

Encoding of Vedic characters used in non-Devanagari scripts

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The Vedic Unicode proposals had dealt with the Vedic characters used in Devanagari script only. The Grantha proposal had proposed the encoding of Samavedic characters and Vedic Anusvaras and other characters and Tirhuta had proposed the encoding of a Vedic Anusvara. Apart from this there were no efforts of encoding Vedic characters used in non-Devanagari scripts.

There is a need of encoding the characters which are seen in both manuscripts and prints. An encoding for these Vedic characters in the UCS will certainly be of promote the usage among native users, scholars and manuscriptologists.

This is a preliminary document which gives brief description of some signs used in non-Devanagari scripts. It also seeks feedback from scholars, native users and experts on encoding these signs. The number of characters used is much more since only very few manuscripts and books are available online.

It is to be noted not all scripts which are used to write Sanskrit are used to write Vedas. In general the scripts are used for Buddhist Sanskrit religious texts such as Tibetan, Siddham and Thai etc. are not used to write Vedas.

The following scripts are used to write Vedas

1. **Bengali/Assamese**
2. **Devanagari**
3. **Grantha**
4. **Gujarati**
5. **Kannada**
6. **Malayalam**
7. **Nandinagari**
8. **Newar**
9. **Odia**
10. **Sharada**
11. **Telugu**
12. **Tigalari**
13. **Tirhuta**

Many of the existing characters are used most commonly in other scripts, Devanagari sign Udatta (mainly for Svarita), Devanagari sign Anudatta and Vedic tone double Svarita.

There is great variation in the marking of svaras. They differ from scripts, Vedas, Shakhas, regions, manuscript traditions, division/group of Vaidikas, time to time, habits of the writers, and fonts available to printers etc.

It is also to be noted that the marking may differ from that used in manuscripts to the notation used in prints. E.g. vowel letter u is written above the letter to indicate udatta in early Grantha manuscripts while in modern prints it is unmarked. So, markings in both manuscripts and prints are to be consulted

and not all manuscripts are accented. Research should be done on notation in above scripts and since no. of characters to be encoded is more than the space available a new Vedic extensions block may be created.

Gujarati was a mercantile script. Sanskrit texts are written recently after 1950's. Today majority of Vedic texts in Gujarat are generally in Devanagari script, with explanation in Gujarati language and script. Few Vedic texts may be printed in recent times.

The notation used in Tigalari, Nandinagari and Newar are quite unknown and different from other systems. As of now we do not have a detailed and comprehensive proposal for Tigalari and Nandinagari scripts. Research on these two scripts is ongoing and will be proposed in future by the author.

The present author will propose these Vedic characters based on the additional information as it is discovered. The following representations are recommended.

For Rig/ Yajur veda

1. If existing characters are used do not encode.
2. If currently encoded characters denote different svāra or a function suitable annotations are to be added in the code chart.
3. If new character is used it has to be encoded in mainly in Vedic extensions block. While explaining the system there are cases where they are used in Devanagari and other scripts.
4. If distinct symbols exist for Vedic anusvara they should be encoded.

Samaveda

The Samavedic svāra markers are currently encoded in Devanagari and Grantha scripts. Samaveda is written in other scripts too. The marking differs in Kauthuma, Ranayaniya and Jaiminiya Shakhas. Samavedic characters have to be encoded in each script wherever they are used. If there is no continuous space they may be encoded in new block.

Some of the characters to be encoded

1. Newar manuscripts.

The attestations used are mainly taken from article “On some unknown systems of marking the Vedic accents” but given in Devanagari script.

1. A *middle dot* after the letter. As this is a combining mark (svāra) this cannot be unified with middle dot etc this should be encoded separately in a new Vedic extensions block.

शा॥ ये । त्रि० सप्तः । परि० यंति० । विश्व० । रूपाणि० । बिभ्र० तः ।
śa⁸⁶ | yé | tri⁸⁶-sapṭāḥ | pari-yānti | vīśva | rūpāṇi | bibhrataḥ |
वाचः । पति० । बला० । तेषां० । तन्वः । अद्य दुधुतु । मे । १ ।
vacāḥ | pātīḥ | bālā | tēṣāṃ | tanvāḥ | adya dadhatu | me | 1 |

2. Ring below.

2.3.4 The system of accentuation here is : कृ कं कृ i.e., it marks the *anudatta* by horizontal stroke below the line, the *udatta* by perpendicular stroke above it, and the dependent *svarita* by a small circle below the line.⁵⁷ The beginning of the ms. runs :

यज्ञश्च मे । यज्ञश्च मे प्रसवश्च मे ... ज्योतिश्च मे स्वश्च मे
 vājś ca me | vājś ca me prasavāś ca me ... jyōtiś ca me svāś ca me
 यज्ञेन कल्पताम् ॥१॥
 yajñēna kalpatām || 1 ||

3. A sign which looks like Dev. Digit 4- ४

2.3.5 The independent *svarita* is marked by a sign which almost looks like a Devanāgarī ४ sometimes slightly inclined towards the right : ४. It is put below the *svarita* syllable, but this is indicated also by an oblique stroke, running from upper left to lower right, put on top of the preceding *akṣara* ; it almost looks as the dev. symbol for medial -e- : ॣ and is the same mark as that for *udatta* before *anudatta* (2.3.6) the only examples appearing in the ms. are :

jyōtiś ca me svāś ca XVII 1	... ॣ मे स्वश्च
sugān ca me supathyān° XVIII 1	... सु पे ध्यु न्
camāśāś ca me vāyavyāni XVIII 21	... वा ये व्यानि

4. A bent udatta towards left.

2.4.2 The system of accentuation is basically that of the ms. described above (2.3.4 sqq.), and also includes the peculiarity of marking the *udatta* before *anudatta* by the 'bent *udatta*' symbol (2.3.6). Thus :

से म नि ॣ । से म नि र नि न्ना ग तः.....
 sām agniḥ | sām. agnir agninagata.....(VS XXXVII 15)

5. Candrabindu below

शा ॥ ये । त्रि० सप्तः । परि० यन्ति० । विश्वा० । रूपाणि० । बिभ्र० तः ।
 śa³⁶ | yé | tri³⁶-saptāḥ | pari-yānti | vīśva | rūpāṇi | bibhrataḥ |
 वाचः । पति० । बला० । तेषां० । तन्वः । अद्य दुधुतु । मे ॥ १॥
 vacāḥ | pātīḥ | bālā | tēṣāṃ | tanvāḥ | adyā dadhatu | me ||

dependent svarita : क क क०

independent svarita : कु

indep. svar. + unaccented syll. : कु क


short indep. svar. + acc. syll. : क कु क क ?

