TARKA AND IMPLICATION

1. Professor Barlingay identifies three different senses of *tarka* : (1) *tarka* as denoting the whole field of logic, a usage which shows *tarka* to be equivalent in meaning to ānvīkṣikī[1]; (2) *tarka* as an ancillary reasoning to anumāna;[2] and (3) *tarka* as a necessary condition or presupposition of anumāna[3] in the sense in which a *vyāpti-vākya* is said to be an exemplification of *tarka*[4]. The form of *tarka-vākya*, in this sense, will be *yaditarhi*[5], or (If *P*, then *Q*) which is equivalent to (If not–*Q*, then not–*P*.). *Tarka* so regarded is identified with the notion of implication[6]. Barlingay writes : " When it is said that there is a *vyāpti*, relation between a *hetu* and the *sādhya*, what is meant is that there is a relation of implication between them which makes the *sādhya* deducible from the *hetu* ".[7] He thinks that this third sense is " more fundamental than any of the senses ".[8]

2. In a deductive argument, the premisses are said to entail the conclusion, and the conclusion is said to follow from the premises. The notion of *follows from* is relative to a given system of rules.[9] In order to show that a certain argument is valid or invalid we have to indicate the set of rules *according* to which the questions of validity are decided, in other words, according to which the conclusion is said to follow from the premises. Barlingay thus differentiates the notion of *following from* from the notion of *according to*.[10] On his theory, it is the rule of *tarka* which is presupposed and appealed to in the inference from a conjunction of *hetu* and *vyāpti*. It is on the strength of *tarka* alone that it is possible to infer *sādhya* from *hetu* and *vyāpti*. In other words, *sādhya* follows from *hetu* and *vyāpti* according to *tarka*. The availability of *hetu* and *vyāpti* is a necessary but not a sufficient condition of *anumāna; tarka* is also required. *Tarka* together with *hetu* and *vyāpti* constitutes both sufficient and necessary conditions of *anumāna*.

We may look at *tarka* as an elementary form of argument or as a rule. Whichever way we do, it remains an important part of Barlingay's thesis that *tarka* is a necessary condition or presupposition of *anumāna*. As he metaphorically puts it : " (Tarka) should be as it were an *avyakta* or unmanifest picture of inference ".[11]

3. Barlingay's thesis acquires enormous significance in the
context of the following two interpretations of *tarka* which are
found in both the *pracína* and *navya nyāya* and which he rejects as
false.

First Interpretation :

Tarka is *viparyaya* or a kind of *ayathārtha jñāna*, and not a
pramāṇa. This interpretation has a currency amongst both the
prācina and also the *navya naiyāyikas*. Vātsyāyana in his *Nyāya-bhīṣya* writes that tarka is not tattva-jñāna.[12] Similarly, Annaṁ-
bhaṭṭa in his *Tarka-saṁgraha* classifies *tarka* under *ayathartha
ñāna*,[13] and in his *Nyāya-dipikā* comprehends *tarka* under
viparyaya.[14] Barlingay rejects this interpretation of *tarka* as false.
On his view, *tarka* is a kind of knowledge. In this opinion, he
seems to agree with the Jaina logicians, for instance *Yaśovijaya*,
the author of *Jaina Tarka-Bhāṣā*, a 17th century work, who holds
that *tarka* is a kind of indirect knowledge or *anumānavat pramāṇa*;
though both, Barlingay and the Jaina logician, arrive at this
thesis apparently from different routes. However it may be, in
rejecting the first interpretation as false, Barlingay writes that in a
jñāna situation it is possible that there is *saṁyoga* of *ātman* with
manas only, and *indriyas* and *viṣayas* are not involved at all. In
this sort of cases, there is knowledge, and this knowledge is not
illusory. " Such knowledge situation gives rise to the form of
knowledge but not to the concrete particular knowledge as such;
for the particular element that is required for concrete knowledge
is missing. Such knowledge will not give any information but
will be a definite aid to the information or particular knowledge.
It is such knowledge that is required in the case of *tarka*. Thus
this special variety of knowledge cannot be regarded as illusory,
at any rate, in the ordinary usage of the term."[16]

