C. Word formation

C.1. Roots

This chapter is on how roots, transformed or added to, are used to form various grammatical forms. The forms covered in his chapter comprise infinitives, PPPs, desideratives, and others. The reader might also expect to learn about the word formation of aorists and perfects in this chapter. I decided to relegate that information to the next chapter, where formation and conjugation are dealt with in "one go".

Learners of Sanskrit are used to memorising

budh, bôdhati
vas, vasati
pat, patati
...

where

◇ *budh, vas*, and *pat* are referred to as OI roots and

◇ *bôdhati* etc. are the forms for the 3. pers. sg. pres. ind.

There is, of course, nothing wrong with memorising *pat, patati*. Note, however, that the OI root is nothing but a (helpful) grammatical fiction. It is regularly used to derive root nouns (pp. 115), the passive voice (pp. 132), and the past participle (pp. 117).

For verbs in the first class, the 3. pers. sg. pres. ind. is normally given in the full grade and the OI root in the zero grade, as shown by *budh, bôdhati* (see pp. 26). One does not always see the OI root in zero grade for two different reasons (two extra reasons are given below):

1. The OI root may be unpronounceable as *pt*, the zero grade of *pat*, but neither *p* nor *t* can become syllabic. (But even here, consider the aorist *a-pa-pt-a-t*.)

2. The regular result may be "too far off". Consider the OI root *vas* whose zero grade would be *us̥*.

In most textbooks, what we call "OI roots" are simply called "roots". Distinguish

◇ a root with IE *e*, i.e., a full-grade root or a normal-grade root or just a root (in Sanskrit with root vowel *a*, or, if a semivowel follows, *ê* or *ô*, respectively), from

◇ a root where IE *e* was lost, i.e., the zero-grade root (for Sanskrit see pp. 26)

Typically, IE roots are monosyllabic and of one of the following forms

syllabic structure	example	translation
C–e–C	*med*	to measure
e–C	*ed*	to eat
C–L–e–C	*trem*	to tremble
C–e–L–C	*serp*	to creep
C–e–SV–C	*deuk*	to lead

Nowadays, IE roots like $^*ed$ are not accepted any more. Instead, laryngeals are thought to come before the *e*. Thus, one would reconstruct $^*h_1ed$ instead of just $^*ed$. Similarly, IE $^*a\acute{g}$ with root vowel *a* is replaced by $^*h_2e\acute{g}$, where h_2 is responsible for changing *e* to *a*. Thus, from this point of view, all IE roots are enclosed by consonants (which may be laryngeals or also liquids or semivowels) and the root vowel is *e*.

There exist two additional reasons why OI roots may not be in zero grade. Both concern IE roots ending in a laryngeal:

3. roots such as *mā* (second class) do not distinguish between strong forms (typically full grade) and weak forms (typically zero grade), but use *mā* throughout although *mā* ← IE root $^*meh_1$ is full grade.

4. given IE zero-grade root may give rise to two different OI verbs, such as *ê-ti* versus *yā-ti* or *jay-a-ti* versus *jyā-ti*.

Turning to the third reason, consider the syllable structure *C–e–C*. If the final consonant is a laryngeal, *C–e–H* results so that one obtains long *ā* as in

√ (f.g.)	3. pers. sg.	translation
pā	*pā-ti*	to protect
bhā	*bhā-ti*	to shine
mā	*mā-ti*	to measure
yā	*yā-ti*	to go
vā	*vā-ti*	to blow

With respect to the fourth reason, OI roots sometimes come in two full-grade forms. It is helpful to distinguish three groups (according to Kulikov (2011, p. 310)). The first group features a resonant and a laryngeal (in that order) in the root. By a process called "schwebeablaut" (floating vowel gradation), one postulates two IE full grades:

$$\begin{array}{lcl} \text{IE } {}^*CeRH(V/C) & \rightarrow & \text{OI } CaRV/CaRiC \\ \text{IE } {}^*CReH & \rightarrow & \text{OI } CR\bar{a} \end{array}$$

Both of these IE full-grade roots have one and the same IE zero grade. For the zero grade, remember the effects of laryngeals according to **Lar_ *V***. The following table shows the most relevant examples of the first group.

