

Pāṇinian Accounts of the Class Eight Presents

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In a paper presented to the American Oriental Society in 2004,¹ I discussed the need for comparing comprehensive linguistic descriptions of Sanskrit with specific corpora rather than attempting to establish the relative date of texts and linguistic treatises on the grounds of individual rules. Which texts were known to the author of a particular linguistic description has implications for the relative date of the linguistic treatise and the texts, and thus for Indian intellectual history and the history of Sanskrit literature. In that paper, I accepted the validity of methodology to establish the correspondence between the language described by a linguistic treatise and the language used in particular texts. Such a correspondence is established by demonstrating a high correlation between the linguistic behaviors described by the treatise and those exhibited in the text. Conversely, a low correlation between the described and exhibited behaviors establishes the lack of correspondence between the language described and the language used. I was critical, however, of the procedure used by scholars until now, which, rather than examining degrees of correlation between the complete set of linguistic traits described and the complete set exhibited, has examined individual traits.

It may be convenient to briefly recapitulate my review in that article of the contributions of Whitney (1893a, 1893b), Renou (1960), Thieme (1935), Cardona (1972, 1984, 1991, 1997a, 1997b, 1997c, 1999, 2005), Bronkhorst (1980, 1981, 1991, 1996), and others (see the bibliography in Scharf 2008) to the relative dating of Indian linguistic treatises and Vedic texts. Thieme (1935) argues that Pāṇini knew certain Vedic texts on the grounds that specific forms mentioned in particular Vedic rules are found only in those texts. Bronkhorst (1991: 88) proposes the converse, that disagreement of a particular Vedic text with a particular trait described by a Vedic rule evidences that Pāṇini did not know that Vedic text. Since the agreement of the linguistic trait of one rule and the disagreement of the linguistic trait of another rule with usage in the same text may present contradictory evidence as to whether the text was known or not, scholars have articulated that contradictory results may be due to complexities in the composition both of the texts described and of the describing linguistic treatise. Bronkhorst (1991: 76–81, 103–4) warns that the extant form of the Vedic text in question may differ from its form in Pāṇini's time due to additions, deletions, and alterations in sandhi, accentuation, vowel length, etc., made to the text in its subsequent transmission. Contradictory results may also be due rather to complexity in both the composition and intent of the linguistic treatise. The linguistic treatise may be prescriptive rather than descriptive or may be deliberately incomplete. Thus Bronkhorst (1991: 81) entertains the possibility that Pāṇini excluded forms found in Vedic texts known to him because he considered them incorrect, and Cardona (1991: 130; 1997a: 281; 1997b: 37–38) argues that Pāṇini may refrain from accounting for certain Vedic forms out of deference to exegetical traditions received in his time. The relationship is complicated by variation both in the corpus of Vedic texts and in the linguistic treatises. Hence, I argued that conclusive results depend upon testing how

1. Scharf 2008 is a corrected publication of Scharf 2005.

closely comprehensive systems of linguistic description conform to clearly delineated textual corpora.

Now, while I explored (in Scharf 2008) the relation of rules in the *Aṣṭādhyāyī* to Vedic forms, the current paper investigates the importance of the contents of ancillary texts that form a part of the linguistic description in determining the descriptive scope of a linguistic system. The Indian linguistic treatises form comprehensive systems of linguistic description by reference to accompanying lists (*gaṇa*) not itemized in the rule-sets that refer to them. The most extensive of these is a root list (*dhātupāṭha*). The *Aṣṭādhyāyī* of Pāṇini refers to a root list in numerous rules, the most prominent of which, Pā. 1.3.1 *bhūvādayo dhātavaḥ*, terms items in the list beginning with *bhū* to be roots (*dhātu*). The current paper considers how variation in the various received versions of the *Dhātupāṭha* alters the linguistic description of the linguistic system that comprises the *Dhātupāṭha*.

The Pāṇinian *Dhātupāṭha* is known through numerous manuscripts as well as through several commentaries (NCC, vol. 9, pp. 287–88). Three complete commentaries composed in Sanskrit are extant: the *Kṣīrataraṅgini* of Kṣīrasvāmin (early twelfth c. C.E., Kashmir), the *Dhātupradīpa* of Maitreyarakṣita (mid-twelfth c. C.E., Bengal), and the *Mādhaviyadhātuvṛtti* of Śāyaṇa (fourteenth c. C.E., Vijayanagara, Kāṇṭhāṭaka).² These commentaries provide examples of forms and make comments; Śāyaṇa provides a full range of examples including nominal derivatives with details of derivation. Several other root lists accompany rule-sets composed by other linguists. The *Śabdakalāpa* grammar of Kāśakṛtsna includes a *dhātupāṭha* on which Cannavīrakavi (c. 1500 C.E., Kuṇṭikāpura, Tumkur district, Kāṇṭhāṭaka) wrote a Kannada commentary *Kāśakṛtsna-śabda-kalāpa-dhātupāṭha-kāṇṭhāṭaka-ṭikā*.³ A shorter version of the *Śabdakalāpa* is found in the *Kātantra* grammar of Śarvavarman (c. 400 C.E.), which itself was enlarged (c. 800 C.E.) in Tibetan Tanjur and supplied with a root list (Scharfe 1977: 163 n. 5; Yudhiṣṭhira Mīmāṃsaka 1965/66: 11–12).

Several other grammars include their own versions of *dhātupāṭha*. The *Cāndra* grammar of Candragomin (fifth c. C.E.) avoids technical terms and dispenses with Pāṇini's *kāraka* class names. The *Jainendra* grammar of Devanandin (c. 5–7th c. C.E.) closely follows the sequence of Pāṇini's rules while further condensing their formulation. The *Mugdhabodha* of Vopadeva (late thirteenth c. C.E., Maharashtra) similarly condenses rule formulation in a set of 1184 *sūtras* in twenty-six sections. The rule-set and commentary *Amoghavṛtti* of the Jain monk Śākaṭāyana (ninth c. C.E.) are the foundation of the *Siddhahaimacandra* of Hemacandra Sūri (1089–1172 C.E., Gujarat) (Scharfe 1977: 101–89). While the root lists associated with these grammars share a large common stock, each *dhātupāṭha* differs from those attached to other grammars by the addition, omission, alternative classification, and modification of roots in the list.

2. Cardona 1976: 288–89. The partial commentary *Daiva* of Deva, who postdates Maitreyarakṣita, is not considered in the present study.

