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I picked up Professor Madhav Deshpande's book in November 2020. These are my notes from his book. While studying from his book, I also explored a variety of resources available on the WWW. These notes rely heavily on those wonderful resources.

## 1 Introduction

The book begins with an overview of Sanskrit that we shall cover below. It touches upon the language's history and evolution, writing system, sounds, grammar, and syntax.

### 1.1 Grammar

Sanskrit ( संस्कृतम् ), like Greek and Latin, is an *inflected* language. This means it shows *alteration in form especially by adding affixes*. The bulk of grammatical information is carried by morphology (i.e. the rules for forming admissible words).

A *morpheme* which is the minimal meaningful language unit, is of one of these types:

1. nominal stem (adjectives, pronouns, and indeclinables( अव्ययम् ))
  - primary
  - secondary
    - derived from other nominals via affixation (e.g. कुरु + अ = कौरव, नर + त्व = नरत्व)
    - derived from verbal roots via affixation (e.g. गम् + अन = गमन, कृ + तृ = कर्तृ)
    - compounds (e.g. नर + पति = नरपति, चक्र + पाणि = चक्रपाणि)
2. verbal root ( धातुः )
  - primary
  - secondary
3. indeclinables ( अव्ययम् )
  - particles (e.g. उपरि)
  - pre-positions (e.g. अधि, परि, अनु)
  - post-positions

- adverbs (e.g. सततम्)
- connectives (e.g. च, वा)
- (occasionally) nouns

The nominal stem is characterized by gender as an *intrinsic property* and it is grammatical, usually unrelated to semantics (though the living beings are usually masculine or feminine). There are three genders:

- masculine,
- feminine, and
- neuter

Between masculine and feminine, the former is *generic*, meaning it takes precedence. For pronouns, neuter is the most generic.

Declension of nouns (as we shall later see, declension serves the same purpose that prepositions serve in English) is affected by several factors such as their

- gender (masculine, feminine, neuter),
- final sound or sounds of the stem (e.g. अकारान्त, न्-कारान्त),
- number (singular, dual, and plural), and
- case (प्रथमा : nominative – I, द्वितीया : accusative – II, तृतीया : instrumental – III, चतुर्थी : dative – IV, पञ्चमी : ablative – V, षष्ठी : genitive – VI, सप्तमी : locative – VII, सम्बोधनम् : vocative – VIII). The following list may help describe the usual purpose of cases:

1. nominative – serving as or indicating the *subject* of the verb (कर्ता)
2. accusative – serving as or indicating the (*direct*) *object* of the verb (कर्म)
3. instrumental – serving or acting as a *means* or aid (साधन, करण)
4. dative – serving as the (*indirect*) *object* or the recipient (beneficiary) of the action of the verb (सम्प्रदानम्)
5. ablative – indicating the *source or separation* of the agent, instrument, or location (अपादानम्)
6. genitive – expressing *ownership* (–)
7. locative – designating the *place or state or action* denoted by the verb (अधिकरणम्)
8. vocative – identifying the person being *addressed* (सम्बोधनम्)

Here is the declension of a masculine अकारान्त word देव :

The verbal system is more complex and in the vedic system it is even more so [than the classical system]. The book describes complexities of the vedic verbal system and mentions that classical verbal system gradually got rid of a lot of constructs from the former.

Here is an overview of the complexities of the grammar of the vedic language:

Singular ( एकवचनम् )	Dual ( द्विवचनम् )	Plural ( बहुवचनम् )	
देवः	देवौ	देवाः	प्रथमा
देवं (देवम्)	देवौ	देवान्	द्वितीया
देवेन	देवाभ्यां (देवाभ्याम्)	देवैः	तृतीया
देवाय	देवाभ्यां (देवाभ्याम्)	देवेभ्यः	चतुर्थी
देवात्	देवाभ्यां (देवाभ्याम्)	देवेभ्यः	पञ्चमी
देवस्य	देवयोः	देवानां (देवानाम्)	षष्ठी
देवे	देवयोः	देवेषु	सप्तमी
हे देव	हे देवौ	हे देवाः	सम्बोधनम्

1. Verb roots ( धातवः ) are generally of two types: *athematic* and *thematic*.

- Athematic: Variable accent<sup>1</sup> and variable stem to which *terminations* are directly attached (e.g. अस् + ति = अस्ति)
- Thematic: Invariable accent and invariable stem followed by the **thematic vowel** अ before the termination (e.g. बुध् + अ + ति = बोधति). This helps make various verb forms more regular as the complex interactions between the root-final consonant and suffix-initial vowel are prevented by the intervening अ.

