

JOHANNES BRONKHORST

Some observations on the padapāṭha of the Ṛgveda*

(published in: *Indo-Iranian Journal* 24 (1982), pp. 181-189)

1.1. In another article (Bronkhorst, 1981: § 1; see also Bronkhorst, 1982) I have shown that the Padapāṭha of the Ṛgveda — composed by Śākalya according to Yāska's Nirukta 6.28 — is older than the finally redacted version of that same Veda. This implies that the Ṛgveda known to Śākalya, on the basis of which he composed his Padapāṭha, had a form which was more archaic than 'our' Saṃhitāpāṭha, at least where it concerns details of sandhi.

This information is, by itself, of limited value, since it is exactly the details of sandhi which are largely absent from the Padapāṭha. Comparison of the text known to Śākalya with the finally redacted Saṃhitāpāṭha is therefore rarely possible, e.g., where we know how Śākalya wanted the words of his Padapāṭha to be joined together. We shall discuss one particularly revealing case. It has long been known that e.g. RV 1.164.8 Sp. *dhīty agre* and RV 1.20.4 Sp. *viṣṭy akrata* replace original *dhīti agre* and *viṣṭi akrata*; see, e.g., Wackernagel, 1896: 322; Kuiper, 1955: 256. The Padapāṭha has *dhīti/agre/* and *viṣṭi/akrata/*, and is therefore simply wrong. This does not, however, mean that the text which Śākalya had before him was wrong. A lucky coincidence enables us to reconstruct that text. Pāṇini's grammar preserves a rule which says: "[In the opinion] of Śākalya, in connected speech (*saṃhitā*), no single [substitute] of what precedes and what follows [comes] in the place of [the vowels] *i, ī, u, ū, ṛ, ṝ, ḷ*, when a dissimilar vowel follows; and [if the earlier vowel is long,] a short [vowel comes in its place]" (P. 6.1.127: *iko 'savarṇe śākalyasya hrasvaś ca [saṃhitāyām (72), ekaḥ pūrvaparayoḥ (84), na (115), aci (125)]*; cf. Bronkhorst, 1981: 84). With the help of this rule it becomes clear that the text of the Ṛgveda known to Śākalya read *dhīti agre* and *viṣṭi akrata* at the places indicated above. This case shows that Śākalya, *even where he wrongly analyzed the text*, knew this text in a form which was in many points more archaic than our Saṃhitāpāṭha.

[182]

1.2. We get immediate information about the text of the Ṛgveda known to Śākalya where the Padapāṭha does not give an analysis. This is the case in reduplicated verbs and certain compounds (as will be established below). It appears that Śākalya's text showed no

* The research resulting in this article was financed by the Netherlands Organization for the Advancement of Pure Research. I like to express my gratitude to Prof. F.B.J. Kuiper and Prof. M. Witzel, who made many valuable suggestions.

retroflexion of *n* and *s* where the conditioning sound occurs in the reduplication of a verb or in the earlier member of a compound. Our Saṃhitāpāṭha has almost throughout retroflexion in such cases.

Examples illustrating the above are: Pp. *sosavīti*, Sp. *soṣavīti* (RV 3.56.7); Pp. *sisakti*, Sp. *siṣakti* (RV 1.56.4 etc.); Pp. *tustuvuḥ*, Sp. *tuṣtuvuḥ* (RV 8.6.12 etc.); Pp. *tisthipat*, Sp. *tiṣṭhipat* (RV 1.162.20);¹ further Pp. *madhusut'tama*, Sp. *madhuṣuttama* (RV 3.58.9); Pp. *nisikta'pā*, Sp. *niṣiktapā* (RV 7.36.9); Pp. *dustara*, Sp. *duṣṭara* (RV 3.24.1 etc.): Pp. *traistubha*, Sp. *traiṣṭubha* (RV 1.164.23 etc.); Pp. *varṣa'nirṇij*, Sp. *varṣanirṇij* (RV 5.57.4); and many others.