3. Because little information is available in European language publications about Cannavīrakavi and his work, I provide the following details reported by Narasimhia (1952: vi–xviii, translated from Kannada for me by R. Chandrashekar, 2007): Cannavīrakavi, popularly known as Kāśikāṇḍa, was a devotee of Yāgaṇṭi-Śarabhalīṅga and belonged to the Atri gotra, to the Taittiriya śākhā of the *Kṛṣṇa-yajurveda*, and to the Vīramāheśvara *Tantrasūtra*. His parents were Kokilākūṇḍa-saṅga-guruliṅga and Nandyambā, and he traced his lineage to the sage Śivalaṅkamaṇḍana. His paternal uncle and teacher was Nambyaṇa. He wrote his commentary on the *Kāśakṛtsna-śabda-kalāpa-dhātupāṭha* to educate students. Other works of his include the *Śabdamaṇi* commentary on *Sārasvata-vyākaraṇa*, a *Kāṇṭhāṭaka-ṭikā* on the *Puruṣasūkta* (Crown Press, 1909), and a commentary on *Namakacama*. The *Kāśakṛtsna-śabda-kalāpa-dhātupāṭha-kāṇṭhāṭaka-ṭikā* occurs in only two mss. both written in Kannaḍa script (Palsule 1961: 223). Yudhiṣṭhira Mīmāṃsaka's (1965/66) *Kāśakṛtsna-dhātu-vyākhyāna* translates Cannavīrakavi's Kannada commentary into Sanskrit.

There are several reasons for the variation in the contents and ordering among these root lists. Naturally some of the diversity arose due to copying errors in the course of the transcription of manuscripts. Yet more interestingly, roots may have been deliberately added by linguists or redactors to their dhātupāṭha in order to account for forms in the Sanskrit language as known to them. Such roots would account for new words not known to Pāṇini, or to other early grammarians, that may have come into Sanskrit due to historical sound change and from borrowings into Sanskrit from regional and foreign languages throughout the history of Sanskrit's presence in the sub-continent. Source languages for borrowings include languages in the Dravidian, Munda, and Austro-Asiatic families with long histories in South Asia, as well as Prakrits, Middle Indic, and Modern Indic languages considered to be descendants of Sanskrit. Emeneau (1980) discusses the high degree of cross-linguistic borrowing in the South Asian sub-continent that supports evidence of areal effects in language development and helps to challenge the traditional genetic model of linguistic change. In addition to sound change and borrowing, the linguistic process of analogy created new verb forms in Sanskrit to be accounted for by reclassification of roots within the dhātupāṭhas.

Since Westergaard published his *Radices linguae sanscritae* in 1841, scholars have disagreed concerning the degree of inclusion of so-called "inauthentic roots" in the received dhātupāṭhas, that is, the inclusion of roots whose derivatives are unattested in the language. Whitney (1884: 282–84) claimed that more than half of the two thousand roots listed in the Pāṇinian *Dhātupāṭha* were inauthentic and never likely to be discovered in Sanskrit literature, and Edgren (1882) examined possible reasons for their inclusion in the list. Among these reasons are (1882: 12) that they are inferred to account for nominal forms or to serve as their denominatives; (1882: 18) that they are of onomatopoeitic origin; and (1882: 15) that similar sounding roots are coined in classes that have the same meaning designation, even when there are no nominals for which to account. Edgren notes that some roots inferred by the first two reasons are legitimate, for example, *kakh* 'laugh' which has cognates in Greek *καχάζω* and Latin *cachinno*. Yet he complains that these reasons are extended injudiciously by the inclusion of phonetic variants of roots. While researchers such as von Schroeder (1879, 1895) do turn up Vedic evidence of derivatives of roots unattested in previously examined literature, Bühler (1894), Franke (1894), Kittel (1893, 1895), Palsule (1961: 208–13), Katre (1938–39: 485–86; 1944: 65–72), and Tripāṭhi (1965) explore derivatives of listed roots in Middle Indic, Modern Indic, and Dravidian. Rosane Rocher (1968) recognizes that grammarians would legitimately account for Middle Indicisms adopted in Sanskrit by positing roots to derive them. She and Cardona (1976: 240–41) conclude evaluations of previous work by calling for more detailed study of dhātupāṭha commentaries. Yudhiṣṭhira Mīmāṃsaka (1973/74: 2.64–68) gives examples of the addition and omission of roots, alteration of sequence and classification, and change in markers and meanings noticed already by medieval commentators, thereby indicating that the texts received by various commentators already differed in their readings.

The current paper considers that making adjustments to the Pāṇinian *Dhātupāṭha* allowed Indian linguists to account for extant forms without altering the set of rules in the *Aṣṭādhyāyī*. In particular, the classification of roots as class eight versus class five allowed linguists a mode to account for forms of present stems not accounted for otherwise, without the need to justify an alteration of the rules themselves. Pāṇini refers to a list of roots beginning with *su* that comprise the fifth major subdivision of roots in the Pāṇinian *Dhātupāṭha*, in 3.1.73 *svādibhyaḥ śnuḥ*, and to a list of roots beginning with *tan* that comprise the eighth major subdivision of roots in the *Dhātupāṭha*, in 3.1.79 *tanādikṛñbhyo uḥ*.

The Pāṇinian *Dhātupāṭha* (throughout here as in Katre 1987) lists the following roots in the gaṇa *tanādi* (class eight):

1. *tānū vistāre* . 2. *śānū dāne* . 3. *kṣānū himsāyām* . 4. *kṣīnū ca* . 5. *ḥnū gatau* . 6. *tḥnū adane* .
 7. *ghṇnū dīptau* . 8. *vānū yācane* . 9. *mānū avabodhane* . 10. *ḍukṛñ karaṇe*.⁴

The final *u* in 1–9 and the initial *ḍu* in 10 are markers employed to convey information not relevant to the present discussion.⁵ The svarita on the final vowel marker in 1–7, and the final *ñ* in 10 indicate that the root takes both *parasmaipada* and *ātmanepada* terminations (thereby producing verb forms in the active and middle voices).⁶ The *anudātta* on the final vowel marker in 8–9, as indicated by a horizontal line below, indicates that the verb occurs only in the middle voice.⁷

Table 1. Class eight roots in various dhātupāṭhas

Kṣīrasvāmin's *Kṣīrataraṅginī* (Kṣi), Maitreyarakṣita's *Dhātupradīpa* (MaiR), Sāyaṇa's *Mādhaviyadhātuvṛtti* (Sāy), Śarvavarman (Śar), Candra (C), Jainendra (J), Kāśakṛtsna (Kāś), Kātantra (Kāt), Śākaṭāyana (Śāk), Hemacandra (H), and Vopadeva (V). P indicates *parasmaipada* (active voice), Ā indicates *ātmanepada* (middle), U indicates *ubhaya* (both). Derived from Palsule 1961.