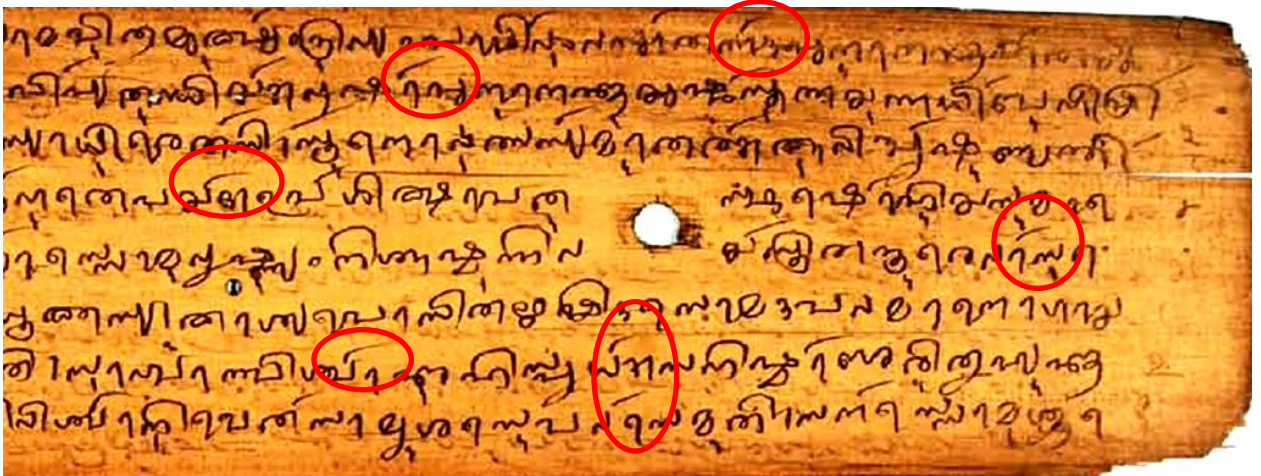
long indep. svar. + acc. syll. : क कु क क०

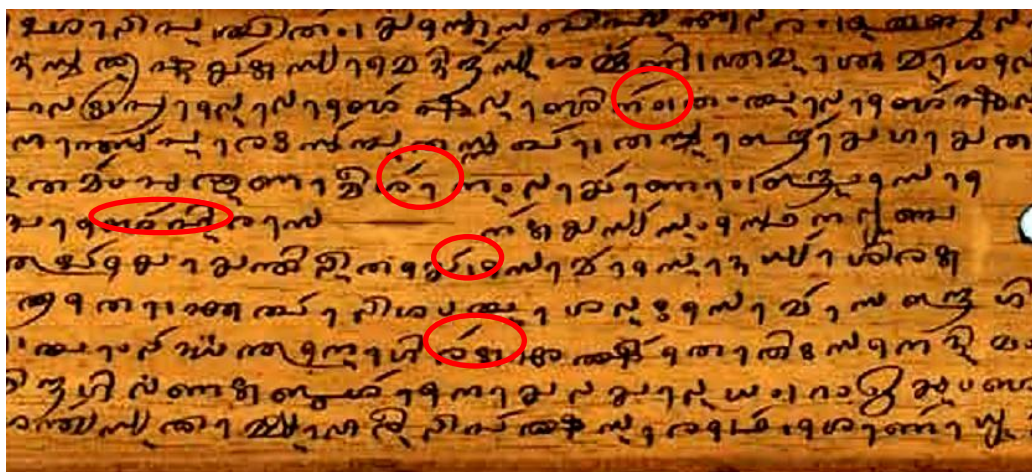
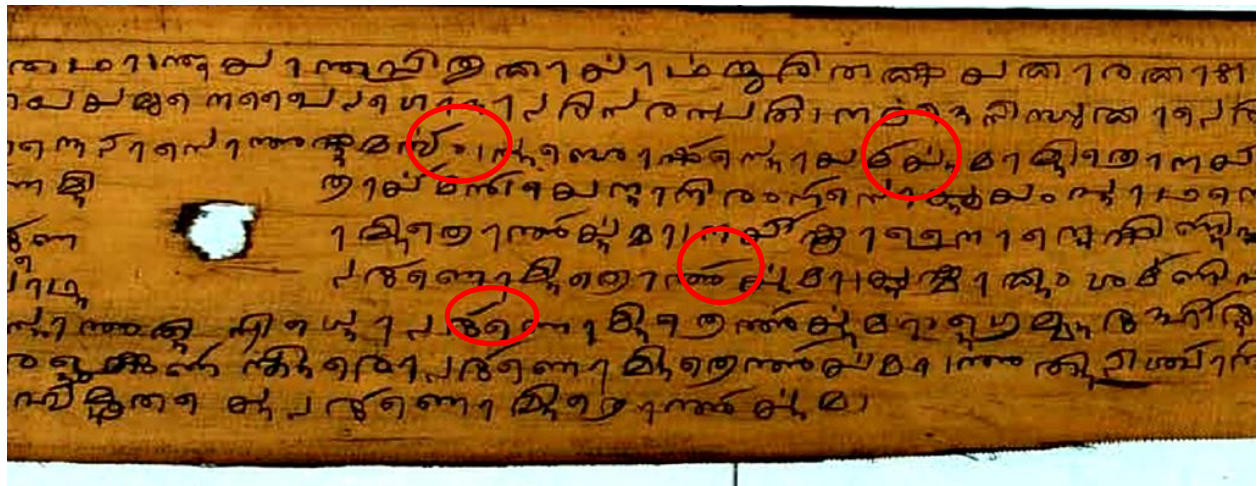
2. Tigalari

In general the svaras used in Devanagari and Kannada ँ - DEVANAGARI STRESS SIGN UDATTA, ॒ - DEVANAGARI STRESS SIGN ANUDATTA are not used in Tigalari. Separate signs are used which are found only in Tigalari script. These signs are also used in Samaveda, but they denote different functions. These are manuscripts of Rigveda and Yajurveda mainly from the texts *ṛksamhitā*, *vēdasūktāḥ*, *taittirīya āraṇyaka*, *ṛgvēda padapāṭha*, *ṛgvēda aṣṭaka*, *āśvālāyana śrauta sūtra*.