As is well known, the Padapāṭha gives an analysis of the text of the Ṛgveda where this is indicated with the help of a *daṇḍa* (/) or an *avagraha* ('). I shall argue that the Padapāṭha analyzes *only* here, and *not* where this is *not* indicated by a *daṇḍa* or *avagraha*.

For this purpose we look at Sp. *nirṇij*. This is analyzed as Pp. *niḥ'nij* (RV 5.62.4 etc.). This same word often occurs in larger compounds. Since the Padapāṭha never uses more than one *avagraha* in the analysis of one compound, this word is now given as *-nirṇij*, without *avagraha*, and also without retroflex *ṇ*! Instances are: RV 1.167.3 Sp. *hirāṇyanirṇij*, Pp. *hirāṇya'nirṇij*; RV 8.8.11 Sp. *sahasranirṇij*, Pp. *sahasra'nirṇij*; RV 5.57.4 Sp. *varṣanirṇij*, Pp. *varṣa'nirṇij*; etc. There can be no doubt that *-nirṇij* is the result of applying sandhi to *niḥ'nij*, and cannot be looked upon as an analyzed form. Applying sandhi to *niḥ'nij* did not, apparently, lead to retroflexion of the second *n*!

There is another group of cases which supports our view that the above examples are not to be considered the result of analysis. The loc. plur. ending *su* is as a rule separated from its stem by an *avagraha* in the Padapāṭha: Pp. *karma'su*, Sp. *karmasu* (RV 8.38.1 etc.); Pp. *mahat'su*, Sp. *mahatsu* (RV 1.81.1 etc.). Where, however, *s* is replaced by retroflex *ṣ*, no *avagraha* separates this ending from the stem, and retroflex *ṣ* appears also in the Padapāṭha: Pp. *śmaśruṣu* (RV 2.11.17); *śatruṣu* (RV 9.19.6); *vikṣu* (stem *viṣ*; RV 1.45.6 etc.); *raśmiṣu* (RV 1.134.4).² The author of the Padapāṭha considered it apparently necessary to indicate the retroflexion of *s* in cases like *śatruṣu*, and in order to achieve this aim he went to the extent of deviating from his procedure of separating *-su* from its stem by an *avagraha*. In cases like *sisakti* he could have given retroflex *ṣ* without having to deviate from any procedure. That he did not do so makes it very probable that in his text these forms had no retroflex *ṣ*.

1.3. That even after Śākalya no full agreement had been reached yet about where [183] to use retroflex *ṇ* and *ṣ*, we learn from Aitareya Āraṇyaka 3.2.6 and Śāṅkhāyana Āraṇyaka

¹ See Abhyankar, 1972: 214 n. 1.

² The only exception may be RV 1.100.16 Pp. *dhūḥ'su*, Sp. *dhūrṣu*. Did Śākalya have *dhūḥsu* in his Ṛgveda?

8.11. Here it is stated that if one is in doubt whether or not *ṇ* must be used, then *ṇ* must indeed be used; if one is in doubt whether or not *ṣ* must be used, then *ṣ* must indeed be used (cf. Bronkhorst, 1981: § 1.3.1). In the same chapters these two books speak about Śākalya, so that they are younger than the Padapāṭha of the Ṛgveda.

1.4. It is well-known that widespread retroflexion is a characteristic which distinguishes Sanskrit from Iranian and other Indo-European languages (see, e.g., Renou, 1956: 9, 16; Burrow, 1955; 95; 1971). The above evidence suggests that at as late a date as the composition of the Padapāṭha retroflexion as a result of sandhi did not yet, so to say, cross certain boundaries: the boundary between the reduplication and the stem of a verb, and the boundary between the members of a compound. Retroflexion as a result of internal sandhi — as in *śatruṣu*, see above — existed in Śākalya's time and was known to him.³

1.5. The Padapāṭha contains a small number of troubling cases, which belong together. They are: Pp. *duḥ'dabha*, Sp. *dūḷabha* (RV 2.28.8 etc.); Pp. *duḥ'dhī*, Sp. *dūḍhī* (RV 1.94.8 etc.); only declined forms occur, wherein *ḍh* is followed by *y*; Pp. *duḥ'naśa*, Sp. *dūṇāśa* (RV 3.56.8) and *dūṇāśa* (RV 7.32.7 etc.).