2. A verb has a single *root*, however, in Vedic Samskritam it may have many *stems*<sup>2</sup>. Consider the following forms (root, stem, affixes) with respect to a single verbal root गम् which means “to go”. Forms depend upon *voice*, *number*, and *person* of the *agent* ( कर्ता ), but for brevity, we show the form only<sup>3</sup> for the singular ( एकवचनम् ), active ( कर्तरि ) voice, and third person ( प्रथम पुरुषः ):

(a) Tenses:

- Present ( लट् – गच्छति )
- Aorist<sup>4</sup> (expressing action (especially past action) without indicating its completion or continuation) ( लुङ् – अगमत् )
- Imperfect Past ( लङ् – अगच्छत् )
- Perfect ( लिट् – जगाम )
- Future ( लृट् – गमिष्यति )

(b) Moods:

- Indicative (simple declarations) ( लट् – गच्छति )
- Injunctive (could indicate *intention*) ( जिगमत् )
- Subjunctive (typically used to express various states of reality such as wish, emotion, judgment etc.)
- Optative (wish, request, or command) ( गच्छेत् )

<sup>1</sup>**Accent or Stress** in linguistics is the relative emphasis or prominence given to a certain syllable (unit of speech sounds) in a word or to a certain word in a phrase or sentence

<sup>2</sup>A **stem** is that part of a word that inflectional affixes attach to

<sup>3</sup>See [here](#) for a programmatic interface to all the forms of गम्

<sup>4</sup>There are **several aorist tense forms** in Samskritam

- v. Imperative (command or request) ( गच्छतु )
- (c) Meanings of the *present tense* stems:
  - i. Indicative (simple declarations)( लट् – गच्छति )
  - ii. Intensive (denotes stronger, more forceful, or more concentrated action relative to the root on which the intensive is built) ( जङ्गम्यते )
- (d) Participle forms indicating tenses and voices (these forms depend on the gender of the nominal they modify):
  - i. Past Passive ( गत, गता )
  - ii. Past Active ( गतवत्, गतवती )
  - iii. Present Active ( गच्छत्, गच्छन्ती )
  - iv. Present Middle ( गच्छमान, गच्छमाना )
  - v. Present Passive( गम्यमान, गम्यमाना )
  - vi. ...

3. Verb conjugations could also be one of

- (a) Primary
- (b) Causative
- (c) Intensive
- (d) Desiderative (a verb formed from another and expressing a desire to do the act denoted by the root verb)

4. All of this clearly means that the number of derived forms was very large. See Table 6 for a more complete list of verb conjugations and related forms.

The verbal form complexity was greatly reduced in the classical language. The so-called लकाराः show a glimpse of a plethora of forms that a verbal root leads to:

लट् वर्तमाने लेट् वेदे भूते लङ् लुङ् लिट्स्तथा ।  
विध्याशिषोस्तु लिङ्गोटौ लुट् लृट् लृङ् च भविष्यति ॥

The language evolved to favor nominal sentences over verbal sentences.

The most remarkable feature of the classical language is the *compounds* (especially their phenomenal length). Here is an example from Jayadeva's गीतगोविन्द :

चन्दनचर्चितनीलकलेवरपीतवसनवनमाली ।  
केलिचलन्मणिकुण्डलमण्डित गण्डयुगः स्मितशाली ॥

The author believes that several changes occurred to the vedic Sanskrit that Panini grammared. There was also the influence of local languages. In spite of that, because of Panini's efforts, the language established itself as an "elite language". In such evolution, the language's *surface forms*<sup>5</sup> were retained.