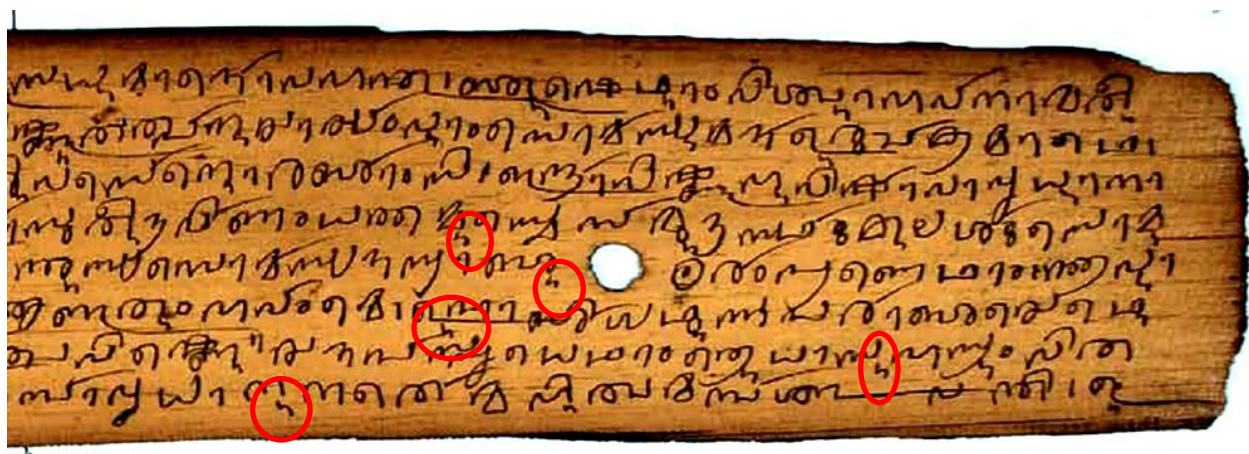
2.1. Rig/ Yajur veda

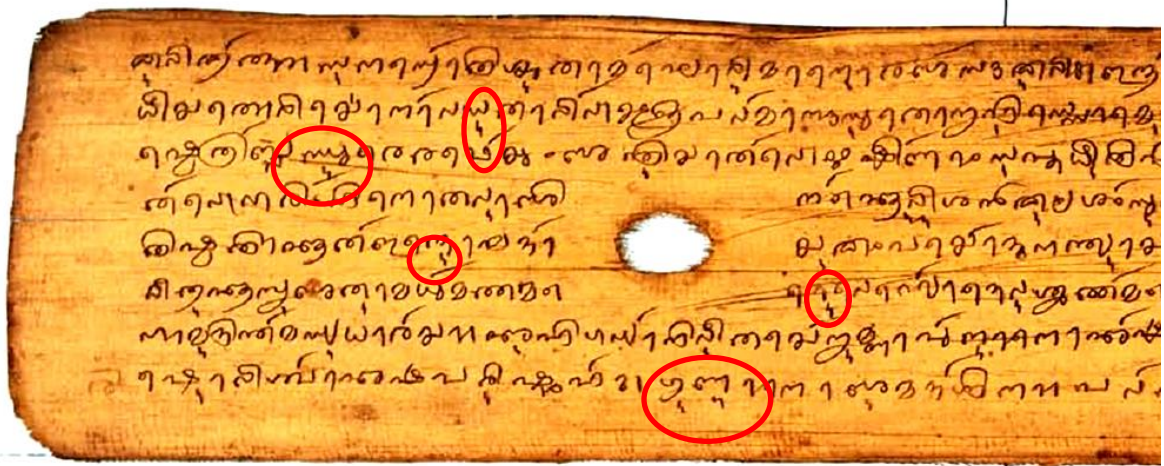
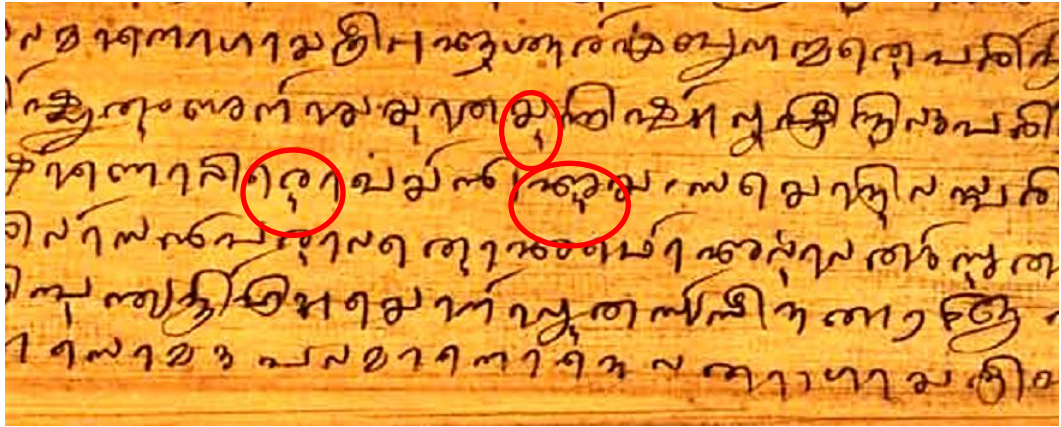
1.  This sign generally used to mark the Svarita.




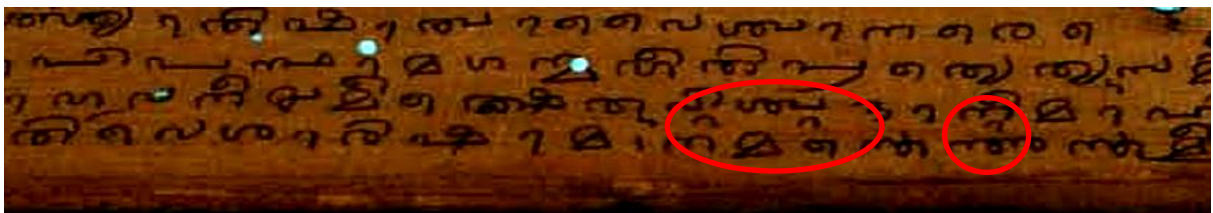


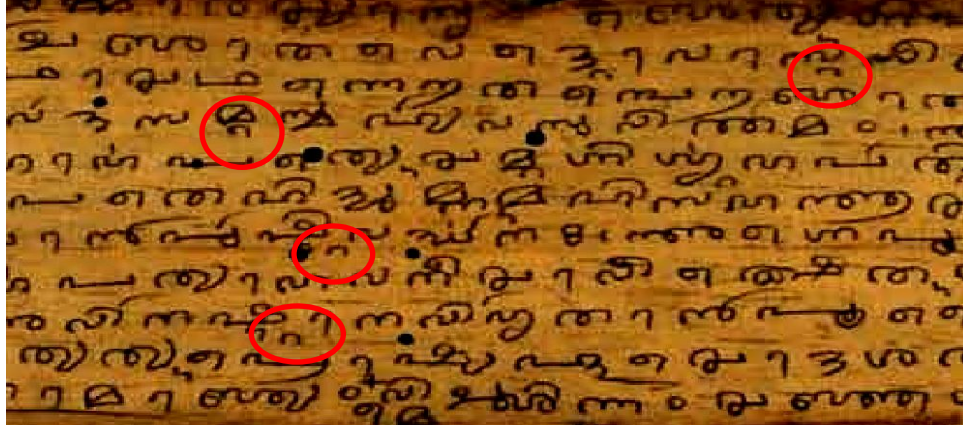
2. This sign generally used to mark the Anudatta.





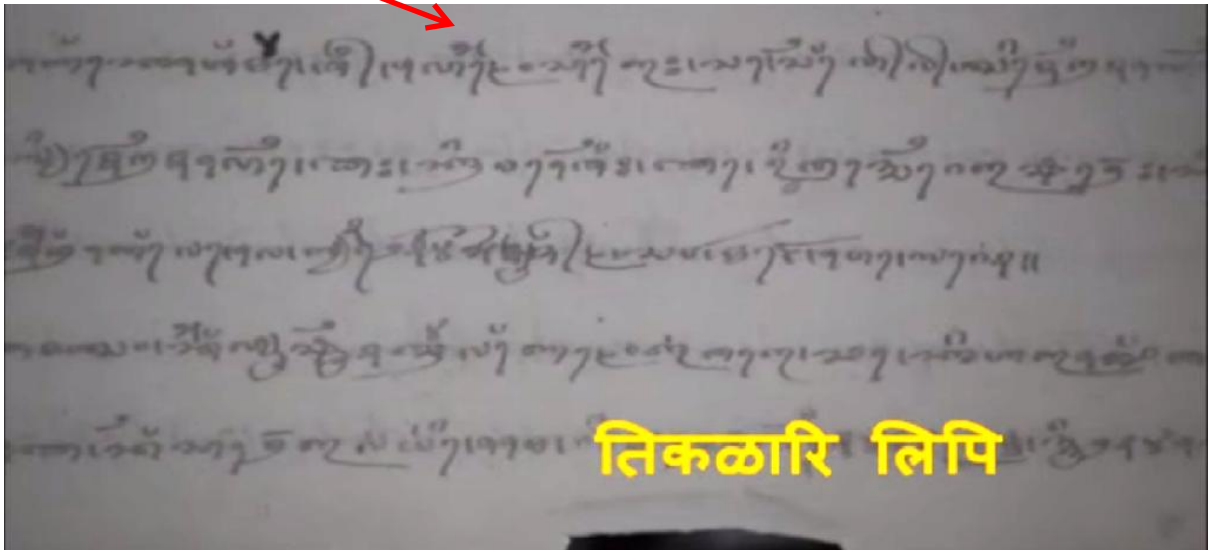
3.  This sign occurs in very few manuscripts. It is currently unknown which character it denotes.