Class	Root	Kṣi	MaiR	Sāy	Śar	C	J	Kāś	Kāt	Śāk	H	V
8.1	<i>tan</i>	1U	1U	1U	1	1U	1U	1U	1U	1U	1U	U
8.2	² <i>san</i>	2U	2U	2U	2	2U	2U	5U	2U	2U	2U	U
8.3	<i>kṣaṇ</i>	3U	3U	3U	3	3U	3U	6aU	3aU	3U	3U	U
8.4	<i>kṣiṇ</i>	3U	4U	4U			4U	6bU	3bU		4U	U
8.4	<i>kṣin</i>		4U	4U							4U	U
8.5	<i>ḥn</i>	4U	5U	5U	4	4U	5U	7U	4U	4U	5U	U
8.5	<i>ḥn</i>											U
8.0	<i>tṛ</i>											
8.6	³ <i>tṛṇ</i>	5U	6U	6U	5	5U	6U	8U	5U	5U	6U	U
8.6	<i>tṛn</i>		6U	6U								U
8.7	<i>ghṛṇ</i>	6U	7U	7U	6	6U	7U	9U	6U	6U	7U	U
8.7	<i>ghṛn</i>										7U	U
8.8	³ <i>van</i>	7Ā	8Ā	8Ā	7	8Ā	8Ā	15Ā	8Ā	7Ā	8Ā	Ā
8.9	² <i>man</i>	8Ā	9Ā	9Ā	8	9Ā	9Ā	16U	9Ā	8Ā	9Ā	Ā
8.10	<i>kṛ</i>	9U	10U	10U	9	7U		14U	7U			U

4. Although Böhtlingk (1887: 78), Katre (1987: 1194–95), Shastri (1964: 506–18), and others (Palsule 1961 s.v.) give roots 4–7 with retroflex *ṇ*; Pāṇini accounts for the retroflexion of dental *n* in derivatives by 8.4.1–2. Several authorities give roots with both dental and retroflex. Maitreyarakṣita, Sāyaṇa, Hemacandra, and Vopadeva list both *kṣin* and *kṣiṇ*. The last lists both *ḥn* and *ḥṇ*. All four excepting Hemacandra list both *tṛn* and *tṛṇ*, and Hemacandra and Vopadeva list both *ghṛn* and *ghṛṇ*. Palsule (1961: n. 140) remarks, “Some authorities regard *n* in *kṣaṇ*, *kṣiṇ*, etc. as original, others regard it as a cerebralisation of a dental *n*.” He further writes (1961: ix) “the roots with any nasal penultimate were read with a dental *n* in the dhātupāṭhas,” and correctly observes (1961: 252) that “penultimate nasal is dental in the grammarian's view.”

5. In accordance with Pā. 7.2.56 *udito vā*, the marker *u* on a root conditions that the affix *ktvā* provided after the root optionally takes the initial augment *i*, as for example in the absolutes *tanitvā*, *manitvā* derived from *tan* and *man* as alternates of the usual *tatvā* and *matvā*. The marker *ḍu* conditions the affix *ktṛi* in the derivative *kṛtima* in accordance with Pā. 3.3.88 *ḍvītaḥ kṛtiḥ*; derivatives ending in the affix *-tri* are obligatorily followed by the affix *map* in accordance with 4.4.20.

6. The svarita accent on a vowel marker and the marker *ñ* condition *ātmanepada* as well as *parasmaipada* verbal terminations in accordance with Pā. 1.3.72 *svaritañīta kartrabhiprāye kriyāphale*.

7. The *anudātta* accent on a vowel marker and the marker *ñ* condition *ātmanepada* terminations in accordance with Pā. 1.3.12 *anudāttañīta ātmanepadam*.

Table 2. Class five roots corresponding to class eight roots in various dhātupāṭhas

Class	Root	Kṣi	MaiR	Sāy	Śar	C	J	Kāś	Kāt	Śak	H	V
5.7	<i>kṛ</i>	7U	7U	7U	7	7U	7U	10U	7U	7U	8U	U
5.8	¹ <i>ṽṛ</i>	8U	8U	8U	8	8U	8U	11U	8U	8U	9U	U
5.29	<i>ri</i>	29P	31P	29P								
	<i>ṛ</i>	29									26d	P
	² <i>ṛkṣ</i>	29P				22aP					26deP	P
	<i>ṛkṣi</i>											
5.30	³ <i>kṣi</i>	29P	32P	30P		12P					26eP	P

There is some variation in the roots included by various Indian linguists in the corresponding classes of their dhātupāṭhas. Table 1 shows roots, numbered as in the Pāṇinian *Dhātupāṭha*, included in class eight in commentaries on the Pāṇinian *Dhātupāṭha* and in the corresponding class in root lists that form supplements to sets of rules by other Indian linguists.⁸ Table 2 shows several roots in class five that correspond to roots in class eight. These could serve to derive linguistic forms similar to those derived from the corresponding class eight roots. Śarvavarman and Śākaṭāyana omit *kṣin* from class eight as well as *kṣi* from class five. Candra lists *kṣi* in class five instead of *kṣin* in class eight, while Kṣīrasvāmin, Maitreyarakṣita, Sāyaṇa, Hemacandra, and Vopadeva all list *kṣi* in class five in addition to listing *kṣin* (with a retroflex) in class eight. (The latter four also list *kṣin* with a dental in class eight.) Kṣīrasvāmin, Hemacandra, and Vopadeva list *ṛ* in class five in addition to listing *ṛn* in class eight. Vopadeva also lists *ṛn* in class eight. Jainendra, Śākaṭāyana, and Hemacandra omit *kṛ* in class eight.

Consider in particular the classification of the root *ṛ* in class five and its corresponding root *ṛn* in class eight. The derivation of the third person singular present active indicative of 8.5 *ṛn* proceeds as shown in Table 3. At step 12, the root *ṛn* undergoes guṇa before the stem-forming affix *u*. All roots with final vowels or penultimate light vowels *i*, *u*, and *ṛ* similarly undergo guṇa strengthening.

In accordance with this derivation, Maitreyarakṣita, and Sāyaṇa in his *Mādhaviyadhātuvṛtti*, show guṇa in present forms of the root *ṛn*:

Maitreyarakṣita (Chakravarti 1919: 122):

aṛṇoti aṛṇute (3sa/3sm pre)

aṛṇotu aṛṇutām, aṛṇuhi aṛṇuṣva (3sa/3sm, 2sa/2sm ipv).

Sāyaṇa *Mādhaviyadhātuvṛtti* (Shastri 1964: 508):

aṛṇoti, aṛṇvanti (3sa/3pa pre)

aṛṇuhi (2sa ipv)

aṛṇute aṛṇvāte aṛṇvate (3sm, 3dm, 3pm pre)

aṛṇvīta (3sm opt).