Let us look at the first case. It is clear that the form corresponding to Pp. *duḥ'dabha* should be expected to be **durdabha* (cf. Pp. *niḥ'nij*, Sp. *nirnij*). The relation between **durdabha* and *dūḷabha* must then be considered to be one of development in time, from **durdabha* to *dūḷabha*. A development of this type has been claimed for *cakravāḍa* (besides *cakravāla*, Pāli *cakkavāla*) from **cakravarta* (Mayrhofer, 1951: 55; the related form *cakravartin* survived in Classical Sanskrit).

However, such a development is not free from objections. Forms like *dūḷabha* are generally held to have developed directly out of **duḥ'dabha*, without the intervention of **durdabha*. This tempts us to believe that **durdabha* had come into the Ṛgveda known to Śākalya as a result of a "puristic countermovement" (cf. Kuiper, 1968: 87-88). It would in this case be remarkable that such puristic forms existed already at such an early date.

A third possibility would be to assume that Śākalya analyzed *dūḷabha* into *duḥ'dabha*. This I consider the least acceptable alternative of all. The Padapāṭha of the Ṛgveda never gives anything but analyses which can be undone by simple rules of sandhi.⁴ And where no such simple rules should be used, *īti* is added as an indication to that effect

³ All retroflex consonants are represented in the Padapāṭha: apart from *ṣ*, we find *t* (e.g. *kāte*, RV 1.106.6), *th* (e.g. *jathara*, RV 5.34.2), *ḍ* (e.g. *āṇḍa*, RV 1.104.8), *ḍh* (e.g. *vividhī*, RV 1.27.10), *ṇ* (e.g. *kāṇe*, RV 10.155.1), and of course *ḷ* and *Ḹ*, which replace *ḍ* and *ḍh* (see § 3.1, below).

⁴ Most of these cases are accounted for by vārttika 5 on P. 6.3.109: *duro dāśanāśadabhadhyeṣu*. But this is clearly an *ad hoc* rule made for these few cases. The Ṛgveda-Prātiśākhya deals with these forms in sūtra V.55 (371).

(cf. Jha, 1975). It seems hard to believe that Śākalya should deviate from his procedure in the above three cases, where he could have easily left them unanalyzed.

[184]

2.1. It will be agreed that the Padapāṭha of the Ṛgveda preserves some archaic features which have disappeared from the Saṃhitāpāṭha. How is this possible? I consider it impossible to believe that the oral tradition could preserve these features where that same oral tradition could not do so in the Saṃhitāpāṭha, which always received far more attention. There is, moreover, no reason whatever to think that there ever existed a set of rules indicating how to retain the peculiarities of the Padapāṭha. How then could the Padapāṭha stay outside the stream of sound-development, when the Saṃhitāpāṭha could not?

I know of but one plausible explanation: the Padapāṭha of the Ṛgveda was *written down* from its beginning. I shall give some further arguments in support of this.

2.2. The first, and simplest, additional argument is that all of us, in our own languages, write in a way that may be compared to a Padapāṭha, and speak a kind of Saṃhitāpāṭha. Our written languages do not usually reflect the fact that our spoken words are joined in sandhi. It should therefore cause no surprise that, when writing had not long ago been introduced among, or rather adapted to the needs of, the Brahmans, they wrote the way in which most people of the world have written until today: separating words from each other. And it is equally understandable, in view of the sacred character of the *recited* text, that indications (*īti*) regarding how exactly the text should be recited, were added to the written text. It is also clear that in such a situation Śākalya and others came to reflect on, and formulate, rules of sandhi.

2.3. A further reason to think that the Padapāṭha was written down right from its beginning, is that it contains some signs which do not easily find expression in recitation. I mean the *daṇḍa* and the *avagraha*, both of which separate words or parts of words from each other,⁵ and the *gaḷantas* (or *galitas*; see below, § 4).