2.2 Samaveda

Various signs are used in Ranayaniya shakha of Samaveda when written in Tigalari and Kannada scripts. A further research is needed on this topic. The details of notation are found in *Samavediya Varga-Paribhasha* of Ranayaniya shakha which is originally in Tigalari script and Devanagari versions are also published. A modern text of Ranayaniya samaveda is given below.

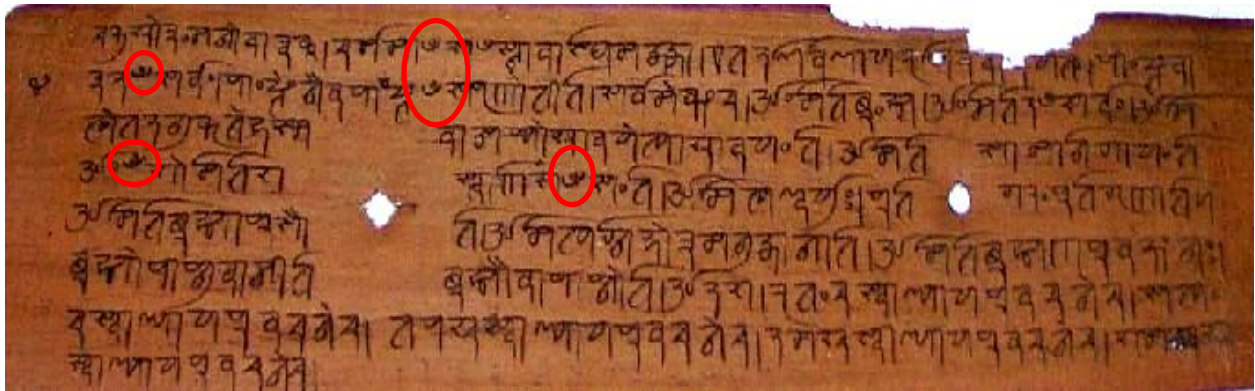


3. Nandinagari

The following text shows the usage of signs in Nandinagari. It needs additional research and original attestations from manuscripts to represent more accurately. It is taken from “On some unknown systems of marking the Vedic accents” in page no 477.

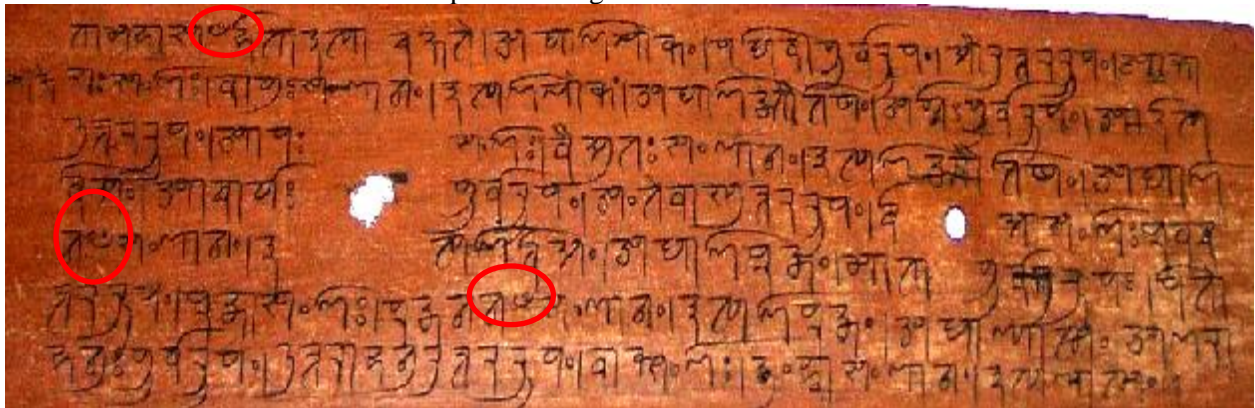
1.3.3 Peculiar to a RV ms. written in Nandinagari script²⁵ is the following system : *kakákaka* = क ा क - क ँ क - which according to Wackernagel means the same as the usual RV one (1.1). As I see it, this system would rather presupposes the rise of the *anudatta* from low level (below the level of unaccented, i.e. *pracaya* syllables which are on the same level as *udatta* here) and not a static nature of the *anudatta* as in the system of 1.1 ; both types, however, seem to agree in assigning the highest pitch to the *svarita*, which then falls to normal (i.e. *udatta* and *pracaya*) level.

1. Vedic Anusvaras



A folio from the manuscript 'Taṭṭiriyopanishad' containing a Vedic anusvara.

Another folio from the same manuscript containing the character.

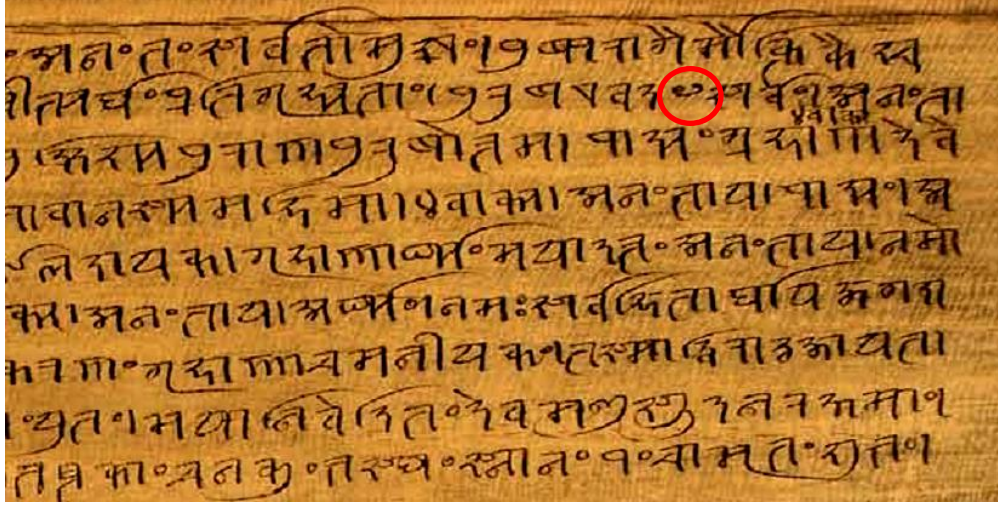


Transliteration of the first line in Devanagari.

ता महासहिता इत्याचक्षते । अथाधिलोकम् । पृथिवी पूर्वरूपम् । द्यौरुत्तररूपम् ।

A distinct Vedic anusvara is attested, this cannot be unified with that of Devanagari, note rings are used in Nandinagari and this has to be encoded in Nandinagari block.

Another type of Vedic anusvara is also used.



4. Grantha

Vedic and samavedic (Kauthuma) characters used in prints have been extensively researched and encoded. But plethora of characters used in manuscripts remain unencoded.

There is a great variation in marking in manuscripts from prints. There are different marks used in order to show sarvaanudaatta, different marks for anunaasika, different marks to show samastapada etc.

