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A NOTE ON NYĀYA NOTION OF INFERENTIAL NECESSITY

In this paper I shall be concerned with only such logic, where the notion of necessity is involved in the notion of inference. It is often held that the Nyāya logic does not satisfy this description. My purpose in this paper is to show that the Nyāya theory of inference keeps enough room for such necessity which is an essential component of the notion of inference. The sense and extent of necessity, forming part of the Nyāya notion of inference, will be clearer in due course.

All systems of logic do not admit necessity in the same sense. There is a sense (i.e., modal necessity) in which necessity is not admitted in Nyāya and extensional logic.

Yet in extensional logic necessity is captured in some form. There are many ways in which one can capture necessity in extensional logic. One might say : to hold that an inferential relation is necessary is to hold that certain implicative is tautologous. Thus the inference p $\therefore$ q is valid when the implicative $P \rightarrow Q$ is a tautology.

One again mignt say that admitting necessity of inferential relation is equivalent to admitting the impossibility of certain conjunction. Thus the reference p $\therefore$ q is valid only when the conjunction P & -Q is impossible i.e., contradictory. Necessity in this sense is certified by the rule of contraposition. And hence the concept of contraposition is assumed to be closely connected with the necessity of inferential relation.[1]

But as Nyāya logic is not propositional logic, so one may hold that neither material implication nor contraposition is relevant here. And we cannot explain necessity in any of the stated ways.[2] Yet,

as we shall see there is a sense in which contraposition can still be said to hold in Nyāya logic. The 'thing' logic of the Naiyāikas may be treated for our purpose as propositional logic. When we infer from the presence of smoke in the hill the presence of fire there, we can say the corresponding propositions, viz. that hill has smoke and that hill has fire, stand in the relation of material implication.[3] Let h stand for the first proposition and s for the second and thus we have h → s.[4] Then we can formulate a contraposition here also.

In the Nyāya tradition it is held that if fire is Vyāpaka of smoke i.e., if from the presence of smoke we can infer the presence of fire then on the other hand from the absence of fire we can infer the absence of smoke.[5] We may as well say that from 'it is false "that there is fire"' it materially follows that 'it is false "that there (in the same place) is smoke"'. This shows that contraposition holds here.

But some may still object that contraposition does not hold in the case of kevalānvayi [6] inference though such inference is admitted in Nyāya logic as genuine. The sādhya (which is to be inferred) of a kevalānvayi inference is such that the possibility of its absence is not admitted by the Naiyāikas.[7] So, though h→s holds in case of kevalānvayi inference -s → -h does not hold here. And therefore the contraposition (h → s) → (-s → -h) does not hold in case of such inferences. Thus the criticism against the Naiyāikas can be restated as: -- though in some accepted cases of inference the Naiyāikas can avail of the notion of contraposition yet they cannot refer to this notion to explain inferential necessity in general.

The opponent's point needs clarification. When the opponent says -s → -h does not hold in the case of kevalānvayi inference, they may have attributed to the Naiyāikas either of two different views :

(a) The Naiyāikas do not admit -s → -h, or more strongly (b) the Naiyāikas admit that -(s → -h).

But surely, the opponents cannot attribute (b) to the Naiyāikas The point is; -s → -h is not a rule without exception in the Nyāya theory of inference, which admits as genuine kevalānvayisādhyakānumiti. But this may or may not amount to an assertion by the Naiyāikas that -(-s → -h) is a rule without exception. Naiyāikas do not admit exception to the rule, -s → -h, in the sense that there are cases where -s & h is true. For in the case of kevalānvayi inference, the first conjunct must be false and therefore -s → -h would be true vacuously. Thus where -s is available -s → -h; where -s is not true -s → -h, only here h is not the negatum of the absence residing in the locue of -s. So we have shown, contrary to general belief, that there is a sense in which contraposition holds in Nyāya logic also.

As we have pointed out that contrapositon holds in Nyāya theory of inference and as contraposition is closely connected with the notion of necessity we can hope to find in Nyaya theory of inference some kind of necessity as well.[8] We believe that failure to find any place of necessity in the Nyaya theory of inference led people to think that the nature of inference according to the Naiyāikas is inductive. And the relation of vyāpti [9] is often translated as inductive relation.

In the next section we shall see that actually or explicitly the Naiyāikas admit only casual necessity to be involved in inference. But, if what we have said above is correct then it will not be difficult to derive or construe a corresponding necessity in propositional terms.