⁵ Jha (1974: 27) maintains that a "[d]aṇḍa represents intervention by the length of time required to pronounce a short vowel (*ckamātrā*) between the two finished words; whereas an *avagraha* represents the intervention by the length of time required to pronounce a consonant (*ardhamātrā*) between two phonological units". However, the Ṛgveda-Prātiśākhya (sūtra I.28 (ed. Shastri) / 29 (ed. Müller)) gives the *avagraha* a duration of one *mātrā*, and says to my knowledge nothing about the length of time represented by a *daṇḍa*.

The earliest known occurrence of the *avagraha* sign in inscriptions dates from 834-35 A.D. (Bühler, 1904: 91; my attention was drawn to this by Prof. J.G. de Casparis). Since, however, Pāṇini and the Ṛgveda-Prātiśākhya speak about *avagraha* on a number of occasions, we must assume that it was indicated in one way or another.

2.4. Pāṇini's rule P. 1.1.16 reads: *sambuddhau śākalyasyetāv anārṣe [ot (15), pragṛhyam (11)]* "o when [expressing the sense] 'vocative singular' is, according to Śākalya, *pragṛhya* when an *iti* which is not uttered by a Ṛṣi follows."

In a general way it is clear what this sūtra means. It is about the Ṛgveda and its Padapāṭha, or at any rate *also* about these two works. Vocative singulars in -o are followed in the Padapāṭha by *iti*, which is added by the author of the Padapāṭha, i.e. Śākalya, and is therefore 'not uttered by a Ṛṣi'. This word *iti* indicates that the preceding o is *pragṛhya*, and does not change before a following vowel (see P. 6.1.125). An example is RV 8.27.8: the Padapāṭha here reads *viṣṇo iti/ aśvinā*, the Saṃhitāpāṭha *viṣṇo aśvinā*.

We get into difficulties if we try to further specify whether P. 1.1.16 is about [185] the Padapāṭha or about the Saṃhitāpāṭha. It cannot be about the Padapāṭha, for there there is no sandhi between words, so that no purpose is served by saying that a final o is *pragṛhya*. The sūtra must, of necessity, be about the Saṃhitāpāṭha.

But there is no 'iti which is not uttered by a Ṛṣi' in the Saṃhitāpāṭha! The only way to make sense of this sūtra may be to assume that for Pāṇini the Saṃhitāpāṭha and the Padapāṭha were not two different texts, but two forms of one and the same text. Pāṇini puzzles over the question how the Mss. of the Ṛgveda (= Padapāṭha) must be read such that a correct recitation (= Saṃhitāpāṭha) is the result.

2.5. This same question seems to underlie Yāska's Nirukta 1.17, where we find the statement: *padaprakṛtiḥ saṃhitā*. Taken in isolation this can mean either of two things:

- (i) "The origin of the Pada(-pāṭha) is the Saṃhitā(-pāṭha)."
- (ii) "The Saṃhitā(-pāṭha) is one of which the origin is the Pada(-pāṭha)."

The context of this statement decides unambiguously for the second interpretation. This context reads: *paraḥ sannikarṣaḥ saṃhitā/ padaprakṛtiḥ saṃhitā/ padaprakṛtīni sarvacaraṇānām pārśadāni/* "Saṃhitā is the closest contact [of words]. Saṃhitā is [therefore] based on the word[-text]. The phonetic treatises of all schools are based on the word[-text]."

The desire to construe the Saṃhitāpāṭha on the basis of the Padapāṭha also underlies the Ṛgveda-Prātiśākhya. It is of course possible that people went on turning Padapāṭha into Saṃhitāpāṭha long after both had entered into the oral tradition, and perhaps both had been written down. But an explanation for the origin of this practice is most naturally found in the supposition that the Padapāṭha was originally the written version of the Ṛgveda.

2.6. An interesting confirmation⁶ of the above hypothesis may be constituted by the text of the Gathas of Zarathustra. This text, the oldest literary product of Iran, and in many

⁶ My attention was drawn to this by Prof. M. Witzel.

respects closely related to the Ṛgveda, is handed down in a written form which one may safely call Padapāṭha. Humbach (1959: 17) discusses some peculiar passages from the Gathas and concludes: "Sie legen nicht nur von der Tendenz zur Herstellung eines Pausaformtextes Zeugnis ab, sondern beweisen auch, dass die Umsetzung des Sandhi-formtextes in diesen nicht immer mit entsprechender Sachkenntnis betrieben wurde." An original Saṃhitāpāṭha, therefore, was replaced by a Padapāṭha. Could it be that the latter is quite simply the written form of the former?