Second Interpretation :

According to the second interpretation, *tarka* is merely a
pramāṇa-hetu or *sahakāri* of *pramāṇa*,[17] but not a necessary condi-
tion of the possibility of *pramāṇa*, in particular of *anumāna–pra-
mīṇa*. Both the old and the new *Niyyāyikas* are one on this point.
Barlingay rejects as false this interpretation also. He writes :
" If this is so (that *tarka* is a necessary condition or presupposi

tion of *anumāna* then) *tarka* cannot merely be a secondary argument in support of *anumāna*, supporting *anumāna* though it would be ".[18] Apparently, Barlingay seems to be inconsistent here. But really he is not, if we differentiate between a necessary condition and an accidental condition. Barlingay is affirming that *tarka* is a necessary condition of *anumāna*, but he is denying that *tarka* is an accidental condition of *anumāna*.

4. Generally, a distinction is drawn between the notion of discovering *vyāpti* and the notion of proving it. The distinction is commonplace in the relevant literature; we shall therefore, assume it and won't discuss it here. In this context, Barlingay assigns two roles to *tarka* : One, Without *tarka*, we cannot say whether there exists a *vyāpti* relation between *sādhya* and *hetu*.[19] Day and night, for instance, are seen to come one after another always, yet we do not infer the fall of night from the rise of the day; for, there is no conceivable *vyāpti-sambandha* between the two. Knowledge of *vyāpti* in fact is knowledge of the implication of *sādhya* from *hetu*. Without this knowledge, it is impossible to assert the *vyāpti* relation between the two. *Two, Tarka* proves the *vyāpti-sambandha* between *hetu* and *sādhya*. Describing this role of *tarka* in *anumiti*, Barlingay writes : " *Vyāpti-vākya* is ' wherever there is smoke there is fire '. The *tarka* is ' If there had not been a fire, then there would not have been any smoke ' ".[20] " *Tarka* states that if there is no fire there is no smoke. But that there is smoke is empirically given, and so it (the proposition) cannot be denied. And, if the smoke cannot be denied, by implication the fire cannot be denied too. ' Not–*q* implies not–*p* ' implies ' *p* implies *q* '. A positive relation between *hetu* and *sādhya* indicates a relation of *vyāpti* but does not prove it. The negative relation that wherever there is no *sādhya* there is no *hetu* proves it. Thus *tarka* indicates the relation which is presupposed by *vyāpti* ".[21]

5. This conception of the role of *tarka* is quite different from the conceptions handed down to us in the Hindu and the Buddhist traditions of *Nyāya*, though here also Barlingay seems to be in substantial agreement with the logicians of the Jaina tradition of *Nyāya* in whose opinion it is impossible to discover or prove a *vyāpti* relation without the necessary operation of *tarka*.[22] In the *navya-nyāya*, the role assigned to *tarka* is merely that of

kvacicchaṁkānivartka or remover of whatever doubts there may be.[23]   In the *prācina nyāya, tarka* is said not to give us knowledge of anything, least of all, of *vyāpti;* nor is it there a necessary constituent operation of *anumāna*, though its usefulness as a supplementary reasoning is not denied.[24]   In the Buddhist tradition too *tarka* is denied to be a pramāṇa, that is knowledge or some operation necessary to pramāṇa; but it is only an intellectual operation performed after the thinker has perceived relevant facts.[25] In his conception of the role of tarka, Barlingay departs from all the three traditions of nyāya, with the possible exception only of the Jaina tradition. I am not suggesting that his view accords with the Jaina view on all its fours. No, it does not. Barlingay's thesis about *tarka* is singularly his own. He identifies *tarka* with the notion of implication which the Jaina logician does not do. For the Jaina logician *tarka* is *anumānavat* pramāṇa; it is a kind of reasoning which enables the thinker to generalize inductively on the basis of repeated observation of individual instances and without which it is impossible to grasp the *vyāpti-saṁbandha* or the *sādhya-sādhana-bhāva*.   On this view, *tarka* is an operation of inductive generalization; and this is how Yaśovijaya defines the notion of *tarka* as *sakala-deśa-kālādyavacchedena sādhya-sādhana-bhāva-adiviṣaya uhastarkaḥ*.[26]   Indeed in their conception of *tarka* as implication and as an operation of inductive generalisation the Jaina logician and Barlingay belong to two radically different worlds.

