), Aruṇa-Bhārati, Prof. A.N. Jani Felicitation Volume, Baroda 1983). VS 2.1.8 states that having a dewlap and some other such things is a *dr̥ṣṭam liṅgam* for being a cow, and Wezler understands this as a mark which is perceived or perceptible in contrast to the same expression in VS 2.1.15 where it exhibits a technically more advanced meaning and denotes that the *connection* of *liṅga* and *sādhyadharmā* has been perceived. Now the following two Sūtras 2.10-11 claim that in the case of wind (*vāyu*) we have a logical mark in the form of touch (*sparsā*) which is *adr̥ṣṭaliṅga* inasmuch as "... this is not the touch of something perceptible." But the touch itself is well perceptible and thus '*dr̥ṣṭam liṅgam*' in the sense of 2.1.8. Thus '*adr̥ṣṭaliṅga*' must not be taken as the negation of the term '*dr̥ṣṭam liṅgam*' in form of a *karmadhāraya* but as a *tatpuruṣa*-compound.

17 VS 2.1.15: *vāyusannikarṣe pratyakṣābhāvād dr̥ṣṭam liṅgam na vidyate*. VS 2.1.16: *sāmānyato dr̥ṣṭāc cāviśeṣaḥ*.

18 VS. 2.1.18: *saṃjñākarma tv asmadvīṣṭānām liṅgam*.

originally touch had been taken to serve as the logical mark for wind. Yet at some later level this was rejected and exchanged for the ṛṣi's naming of wind as 'wind' which was then regarded as a new and convincing *liṅgam*.¹⁹ The early commentator Candrānanda, however, does not agree with this interpretation. In his opinion the *sūtrakāra* regards touch as a valid *sāmānyato dṛṣṭam liṅgam* for wind, though the desired conclusion can only be reached by an additional argument by exclusion (*pariśeṣa*). Touch is a property (*guṇa*) and as such it necessarily resides within some substance. As this touch cannot be of the other substances earth etc., because these are visible and in the case under consideration something invisible is touched, we might infer that it is wind we feel.²⁰ But why should there not be a hitherto unknown substance which we touch instead of wind? It is this last possibility which according to Candrānanda is excluded by VS 2.1.18 which he interprets thus: God gave us only the names of nine substances and therefore no further substance exists. So what we feel can only be wind and touch is its *sāmānyato dṛṣṭam liṅgam*.²¹

It is noteworthy that in the above Vaiśeṣika texts it is always the *sāmānyato dṛṣṭa* kind of *anumāna* which comes into play when some entity has to be inferred which is imperceptible by its very nature. This is a feature common to other Indian schools as well. Thus we read in Vārṣaganya's *Ṣaṣṭitantra*, a lost early Sāṃkhya text partly reconstructed by Frauwallner, that the *sāmānyato dṛṣṭam anumānam* "is the cause of the cognition of imperceptible things."²² And the same conception reoccurs in Pakṣilasvāmin's

- 19 With this interpretation I follow the line of Wezler, being well aware that the discussion among scholars about the right understanding of these Sūtras is still going on. In the present context, however, all that is of importance is that here, too, the *sāmānyato dṛṣṭam anumānam* is regarded as a possibility to infer an entity unobservable by nature.
- 20 Some further substances such as *ākāśa* etc. which are equally invisible can be excluded on other grounds.
- 21 This discussion of Candrānanda is quite interesting with regard to the problem of *Praśastapāda* which we have analyzed above. Strictly speaking he cannot infer by way of a proper *anumāna* the unobservable results of ritual acts but only that these must bear some fruit at all. But he might have reached his goal by supplementing the *anumāna* by such an inference by exclusion (*pariśeṣa*) as Candrānanda proposed. This method was known to *Praśastapāda*. He uses it in his discussion of *ākāśa* where he shows that sound must be a property of this very substance because all other possibilities can be excluded. And he adopts the same way of reasoning again in his paragraph on *ātman*.
- 22 E. Frauwallner: *Die Erkenntnislehre des klassischen Sāṃkhya-Systems*, Wiener Zeitschrift für die Kunde Süd- und Ostasiens, 2 (1958), p. 128. Even though Vārṣaganya uses most of the important technical terms, his classification of *anumāna* is rather unique. His main classifications are '*viśeṣato dṛṣṭam*' and '*sāmānyato dṛṣṭam anumānam*'. In the

Nyāyabhāṣya on Nyāyasūtra 1.1.5. There we find a threefold distinction of *anumāna* denoted by the terms '*pūrvavat*', '*śeṣavat*' and '*sāmānyato dṛṣṭa*'. As Potter remarks "it is apparent from later writings that no one is very sure what Gautama's *sūtras* meant."²³ Lately, however, Wezler has argued that the original intention of the *sūtra* can be recovered from two early buddhist texts.²⁴ According to him '*pūrvavat*' means 'as [observed] before' and denotes an inference like that of some fire by its smoke where one has observed previously fire and smoke together, while the meaning of '*śeṣavat*' is 'as the rest' and this refers to cases such as when one judges that all grains of rice in a pot are well cooked after having tried a sample. The distinctive feature seems to be that in the first case we predict a single fact while in the second we infer a general (though not universal) fact. Thus the two kinds of arguments might be viewed as cases of inductive prediction and inductive generalization respectively.