Let us take the standard case of inference -- the hill has fire since the hill has smoke. The rela-

tion between the thing smoke and the thing fire, being one which allows no exception, is a necessary relation. And this necessary relation which is the basis of inference is factual in nature. This factual necessity', is not the only kind of necessity in terms of which the Naiyāikas understand inferential necessity. There is also an epistemic necessity admitted in their theory of inference.[10]

In our sense, inferrability is not a character of some sentence (i.e. the conclusion) but is a character of a thing (the sādhya or the upapādya). Yet, by this, we mean that there is certain other thing (jñāpaka or upapādaka), the knowledge of which leads to the knowledge of the sādhya. So it is not the relation between two propositions or two things, but it is the relation between two pieces of cognitions (of the same person) which is important.[11]

An epistemic necessity, it seems, is to be admitted in the theory of inference and Naiyāikas have provided for this. It is said if one has vyāptiviśiṣṭapakṣadharmatājñāna, inferential cognition follows.[12] Certain cognitions are causally related with certain other cognitions. So, if in the same locus, a cognition of vyāptiviśiṣṭapakṣadharamatā occurs there cannot but occur inference. And the validity of such inference depends on the validity of such vyāptiviṣiṣtapakṣadharamatājñāna.[13]

Thus one who has the inferential knowledge that the hill has fire, can not but have previously known that the hill has smoke. To say that it cannot be otherwise is to say, in some form, that it is necessary. But this epistemic necessity has some reference to a causal necessity. The necessity which is epistemic on the one hand is causal on the other. For inferential knowledge there must be some other knowledge, say parāmarśa. And the occurence of an act of parāmarśa produces the occurence of infern-

tial cognitions. And these two necessities go together. Both these causal and epistemic necessities pertain to the relation between the two cognitions viz. parāmarśa and inferential cognition. But the relation in the case of epistemic necessity obtains between the cognitions qua cognition. And in case of the causal necessity it obtains between them qua things of the world.[14]

This epistemic necessity can be formulated in a different way. I start with the standard case of inference "There is fire since there is smoke". Anyone could see that our knowledge of fire results from the knowledge of smoke in case we have a prior knowledge of a relation between smoke and fire. Fire is a necessary condition for the occurance of smoke. When we say that fire is a necessary condition for smoke we mean that in the absence of fire there cannot be smoke. This shows that there is a sort of causal necessity.[15] But there is on the other hand an epistemic necessity. If something s is a necessary condition of some thing, as is the case where s and h are related as cause and effect the knowledge of h is according to the Nyaya theory of inference a necessary condition for the inferential knowledge of s. In other words just as there cannot be h where there is no s so also we can not inferentially know s where we could not know h.

But absence of knowledge of h in any of the two following senses prevents the inferential knowledge of s :

(1) knowledge of h does not occur;
(2) knowledge of -h occurs.

The second is the stronger sense, and taking this sense we can state that if we know that there is no h then we cannot have the inferential knowledge of s. In other words if anything x is the necessary condition for y then our knowledge of absence of y is the sufficient condition for absence of inferential

knowledge of x. (Tadhetuabhāvajñānapratibadhya jāt sādhyajñānam tatsādhyānūmitī).

Thus we see that the necessity admitted in Nyaya theory of inference may be viewed both as epistemic and as factual or natural.

There is another way of explicating this epistemic necessity. That we cannot help knowing that the hill has fire (once we know that the hill has smoke) is because the opposite of it would be contrary to certain belief of ours. It is impossible to suppose or concieve that the hill from where a column of smoke is issuing uninterruptedly, has no fire. This is because, such supposition would disestablish our belief in the relation between fire and smoke. Moreover, it will go against our concept of cause and effect. Naiyaikas devise the reductio argument or tarka to show how the assumption of falsity of any (valid) inferential cognition, goes against some such or other accepted beliefs or notions.

By this necessity one cannot claim to mean universal acceptability, but one can mean atleast this: it is necessary to admit such knowledge as always true in a restricted field, i.e., within a system. And nowadays necessity is usually relativized to different systems.

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NOTES AND REFERENCES

1. In some suitable context reductio ad absurdum can be used to prove the necessity with which the conclusion of an argument follows from its premisses. And in some classical logical systems some forms of reductio ad absurdum are allowed

to replace the rule of contraposition showing thereby that contraposition can also be used to demonstrate the necessity pertaining to inferential relation. cf Makinsen, D.C., Topics in Modern logic (Methuen & Co. Ltd.) pp 69-70.