6. To sum up my statement of Barlingay's thesis there is nothing better than his own statement that " *tarka* indicates implication and points to the law of implication.   On the other hand, *vyāpti* indicates a relation of inference and points to the law of inference.   But clearly the law of inference presupposes the law of implication ".[27]

From the foregoing, I think, it is abundantly clear that Barlingay identifies *tarka* with implication, and that according to him *tarka* is a necessary condition of the possibility of *vyāpti* and hence of all *anumāna*.   We shall now consider this thesis.

7. Barlingay does not define the notion of implication rigorously.   His usage, however, suggests that he means by it a sort of entailment relation which, following C. I. Lewis,[28] he calls

the relation of strict implication or deducibility. I do not think
that it is possible to identify the two notions if we take strict impli-
cation with all its known properties. Nor do I think that Barlingay
intends to do this. For, if he had intended this, then he would
have been[29] prevented by the same sort of considerations which
kept him from identifying *tarka* with material implication. For, both
material implication and strict implication have their own para-
doxes. It seems to me that Barlingay wishes to employ the notion
of implication in a way in which the rules of modus ponens (If
P then Q, and P, therefore Q), modus tollens (If P then Q, and
not–Q, therefore not–P), the law of contraposition ($(P \supset Q) \equiv$
$(\sim Q \supset \sim P)$) are applicable to it, and in $(P \supset Q)$ and $(\sim Q \supset \sim P)$,
P has a kind of stronger connexion with Q, and not–Q with not–P,
and also it is the case that in resoning from premises to conclusion
we never go from truth to falsity.[30] In the following standard
pattern of parārthānumāna, for instance, if (1) to (4) are true,
then (5) is true also :

(1) There is fire on the hill (*pratijñā*)

(2) Because there is smoke on it (*hetu*)

(3) Where there is smoke there is fire as in the case of the
        kitchen (*udāhāraṇa*)

(4) There is smoke caused by fire on this hill (*upanaya*)

(5) Therefore there is fire on the hill (*nigamana*)

Let us call this kind of implication Barlingayan model of impli-
cation. Briefly, I will call it merely by the name " implication ".
Following Barlingay's argument, this kind of implication can be
said to hold between the two parts of *vyāpti-vākya*, that is, between
what follows *yadi* and what follows *tarhi* in the *yadi-tarhi* form of
vyāpti-vākya. Considering the *anvaya-vyāpti*, *vytireka-vyāpti*, and
tarka, we should get the following three staightforward exempli-fi-
cations :

(1) If there is smoke on the hill then there is fire on it (*anvaya-
        vyāpti-vākya*)[31]

(2) If there is no fire on the hill then there is no smoke on it
        (*vytireka-vyāpti-vākya*)[32]

(3) If there were no fire on the hill, then there would have been
        no smoke on it (*tarka-vākya*)[33]

(1) and (2) can satisfy the conditions of Barlingay's implication. Both may be expressed as two conditionals : (1) as (P ⊃ Q) and (2) as (∼Q ⊃ ∼P), and (1) being logically equivalent to (2), the law of contraposition is also obtained. Placed in certain argument as members of the set of premises, the rules of MP and MT will also be applicable to them. Finally, in the case of valid arguments, they will lead always from truth to truth, and never from truth to falsity.