Pakṣilasvāmin supplies two different explanations for each of the three kinds of *anumāna*.²⁵ Thus according to him *pūrvavat* is either the inference of an effect by its cause or more generally that of any presently not perceived entity by another entity on the ground that previously both have been experienced as related to each other. The *śeṣavat* kind of *anumāna*, on the other hand, is either the inference of a cause by its effect, or it is the method excluding other possibilities called '*pariśeṣa*' which we have already seen in work in the case of Candrānanda above. None of these forms of inference can fairly be described as analogical. The first example Pakṣilasvāmin gives for *sāmānyato dṛṣṭam anumānam*, which is also adopted by the buddhist texts Wezler used for his reconstruction, runs as follows: From its change of position within the sky one infers that the sun moves, albeit this motion is

first case the entity we want to infer is numerically identical with that which we have experienced before, while in the latter it is not. Subkinds of *sāmānyato dṛṣṭam anumānam* are *śeṣavat* (inference of cause from effect) and *pūrvavat* (inference of effect from cause). The former can be direct or indirect; in the indirect case the device of excluding other possibilities (*pariśeṣa*) is used.

23 L.c., p. 184.

24 Cf. above fn. 2. The two texts in question are the so-called Upāyahṛdaya and a commentary to Nāgārjuna's Mādhyamikaśāstra of some Piṅgala or Piṅgalākṣa, both extant only in Chinese translations.

25 This is generally taken to indicate that he was unsure about the original meaning of the Sūtra, though Thakur thinks that Pakṣilasvāmin's first three explanations represent the Nyāya view while the latter set refers to the Vaiśeṣika conception. This, however, is rather unconvincing (cf. Anantalal. Thakur: *Vātsyāyana and the Vaiśeṣika-System*, Vishveshwaranand Indol. Journal, 1 (1963), p. 78-86).

not perceived, on the ground that in the case of other things (of higher velocity) change of place is also connected with (perceptible) movement.²⁶ This example is not devoid of uncertainties. If it is just the movement of the sun which is inferred than there is no reason why not to subordinate this *anumāna* under the first kind of *śeṣavat*, namely the inference of a cause by its effect. Of course the sun never moves any faster and so its movement is of a special kind which is in the context of this inference decisively different to that of the examples as it is imperceptible by nature. This feature is clearly stressed in Pakṣilasvāmin's formulation "*tasmād asty apratyakṣāpy ādityasya vrajyeti.*" If, however, it is this special because imperceptible movement of the sun which is being inferred, then this case does not differ much from Pakṣilasvāmin's second explanation of the *sāmānyato dr̥ṣṭam anumānam*. Here he says that this kind of inference takes place if the connection between *liṅga* and *sādhyadharmā* is not perceptible and we infer the imperceptible on the ground of some feature the *liṅga* has in common with some other object. As an example the inference of the *ātman* by desire and similar properties is given. Desire etc. are properties (*guṇa*) and every property has a substance (*dravya*) it inheres in. Thus one concludes that the *ātman* exists as desire etc. inhere in it.²⁷ The only structural difference between this argument and the one which tries to prove the sun's imperceptible movement is that in the latter case the *liṅga* itself (change of place) has been observed with the examples but not the *anumeyadharmā*, while in the preset case both these *dharma*'s differ from those properties which correspond to them in the examples. Again the analogical character of both these arguments is rather obvious.²⁸ If one were to apply the *trairūpya* conditions of correctness to them the same problems would arise as in the

26 "*vrajyāpūrvakam anyatra dr̥ṣṭasyānyatra darśanam iti, tathā cādityasya tasmād asty apratyakṣāpy ādityasya vrajyeti.*" (Anantalal Thakur (ed.): *Nyāyadarśana of Gautama*, vol. 1, Mithila Institute Series, Ancient Text No. 20, Darbhanga 1967, p. 291).

27 "*yatrāpratyakṣe liṅgaliṅgiṇoḥ sambandhe kenacid arthena liṅgasya sāmānyād apratyakṣo liṅgī gamyate, yatheccchādibhir ātmā, icchādayo guṇāḥ, guṇās ca dravyasaṁsthānāḥ, tad yad eṣāṁ sthānam sa ātmeti*" (l.c., p. 292).