Moreover, they remark on the fact that guṇa occurs. Both state, “[g]uṇa occurs throughout, conditioned by the stem-forming affix” (*sarvatra vikaraṇāpekṣo guṇaḥ*) (Shastri 1964: 508; Chakravarti 1919: 122). Sāyaṇa additionally remarks on the preservation of the second

8. These roots are in the seventh class in the *Kāśakṛtsna* and *Kātantra* dhātupāṭhas since there are nine *gaṇas* rather than ten. The Pāṇinian third class roots *juhoryādi* are included in the second class of these dhātupāṭhas. Yudhiṣṭhira Mimāṃsaka 1965/66: 14.

Table 3. Derivation of *arṇoti* (3sa present of *ṛn*)

1.	<i>ṛn(ù)</i>	DhP. 8.5 <i>ṛnù gatau</i>
2.	<i>ṛn</i>	1.3.9 <i>tasya lopah</i>
3.	<i>ṛn</i>	6.1.162 <i>dhātoḥ (antaḥ udāttaḥ 159)</i>
4.	<i>ṛn-l(t)</i>	3.2.123 <i>vartamāne laṭ</i>
5.	<i>ṛn-l</i>	1.3.9 <i>tasya lopah</i>
6.	<i>ṛn-ti(p)</i>	3.4.78 <i>tiptasjhi . . . idvāhimahiṇ (lasya 77)</i>
6a.		1.4.99 <i>laḥ parasmaipadam</i>
6b.		1.4.108 <i>śeṣe prathamah</i>
6c.		1.4.22 <i>dvyekayor dvivacanaikavacane</i>
6d.		3.1.4 <i>anudāttau suppitau (pratyayaḥ 1)</i>
7.	<i>ṛn-ti</i>	1.3.9 <i>tasya lopah</i>
8.	<i>ṛn-ti</i>	3.4.113 <i>tiṇśit sārvaḥātukam</i>
9.	<i>ṛn-ú-ti</i>	3.1.79 <i>tanādikṛñbhya uḥ (sārvaḥātuke 3.1.67)</i>
9a.		3.1.3 <i>ādyudāttaś ca</i>
10.	<i>ṛn-ú-ti</i>	3.4.114 <i>ārdhahātukam śeṣaḥ</i>
11.	<i>ṛn-ú-ti</i>	6.1.158 <i>anudāttam padam ekavarjam</i>
		vt. 9 <i>satiśiṣṭasvarabaliyastvam ca</i>
12.	<i>arn-ú-ti</i>	7.3.86 <i>pugantalaghūpadhasya ca (guṇaḥ 82)</i>
12a.		1.1.3 <i>iko guṇavṛddhī</i>
12b.		1.1.51 <i>ur aṇraparaḥ</i>
13.	<i>arn-ó-ti</i>	7.3.84 <i>sārvaḥātukārdhahātukayoḥ (guṇaḥ 82)</i>
13a.		1.1.3 <i>iko guṇavṛddhī</i>
14.	<i>arṇ-ó-ti</i>	8.4.1 <i>raśābhyām no ṇaḥ samānapade</i>
		vt. 1 <i>raśābhyām ṇatva ṛkāragrahaṇam</i>
	Patañjali	<i>yo 'sav ṛkāre repastadāśrayam ṇatvam bhaviṣyati</i>
15.	<i>arṇóti</i>	Delete morpheme boundaries

person singular imperative active termination *hi* due to the fact that the vikaraṇa *u* is preceded by a conjunct consonant that results from *guṇa* having applied previously. He writes, “*hi* is not deleted (*luk*) by 6.4.106 *utaś ca pratyayād asaṃyogapūrvāt* because the stem-final *u* is preceded by a conjunct consonant once *guṇa* has been done” (*guṇe kṛte saṃyogapūrvatvād ukārasya 'utaś ca pratyayāt' iti her lug na bhavati*) (Shastri 1964: 508).

One finds *guṇa* likewise in the strong stem of *kṛ*:

10 *kṛñ karoti* (3sa pre)

Similarly, according to step 12, *guṇa* would be expected for other roots with penultimate light vowels *i*, *u*, *ṛ*. Maitreyarakṣita does indeed show this in his examples of present forms of *tṛn* as does Sāyaṇa for *tṛn* and *ghṛn*:

6 *tṛñ tarṇoti* (3sa pre), *tarṇute* (3sm pre). (MaiR. and Sāy.) (Shastri 1964: 509; Chakravarti 1919: 122)

7 *ghṛñ gharṇoti* (3sa pre), *gharṇute* (3sm pre). (Sāy.) (Shastri 1964: 509)

However, several authorities show lack of stem strengthening where *guṇa* is expected. Maitreyarakṣita and Sāyaṇa do not show *guṇa* for the root *kṣin* (Shastri 1964: 508; Chakravarti 1919: 122).

4 *kṣiṇoti* (3sm pre) instead of **kṣeṇoti*.

Kṣīrasvāmin reports that Durga listed *kṣin* in class eight, and hence Kṣīrasvāmin provides examples of the form. He too illustrates it without *guṇa* (Liebich 1930: 160).

Table 4. Guṇa according to dhātupāṭha commentators

Presence (y), lack (n), or optionality (y/n) of guṇa in verb forms of class eight roots amenable to guṇa (i.e., with final vowel or penultimate light vowel *i, ṛ*) according to commentators and their reports of others, including Cannavīrakavi in his *Kāśakṛtsna-śabda-kalāpa-dhātupāṭha-karṇāṭaka-ṭikā* (CVK), and Ātreya (Ātr).

Class	Root	Kṣi	CVK	MaiR	MaiR Others	Sāy	Sāy Ātr	Sāy MaiR	Sāy Āpi	Sāy Kṣi	Sāy C
8.4	<i>kṣin</i>	n	n	n	y	n	n	n	n	y/n	y
8.5	<i>ṛn</i>	y/n	n	y	n	y	n	n	n	y/n	y
8.6	<i>tṛn</i>	y/n	n	y	n	y	n	n	n	y/n	y
8.7	<i>ghṛn</i>	y/n	n	y/n		y	n	n	n	y/n	y
8.10	<i>kṛ</i>	y	y	y		y	y	y	y		y

4 *kṣiṇv iti durgah . kṣiṇoti*

Kṣīrasvāmin and Cannavīrakavi show the roots with penultimate light vowel without guṇa (Liebich 1930: 160; Yudhiṣṭhira Mīmāṃsaka 1965/66: 177).