On the other hand different marks are used for samavedic mss. for the same accents, different for the Rigveda manuscripts. It again differs from time to time.

Details are given in "Observations on Vedic accents in Grantha palm-leaf manuscripts"

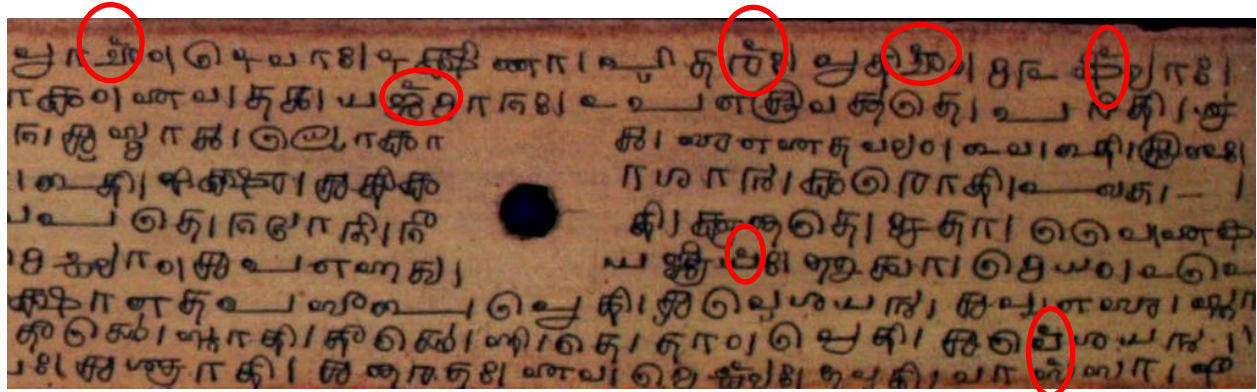
Presented by Saraju Rath in the 4th International Vedic Workshop in Austin University, Texas in 2007.

1. **Combining letter U** - is used to mark udatta in early Vedic manuscripts of Grantha. These are manuscripts from Taittiriya Samhita.

§ 1. RIG AND YAJUR VEDAS.

In the oldest mss. only the udāṭṭa is marked. In the Telugu mss. this is generally done by a circle ॐ; in the Grantha mss. the letter u or a circle is written above the syllable, thus: ॐ, ॐ. In this respect mss. of the Samhitā and Padapāṭha agree¹⁾. In the last the words are separated by a perpendicular stroke: | The avagraha is seldom marked, but when it is done a zigzag line is used: }

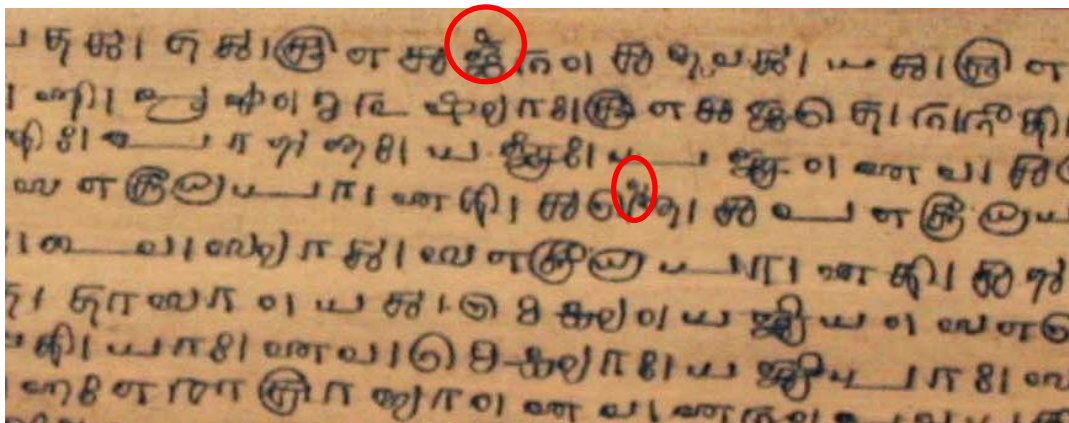
Description of sign from A.C Burnell in Chapter IV, pg no 81 in his book 'Elements of south-Indian paleography'



Usage of character from *Taittiriya Samhita*

Transliteration given for the first line –





புரா^{வீ}ம் டெவா: உக்ஷணா விதர: ப்ரதீ^{வீ}ம் உநு^{ஷ்}யா: . The character is used on the highlighted letters.



Usage of sign as in word in first line in above folio – சு^{ஷ்}நம் from the same manuscript.