28 In his article *Die "dreifache" Schlußfolgerung...* (p. 209) Wezler has clearly seen this analogical character. He translates the expression '*sāmānyato dr̥ṣṭam*' as 'Sehen (d.h. Erkennen) Gemeinsamem nach (d.h. auf Grund einer Gemeinsamkeit)' and correctly states that this term ('Cognition on the basis of a common character') is quite adequate to characterize analogical inference. Yet he is mistaken about the theoretical nature of the distinction as such when he adds that this name was given by the Indian logicians without reflection on the fact that "this denomination is adequate to be used as a synonym for *anumāna* – inference by analogy."

case of Praśastapāda, namely that one could only infer that desire etc. have some substance to reside in (but not that this is the *ātman*) and that the sun must be endowed with movement (but not that this movement is imperceptible). One could apply a *pariśeṣa* argument to specify these properties further. But as this is a kind of reasoning on its own right (according to Pakṣilasvāmin's second interpretation of *śeṣavat*), the *sāmānyato dr̥ṣṭam anumānam* as such would still have to be regarded as deficient.

If the characterization of *sāmānyato dr̥ṣṭam anumānam* as analogical reasoning is correct, it should be possible to analyze the examples given for it in accordance with Salmon's scheme introduced above. In fact, however, certain deviations are obvious. In order to facilitate the comparison I repeat his scheme again:

Objects of type X have properties A, B etc. and H
 Objects of type Y have properties A, B etc. and H
 Objects of type X have property S.
 Thus: Objects of type Y have property S.

The main point of difference between this and other types of inductive arguments is that only here the domain of the inductive basis is left to draw a conclusion about something which is of another kind than that we have experience of. This decisive feature of analogical arguments is mirrored in Salmon's scheme by speaking about objects of different types. The properties, however, which are brought forward in the argument are considered as identical in each case. Praśastapāda, on the other hand, draws almost the reverse picture. For him the properties (namely *liṅga* and *anumeyadharmā*) carry the difference. To be sure, also the experienced objects and the *pakṣa* differ in kind, yet this is secondary from a logical point of view. For if the *liṅga* would have just been the property of being an act and the *anumeyadharmā* only that of having a result, this *anumāna* would have been *dr̥ṣṭa*, even though the *pakṣa* (ritual acts) and the objects experienced (worldly acts) would be no less different in kind.²⁹ Bearing in mind that this difference of the properties is accompanied by their conformity on a higher level, an appropriate scheme for Praśastapāda's *sāmānyato dr̥ṣṭam anumānam* might be this:

29 Just as in the case of inferring fire from smoke it plays no role whether the place of the inferred fire (i.e. the *pakṣa*) is of another kind or not than those places where we have seen fire before.

Objects X have properties H_g and H_1
 Objects Y have properties H_g and H_2
 Objects X have properties S_g and S_1
 Objects Y have property S_g
 Thus: Objects Y have property S_2

X and Y are worldly and ritual acts. 'H_g' stands for their general property of being an act, while 'S_g' refers to their general property of leading to results. They correspond to the common physiological properties A, B etc. in Salmon's scheme. H₁ and H₂, on the other hand, are properties of a more specific nature, namely those of being acts with or without a worldly motive, and S₁ and S₂ are the specific ways these acts are connected with their results, namely bearing observable fruits or imperceptible ones attained in heaven. Like the original one this second scheme represents analogical arguments as here, too, the difference between the inductive basis and the considered cases plays a crucial role.³⁰

In the above scheme we have $H_1 \neq H_2$ and $S_1 \neq S_2$. This is also true for Pakṣilasvāmin's second example, the argument for the *ātman*. In the case of the *sāmānyato dr̥ṣṭam anumānam* which argues for the imperceptible movement of the sun, however, H₁ is identical with H₂ (namely the property of changing position) while S₂ still differs from S₁ by being imperceptible. As far as I know, there is no Indian example exhibiting the structure $H_1 \neq H_2$ and $S_1 = S_2$.³¹ If, however, both pairs of specific properties were identical, the argument would lose its analogical character and would be nothing else but a *dr̥ṣṭam anumānam*.

As we have seen, all Indian examples of *sāmānyato dr̥ṣṭam anumānam* deal with some imperceptible properties. Of course, analogical arguments are by no means limited to cases where the desired conclusion is about something we cannot perceive. Yet the Indian preoccupation with the imperceptibility of the *sādhyadharmā* is quite understandable. For in such cases

30 Salmon quotes an analogical argument for the existence of God given by David Hume, which might be even better represented by the second scheme. The objects of nature, it is said, resemble very much, though they exceed, the products of human contrivance. Thus one is led to conclude that these objects are as well the product of an intelligence which is akin to the human mind, though possessed of much larger faculties, namely God.