2.7. There is no unanimity regarding the date of the origin of writing in India.⁷ Perhaps the best case has been made by Bühler (1904: 15 f.; cf. Renou, 1957: 32-33; Basham, 1954: 394; Dani, 1963: 23-30; Jensen, 1969: 367-70), who [186] assumes that the earliest Indian alphabet (Brāhmī) is based on Northern Semitic forms (cf. already Weber, 1856) used towards 800 B.C. This form of writing may therefore have reached India around 800 B.C.⁸ Bühler (1904: 17) rightly points out that a "prolonged period must, of course, have elapsed between the first introduction of the Semitic alphabet by the merchants [and] its adoption by the Brahmans which probably did not take place at once."

If we accept Bühler's ideas, and estimate that it took the Brahmans about a century to adopt the alphabet and adjust it to their needs, the earliest possible date for Śākalya becomes 700 B.C. A later date must however be preferred.

3.1. It is, in view of the above, not unlikely that the Padapāṭha of the Ṛgveda is the oldest surviving written book of India. And we have seen that many archaic features have been retained in it. The question remains if the Padapāṭha as we know it is in all details identical with what was written down by Śākalya, perhaps as long as 2700 years ago. The answer must probably be: no. Some features of our Padapāṭha seem to be younger than Śākalya.

One of these features is the retroflex consonant *ḷ* (and *ḷh*). I have argued elsewhere (Bronkhorst, 1981: § 2.3.1 and note 15) that this sound is late, later than Pāṇini, and *a fortiori* later than Śākalya; the inclusion of *ḷ* and *ḷh* later on in the Padapāṭha is due to "śākalization", a process which is demonstrable in the Ṛgveda-Prātiśākhya.

⁷ For a survey of opinions, see Nowotny, 1967: 529 f.

⁸ That there were contacts between India and the Near East at that time, follows from the mention of aloe-wood in the Biblical book of Numbers (xxiv.6), in a portion which is held to be preexilic, and to date from some time between 900 and 722 B.C.; see Miller, 1969: 66. Hoernle's (1901: 130) proposal to lower the date of the introduction of writing into India to roughly between 650 and 550 B.C., cannot therefore be supported by the claim that there were no trade contacts before that time. Note however that Lidzbarski (1926: 1436) argues for such a lower date on the basis of the form of the *s* sign which perpetuates a younger form of the north-Semitic alphabet.

3.2. Thieme (1935: 120-30) has argued that accents and nasalization were not yet indicated in writing in the time of Pāṇini. They must therefore have been absent from the original Padapāṭha. (Nasalization is now indicated at RV 10.146.1.)

4. It will be clear that much can be gained by recognizing the important position occupied by the Padapāṭha of the Ṛgveda. It may be that also light will be thrown on the way the Ṛgveda was compiled by a study of a feature of the Padapāṭha: the *Galantas*.⁹ Other obligations do not allow me to carry out such a study myself, but I hope that the following remarks — which are mainly based on Kashikar, 1951 — will inspire someone else to do so.

Where a sequence of three or more (exceptionally two) words occurs a second time in the Ṛgveda, the Padapāṭha often omits these words, and represents this omission by a hollow dot. The omitted words are called *Galanta* (or *Galita*).

The distribution of the *Galantas* is irregular. Sometimes the device is not made use of, even though the repeated words are not far removed from their first occurrence. Sometimes the device is made use of, even though the repeated words are far removed from their first occurrence. (Examples are given by Kashikar (1951: 41-42).) the device makes the impression of being used rather at random.

