Algorithms in Ancient India

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Various recitation styles to allow complete and perfect memorization

- Prakṛti pāṭha
- Vikṛti pāṭha

Preservation of Vedas: Oral Tradition

Prakṛti pāṭha

- Saṁhitā: Continuous recitation
- Pada: Pause after every word
- Krama: consecutive words are paired and recited
  1 2; 2 3; 3 4; 4 5; ..

Which one is given / Basic ? – Saṁhitāpāṭha or Padapāṭha ?

Padapāṭha involves undoing Sandhi operation, while Saṁhitā involves doing a sandhi operation.

Sandhi: V * V $\rightarrow$ V
where V: one or two varṇas
This relation is Many-Many

Hence both Saṁhitā as well as Pada pāṭha should be considered to be the starting points. Only one of them is not sufficient to preserve them.

Vikṛtis

जटा माला शिखा रेखा ध्वजो दण्डो रथो घनः |
अष्टौ विकृतयः प्रोक्ताः क्रमपूर्वा महर्षिभिः ||1 ||
(aṣṭvikṛtilakṣāṇāni)

Lakṣaṇa for Jaṭā

Jatā (matted hair)

क्रमं यथोक्तं प्रब्रूयाद् व्युत्क्रमेण क्रमेण च |
सलक्षणं सर्वसंधौ जटा सा प्रोच्यते बुधैः||2 ||
(aṣṭvikṛtilakṣāṇāni) If there are 5 words 1 2 3 4 5 then the jaṭā

pāṭha will be
1 2 2 1 1 2;
2 3 3 2 2 3;
3 4 4 3 3 4;
4 5 5 4 4 5;
5 iti 5

Lakṣaṇa for mālā

There are two types of mālā: puṣpamālā and kramamālā

puṣpamālā

माला मालेव पुष्पाणां पदानां ग्रन्थिनी हि सा|
आवर्तन्ते त्रयस्तस्यां क्रमव्युत्क्रमसंक्रमाः ||

If there are 5 words 1 2 3 4 5 then the puṣpamālā will be
1 2; 2 1; 1 2;
2 3; 3 2; 2 3;
3 4; 4 3; 3 4;
4 5; 5 4; 4 5;
5 iti 5

Note that this is exactly same as the jaṭā, except that now there is a pause after every pair of words, and thus there is no sandhi taking place between the consecutive pair of words.

Lakṣaṇa for mālā

Kramamālā
ब्रूयातक्रमविपर्यासावर्धर्चस्यादितोऽन्ततः|
अन्तं चादिं नयेदेवं क्रममालेति गीयते||

If there are 7 words 1 2 3 4 5 6 7 then the kramamālā will be
1 2; 7 iti 7
2 3; 7 6
3 4; 6 5
4 5; 5 4
5 6; 4 3
6 7; 3 2
7 iti 7; 2 1