- 4 *kṣin . kṣiṇoti . kṣiṇute* (3sa pre, 3sm pre)
- 5 *ṛn . ṛṇoti . ṛṇute* (3sa pre, 3sm pre)
- 6 *tṛn . tṛṇoti . tṛṇute* (3sa pre, 3sm pre)
- 7 *ghṛn . ghṛṇoti . ghṛṇute* (3sa pre, 3sm pre)

Commentators remark on the difference of opinion regarding whether guṇa applies and justify its optionality. The various opinions of the commentators as well as the opinions of others reported by them are shown in Table 4. Hence, although Maitreyarakṣita favors guṇa of the root in present forms of *ṛn* but the lack of guṇa in present forms of *kṣin*, he notes that others validate *ṛn* without guṇa and *kṣin* with it, in accordance with the principle that a vidhi brought into play by a technical term is not obligatory.⁹ He writes, “but others, considering that guṇa is absent by virtue of the principle that a rule conditioned by the use of a technical term is not obligatory, accept the forms *ṛṇoti*, *ṛṇute*, etc. In this way *kṣeṇoti*, *kṣeṇute*, etc., are valid only under the alternate view” (*anye tu sañjñāpūrvakavidher anityatvād guṇābhāvaṃ manyamānā ṛṇoti ṛṇute ityādi rūpam āhuḥ. evaṃ matāntareṇaiva kṣeṇoti kṣeṇute ityādi*. Chakravarti 1919: 122). Maitreyarakṣita also notes that, according to another opinion (*matāntare*), *tṛn* lacks guṇa (*matāntare tṛṇoti tṛṇute*). He himself finally accepts guṇa of the root as optional when he gets to *ghṛn* and lists exemplary forms with and without guṇa (*ghṛṇoti ghṛṇute gharṇoti gharṇute. . . . gharṇotu ghṛṇotu ghṛṇutām gharṇutām. ghṛṇu gharṇuhi ghṛṇuṣva gharṇuṣva. . . . iti vibhāṣitāḥ*. Chakravarti 1919: 122).

Although Kṣīrasvāmin illustrates all forms without guṇa, he remarks that there is doubt as to whether they are subject to guṇa or not before the stem-forming affix and goes on to illustrate forms of *ṛn*, *tṛn*, and *ghṛn* with guṇa as well (*ete sārva dhātuke saṃdigdhaguṇāḥ . arṇoti . tarṇoti . gharṇoti*. Liebich 1930: 161).

Sāyaṇa surveys the opinions of his predecessors concerning whether there is or is not guṇa before the stem-forming affix in these verb forms, particularly referring to the views of

9. *Sañjñāpūrvakavidher anityaḥ* is no. 47 in Vyādi's *Paribhāṣāvṛtti*. Wujastyk 1993: vol. 1, p. 55; vol. 2, pp. 184–85. Abhyankar 1967: 488 s.v.

Table 5. Verbal forms without *guṇa* according to Viśvabandhu

ṛ (viśvabandhu 1960: 278)	
ṛṇavaḥ (2sa psb)	(RV 1.138.2; Tai.Ā. 2.4.1)
ṛṇavaḥ (2sa psb)	(RV 7.8.3)
ṛṇoh	(RV 1.174.2, inter-RV-repetition: 1.174.9, 6.20.12)
ṛṇv (= riṇv) (Viśvabandhu 1960: 283)	
āṛṇvati	(RV 1.144.5, 1.168.6, 6.2.6; Tai. 2.5.5.4)
ṛṇvānti	(RV 9.7.5)
ṛṇvathaḥ	(RV 1.151.5)
ṛṇarti	(Nigh. 2.14)
kṣi (kṣaye) (Viśvabandhu 1960: 332)	
kṣiṇoti, etc.	(ŚBrM 10.4.3.1, etc.; Nigh. 2.14)
kṣiṇvanti	(ŚBrK 2.2.1.8)
kṣiṇómi	(YV 11.82; TS 4.1.10.3 (1963: 108))
kṣiṇomi	(Tai.Ā 2.5.3)
kṣiṇuyāt	(ŚBrM 1.3.1.6; 6.6.3.15; ŚBrK 2.2.4.5)

Ātreya, Maitreyarakṣita, Āpiśali, and Kṣīrasvāmin justifying the lack of *guṇa*, at least optionally, and the view of Candra in favor of *guṇa*. He reports under the root *kṣin* the view of Ātreya and Maitreyarakṣita that under the principle that a *vidhi* brought into play by a technical term is not obligatory (*saṃjñāpūrvako vidhir anityaḥ*) *guṇa* does not occur before the vikaraṇa *u* (*vikaraṇāpekṣo guṇaḥ . . . na bhavati*). Sāyaṇa continues that Āpiśali (*tathā ca āpiśaliḥ*) limits *guṇa* of the penultimate vowel of a root before a present stem-forming affix to class one roots (*‘śabvikaraṇe guṇaḥ’ iti dhātuguṇam abhidhāya*) and to the roots *kṛ* and *mid* (*‘karoteś ca mideś ca’ ity asūtrayat*). Thus, Sāyaṇa continues, according to Maitreyarakṣita lack of *guṇa* in *kṣiṇoti* accounts for Kālidāsa’s passage *pañcabāṇaḥ kṣiṇoti*.¹⁰ Moreover, under *ṛṇ*, Sāyaṇa notes that in view of what Āpiśali has provided, Ātreya and Maitreyarakṣita and others limit *guṇa* to just these roots (*atra ātreyamaitreyādibhiḥ ‘śabvikaraṇe guṇaḥ karoteś ca mideś ca’ iti āpiśalismaraṇād vikaraṇāpekṣo guṇo ‘nyasya dhātor na bhavatīti ‘kṣiṇoti’ ityādi darśitam*. Shastri 1964: 509). Likewise, he reports that Kṣīrasvāmin doubts that *guṇa* occurs before the vikaraṇa *u* followed by *sārvadhātuka* affixes. He writes, “and likewise, while describing the roots *kṣin*, etc., Kṣīrasvāmin too says, ‘The *guṇa* of these roots followed by a *sārvadhātuka* affix is doubtful.’ By ‘followed by a *sārvadhātuka* affix’ he means, ‘followed by the *sārvadhātuka* affix *u*’” (*tathā ca kṣīrasvāmī api kṣiṇiprabhṛtīn prastutya ‘ime sārvadhātuke sandigdhaḡuṇāḥ’ ity āha. ‘sārvadhātuke’ iti ‘sārvadhātuke pare upratyaye’ ity arthaḥ*. Shastri 1964: 509).