[187]

The suggestion I wish to make, and which must be thoroughly tested, is inspired by Kashikar's following remark (1951: 40n): "This practice [of marking *Galantas*] is also followed in the Vāḷakhilya hymns [i.e., RV 8.49-59] If, however, any portion from the genuine Ṛgveda [i.e., the remainder of the Ṛgveda] subsequently occurs in the Vāḷakhilya hymns, it is not made *Galanta* Similarly a portion from any Vāḷakhilya hymn is also not made *Galanta* in the subsequent ... Ṛgveda text" My suggestion is: Can it be that Śākalya had a great number of such more or less independent pieces before him, rather than one unified Ṛgveda?

If this suggestion is correct, a complete inventory of Śākalya's use of the *Galanta* device should almost of its own lead to the division of the text as it existed in Śākalya's time. It seems, however, nearly certain that cases of real oversight have to be reckoned with, which will give rise to complications. But if an investigation of this kind will bring to light a division of the Ṛgveda similar to the one believed to have existed on other grounds (cf. Gonda, 1975: 8 f.) it will be highly rewarding. An edition of the Padapāṭha which marks the *Galantas* is given in the Bibliography.

⁹ The phenomenon is known to the Ṛgveda-Prātiśākhya by the name of *samaya* (sūtra X.19 (608); XI.24 (636); XV.27 (854); XVIII.58 (1063)). It is discussed at Vājasaneyi-Prātiśākhya 4.165-178 (p. 274-79). The commentator Uvaṭa cites, under sūtra 4.174, a verse according to which the Śākalas drop repeated words: *punar uktāni lupyante padānīty āhasākalaḥ/ alopa iti gārgasya (v.l. gārgya-)kāṇvasyārthavaśād iti//*.

[188]

BIBLIOGRAPHY

- Abhyankar, K.V. (1972): "Discrepancy between the Saṃhitā and the Pada texts of the Ṛgveda." *Annals of the Bhandarkar Oriental Research Institute* 52 (1971), 211-14. *Aitareya Āraṇyaka*. See Keith, 1909.
- Basham, A.L. (1954): *The Wonder that was India*. London: Sidgwick and Jackson.
- Bronkhorst, Johannes (1981): "The orthoepic diaskeuasis of the Ṛgveda and the date of Pāṇini." *Indo-Iranian Journal* 23, 83-95.
- Bronkhorst, Johannes (1982): "The Rgveda-Prātiśākhya and its Śākhā." *Studien zur Indologie und Iranistik* 8/9, 77-95.
- Bühler, Johann Georg (1904): *Indian Paleography*, edited by John Faithfull Fleet. Bombay: Bombay Education Society's Press. (Appendix to *Indian Antiquary* 33.)
- Burrow, T. (1955): *The Sanskrit Language*. London: Faber and Faber.
- Burrow, T. (1971): "Spontaneous cerebrals in Sanskrit." *Bulletin of the School of Oriental and African Studies* 34, 538-59.
- Dani, Ahmad Hasan (1963): *Indian Palaeography*. Oxford: Clarendon Press.
- Deshpande, Madhav M. (1979): "Genesis of Ṛgvedic retroflexion, a historical and sociolinguistic investigation." *Aryan and Non-Aryan in India*, edited by Madhav M. Deshpande and Peter Edwin Hook. Ann Arbor: Center for South and Southeast Asian Studies, The University of Michigan. (Michigan Papers on South and Southeast Asia, Number 14.) Pp. 235-315.
- Gonda, Jan (1975): *Vedic Literature (Saṃhitās and Brāhmaṇas)*. Vol. I, Fasc. I of *A History of Indian Literature*. Wiesbaden: Otto Harrassowitz.
- Hoernle, A. F. Rudolph (1901): "An epigraphical note on palm-leaf, paper and birch-bark." *Journal of the Asiatic Society* (of Bengal) 69 (part I; 1900), 93-134.
- Humbach, Helmut (1959): *Die Gathas des Zarathustra. Band I: Einleitung-Text-Übersetzung-Paraphrase*. Heidelberg: Carl Winter.
- Index of the Ṛgveda-Padapāṭha*, edited by Vishva Bandhu, in collaboration with Bhim Dev, Munishvar Dev and Vrajanandan. Hoshiarpur: Vishveshvaranand Institute. 1966. (V.I. Series, 26(b).)
- Jensen, Hans (1969): *Sign, Symbol and Script: An account of man's effort to write*. Third Revised and Enlarged Edition. Translated from the German by George Unwin. New York: G.P. Putnam's Sons.
- Jha, Vashishtha Narayan (1974): *A Linguistic Analysis of the Ṛgveda Padapāṭha*. Unpublished doctoral thesis, University of Poona.
- Jha, Vashishtha Narayan (1975): "Iti-karāṇa in the Rgveda-Padapāṭha." *Bulletin of the Deccan College Research Institute* 35, 49-54.
- Kashikar, C.G. (1951): "The problem of the Gaṇantas in the Rgveda-Padapāṭha." *Proceedings of the All-India Oriental Conference* 13 (1946), 39-46.
- Kāśīkā*, edited by Aryendra Sharma, Khanderao Deshpande and D.G. Padhye. 2 parts. Hyderabad: Sanskrit Academy, Osmania University. 1969-70.
- Keith, Arthur Berriedale (ed. and transl.)(1909): *The Aitareya Āraṇyaka*. Oxford: Clarendon Press. (Anecdota Oxoniensia, Aryan Series - Part IX.)
- [189]
- Kuiper, F.B.J. (1955): "Shortening of final vowels in the Rigveda." *Mededelingen der Koninklijke Nederlandse Akademie van Wetenschappen*, Nieuwe Reeks 18, 253-89.
- Kuiper, F.B.J. (1968): "The genesis of a linguistic area." *Indo-Iranian Journal* 10, 81-102.
- Lidzbarski, M. (1926): Review of Hans Jensen, *Geschichte der Schrift*, Hannover, 1925. *Deutsche Literaturzeitung* N.F. 3, 1433-37.
- Mayrhofer, Manfred (1951): *Handbuch des Pāli. I. Teil: Grammatik*. Heidelberg: Carl Winter.
- Miller, J. Innes (1969): *The Spice Trade of the Roman Empire*. Oxford: Clarendon Press.