<sup>5</sup>Surface form of a word is the form of a word as it appears in the text (e.g. "goes" is a surface form of the verb "go"). Contrast it with the *lexical form* which consists of things such as the root, the part of speech etc.

## 2 The संस्कृत Alphabet

### 2.1 Basics

#### 2.1.1 Vowels (when not combined with consonants)

There are 13 vowels of which 5 are **short** (ऋस्व) and 8 are **long** (दीर्घ). Not combined with consonants, here they are:

Table 1: Sanskrit Vowels

अ	आ
इ	ई
उ	ऊ
ऋ	ॠ
ऌ	
ए	ऐ
ओ	औ

In addition to these 13 *independent* vowels, there are two “add-on signs” that, like other vowels, conjugate with consonants:

1. ँ – अनुस्वारः
2. ः – विसर्गः

One last vowel-like letter is “अवग्रह” which elongates the pronunciation of a preceding vowel: ऽ. The independent vowels conjugate with consonants and create “add-on signs” that we will see below.

There are 33 consonants and 2 special consonant clusters. The arrangement is according to the location and mechanism of sound production:

Table 2: Sanskrit Consonants

Velar (Guttral) ( कण्ठ्य )	क	ख	ग	घ	ङ
Palatal ( मूर्धन्य )	च	छ	ज	झ	ञ
Cerebral ( तालव्य )	ट	ठ	ड	ढ	ण
Dental ( दन्त्य )	त	थ	द	ध	न
Labial ( ओष्ठ्य )	प	फ	ब	भ	म
Semivowels	य	र	ल	व	
Sibilants (hissing sound)	श	ष	स		
Aspirate (rush of air)	ह				
Special consonant clusters	क्ष	ज्ञ			

Table 3 shows the *phonetic analysis* of the Sanskrit Alphabet. In that table, ‘Voice’ feature refers to *sonorous vibration*, ‘Asp’ (aspiration) feature refers to a *rush of air*, and ‘Nasal’ refers to sound generation with the passage of air through nose (and not mouth<sup>6</sup>). If a feature is present, a ‘+’ preceeds it (e.g. ‘+Voice’ – generation of a sonorous vibration) and if a ‘-’ preceeds it, that feature is absent (e.g. ‘-Asp’ – no rush of air).

Table 3: Phonetic Analysis

Places of Articulation	Stop -Voice -Asp	Stop -Voice +Asp	Stop +Voice -Asp	Stop +Voice +Asp	Stop +Voice -Asp +Nasal	Semi- vowels +Voice -Asp	Sibilants +Voice +Asp	Sibilants -Voice +Asp
कण्ठ्य	क	ख	ग	घ	ङ		ह	ः
मूर्धन्य	च	छ	ज	झ	ञ	य अनुनासिक य		श
तालव्य	ट	ठ	ड	ढ	ण	र		ष
दन्त्य	त	थ	द	ध	न	ल अनुनासिक ल		स
ओष्ठ्य	प	फ	ब	भ	म	व अनुनासिक व		

Figure 1 (taken from Wikipedia) shows the places where the sound is **produced** in its

<sup>6</sup>Nearly all nasal consonants are nasal occlusives, in which air escapes through the nose but not through the mouth, as it is blocked (occluded) by the lips or tongue.

audible form<sup>7</sup>.

We have already seen the Sanskrit alphabet in Tables 1 and 2. In the written form, when one consonant conjugates with one vowel, we see an alternate representation. For example, when क combines with इ, the resulting conjugate is written as कि and not क.इ.