31 An example would be: 'Martens of all kinds are very aggressive. Thus this mongoose will be aggressive, too.' Even if one does not confound the biological species – the mongoose is not a kind of marten –, one might draw this conclusion on the strength of certain similarities between these different animals.

one cannot have any previous (sensual) experience of objects as exhibiting both the *liṅga* and the *sādhyadharmā*. Thus the inductive basis must be of a kind different from what one is arguing for and this necessarily renders the reasoning analogical.

The two- or threefold distinction of *anumāna* is older than the invention of the famous conditions of correctness named '*trairūpya*'. It is well conceivable that in the early times no concept prevailed according to which a single set of conditions would account for the correctness of each different kind of *anumāna*. That is to say, the *sāmānyato dr̥ṣṭam anumānam* may have been looked upon as an inference on its own right functioning in its own peculiar way. With the introduction of *trairūpya*, however, things changed. These conditions were construed as governing each and every kind of *anumāna* in like manner. Yet the paradigm on which they were modelled was clearly the *dr̥ṣṭam anumānam*. By applying them to the analogical reasoning of *sāmānyato dr̥ṣṭam anumānam* tension was unavoidable. Praśastapāda's basic idea is that *anumāna* is made possible by such a relation between *liṅga* and *anumeyadharmā* that the former never occurs without the latter (called '*avinābhāva*' or, in later times, '*vyāpti*'). In his theory the *trairūpya*-conditions are construed in a way that if they are fulfilled one is justified in the belief that this relation holds. Now in the case of *sāmānyato dr̥ṣṭam anumānam* the experience is about two rather specific properties, H_1 and S_1 , and it may be so that the belief in their *avinābhāva* relation is in fact justified. The same relation may then be taken to hold between their more general counterparts H_g and S_g . In a third step this relation is transferred upon two other, again more specific properties H_2 and S_2 . It is precisely here that the problems come in. This third step is analogical in character. And it is not warranted by the *trairūpya* conditions.

Among the criteria for the plausibility of inductive arguments which have been discussed by modern logicians relevance is a very important one. To argue that my new car will give good mileage because other cars of the same model known to me do so is rather convincing, whereas the same conclusion would be very weak on the premise that I know of other cars of the same colour which need little gasoline. A similar consideration might have urged early Indian logicians to formulating the concept that logical entailment is based on some special relations between *liṅga* and *sādhyadharmā* as are, for example, listed in the *Ṣaṣṭitantra* and the *Vaiśeṣikasūtras*. Later on, however, this relation was characterized purely extensional and the question of relevance was nowhere discussed.³² For analogical argu-

32 In new guise the old idea returned again in Dharmakīrti's theory.

ments another kind of relevance is important as well, namely that of the similarity between the inductive basis and the case under consideration. A very weak analogical argument would be the following ‘pacifistic’ reasoning: If you plant wheat, you get wheat, if you plant corn, you get corn. Thus, if you plant hatred and murder you will harvest hatred and murder again. The dissimilarities between the kinds of ‘planting’ make this argument rather unconvincing. As far as I know, this and similar questions have never been discussed in connection with the *sāmānyato dr̥ṣṭam anumānam* by Indian authors. This silence corresponds to the lack of reflection on the problem of probability, a fact which is rather astonishing as it is a central feature of inductive arguments that their conclusion is never anything else but (more or less) probable. It seems that the attention of Indian logicians was so strongly occupied by their desire to find sure paths to truth that the idea never occurred to them that such reflections on mere probability etc. might yield theoretically rewarding results. This tendency finally led to Dharmakīrti’s recasting the conception of *anumāna* into a deductive and truth guaranteeing theory of inference. The invention of the *trairūpya* conditions was a decisive step towards this end, even though they were not construed as truth guaranteeing from the beginning. But on the way many important features of argumentation were lost and the *sāmānyato dr̥ṣṭam anumānam* was one of the victims so to say. In assimilating it to the inductive generalization it was deprived of its original analogical character at the cost of modelling a kind of *anumāna* which as a matter of fact did not fulfill the three conditions of correctness.³³ As far as I know, the question of analogical reasoning was never again pursued by any Indian logician.

33 Still later the original intention of the *sāmānyato dr̥ṣṭam anumānam* seems to have faded completely leaving a mere name for just about anything which would not count as standard. Thus Vācaspati Miśra commenting on NS 2.2.2 says that any inference which is not that of the cause from its effect is *sāmānyato dr̥ṣṭam anumānam*: “*yatra na kāryakāraṇayor gamyagamakabhāvaḥ tat sāmānyato dr̥ṣṭam iti.*” And Uddyotakara states in his comment on NS 1.1.5: “*akāryākāraṇībhūtena yatrāvinābhāvinā viśeṣaṇena viśeṣyamāṇo dharmo gamyate tat sāmānyato dr̥ṣṭam.*”