√	f.g. IE root	√	f.g. IE root
jan (f.g.) ("to produce")	${}^*\acute{g}enh_1$	**not** *jñā* ("to know")	${}^*\acute{g}neh_3$
tr̥ ("to cross")	${}^*terh_2$	*trā* ("to protect, to save")	${}^*treh_2$
dham (f.g.) ("to exhale")	${}^*dhemH$	*dhmā* ("to exhale")	${}^*dhmeH$
dhī ("to think, to reflect")	${}^*dheiH$	*dhyā* ("to contemplate")	${}^*dhyeH$
pī ("to become fat")	${}^*peiH$	*pyā* ("to swell")	${}^*pyeH$
pr̥ ("to fill)	${}^*pelh_1$	*prā* ("to fill")	${}^*pleh_1$
mr̥ ("to crush")	${}^*merh_2$	*mlā* ("to wither")	${}^*mreh_2$
hū ("to call")	${}^*\acute{g}heuH$	*hvā* ("to call")	${}^*\acute{g}hveH$

The very first example does not fit etymologically because *jan* ← IE ${}^*\acute{g}enh_1$ and *jñā* ← IE ${}^*\acute{g}neh_3$ are produced from different laryngeals. Nevertheless, in the speakers' minds, the pair *jan*/*jñā* may have been considered analogous to other pairs such as *dham*/*dhmā*. Based on *dham,* there exists the full-grade instrumental noun *dhami-tram* which clearly shows *mit* for *RiC* ← ${}^*RHC$ in the sound law above.

The second and third groups do not feature laryngeals, but are produced according to a similar model. The second group is built by the rule

$$\text{zero-grade root} \quad + \quad \bar{a}$$

while the third group follows

$$\text{root-initial consonant (cluster)} \quad + \quad \bar{a}$$

The zero-grade (second group) is seen in the following table:

√	√
i (“to go”), *ê-ti*	*y-ā* (“to go out, to go forth”), *y-ā-ti*
ghṛ (“to sprinkle, to wet”), *ji-ghar-ti*	*ghr-ā* (“to smell”), *ghr-ā-ti*
ji (“to conquer, to overcome”), *jay-a-ti*	*jy-ā* (“to suppress, to grow old”), *jy-ā-ti*
dah (f.g.) (“to burn”), *dah-a-ti*	*kṣ-ā* (“to burn”) (see s.v. *dah*)
bhas (f.g.) (“to chew”)	*ps-ā* (“to devour”), *ps-ā-ti*
man (f.g.) (“to think”), *man-ya-tê*	*mn-ā* (“to remember, to praise”), *mn-ā-ti*

while the root-initial consonant (cluster) in the third group is present in the last table:

√	√
i (“to go”), *ê-ti*	*y-ā* (“to go out, to go forth”), *yā-ti*
gam (“to go”) (f.g.), *gacch-a-ti*	*g-ā* (“to go”), *gā-ti*
dru (“to run”), *drav-a-ti*, s.v. *dram*	*dr-ā* (“to run”), *drā-ti*
bhan (“to speak”), *bhan-a-ti*	*bh-ā* (“to shine”), *bhā-ti*

It is unclear whether *i/yā* belongs to the second or the third group. The very last example is semantically difficult.

According to Kulikov (2011), the first verb in the pairs of all three groups is more flexible with respect to transitivity, while the second verb is either transitive or intransitive. Unrelated to this observation, one might suggest that the long-*ā* roots have a consequential meaning:

◇ He goes (*ê-ti*) so that he escapes (*yā-ti*).

◇ He conquers (*jay-a-ti*) so that he suppresses (*jyā-ti*).

◇ He chews (root *bhas*) so that he devours (*psā-ti*).

C.2. Ten verbal classes, overview

C.2.1. Thematic versus athematic classes

Sanskrit is famous for its ten verbal classes, some of which are thematic, while others are athematic. In this chapter, a rough overview of these classes is presented. With many examples and much more detail, these classes are taken up again in the next chapter.

Verbs belonging to the thematic classes are characterised by a thematic vowel between OI root (which may be put into the full grade) and ending. Without such a vowel, athematic verbs show an alternation of strong forms (mostly full grade) and weak forms (zero grade). In order to provide examples, the 3. pers. sing. (which usually takes a strong form) and the 1. pers. pl. (where the weak form is expected) are often presented.

C.2.2. The four thematic classes

The first class

Four out of the ten verbal classes use the thematic vowel. One good example for the first class is given by

$\underbrace{budh}$	,	$\underbrace{bôdh}$	-	$\underbrace{a}$	-	$\underbrace{ti}$
OI root		root		thematic		ending
in zero grade		in full grade		vowel		3. pers. sg.