- Müller, Max (1869): *Rig-Veda-Pratisakhya, das älteste Lehrbuch der vedischen Phonetik*. Sanskrittext mit Übersetzung und Anmerkungen. Leipzig: F.A. Brockhaus.
- Nowotny, Fausta (1967): "Schriftsysteme in Indien." *Studium Generale* 20, 527-47.
- Padapāṭha of the Ṛgveda*, edited by Gomatham Rāmānuja Jyautiṣika (G.R. Josyer). Mysore: Koronesan Mudraṇālaya. 1947.
- Renou, Louis (1956): *Histoire de la Langue Sanskrite*. Lyon-Paris: IAC. (Les Langues du Monde, Volume X.)
- Renou, Louis (1957): "Introduction générale. Nouvelle édition du texte paru en 1896, au tome I", of Jacob Wackernagel, *Altindische Grammatik*. Göttingen: Vandenhoeck und Ruprecht.
- Ṛgveda-Prātiśākhya*. 1. Edited, with the commentary of Uvāṭa, by Mangal Deva Shastri. Volume II. Allahabad: The Indian Press. 1931. 2. = Müller, 1869.
- Śāṅkhāyana Āraṇyaka VII-XV* = Keith, 1909, 305-28.
- Thieme, Paul (1935): *Pāṇini and the Veda. Studies in the early history of linguistic science in India*. Allahabad: Globe Press.
- Vājasaneyi-Prātiśākhya*, edited by Albrecht Weber. *Indische Studien* 4, 65-331. 1858.
- Wackernagel, Jacob (1896): *Altindische Grammatik. I. Lautlehre*. Göttingen: Vandenhoeck und Ruprecht.
- Weber, A. (1856): "Über den semitischen Ursprung des indischen Alphabetes." *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 10, 389-406.
- Yāska: *Nirukta*. Edited by Lakshman Sarup. Second Reprint. Delhi: Motilal Banarsidass. 1967.

ABBREVIATIONS

P.	Pāṇinian sūtra
Pp.	Padapāṭha
RV	Ṛgveda
Sp.	Śaṃhitāpāṭha