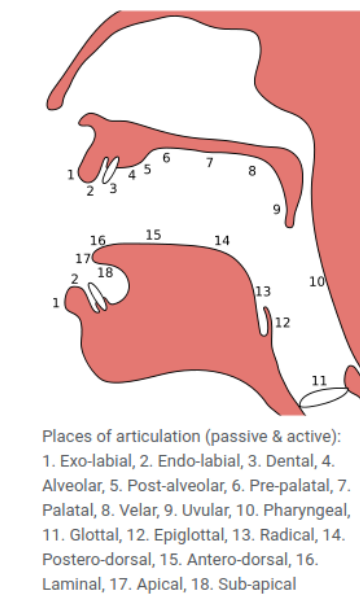


Figure 1: Places of Articulation

These are collectively called the “add-on vowel signs” and they look like below (note that each of them has a Unicode codepoint which means that it is recognized as a distinct character in a writing system (in this case देवनागरी)). There is no add-on vowel sign for अ; when conjugated with अ, the consonant simply loses the विरामः – ्. Any consonant should conjugate with these add-ons, the Table 4 below uses ‘त्’ as an example.

Consonants combine with the vowels to form the conjugate forms as in Table 4. Thus, with another consonant, ग्, the forms will be written: ग, गा, गि, गी, गु, गू, गृ, गृ, गे, गै, गो, गौ, गं, गः. There are few exceptions in writing these forms:

- र् + उ = रु
- र् + ऊ = रू
- र् + ऋ = र्रु
- र् + ॠ = र्रु
- ह् + ऋ = ह्र

When two or more consonants occur successively without any intervening vowels, they are written in a conjoined form:

<sup>7</sup>Articulation means the aspect of pronunciation that involves bringing articulatory (speech) organs together so as to shape the sounds of speech.

Table 4: Add-on Vowel Signs with the consonant ‘त्’

Add-on sign codepoint (decimal)	Add-on sign	Its conjugation with ‘त्’	Corresponding vowel
	–	त	अ
2366	ा	ता	आ
2367	ि	ति	इ
2368	ी	ती	ई
2369	ु	तु	उ
2370	ू	तू	ऊ
2371	ृ	तृ	ऋ
2372	ॄ	तॄ	ॠ
2402	ॢ	तॢ	लृ
2375	े	ते	ए
2376	ै	तै	ऐ
2379	ो	तो	ओ
2380	ौ	तौ	औ
2306	ं	तं	अं
2307	ः	तः	अः

• Horizontal cluster (read left → right):  $\overline{cc\bar{c}}$

• Vertical cluster (read top → bottom):  $\begin{smallmatrix} c \\ \vdots \\ c \end{smallmatrix}$

The rules for making consonant clusters depend (mostly) on whether the first consonant has a vertical line from top to bottom or a short central stem from which character is suspended:

1. In a horizontal cluster, the final vertical lines of all but the last consonant are dropped and then the remaining parts are joined together:  $व् + य = व्य$ ,  $ष् + प् + य = ष्य$ ,  $स् + त् + वा = स्त्वा$
2. Characters suspended from a central stem have several forms:  $ट् + ट = ट्ट$ ,  $ड् + द = द्द$ ,  $ड् + ड = ड्ड$ ,  $ल् + ल = ल्ल$
3. Other combinations are handled in various ways:  $ट् + य = ट्य$ ,  $ड् + य = द्य$ ,  $क् + य = क्य$ ,  $क् + त = क्त$ . When  $ल$  is the second consonant, it may be placed next to ( $ग् + ल = ग्ल$ ) or below ( $क् + ल = क्ल$ ) the first consonant.
4. Special forms:  $श्$  and  $र्$ 
  - (a) For  $श्$ , alternate combining form may be used:  $श्च$ ,  $श्न$ ,  $श्त्र$ ,  $श्च$  etc. or  $श्$  may be retained:  $श्क$ ,  $श्त$ ,  $श्म$  etc. But with  $र$  it is always  $श्च$ , never as  $श्$ .
  - (b)  $र्$  has several combining forms.



- i. When र् is the second consonant:
  - A. First consonant has a vertical line: प् + र = प्र, क् + र = क्र, ब् + र = ब्र, but there are special forms: त् + र = त्र, क् + र = क़.
  - B. First consonant has a central stem: ट् + र = ट्र, ड् + र = ड्र etc. Note the exception: द् + र = द्र.
- ii. When र् is the first consonant: This gives rise to रेफ़: . Examples: र् + क = कर्क, र् + म = मर्क, र् + को = कौर्क.