Other examples, typical or less typical, are now presented: Typical cases (zero-grade OI root, present indicative in full-grade) include:

$\surd$	3. pers. sg.	translation
kṛṣ	*karṣ-a-ti*	he ploughs
klp	*kalp-a-tê*	he is ready for
dyut	*dyôt-a-tê*	he shines
$bhū \leftarrow {}^*bhuH$	*bhav-a-ti*	he is
mih	*mêh-a-ti*	he urinates
śuc	*śôc-a-ti*	he grieves
smṛ	*smar-a-ti*	he remembers

Some OI roots are given in full grade:

$\surd$	3. pers. sg.	translation
kamp	*kamp-a-tê*	he trembles
tyaj	*tyaj-a-ti*	he abandons
dah	*dah-a-ti*	he burns
vas	*vas-a-ti*	he dwells

In these examples, the zero grades would be impossible to pronounce or "too far away" to be recognisable.

Some reduplicated roots also belong to the first class:

◇ *sīd-a-ti* ("he sits") with (full-grade!) OI root *sad* is originally a reduplicated form and could be considered a class-3 verb. In fact, one obtains *sīḍ-ati* by way of

*si-sd-ati (reduplication with *i* and zero grade, without sandhi)
→ si-zd-ati (***sz*** before voiced stop)
→ si-ẓd-ati (**RUKI**)
→ si-ẓḍ-ati (**Cer*D***)
→ sīḍ-ati (**CpL*z*** 2. line), *see pīḍ*

whence finally *sīd-ati* through leveling:

	sīḍ-ati	
influenced by	*sa-sād-a* (perf. 3. pers. sg.) or other forms	with dental
turns into	*sīd-ati*	with dental

◇ *sthā, ti-ṣṭha-ti* ("to stand") is thought to go back to IE **steh*$_2$. Note that *t* in the IE full-grade root is not aspirated. Thus, *ti-ṣṭha-ti* is not an instance of Grassmann's law (although the final result does not contradict that law). Instead, the aspiration is a reflex of the laryngeal. Reduplicating with *i* and just the consonant immediately before *i* yields

IE **ti-sth*$_2$*-eti* (reduplication with *i* and zero grade)
→ *ti-sth-eti* (**Lar_*CH*:** h_2 aspirates *t*)
→ *ti-ṣth-ati* **(RUKI)**
→ *ti-ṣṭh-ati* (**Cer*D***)

The full grade form should be **steh*$_2$ → *stā*, but the OI root *sthā* is aspirated (as in the infinitive *sthā-tum*). Leveling provides an easy explanation.

◇ While h_2 has caused aspiration, h_3 may have caused voicedness in *pā*, *pi-ba-ti* ("to drink"):

IE **pi-ph*$_3$*-eti* (reduplication with *i* and zero grade)
→ *pi-b-eti* (**Lar_*CH*:** h_3 makes *p* voiced)
→ *pi-b-ati*

The first class also contains verbs where

◇ both OI root and present indicative contain short *i* or short *u*:

√	3. pers. sg.	translation
cumb	*cumb-a-ti*	he kisses
bhikṣ	*bhikṣ-a-ti* (p. 140)	he begs

◇ both OI root and present indicative contain *ī*:

√	3. pers. sg.	translation
krīḍ	*krīḍ-a-ti*	he plays
ṭīk	*ṭīk-a-ti*	he trips

The fourth class

The fourth class also employs the thematic vowel. Both OI root and present indicative are in zero grade, as seen in this example:

$\underbrace{sidh}$	,	$\underbrace{sidh}$	–	$\underbrace{y}$	–	$\underbrace{a}$	-	$\underbrace{ti}$
OI root		root		suffix		thematic		ending
in zero grade		in zero grade				vowel		3. pers. sing.

Consider these cases (zero-grade OI root, present indicative in zero grade plus suffix *y*):

√	3. pers. sg.	translation
kup	*kup-y-a-ti*	he is angry
kṣubh	*kṣubh-y-a-ti*	he is agitated
tuṣ	*tuṣ-y-a-ti*	he is pleased
tṛp	*tṛp-y-a-ti*	he is content
nṛt	*nṛt-y-a-ti*	he dances
sidh	*sidh-y-a-ti*	he is successful
snih	*snih-y-a-ti*	he loves

Some verbs exhibit full-grade OI root with nasal. Then **SY__*N*** applies:

√	3. pers. sg.	translation
bhraṃś	*bhraś-y-a-ti* ← **bhr̥m̥ś*	he falls
rañj	*raj-y-a-ti* ← **r̥n̥j*	he reddens