8. The case of (3), however, is quite different. In appearance, it looks to be an ordinary conditional of the if–then form; but really it is an instance of a subjunctive conditional. This is indicated by the use of the word " syāt " or " would have been " and by the general syntactical structure of the sentence at (3). Moreover, in the case of (1) and (2), (a) the if–clause is assumed to be true, and (b) the truth of the then–clause is made to depend on the truth of the if–clause. But neither of these two conditions (a) and (b) is relevant to the case of (3). The condition (a) is not relevant; for when we utter (3), under no circumstances do we assume that the if–clause is true. The condition (b) is not applicable; for in using (3), we really mean to assert that the conditional is contrary to facts. In no case do we make the truth of the then–clause to be dependent on the truth of the if–clause in (3). The use of (3), to my mind, is to remind the addresses of the facts of the case and the relevant connection between them. Thus, it won't fit in the implicational mould of either (1) or (2). Furthermore, in normal speech situations, the two are used to play different language-games. What we want to say by means of (3) cannot be conveyed by means of (2) or (1). Finally, wherever (2) occurs we can substitute (1) for it, the two being logically equivalent. But this sort of substitution is not available to us for (3). These considerations show that (3) won't satisfy the Barlingayan model of implicational statement.

It follows from the above discussion that if (3) is not an implicational statement, it does not express implication. But. (3) is a paradigm of *tarka*. It follows then that *tarka* and implication are two logically distinct notions. Hence, they cannot be identified with each other.

9. Some interpreters of *nyāya* works, like Athalye and Bodas, and S. C. Chatterjee, for instance, have taken *tarka* to be the same as *reductio ad absurdum* argument. The form of *tarka*, as traditionally handed down to us, is this: 'Had there been no fire on the hill there would have been no smoke on it'. This could be regarded as a sort of an ethymeme. Expressed fully, the argument will take the form :

(1) Had there been no fire on the hill, there would have been no smoke on it.

(2) That there is smoke on it is given in perception.

(3) It follows that there must be fire on the hill.

According to Barlingay, *tarka* is not identical with the *reductio ad absurdum* type of argument, but rather is presupposed by it or is a necessary condition of it[35]. Barlingay does not distinguish the notion of presupposition from the notion of a necessary condition, as for instance P. F. Strawson[36] does. Rather he speaks of them in a way in which they were the same notion. Anyway the distinction is not of any fundamental importance for Barlingay's thesis about *tarka*. What he means by *tarka* being presupposed by the *reductio* type of argument is that the former is necessary condition of the latter. But, is it really so ?

10. Let us consider a concrete situation in which *tarka* is offered. The situation will be something like this. Let A and B be the two persons engaged in an argument.

A says : There is fire on the hill, because there is smoke on it, and being smoke on the hill is a sure sign (*liṅga*) of there being fire on it. For, we have often observed (*bhūyodarśanena*) that where there is smoke, there is fire as for example in the kitchen.

B says : I am not quite sure; and after all one can have doubts about the correctness of this inference.

A replies : Why ? There need not be any doubt about the correctness of this inference. For, had there been no fire on the hill, there would have been no smoke on it. But that there is smoke on it is given in perception. If follows that there must be fire on the hill.

I.P.Q. ...7

In this hypothetical reasoning situation, *tarka* is offered to convince or remove doubt in the mind of the one who is unsure of the validity of the inference, and is rather hesitent to accept it. What the *tarka* is used to do is to remind the person that there is a cause-effect connection between fire and smoke, such that when the effect (viz., smoke in our example) is observed, we can legitimately infer its cause (viz., fire in our example). Besides, it is also used to draw the attention of the person to the fact of observed smoke on the hill. Now, if I am right in this[37] thinking, then *tarka* certainly is not an implication, nor is the smoke-fire relation a relation of Barlingayan implication. Further more, *tarka* is not an indispensable instrument of inference; it is not a necessary condition of inference.

11.   It seems to me that Barlingay's argument for the thesis that the only relation which a *reductio* form of reasoning involves is that of implication is faulty.   One can use the *reductio* form of argument in those cases in which causal connexions are involved; as for instance in the above reasoning situation.   It is also possible to imagine reasoning situations which involve neither causal nor implicational relations but some different types of language-games such that it would be perfectly legitimate to employ the *reductio* form of argument in those situations.   We can think of a vast variety of inferential moves, which turn on linguistic rather than logical or causal rules, as for instance, the inference moves from ' X is older than Y ' to ' Y is younger than X ', or the form identified by the *Bauddha naiyyāyikas* namely, *vrkṣo ayam śimṣapatvāditi;* or the socio-conventional but nonlogical and noncausal inferential move from ' Gaṁgeśā has children ' to ' Gaṁgeśā is a father'. We can cite innumerable examples of other similar inferential moves in which we can employ the *reductio* form of argument perfectly legitimately.   The point that I am trying to make is that regarding *tarka* as a *reductio ad absurdum* form of argument does in no way commit us to saying that the only connection underlying it is the connexion which Barlingay's model of implication envisages.