Candra, Sāyaṇa reports on the other hand, rejects limiting *guṇa* to class one roots, *kṛ* and *mid*. Instead he extends it to all four of the roots in question. He claims that something else must be intended by statements that deny *guṇa* for *kṣin*. Sāyaṇa continues, “but Candra does

10. *atra sarvatra pidvacaneṣu vikaraṇāpekṣo guṇaḥ ‘saṃjñāpūrvako vidhir anityaḥ’ iti na bhavatīti ātreya-maitreyau. tathā ca āpiśaliḥ ‘śabvikaraṇe guṇaḥ’ iti dhātuguṇam abhidhāya ‘karoteś ca mideś ca’ ity asūtrayat ‘pugantalaghūpadhasya ca’ ity atra rakṣitena cōktam. evaṇ ca ‘pañcabāṇaḥ kṣiṇoti’ iti siddhyati*. Shastri 1964: 508. In fact, Maitreyarakṣita reports the observation by some that Kālidāsa’s use of the form *kṣiṇoti* attests the class five root *kṣi* without *guṇa*, as would be expected if derived by regular rules: *kṣiṇotīti bhāṣāyām apy asya prayojanam ke cid icchanti. pañcabāṇaḥ kṣiṇotīti kālidāsaḥ* (Chakravarti 1919: 104). *pañcabāṇaḥ kṣiṇoti* occurs in the interpolated verse beginning *dhārāsikta*, listed by Hultsch (1991: 63) as number XIII in his appendix of spurious verses.

Table 6. Derivation of *ṛṇoti* (3sa present of *ṛ* class five)

1.	<i>ṛ(')</i>	DhP. 5.29	Böhtlingk; Kṣīrasvāmin: some; Hemacandra
2.	<i>ṛ</i>	1.3.9	<i>tasya lopah</i>
3.	<i>ṛ</i>	6.1.162	<i>dhātoḥ (antaḥ udāttaḥ 159)</i>
4.	<i>ṛ-t</i>	3.2.123	<i>vartamāne laṭ</i>
5.	<i>ṛ-l</i>	1.3.9	<i>tasya lopah</i>
6.	<i>ṛ-ti(p)</i>	3.4.78	<i>tiptasjhi . . . idvāhimahiṇ (lasya 77)</i>
6a.		1.4.99	<i>laḥ parasmaipadam</i>
6b.		1.4.108	<i>śeṣe prathamah</i>
6c.		1.4.22	<i>dvyekayor dvivacanāikavacane</i>
6d.		3.1.4	<i>anudāttau suppitau (pratyayaḥ 1)</i>
7.	<i>ṛ-ti</i>	1.3.9	<i>tasya lopah</i>
8.	<i>ṛ-ti</i>	3.4.113	<i>tiṇśit sārva dhātukam</i>
9.	<i>ṛ-nū-ti(śnu)</i>	3.1.73	<i>svādibhyaḥ śnuḥ (sārva dhātuke 3.1.67)</i>
9a.		3.1.3	<i>ādyudāttaś ca</i>
10.	<i>ṛ-nū-ti(śnu)</i>	3.4.113	<i>tiṇśitsārva dhātukam</i>
11.	<i>ṛ-nū-ti</i>	1.3.9	<i>tasya lopah</i>
12.	<i>ṛ-nū-ti</i>	6.1.158	<i>anudāttaṁ padam ekavarjam</i>
		vt. 9	<i>satiśiṣṭasvarabaliyastvaṁ ca</i>
13.	<i>ṛ-nū-ti</i>	1.2.4	<i>sārva dhātukam apit (ñit 1)</i>
14.	<i>ṛ-nū-ti</i>	7.3.86	<i>pugantalaghūpadhasya ca (guṇaḥ 82) blocked</i>
14a.	<i>ṛ-nū-ti</i>	1.1.5	<i>kñiti ca (na 4, iko guṇavṛddhi 3)</i>
15.	<i>ṛ-nó-ti</i>	7.3.84	<i>sārva dhātukārdhadhātukayoḥ (guṇaḥ 82)</i>
15a.		1.1.3	<i>iko guṇavṛddhi</i>
16.	<i>ṛ-nó-ti</i>	8.4.1	<i>raśābhyāṁ no ṇaḥ samānapade</i>
		vt. 1	<i>raśābhyāṁ ṇatva ṛkāragrahaṇam</i>
		Patañjali	<i>yo 'sāv ṛkāre repastadāśrayaṁ ṇatvaṁ bhaviṣyati</i>
17.	<i>ṛṇoti</i>		Delete morpheme boundaries

not accept the absence of *guṇa*, because after he provides examples such as *arṇoti* (with *guṇa*), he says that one must seek some other purpose for the statement, 'Guṇa is not desired for the root *kṣin* with a light penultimate vowel' " (*candras tu guṇābhāvaṁ na saḥate. yad āha 'arṇoti' ityādy udāhṛtya 'kṣiṇer dhātor laghurūpāntasya guṇo neṣyate' ity etasyānyo 'bhīprāyo mṛgyaḥ iti*. Shastri 1964: 509). Sāyaṇa states that *guṇa* alone is illustrated in Candra's *Śābdikābharāṇa* (*śābdikābharāṇe tu guṇa evodāhṛtaḥ*. Shastri 1964: 508).

Now, according to Viśvabandhu's indices, as shown in Table 5, most attested verbal forms attributable to the root *ṛn* and all attested verbal forms attributable to the root *kṣin* in Vedic and post-Vedic do not have *guṇa*. Viśvabandhu assigns all such forms to roots *ṛ* and *kṣi*. Citations of present tense forms attributable to *ghṛn* and *tṛn* are entirely absent. *Guṇa* is the only attribute that distinguishes these finite verbal forms from those that would be derived if corresponding roots *ṛ*, *kṣi*, *ghṛ*, and *tṛ* were listed as class five roots. The derivation of *ṛ* as a class five root is shown in Table 6. One would introduce the stem-forming affix (*vikaraṇa*) *śnu* in accordance with 3.1.73 *svādibhyaḥ śnuḥ* at step 9. The *vikaraṇa śnu*, because marked with *ś*, is termed *sārva dhātuka* at step 10 and at step 13 is thereby extended the status of being marked with *ñ*, which prevents *guṇa* at step 14 in accordance with the metarule 1.1.5 shown at 14a.

Because present tense forms of class eight roots could be derived just as well if they were transferred to class five, Edgren (1889: xl) proposed eliminating the class entirely.

Table 7. Whitney's reclassification.

<i>ṛṇ</i> 8	<i>ṛ</i> 5
<i>kṣiṇ</i> 8	<i>kṣi</i> 5
<i>ghṛṇ</i> 8	quotable only in nominals <i>gharma ghṛṇa ghṛṇi</i>
<i>tṛṇ</i> 8	'graze' supplied to furnish etymology for <i>tṛṇa</i> 'grass'
With original nasal, i.e., class eight:	
<i>kṣan, tan, man, van, san</i>	

The general result appears to be, that, of the list of ten roots that have been reckoned to the *tan*-class, four must be struck off as fictitious, five transferred to the *su*-class as regular, and one as irregular; and that in this way the *tan*-class will disappear entirely.