There are defined consonant clusters (different from the special consonant clusters क् + ष = क्ष, ज् + ञ = ज्ञ that are part of the alphabet) like: क्ख, क्च, क्ण, ..., क्ष्म, झ्झ, झ्झ, ..., द्र, द्र, द्र, द्र, द्र. Upon careful observation, one can see several similarities and some anomalies in the way letters of the देवनागरी script are written. One reason is, of course, evolution of the language and the script due to socioeconomic circumstances (e.g. ease of writing). Still, one generally makes no mistake in identifying a piece of text written in some script. In other words, how humans identify a certain script and letters in it is a matter of scientific research. If a person who can read the देवनागरी script is asked to describe every character written in it, it would be difficult to do it accurately.

Generally speaking, a document (like this one) with देवनागरी letters that has been type-set on a computer (or in a traditional printing press), the letters (especially the combined ones) are dictated by the *font* used. Thus, all of the above letters that you see are defined by the artist(s) who created the font. The देवनागरी letters in this document use a font named Shobhika( शोभिका ) which is developed by the [Indian Institute of Technology Bombay, Mumbai, India](#).

## A Verb Conjugation Names

Naming verb conjugations is typically challenging. We found a verb **conjugation engine** that is indeed very useful in this regard. Table 6 shows the देवनागरी names of various verb forms (including conjugations) and their corresponding English names.

The classical language misses some conjugations present in the vedic language.

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<sup>8</sup>Benediction: Indicating prayer or invoking divine protection

<sup>9</sup>परस्मैपदी धातुः

<sup>10</sup>आत्मनेपदी धातुः

Table 6: Names of Verb Conjugations

देवनागरी नाम	English Name
तिङन्ताः	Conjugations
अप्रत्ययान्तधातुः	Primary Conjugation
लट् (लकारः)	Present (Tense)
लङ् (लकारः)	Imperfect (Past Tense)
विधिलिङ् (लकारः)	Optative (Mood)
लोट् (लकारः)	Imperative (Mood)
लृट् (लकारः)	Future (Tense)
लृङ् (लकारः)	Conditional (Future Tense)
लुट् (लकारः)	Periphrastic (Future Tense)
लिट् (लकारः)	Perfect (Past Tense)
लुङ् (लकारः)	Aorist (Tense)
आगमाभावयुक्तलुङ् (लकारः)	Injunctive (Mood)
आशिर्लिङ् (लकारः)	Benedictive <sup>8</sup> (Mood)
कृदन्तः (प्रत्ययः)	Participle
क्त (प्रत्ययः)	Past Passive (Participle)
क्तवतु (प्रत्ययः)	Past Active (Participle)
शतु (प्रत्ययः)	Present Active (Participle)
शानच् कर्मणि (प्रत्ययः)	Present Passive (Participle)
लुडादेश (लुट् + आदेश) पर <sup>9</sup> (प्रत्ययः)	Future Active (Participle)
तव्य (प्रत्ययः)	Future Passive (Participle)
यत् (प्रत्ययः)	Future Passive (Participle)
अनीयर् (प्रत्ययः)	Future Passive (Participle)
यत् (प्रत्ययः)	Future Passive (Participle)
लिडादेश (लिट् + आदेश) पर (प्रत्ययः)	Perfect Active (Participle)
लिडादेश (लिट् + आदेश) आत्म <sup>10</sup> (प्रत्ययः)	Future Passive (Participle)
अव्ययः	Indeclinable
तुमुन् (अव्ययः)	Infinitive
क्त्वा (अव्ययः)	Absolutive (gerund)
क्त्वा (अव्ययः)	Absolutive (gerund)
ल्यप् (अव्ययः)	Absolutive (gerund)
ल्यप् (अव्ययः)	Absolutive (gerund)
णिच् रूपाणि	Causative Conjugation (repeat some of the above)
यङ् रूपाणि	Intensive Conjugation (repeat some of the above)
सन् रूपाणि	Desiderative Conjugation (repeat some of the above)