But this rule is not always adhered to. In the following example, the resulting u.at. *ma-y-a-tê* would have been too difficult to understand:

√	3. pers. sg.	translation
man	*man-y-a-tê*	he thinks

Finally, consider verbs with laryngeals. A clear instance of full-grade OI root and zero-grade present indicative is given by

√	3. pers. sg.	translation
jan	*jā-y-a-tê* ← IE **ǵn̥H-y-e-toi*	he is born

where the laryngeal sound law **Lar_SY** (p. 30) is applied. The laryngeal in this case is clear from infinitive *jan-i-tum*. Laryngeals are also responsible for the following examples with full-grade OI root and zero grade (!) present indicative:

√	3. pers. sg.	translation
kram	*krām-ya-ti* ← IE **krm̥H-ye ti*	he strides
dam	*dām-ya-ti* ← IE **dm̥H-ye-ti*	he tames
śam	*śām-ya-ti* ← IE **ḱm̥H-ye-ti*	he gets quiet
śram	*śrām-ya-ti* ← IE **ḱrm̥H-ye-ti*	he toils

The sixth class

The sixth class is like the fourth class without *y*, see, for example,

$\underbrace{tud}$	,	$\underbrace{tud}$	-	$\underbrace{a}$	-	$\underbrace{ti}$
OI root		root		thematic		ending
in zero grade		in zero grade		vowel		3. pers. sg.

Look, first, at the following cases (zero-grade OI root, zero-grade present indicative):

√	3. pers. sg.	translation
kṛṣ	*kṛṣ-a-ti*	he ploughs
kṣip	*kṣip-a-ti*	he throws
tud	*tud-a-ti*	he strikes
diś	*diś-a-ti*	he shows
nud	*nud-a-ti*	he pushes
likh	*likh-a-ti*	he writes
viś	*viś-a-ti*	he enters

Second, observe the following verbs with nasal infix in the present indicative:

√	3. pers. sg.	translation
muc	*mu-ñ-c-a-ti*	he frees
lip	*li-m-p-a-ti*	he smears

√	3. pers. sg.	translation
lup	*lu-m-p-a-ti*	he bites off, he steals
vid	*vi-n-d-a-ti*	he finds

Third, consider the verbs which (from the Indo-European point of view) use *sḱ* to form the present indicative:

√	3. pers. sg.	translation
iṣ	*icch-a-ti*	he wishes
pracch	*pṛcch-a-ti*	he asks

Clearly, *gam, gacch-a-ti* also belongs here. While it is normally considered a first-class root, *gacch-a-ti* goes back to IE $^*g^w\underset{\circ}{m}$-*sḱ*-*e-ti* (**SY__*N***, **SIB**). Thus, *gacch-a-ti* is in zero grade.

The tenth class

For the tenth class, the leading example is

cur	,	*côr*	–	*ay*	–	*a*	-	*ti*
OI root		root		suffix		thematic		ending
in zero grade		in full grade				vowel		3. pers. sg.

with a full-grade root in the present indicative. Another frequently cited example is provided by[7]

√	3. pers. sg.	translation
cint	*cint-ay-a-ti*	he thinks

Causatives look similar, but are treated elsewhere, on pp. 113.

C.2.3. The second class

Leaving the thematic group of verbs, the athematic classes 2, 3, 5, 7, 8, and 9 are now covered. In the third class, one finds reduplication, in the classes 5, 7, 8, and 9 a nasal infix occurs. The remaining class 2 contains many often-used verbs. For example, the zero grade of *ê* is *i* so that Sanskrit for "to go" is

i	,	*ê*	-	*ti*
OI root		root		ending
in zero grade		in full grade		3. pers. sg.

[7]Perhaps, a nasal infix (similar to *lup* just above) may be present here. Compare the OI root *cit*.

Consider:

√	3. pers. sg.	1. pers. pl.	translation
as (f.g.)	*as-ti*	*s-mas*	to be
i	*ê-ti*	*i-mas*	to go
dih	*dêg-dhi* (2) ← IE **dheigh-ti*	*dih-mas*	to grease
duh	*dôg-dhi* (2) ← IE **dheugh-ti*	*duh-mas*	to milk
dviṣ	*dvêṣ-ṭi* (1)	*dviṣ-mas*	to hate
lih	*lê-ḍhi* (3) ← IE **leiǵh-ti*	*lih-mas*	to lick
vaś (f.g.)	*vaṣ-ṭi* (1)	*uṣ-mas*	to wish
vid	*vêt-ti*	*vid-mas*	to know