Whitney, tempering Edgren's proposal, concurred to the extent that roots that do not end in *an*- could be transferred to class five. He writes in his own comment to the paper of Edgren's that he read,

Of the ten roots counted to the *tan*-class by the native grammarians, two are obviously false, viz. *ṛṇ*, with present *ṛṇoti*, and *kṣiṇ*, with present *kṣiṇoti*: they are only inflections of the roots *ṛ* and *kṣi* according to the *su*-class; and a third, *ghṛṇ*, is doubtless a similar perversion of *ghṛ*—and besides, it never occurs in the language, unless in a few derivatives, as *gharma, ghṛṇa, ghṛṇi*; . . . (Edgren 1889: xxxix)

He would eliminate *tṛṇ* as well. Accordingly Whitney would reclassify roots as shown in Table 7.

Whitney's proposal accounts for the majority of the Vedic evidence. However, he (1885: 14) makes no mention of the possibility of *guṇa* in present tense forms of the roots in question in his *Roots*. For the root *ṛ*, *ṛch* 'go, send' he shows as a class five only the following present forms:

(5.) *ṛṇóti* etc. *ṛṇve* etc. V. — *ṛṇvati* etc. RV.

Neither does Werba (1997) make any mention of the possibility of *guṇa* in present tense forms of the roots in question in his *Verba Indoarica*. For *ṛ*¹⁸ '(sich) in Bewegung setzen', he shows the stem *ṛṇó/ṛṇvá*, and for the root *ṛ*²⁰ 'fügen', he shows stems *ā/ní/sám+ṛṇó/ṛṇu/ṛṇvá*, all without *guṇa*.

Yet *guṇa* does in fact occur in one form, namely, in *aṇavat* which appears in the fourth pāda of Śaunakiya *Atharvaveda* 5.2.8. The verse (Roth and Whitney 1856: 78) with Whitney's (1905: 224) attempt to render it literally is as follows:

imā brāhma bṛhāddivāḥ kṛṇavad īndrāya śūśām agriyāḥ svarṣāḥ.
mahó gotrásya kṣayati svarājā túraś cid víśvam aṇavat tápāsvān

These incantations (*brāhmaṇa*) may Brihaddiva,
 foremost heaven-winner, make, a strain (*śūśa*) for Indra;
 he rules, an autocrat, over the great stall (*gotrá*);
 may he, quick (? *túra*), rich in fervor, send (?) all.

The verse is a variation on RV 10.120.8, with which *Atharvaveda* Paippalāda recension 6.1.8 agrees. The Ṛgvedic and Paippalāda verse (Roth and Whitney 1856: 439) with Griffith's (1889–92: 628) translation runs as follows:

imā brāhma bṛhāddivo vivaktīndrāya śūśām agriyāḥ svarṣāḥ.
mahó gotrásya kṣayati svarājō dūraś ca víśvā avṛṇod āpa svāḥ.

Brhaddiva, the foremost of light-winners,
 repeats these holy prayers, this strength of Indra.
 He rules the great self-luminous fold of cattle,
 and all the doors of light hath he thrown open.

The first pāda of the *Atharvaveda* verse replaces the Ṛgvedic *vivakti* (3sa pre *vi vac* 'speak out') by *kṛṇavat* (3sa psb *kṛ* 'make'). The second and third agree completely with the Ṛgveda. The fourth pāda of the *Atharvaveda* verse differs markedly, most notably employing the form in question, *aṇavat* (3sa psb *ṛ* 'go') instead of the Ṛgvedic *avṛṇot* (3sa ipf) *vṛ* 'cover'.

Whitney (1905: 224) dismisses the whole fourth pāda of Śaunakīya *Atharvaveda* 5.2.8 as a corruption of the corresponding Ṛgvedic passage: "the fourth pāda is attempted to be rendered literally from our text, although this is plainly a gross corruption of the RV." The adaptation of *avṛṇot* to *aṇavat* is assisted by metrical considerations and by the prevalence in the language of the noun *aṇavá* 'ocean'.¹¹

Nevertheless, even if the passage is a corruption of a verse in the Ṛgveda and in the Paippalāda recension, the adapter and transmitters of the verse as it occurs in the Śaunaka recension of the *Atharvaveda* composed and accepted it as valid language. It is comprehensible as it is, despite Whitney's diffidence, and has been transmitted as bona fide Vedic text. Such adaptation is a legitimate part of the evolution of language. Accepted in the tradition as a valid Vedic text, it is appropriate that Indian linguists attempted to account for the form, as indeed Maitreyarākṣita's and Sāyaṇa's expositions do.

Viśvabandhu (1960: 104) identifies the form as a third person singular present subjunctive active of the root *ṛ*, which Böhrtlingk, Kṣīrasvāmin, Hemacandra, and Vopadeva include in the fifth class of their *dhātupāṭhas*, in addition to including *ṛṇ* in the eighth class.¹² As a class five root, however, the third person singular present subjunctive active of the root *ṛ* derived according to regular rules would be *ṛṇávat*, with the weak form of the root before the stem-forming affix *nu* (Pāṇinian *śnu*), not *aṇávat* with the strong form of the root. As shown in steps 14–14a of Table 6, the class five root *ṛ* regularly does not undergo guṇa before the stem-forming affix *śnu* because *ṇ*-marking has been extended to the affix in step 13 by virtue of being termed *sārvadhātuka* in step 10; *śnu* is so termed due to being marked with *ś* when initially taught. The form *aṇávat* would, on the other hand, be the correct third person singular present subjunctive active of a class eight root *ṛṇ*. As shown in step 12 of Table 3, the class eight root *ṛṇ* regularly does undergo guṇa before the stem-forming affix *ú*. This affix, not marked with *ś* when taught, is termed *ārdhadhātuka* in step 10 and does not get *ṇ*-marking extended to it. The derivation of the form *aṇávat* by regular rules could be the motivation for the inclusion of the root *ṛṇ* (or *ṛṇ*) in class eight of their *dhātupāṭhas* by Indian

11. *Nirukta* 10.9 implies analyzing *aṇavá* 'possessing water' as *árṇa/árṇas* 'water' + *-va*. The passage glosses the word *aṇavá* in RV 5.32.1 as *arṇasvat* 'possessing water' (< *arṇas* + *-vat*) on the authority of which Sāyaṇa glosses it *udaka-vat* 'possessing water'. To account for the word *keśava*, Pāṇini 5.2.109 *keśavād vo 'nyatarasyām* provides the affix *-vā* in the meaning of *-matup* (that in which or of which the object denoted by the base occurs) optionally after the word *keśa*. Kātyāyana (vt. 1) accounts for the words *maṇiva* and *hiraṇyava* by noting that the affix occurs after the words *maṇi* and *hiraṇya* as well (MBh. II.397.12–13). Patañjali (MBh. II.397.19–20) reports the opinion of another that the affix occurs after other words too (*apara āha: anyebhyo 'pi dṛśyata iti vaktavyam. bimbāvam, kurarāvam, iṣṭakāvam*). Debrunner (1954: 868) and Mayrhofer (1956: 51; 1986: 116) concur that *aṇavá-* is a nominal derivative from *árṇa-/árṇas-* + *vā*, but compare Pokorny (1959: 327), who raises the question of whether the word is a direct formation from the present class five stem of the root *ṛ* (3sa pre *ṛnoti*). Pokorny prefers the latter derivation by comparison with Avestan *arənu-*.