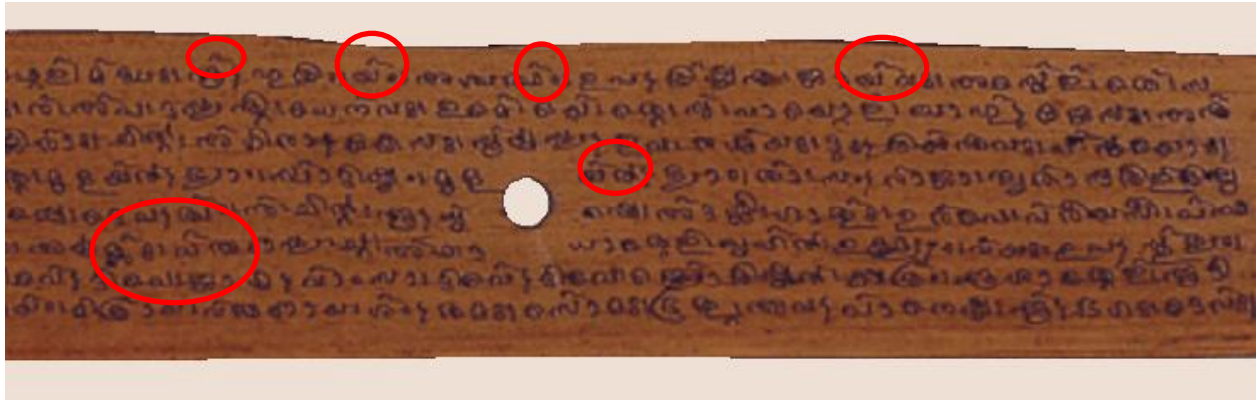
VARIETIES OF GRANTHA SCRIPT

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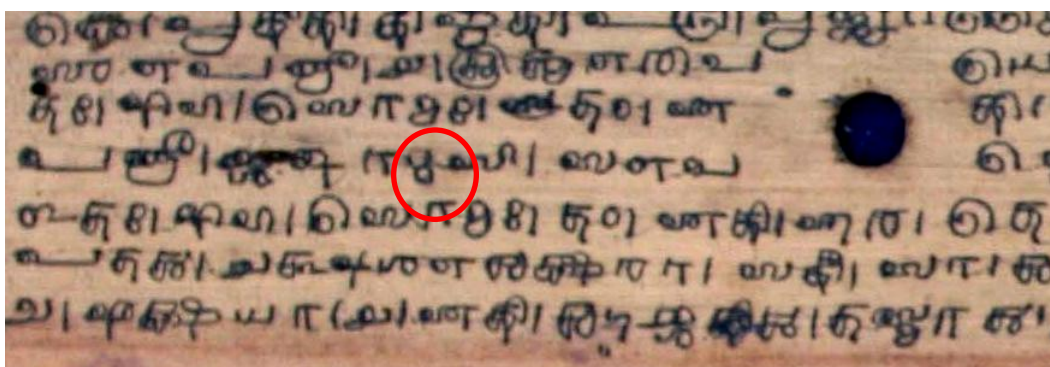
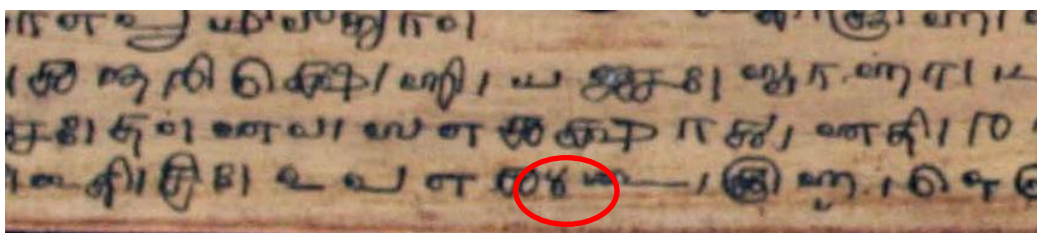
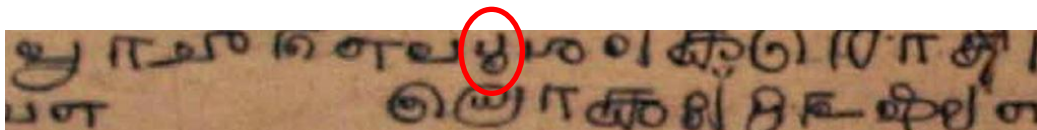
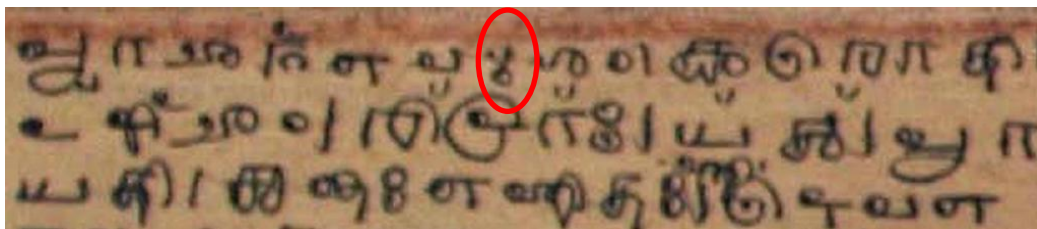
- vii. *repha* (small vertical stroke representing *r* in conjuncts) on the top (for all)  / (*rka*), sometimes the consonants are doubled  placed side by side, sometimes one above other, for instance, ;
- viii. accent marks,²⁴ for instance, *udātta*:  உ^{தீ}தீ, லை^{தீ}கீ;
- ix. alphabetic and syllabic numerals are simultaneously found on the left side margin of mss.

Usage and description of the sign from Saraju Rath in 16th to 18th century Grantha manuscripts.

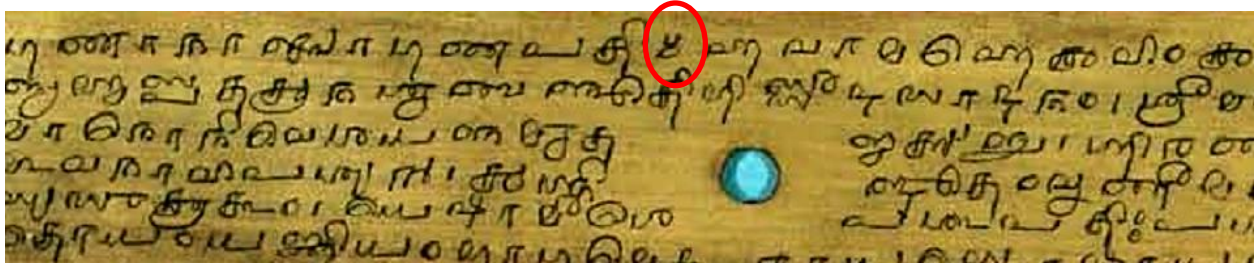
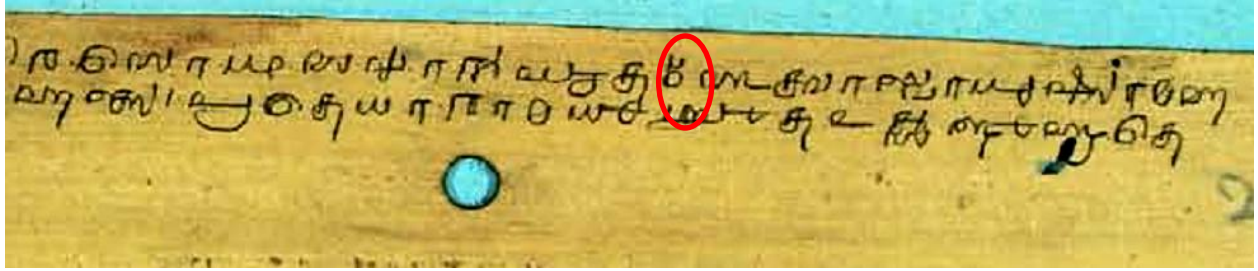
Note that this sign also appears to be used in its one descendent Malayalam script. It may be due to the proximity of Kerala with Tamil region. The following is a manuscript of Rigveda Padapatha.



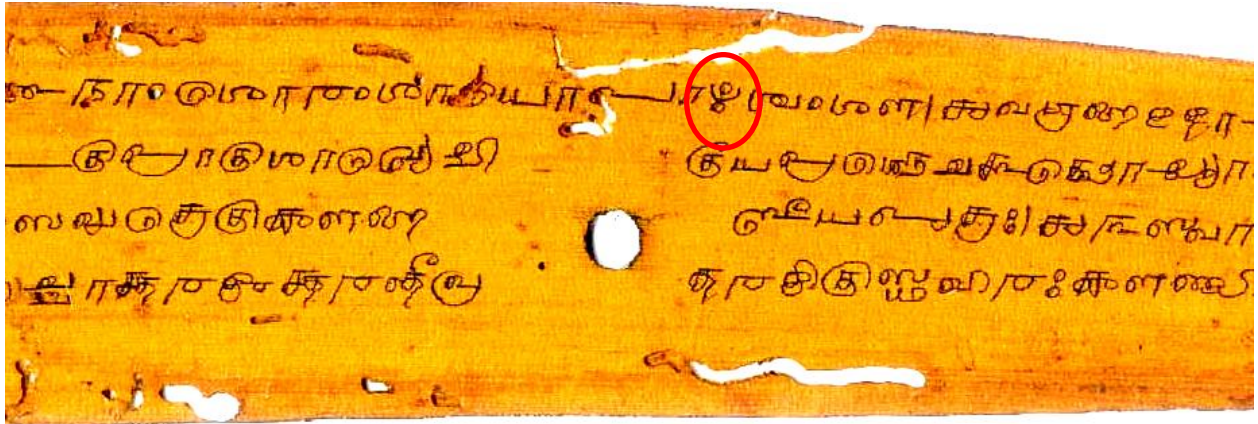
2. **Vedic Anusvara:** A distinct symbol for Vedic anusvara seems to be used in manuscripts. There are symbols for marking various types of anusvara, sarvanudatta, samastapada etc.



Usage of Vedic anusvara in the word in above folio -ಅನುಸಾರವಿಠ



Usage of Vedic anusvara in above Vedic manuscript –Ayushyasuktam



Note that sometimes it may contain a ring inside. A folio from manuscript –*Taittiriya Pratishakyam*. Additional information is required on the distinction between the two.