12.   From what I have said so far, it follows that *tarka* is not identical with implication and that it is not a necessary condition of inference, a *vyāpti-vākya* being neither a *tarka* nor an implicational statement. It seems to me that Barlingay has attempted to interpret *tarka* within the framework of the *nyāya* tradition,

both *prācina* and *navya nyāya* taken together. I have tried to show that this theory of *tarka* falls outside this tradition. Nor can it fit in with the other available alternative traditions. The Jaina *nyīya* takes *tarka* to be an operation of inductive generalization, and this conception is far far away from Barlingay's view of *tarka*. In the *Bauddha* tradition too, *tarka* is not a pramāṇa. But no where in these tradition is the notion of *tarka* analysable in terms of the notion of implication. The fact is that Barlingay has used the traditional vocabulary word ' *tarka* ' in a way in which it turns out to be a clear depatrure from all the known ancient Indian traditions. And it is here that he has taken the development of logical theory in the country a futrther step forward.

Dept. of Philosophy
University of Delhi.

V. K. Bharadwaj

NOTES

1. This usage is suggested by such titles of treatises on logic as *Tarka-Saṁgraha of Annaṁ-Bhaṭṭa*, *Tarka-Bhāṣa of Keśava Miśra* and innumerable other treatises.

2. This usage is to be found in the Hindu *nyāya* works in general. See, for instance, *Nyāya-Bhāṣya* of Vātsyāyana, *Tattva-Cintāmani* of Gaṅgeśa Upādhyāya, *Bhāṣā-Pariccheda* of Viśvanātha Pañcānana.

3. Barlingay, S. S., *A modern Interoduction to Indian Logic*. National Publishing House, Delhi, 1965; p. 123.

4. Ibid, p. 124.

5. Ibid, p. 125. Barlingay regards (if ∼Q then ∼P) as the real form of *tarka-vākya* on the grounds that it accords best with the definition of tarka as *vyāpyāropeṇa vyāpakāropaḥ* given by the *navya-naiyāyika* logician Annaṁ-Bhatta in his work *Tarka-Saṁgraha*. (p. 56 of the Bombay Sanskrit Series No. LV.)

6. Ibid, p. 125. This third usage, in fact, is Barlingay's own view of *tarka*. Besides his, there are several different conceptions of *tarka* to be found in the four major traditions of *nyāya* the

prācīna nyāya, the *Bauddha nyāya*, the *Jaina nyāya*, and the *navya-nyāya*. In these traditions, the word is not used in one and the same sense. Barlingay's usage is different from them all. In Barlingay's theory of inference the concept of *tarka* is of the fundamental importance. It is noteworthy that he and the Jaina logician, the author of *Jaina Tarka-Bhāṣā*, Yaśovijaya Gaṇi, both hold, for different reasons of course, that *tarka* is a kind of knowledge. See *Jaina Tarka Bhāṣā* (ed. Dayānanda Bhārgava, Motilal Banarasidass, Delhi. 1973). Notice particularly, that in Hindi, the word " Tarka " is used in the sense of " reason " or " argument"– any argument whatever. Also, it is so used in the Buddhist Pāli literature, There it is found as " *takka* " (See *Pali-English Dictionary*).

7. Ibid, p. 125.

8. Ibid, p. 120.

9. Strawson, P. F., *An introduction to Logical Theory*, Methuen and Company, London, 1952; pp. 217–23.

10. Barlingay, S. S., op. cit., p. 124.

11. Ibid, p. 123.

12. P. 54 of the Oriental Book Agency, Poona, 1939 edition of the *Nyāya-Sūtram* (Poona Oriental Series No. 58.)

13. Annam-Bhaṭṭa, in his *Tarka-Saṁgraha: ayathārthā-nubhavastrividhaḥ saṁśaya-viparyaya-tarka bhedāt*. p. 56 of the Bombay Sanskrit Series No. LV.