2. Of course 'necessity' can not be explained in terms of tautology in every branch of extensional logic either.

3. For our purpose the difference between a sentence and a proposition is not relevant.

4. The letters h and s are used here as a sort of propositional variables to be replaced respectively by statements, to the effect that the subject of inference, in question has probans (in the pressent case of inference — the hill has smoke) and statements to the effect that the subject of inference has the probandum (in the present case of inference — the hill has fire).

5. This truth is rooted in the nature of the Vyāpya — viz — vyāpakābhāvasamaññādhikaraṇa vyāpya.

6. "Kevalānvayi" in Kevalānvayi inference may be understood in different ways. A standard way is to mean by it asadvipakṣa cf Gangeśopādhyāya, Tattvacintāmani (Chowkhamba Samskṛta Granthamāla-42) Vol. 2, p.1326.
An asadvipakṣa anumāna means atyantābhāva pratiyogisādhyakānumān cf. Raghunatha Siromani Didhiti on Tattvacintāmani ibid p. 1326.

7. Pratiyogivyādhikaraṇa Vrttimat atyantābhāvapratiyogitvām Bhedapratiyogitànavacchedakadharmāvattvam Va.

8. The necessity involved in Vyapti is a categorical necessity. But the problem is how do we formulate it - we can formulate it in a negative way i.e., by showing the negation of a contrary supposal. Thus by using negation, we

can formulate the necessity involved in vyapti by negating a conjunction, i.e., -(-s & h). And an alternative formulation of this negation is an "if...then" statement i.e., h → s.

If we take it as a material conditional then only there might be certain difficulties. But these difficulties did not render construction on theories of inference impossible. So we can always express the necessity involved in vyāpti in a conditional statement.

9. Vyāpti, the relation, the knowledge of which permits the inference of the presence of one of the relata from the knowledge of the presence of the other, has been defined in various ways. The most commonly accepted definition is roughly this: the hetu h has vyāpti with s the sādhya if h is such that it cannot reside in the locus of the absence of s. cf. Gangeśopādhyāya, vyāptikancaka (Kashi Sanskrit Series: Haridās Sanskrit Granthamala no. - 64).

10. We would like to make clear what we mean by inferential necessity. By inferential necessity we take certain relation between the things that make an inference possible. And so both the relation between two cognitions and the relation between the objects of these two cognitions (the objects are hetu and sādhya in the context of inference) are involved in the Nyāya notion of inferential necessity. Between the cognitions the necessity is always causal and between the objects of the cognitions it may or may not be causal.

11. An analogous view may be found in the following passage, "logic has to do neither with relations between words and sentences, nor between calculatory shapes or sounds, but with relations between 'meanings' or 'concepts." Jorgensen, J., Lanaguage, Calculuses and logic' in Kazemler, B.H. and Vuysic, D. ed. Logic and

language (D. reidel Publishing Company, 1962) pp. 33-34.

12. What I intended to say is that Parāmarśa is the last member in the chain of causal conditions and as such there can not be any gap or intervening condition between parāmarśa and anumiti. It is not denied that all these conditions complete a totality of conditions and the totality is to be taken as the sufficient cause.

13. To arrive at an inferential knowledge of a sādhya one must have, according to the Naiyāikas, knowledge that the hetu, which have vyapti with sādhya does at the same time reside in the pakṣa (where the sadhya is to be inferred). Nyāya term for this complex knowledge, is vyāptiviśistapakṣadharmatājñāna or parāmarśa. Such a knowledge is not admitted by all Indian thinkers. cf. Gangesopadhyaya. Tattvacintāmani (ibid) = pp. 1177-1313.

14. When we are talking of two necessities, viz. causal and epistemic we are keeping in mind two orders, the order of occurence and the order of knowing. Between the objects of knowledge the necessity is causal in this order i.e., in the order of occurence the cause comes first and the effect follows but in case of their cognition, we know the effect first and the knowledge of the effects becomes the cause of the knwoledge of the cause. This is at least true of the standard cases of causal inference.

15. This should not be confused with a definitely wrong view that according to the Naiyāikas every inference is based on a causal relation between the anumāpaka hetu and the sādhya.