Transliteration – ಅನುಸಾರವಿಠ

5. Kannada

Various signs similar to Devanagari are used in Kannada script. In Rig and Yajur Veda the marking of svaras is same as that of Devanagari. In Samaveda combining letters and digits are used similar to Devanagari and Grantha. Around 10-15 signs are used. Since Kannada digits are also used in Tigalari and Nandinagari, these combining digits are used in these scripts too. The texts of Ranayaniya should also be consulted which is mainly used in Honnavar, U.K. Dist, Karnataka. Books are now being printed in

Kannada script which were originally in Tigalari script. The below two tables shows a list of signs used taken from Bhasha IME.

Svara	Key combo	eg. Text
೧	1	ವಿ ^{ಗಿ} ದೇತಮೂ ^{ಗಿ} ಽಸ್ತಹಾ ^{ಗಿ} ಇ
೨	2	ಪ್ರ ^{ತಿ} ಜಾಽಪಿ ^{ಗಿ} ಪರ್ತಿ ^{ತಿ} ಬಹು ^{ಗಿ} ಧಾವಿ ^{ರಿ} ರಾಜ ^{ತಿ} ತಿ
೩	3	ಸ ^{ತಿ} ಮುದ್ರಾ ^{ಗಿ} ಯೇವ ^{ತಿ}
೪	4	ಕಾ ^ಳ ಽಞಿ ^{ಗಿ} ನೋ ^{ತಿ} ಽಽಹಾ ^{ಜಿ} ಇ
೫	5	ಕಾ ^ಳ ಽಞಿ ^{ಗಿ} ನೋ ^{ತಿ} ಽಽಹಾ ^{ಜಿ} ಇ
೬	6	
೭	7	
೮	8	
೯	9	
೦	0	ಅ ^{ರಿ} ತೋಮರಾ ^{ಗಿ} ಇಮ್
ಅ	1 (Shift 1)	ಜ ^ಅ ನಶಾ ^{ಗಿ} ಽಽಇ

೨	@ (Shift 2)	
೩	# (Shift 3)	
೪	\$ (Shift 4)	ನ ^೨ ಓ ^೩ ಹಾ
೫	% (Shift 5)	
೬	^ (Shift 6)	ನ ^೨ ಓ ^೩ ಹಾ
೭	~ (Shift 6 + Shift 6)	ಗಿ ^೦ ಯೋಮಂಹಿ ^೦ ಷ್ಠೋಮಘೋ ^೭ ೨
೮	& (Shift 7)	ಇರ ^೩ ಅ ^೩ ಗ ^೩ ಒ ^೩ ಹಾಒ ^೩ ಹಾ
೯	* (Shift 8)	*ಗ ^೩ ಉ ^೩ , ಪ್ರ ^೩ ದೇ ^೩ ವ್ಯೇ ^೩ ತು
೧೦	((Shift 9)	ವಿ ^೩ ಇತ್ತೀ ^೩ ೨೧ ಸ್ರಾ ^೩ ಒ ^೩ ೨೧
೧೧) (Shift 0)	
—	_ (Shift -)	ಇಯಾ ^೩ ೨೧
	(Shift \)	ಓ ^೩ ಹಾ

6. Bengali

Samavedic symbols are employed in Bengali alphabet. They are analogous to Devanagari in structure and notations. These are the texts of Samaveda Samhita. Combining digits and letters have to be encoded in Bengali alphabet. Combining letter of Assamese Ra may be also be encoded.

ঐ সামবেদ-সংহিতা।

—•••••—

উত্তরার্চিকে—পঞ্চদশোহধ্যায়ঃ।

যন্ত নিঃশ্বদিতং বেদা যো দেদেভ্যোহধিলং অগং।

নির্ম্মমে তমহং বন্দে বিত্তাভীর্ষ-মহেশ্বরং। ১৪।

* * *

প্রথমঃ খণ্ডঃ।

প্রথমং সাম।

(প্রথমঃ খণ্ডঃ। প্রথমং হুক্তং। প্রথমং সাম।)

১ ২ ৩ ১২ ২২ ৩ ২ ৩ ২ ৩ক২২
কশ্চ জামির্জানানামগ্নে কো দাশ্বধরঃ।

২ ৩ ১ ২ ০ ২
কো হ কশ্মিন্‌সি শ্রিতঃ ॥ ১ ॥

* * *

মর্মানুসারিণী-ব্যাখ্যা।

‘অগ্নে’ (হে জ্ঞানদেব !) ‘জানানং’ (যজ্ঞতাপং মধো) ‘তে’ (তব) ‘জামিঃ’ (শত্রুঃ প্রতিষদৌ বা) ‘কঃ’ (কো বিত্ততে) ; জ্ঞানত্ব প্রতিযোগী কোহপি নান্তি ইতি ভাবঃ ; তথা ‘দাশ্বধরঃ’ (লংকর্ষপ্রাপকঃ—তবংগদৃশঃ) ‘কঃ’ (কো বিত্ততে) ; জানানং শ্রেষ্ঠঃ লংকর্ষ-প্রাপকঃ কোহপি নান্তি ইতি ভাবঃ ; তথা ‘হ’ (হস্তা বহুগমজিসম্পন্নঃ বা) ‘কঃ’ (কো বিত্ততে) ; জ্ঞানত্ব হস্তা লমণজিসম্পন্নঃ বা কোহপি নান্তি ইতি ভাবঃ ; অতঃ ‘কশ্মিন্’ (স্থানে কশ্মিণ বা) ‘শ্রিতঃ’ (আশ্রিতঃ, অস্থিতঃ) ‘অনি’ (তবঃস), তৎ অনুলভ্যং ইতি শেবঃ। জ্ঞানত্ব প্রতিপন্নং অনুলভ্যং জানানুসরণায় লক্ষ্যং অল্পরাগোপজননং কৰ্ত্তব্যং— ইতি ভাবঃ। (১৫ অ—১৭—১৮—১৭)।

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২র ২র ২র ২র ২৩. ২র ২র ২র
 হোইয়াহোইয়াহোইয়া ৩৪৩পিব। মৎস্বাহাউ। ওজো
 ২র ২র ২র ২র ২র ২র
 হাউ। সহোহাউ। বলৎহাউ। ইন্দ্রোহাউ। বরোহাউ।
 ২র ২র ২র ২র ২র ২র
 বহুহাউ। ঋতৎহাউ। স্বহাউ। জ্যোতির্হাউ। দাওধে।
 ২র ২র ২র ২র ২র ২র
 হাউহাউহাউ। ওহোই। ৩। সোমাম্। ইন্দ্রম্। দতুহা।
 ১ ২র ১ ২র ২র ২র ২র ২র
 দতুহা। দতুহা। হাউহাউহাউ। ওহোই। ৩। পিবাসো
 ১ ২ ১ ২র ২র ২র ২র ২র
 মাম্। ইন্দ্রমা। দতুহা। ৩। হাউ হাউহাউ। ওহোই
 ২ ২র ২র ২র ২র ২র
 ই। ৩। পিবাসোমাম্। ই। মৎস্বাহাউ। স্তোভাঃ পূর্ববৎ।
 ২ ২ ২র ২র ২র ২র ২র ২র
 দাওধে। হাউহাউহাউ। ওহোই। ৩। যন্তেহা। বাহ
 ২ ২র ২র ২র ২র ২র ২র
 রিয়ান। ঋদ্রী২ঃ। ঋদ্রী২ঃ। ঋদ্রীঃ। বারত। মৎস্বাহাউ।
 ২র ২র ২র ২র ২র ২র
 স্তোভাঃ পূর্ববৎ। হাউহাউহাউ। ওহোই। মোহুর্বাছভ্যাৎ
 ১ ২ ১র ২র ২র ২র ২র ২র
 স্তয়তো। নার্বী২। নার্বী২। নার্বী। বারত। সধমে। ২।

৩০শ সামের ভাঃ অঃ ছঃ আঃ ২, ২, ৩, ৫ দেখ।

(৩০) : "পঞ্চনিধনং বামদৈবাম্"—ইতি আঃ স্তোত্রঃ ৩, ২, ১০।

7. Telugu

In Rig and Yajur Veda the marking of svaras is same as that of Devanagari. In Samaveda combining letters and digits are used similar to Devanagari. The following is a modern printed text of Samaveda bhashyam.

