

## Appendix I to Chapter Five

### Supplemental notes from the text on Sanskrit

#### The Sanskrit Alphabet

	<u>Standard Grammatical Arrangement</u>	<u>Kalachakratrantra Arrangement</u>
<b>Vowels:</b>	A, Ā	
<b>Palatal vowels:</b>	I, Ī	
<b>Labial vowels:</b>	U, Ū	
<b>Lingual vowels:</b>	Ṛ, Ṝ	
<b>Dental vowels:</b>	Ḍ, Ḍ̄	
<b>Guttarals:</b>	KA, KHA, GA, GHA, ṆA	ϕKU
<b>Palatals:</b>	CA, CHA, JA, JHA, ṆA	KḶ, KHU, GR, GHI, ṆA
<b>Retroflexes:</b>	ṬA, ṬHA, ḍA, ḍHA, ṆA	CL, CHU, JR, JHI, ṆA
<b>Dentals:</b>	TA, THA, ḌA, ḌHA, NA	TL, THU, DR, DHI, NA
<b>Labials:</b>	PA, PHA, BA, BHA, MA	PL, PHU, BR, BHI, MA
<b>Palatal semivowel:</b>	YA	TL, THU, DR, DHI, NA
<b>Lingual semivowel:</b>	RA	SL, VU, SR, SI, XKA
<b>Dental semivowel:</b>	LA	
<b>Labial semivowel:</b>	VA	
<b>Palatal sibilant:</b>	ŚA	
<b>Lingual sibilant:</b>	ṢA	
<b>Dental sibilant:</b>	SA	

### Long, Short, Guna and Vrddhi Vowels

The set of the long and short vowels, and the set of the guṇa and vr̥ddhi vowels are two distinct, yet overlapping sets. Short I for instance and long Ī are neither guṇa nor vr̥ddhi – i.e. one cannot gunate or vr̥ddhi any vowel to get either short I or long Ī – the guṇa for both is E, the vr̥ddhi for both is AI. The same is true for U and Ū: the guṇa for both is O, the vr̥ddhi for both is AU. Short Ṛ and long Ṝ both have AR as their guṇa and AR as their vr̥ddhi. Short Ḍ and long Ḍ̄ both have ĀL as their guṇa and AL as their vr̥ddhi. The overlap between the two sets occurs with A and Ā. Short A is a member of both sets since it is both a short vowel in its own right and is also the guṇa itself. Similarly long Ā is a member of both sets since it is both a long vowel in its own right, forming the guṇa of itself and is also the vr̥ddhi of the gunated A and Ā. None of the guṇa forms nor any of the vr̥ddhi forms are part of the set of long and short vowels.

<u>Short Vowel</u>	<u>Long Vowel</u>	<u>Guna</u>	<u>Vrddhi</u>
A	Ā	A	Ā
I	Ī	E	AI
U	Ū	O	AU
Ṛ	Ṝ	AR	ĀR
Ḍ	Ḍ̄	AL	ĀL

### **Vowel gradation: Guna and vrddhi** (from *Teach Yourself Sanskrit*)

The present tense stem bhar is derived from the root bhṛ by a regular process of ‘vowel gradation.’ The three forms bhr, bhar and bhār, found in bhr̥ta (past participle) ‘borne,’ bharati (present) ‘he bears’ and babhāra (perfect) ‘he bore,’ exemplify a characteristic pattern of vowel alternation in Sanskrit words. The Indian grammarians described this phenomena by saying that ar and ār were two successively strengthened grades of the vowel ṛ. To the first of these, ar, they gave the name guṇa; to the second, ār, they gave the name vr̥ddhi.

From the point of view of the comparative philologist, the middle grade, guṇa, is the normal grade and the others result from weakening or strengthening. Failure to appreciate this landed Indian grammarians in some complications, since the regular pattern of strengthening from the basic to the guṇa grade presented above did not occur in all roots. If we compare the verbs sravati ‘flows,’ ghoṣati ‘proclaims’ and svapati ‘sleeps’ with their past participles sruta, ghuṣṭa and supta, we may detect the general principle that the formation of the past participle involves elimination of the element a-srav/sru, ghoṣ/ghuṣ, svap/sup (historically e and o may be taken to represent ay and av and y, r, l, v to represent consonantal alternants of the vowels i, ṛ, Ḍ, u). If however, we take the reduced form as shown in the past participle as our starting-point (which in principle the Indian grammarians did), we shall on the analogy of sravati and ghoṣati predict sopati instead of the correct svapati. For this reason the root of verbs such as the last is formed according to the middle grade [i.e. the guṇa].

### Substitution of the long and short semivowels

The substitution pattern is:

-ya and -yā for -e and -ai  
-ra and -rā for -ar and -ār  
-va and -vā for -o and -au  
-la and -lā for -al and -āl  
-haḥ and -haṃ for -aḥ and aṃ

So: y substitutes for the guṇa and vṛddhi of i and ī  
r substitutes for the guṇa and vṛddhi of ṛ and ṝ  
v substitutes for the guṇa and vṛddhi of u and ū  
l substitutes for the guṇa and vṛddhi of ḷ and ḹ  
-ham substitutes for the anusvara  
-haḥ substitutes for the visarga.

Schematically this is:

<u>Short Vowel</u>	<u>Long Vowel</u>	<u>Guna</u>	<u>Vrddhi</u>	<u>Short Semi</u>	<u>Long semi</u>
A	Ā	A	Ā		
I	Ī	E	AI	YA	YĀ
U	Ū	O	AU	VA	VĀ
Ṛ	Ṝ	AR	ĀR	RA	RĀ
ḷ	ḹ	AL	ĀL	LA	LĀ
<u>Visarga</u>	<u>Anusvara</u>	<u>“Semivowel Substitution”</u>			
Ḥ	Ṁ	HAḤ	HAṀ		