12. Vopadeva includes *ṛṇ* with final dental *n* in addition to *ṛṇ* with retroflex. Palsule 1955: s.v.; 1961: s.v.

linguists. Including the root in class eight accounts for exceptional facts of the language by regular rules already in the rule-set, without requiring any alteration of the rule-set.

Although the inclusion of *ṛn* in class eight of the *Dhātupāṭha* allows Indian linguists to account for the exceptional form *aṛṇavat* by regular rules, this inclusion undesirably permits the derivation of a slew of forms not found in extant texts or current Sanskrit usage. Moreover, the form could be accounted for by rules already present in the received text of the *Aṣṭādhyāyī*, even without including the root *ṛn* in class eight. Since forms without *guṇa* grossly outnumber those with, the facts are more appropriately described by listing the roots in class five and accounting for the single exceptional case by other means. One typical way that Pāṇinians could account for *guṇa* in *aṛṇavat* would be to classify the affix *śnu* as ārdhahātuka for the purpose of preventing it from being marked with *ñ*. This would prevent it coming under the purview of 1.1.5 *knīti ca* and hence allow *guṇa* to apply to the root vowel *ṛ* in accordance with the metarule 1.1.3 *iko guṇavṛddhi*. Exceptional classification of a sārvaśhātuka affix as an ardhahātuka affix is permitted in Vedic by Pā. 3.4.117 *chandasy ubhayathā*. The rule permits affixes marked with *ś*, which by virtue of being so marked are regularly termed sārvaśhātuka by Pā. 3.4.113, to be classified as ārdhahātuka in order to condition certain specific operations or to avoid conditioning other specific operations.

It is very difficult to determine the exact content of lists associated with Pāṇini's grammar. While *gaṇapāṭhas* are supplied by commentators, they do not accompany the rule-set directly. This is preeminently true of the *Dhātupāṭha*. I do not know of any provision of the rules that would require the four roots *ṛn*, etc., to be included in class eight rather than class five. Rather it seems that the inclusion of the root *ṛn* among class eight roots represents a linguistically infelicitous re-analysis that nevertheless adequately accounts for the appearance of new forms in the evolution of Sanskrit. Moreover it does so without modification of the rule-set comprising the *Aṣṭādhyāyī*. Commentators could therefore achieve such a re-analysis without the cost of justifying an alteration of the *sūtrapāṭha*.

The current paper considered the classification of class five and eight roots in the Pāṇinian *Dhātupāṭha*, the rules for the derivation of their present stems, and the corpus in which these forms are found. The inclusion of certain roots among class eight roots represents an etymologically infelicitous re-analysis that nevertheless adequately accounts for the appearance of new forms in the evolution of Sanskrit, without modification of the rule-set comprising the *Aṣṭādhyāyī*. In particular, the inclusion of *ṛn* as a class eight root instead of the inclusion of *ṛ* as a class five root accounts for *aṛṇavat* (3sa psb) in the Śaunakiya *Atharvaveda* 5.2.8d. It is not clear when in the history of the transmission of Vedic texts the form *aṛṇavat* appeared in the *Atharvaveda*, nor when in the history of Indian linguistics the root *ṛn* appeared classified as a class eight root. However, it seems plausible that the root list was revised subsequent to the appearance of the form in the *Atharvaveda*; some linguist included the root in class eight to account for the form. Thus the appearance of the form represents a revision of the root list ancillary to the rule-set and thereby constitutes a revision of the linguistic description of the Sanskrit language in order to account for known usages.

It is plausible that the revision of the linguistic system in the detail described occurred subsequent to the appearance of the particular verb form in the *Atharvaveda*. It is also generally accepted that Pāṇini's grammar, including the *Dhātupāṭha*, is subsequent to the *Atharvaveda*. However, the former in no way directly implies the latter. The occurrence or absence of unusual forms justified by particular elements in lists ancillary to the linguistic system indicates only the relative date of particular passages and particular items in the list. It does not entail the relative dating of the complete Vedic text and the linguistic system as a whole. Both the Vedic text and the linguistic system underwent adaptation. The occurrence

or absence of elements of a linguistic system that account for unusual forms may indicate only the relative date of particular passages and those particular elements rather than the relation between the complete Vedic text and the rule-set as a whole. While the detail concerning the root *ṣṇ* as an explanation of *arṇavat* contributes to the relative dating of Indian linguistic treatises and Vedic texts, as does the work of Whitney, Renou, Thieme, Cardona, Bronkhorst, and others, conclusive results depend upon testing the aptitude of comprehensive systems of linguistic description to clearly delineated textual corpora.

Comprehensive comparisons of the linguistic descriptions of the Indian grammatical tradition with selected sets of text could be carried out with the assistance of computational methods, if digital texts were integrated with inflection software. This would allow one to search the selected corpus for all occurrences of specific forms as well as for various lexical and inflectional categories of forms. The International Sanskrit Computational Linguistics Consortium, formed at the conclusion of the Second International Sanskrit Computational Linguistics Symposium held at Brown University, 15–17 May 2008, is working to develop this facility to facilitate such research.¹³

ABBREVIATIONS NOT INDICATED IN THE INTRODUCTIONS TO TABLES

2sa	second person singular active
2sm	second person singular middle
3dm	third person dual middle
3pa	third person plural active
3pm	third person plural middle
3sa	third person singular active
3sm	third person singular middle
ipf	imperfect
ipv	imperative
opt	present optative
pre	present indicative
psb	present subjunctive
Nigh.	Nighaṇṭu
ŚBrK	Śatapathabrāhmaṇa in the Kāṇva recension
ŚBrM	Śatapathabrāhmaṇa in the Mādhyandina recension
TaiĀ	Taittirīya-Āraṇyaka
YV	Śukla-Yajur-Veda, Vājasaneyi-Saṃhitā

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