ప్రపాతకము 1 (అర్థము 1), దశతి 1 ఆగ్నేయం పర్వం

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సామవేద భాష్యారంభః క్రియతే
పూర్వార్చికః, అథ ఆగ్నేయం కాణ్డమ్
అథ ప్రథమోఽధ్యాయః
ప్రథమః ప్రపాతకస్య ప్రథమోఽర్థః
ప్రథమాదశతిః
(మొదటి అధ్యాయము)

౧. ఋషిః - భరద్వాజః, దేవతా - అగ్నిః, ఛందః - గాయత్రీ, స్వరః - షడ్జః.

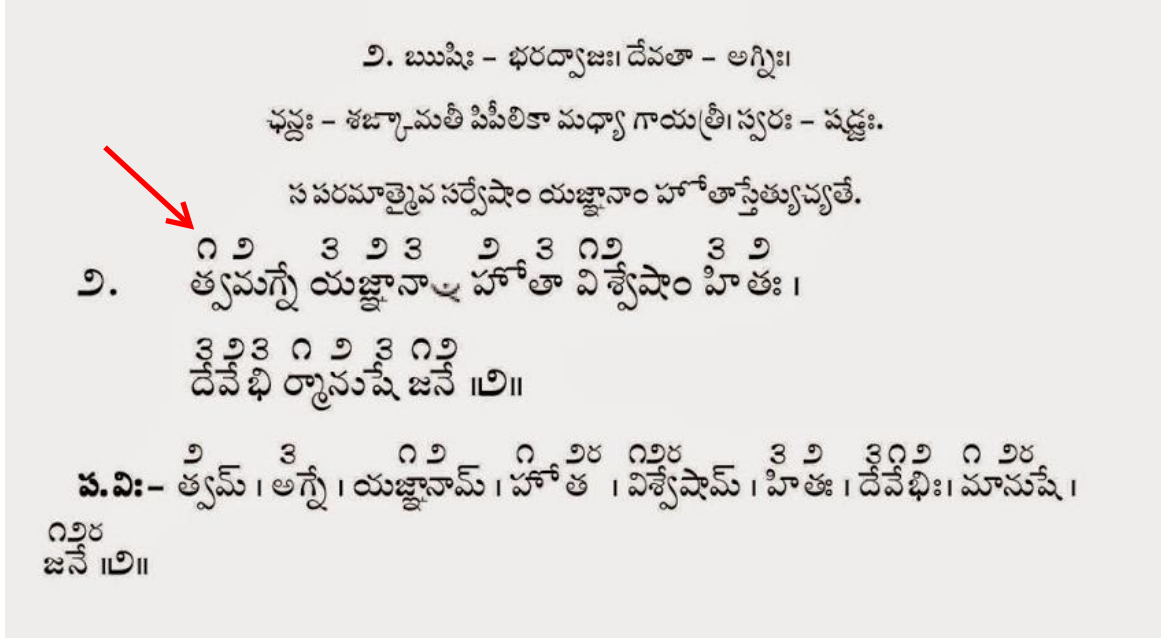
తత్రాద్యే మన్తేఽగ్నినామన్న పరమాత్మవిద్యస్యపాదీనాహ్వయన్నాహ.

౧. ^{౨౩} అగ్న ^౧ ఆ ^౨ యాహి ^{౩౧౨} వీతయే ^౩ గృణా ^౨ నో ^౩ హవ్య ^౧ దాతయే ।

^{౧౪} ని ^{౨౪} హోతా ^{౩౧౨} సత్ని ^౩ బర్హిషి ॥౧॥

ప.వి :- ^{౧౨౪} అగ్నే । ^౩ ఆ । ^{౧౨౨} యాహి । ^౩ వీతయే । ^౩ గృణా ^౨ నః । ^౩ హవ్యదాతయే - ^౩ హవ్య-
^౩ దాతయే । ^౨ ని । ^{౧౨౪} హోతా । ^౩ సత్ని । ^{౧౨౨} బర్హిషి ॥౧॥

పదార్థః-తత్ర **ప్రథమః** పరమాత్మపరః. 'హే **అగ్నే** సర్వాగ్రణీః, సర్వజ్ఞ, సర్వవ్యాపక, సర్వసుఖప్రాపక, సర్వప్రకాశమయ, సర్వప్రకాశక పరమాత్మన్! **గృణానః** కర్తవ్యాని ఉపదిశన్ త్వమ్. గృణా శబ్దే, శానన్, వ్యత్యయేనాత్మనేపదమ్. **వీతయే** అస్మాకం ప్రగతయే, అస్మాకం విచారేషు కర్మసు చ వ్యాప్తయే, హృదయేషు సద్గుణానాం ప్రజననాయ, అస్మాసు స్నేహితుమ్, కామక్రోధాదీనాం చ బహిః ప్రక్షేపణాయ. వీ గతి - వ్యాప్తి - ప్రజన - కాన్తి - అసనభాదనేషు ఇత్యస్మాత్ 'మన్తే వృషేషపచమనవిదభూవీరా ఉదాత్తః అ... ౩ । ౩ । ౯౬' అనేన క్షిన్ ప్రత్యయః, ఉదాత్తత్వం చ. **హవ్యదాతయే** హోతుం దాతుం యోగ్యం ద్రవ్యం హవ్యం సద్బుద్ధి - సత్కర్మసద్ధర్మ -



Similarly Samavedic symbols should be encoded for other scripts too such as Oriya, Malayalam, Nandinagari, Tigalari etc. Note that system of notation is generic and can be used in any Brahmic script though there are few variations in marking. Apart from these several signs for Atharvaveda and Samaveda manuscripts of Sharada script may also be researched.

Major manuscript libraries, book publishers and Vedic scholars all over India and overseas are to be consulted on encoding these lesser known Vedic accents.
National Mission for Manuscripts, Oriental research institutes and Indira Gandhi National Centre for the Arts (IGNCA) can be contacted for further research.

Sources of manuscripts and attestations

The major sources of manuscripts are from the various digital libraries of India. Tigalari manuscripts are from Digital Manuscript Database of French Institute of Pondicherry (IFP).¹ Grantha and Nandinagari manuscripts are from *Pandulipi Samshodhaka*, manuscript processing software in which manuscripts are collected from different manuscript libraries. While the attestations of Newar and Nandinagari were from the article-“On some unknown systems of marking the Vedic accents”.² The Bengali texts are from Digital library of India (DLI).

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¹ www.ifpindia.org/manuscripts/

² www.people.fas.harvard.edu/~witzel/w97vij.pdf

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