14. Annaṁ-bhaṭṭa in his *Nyāya-Dīpikā: yadyapi tarko viparyaye antarbhavati tathāpi pramāna anugrahakatvādibhedena kīrtanam*. (p. 57 of the Bombay Sanskrit Series No. LV).

15. p. 11 of Dayānanda Bhārgava's edition of the *Jaina Tarka Bhāṣā*, Motilal Banarasidess, Delhi. 1973. See also Uddyotakara's *Nyāyavārttika—saṁśaya-nirṇayatiriktaḥ sambhavanātmako jñāna-viśeṣastarka iti*. (See Śri Pancānana Bhattācārya in *Bhāṣī-Pariccheda*, p. 269).

16. Barlingay, S. S. , op. cit., pp. 122–23.

17. See Gautama's *Nyāya-sutras*, Vatsyāyana's *Nyāya Bhāṣya* op. cit., pp. 52–53. For the *navya naiyayika's* opinion, see *Tarka-Prakaraṇa* of Gaṅgeśa Upādhyāya's *Tattva-Cintāmani;* Viśvanātha Pancānana's *Bhāṣā-Pariccheda*, the section on Tarka-nirūpaṇa;

Annaṁ-Bhatta's *Tarka-Saṁgraha* together with his *Tarka-Dīpikā*, Op. cit., *Maṇikaṇa*, p. 35. None of the *Naiyāyikas* regards *tarka* as a *pramāṇa*. On the contrary, each one of them explicitly says that it is not a *pramāṇa*.

18. Barlingay, S. S., op. cit., p. 123.

19. Ibid, p. 125.

20. Ibid, p. 126.

21. Ibid, p. 127.

22. See *Jaina Tarka Bhāṣā* of Yaśovijaya, op. cit. pp. 10–11. Also cf. the Bhātta view of Tarka in relation to vyāpti—*Tarka-sahakṛta bhūyodarśanaṁ vyāptigrāhakamiti Bhāttah.* (See Śri Pañcānana Bhattācārya in his *Muktāvali Saṅgraha*, p. 269 of *Bhāṣā-Pariccheda*, op. cit.)

23. Viśvanātha Pancānana's *Bhāṣā-pariccheda*, 137th *Kārikā*, op. cit., p. 10. *Tarkaḥ kvacitsaṁkānivartakaḥ.*

24. See *Nyāyasūtra* and *Nyāya-Bhāṣya*, op. cit., pp. 52–54.

25. See Yaśovijaya's statement of this position in his *Jaina Tarka Bhāṣā*, op. cit., p. 11—*Pratyakṣaprathabhavivikalparupatvan-nāyaṁ pramāṇamiti.*

26. *Jaina Tarka Bhāṣā*, op. cit., p. 10.

27. Barlingay, S. S. ,op. cit., pp. 127–28.

28. Lewis, C. I. and H. Langford, *Symbolic Logic.* New York, 1952.

29. This is a good example of tạrka. I think, this sort is a common type of argument to be found in the ordinary language and the day to day life.

30. Barlingay, S. S. op. cit., Chapter VIII ' the theory of Inference ', pp. 107–59.

31. Tarka Saṁgraha, op. cit., p. 40.

32. Ibid, p. 40.

33. Ibid., p. 56 and Manikaṇa, p. 35.

34. This is so in all the major traditions of *Nyāya.*

35. Barlingay, S. S. op. cit., pp. 122–23.

36. Strawson, P. F., op. cit., pp. 173–79.

37. This reasoning of mine suggests a distinction between 'an argument's being valid' and 'believing that the argument is valid'. I am inclined to think that *tarka* is used to make a person believe that a certain given argument is valid; it does not constitute a necessary condition or presupposition of inference.

38. Dharmakīrti's *Nyāya-bindu*, Second Pariccheda.