1. Sound laws OI *ṣ/ś* + *t* → *ṣṭ* (**Cer*D***)
2. Both Grassmann (deaspiration of word-initial *dh,* **DA**) and Bartholomae (IE *gh t* → OI *g dh,* **ASh**)
3. *lê-ḍhi* is to be explained by

   IE **leiǵh-ti* (full grade)
   → *lêǵh-ti* (**DIPH**)
   → *lêǵ-dhi* (**ASh**)
   → *lêz-dhi* (***sz*** before voiced stop)
   → *lêẓ-dhi* **(RUKI)**
   → *lêẓ-ḍhi* (**Cer*D***)
   → *lê-ḍhi* (**CpL*z***, but *ê* already long)

However, full grade also in plural is sometimes observed:

√	3. pers. sg.	1. pers. pl.	translation
ad (f.g.)	*at-ti*	*ad-mas*	to eat
vac (f.g.)	*vak-ti*	*vac-mas*	to speak
vas (f.g.)	*vas-tê*	*vas-mahê*	to dress
han (f.g.)	*han-ti*	*han-mas*	to kill

Next, consider some OI sêṭ roots with regular weak-strong distribution:

√	3. pers. sg.	1. pers. pl.	translation
rud	*rôd-i-ti*	*rud-i-mas*	to weep

Some sêṭ roots show strong forms also in the plural:

√	3. pers. sg.	1. pers. pl.	translation
an (f.g.)	*an-i-ti*	*an-i-mas*	to breath
svap (f.g.)	*svap-i-ti*	*svap-i-mas*	to sleep
śvas (f.g.)	*śvas-i-ti*	*śvas-i-mas*	to blow, to snuffle

Sometimes *âu* is found in sg. and *u* in pl. (so-called Narten present forms, see pp. 178):

√	3. pers. sg.	1. pers. pl.	translation
nu	*nâu-ti*	*nu-mas*	to praise
ru	*râu-ti*	*ru-mas*	to roar
stu	*stâu-ti*	*stu-mas*	to praise

They can be explained with a laryngeal. For *nu*, one can postulate the IE f.g. root **neHv*. One then obtains regularly formed

◇ f.g. (!) 3. pers. sg. IE **neHv-ti* → OI *nâu-ti* versus

◇ z.g. 3. pers. pl. IE **nHv-mes* → OI *nu-mas*

Finally, long-*ā* verbs do not differ between strong and weak forms:

√	3. pers. sg.	1. pers. pl.	translation
khyā	*khyā-ti*	*khyā-mas*	to tell
pā	*pā-ti*	*pā-mas*	to protect
bhā	*bhā-ti*	*bhā-mas*	to shine
mā	*mā-ti*	*mā-mas*	to measure
yā	*yā-ti*	*yā-mas*	to go
vā	*vā-ti*	*vā-mas*	to blow

C.2.4. The third class

Remember the first-class verbs *sīd-a-ti* ("he sits") and *ti-ṣṭha-ti* ("he stands") that are formed by reduplication. (Reduplication is also used for perfect and for desiderative forms.) Consider now the third class which contains only reduplicating verbs. It does not have many representatives. The basic idea is that the former part of the root is repeated. The repeated root vowel is often "reduced" and *i* seems to be the preferred reduplication vowel. In particular, observe the following pattern:

OI root vowels	$\bar{a}$	$\bar{\imath}$	u	$\dot{r}$
	$\downarrow$	$\downarrow$	$\downarrow$	$\downarrow$
reduplication vowel	a	i	u	i

Thus, a telling example is given by the verb for "carry":

$\underbrace{bh\dot{r}}$	,	$\underbrace{bi}$	-	$\underbrace{bhar}$	-	$\underbrace{ti}$
OI root in zero grade		reduplication syllable		root in full grade		ending 3. pers. sg.

Grassmann's law (**DA**, pp. 39) is regularly applied. For example, the OI root *hu* ("to sacrifice") goes back to IE **ǵheu* and one derives

IE **ǵhu-ǵheu-ti*
→ *ǵu-ǵhô-ti* (**DA**)
→ *ju-hô-ti* (**PPal**, p. 37)

Here is a list with third-class verbs:

√	3. pers. sg.	1. pers. pl.	translation
gā	*ji-gā-ti*	*ji-gī-mas*	to go
dā	*da-dā-ti*	*da-d-mas*	to give
dhā	*da-dhā-ti*	*da-dh-mas*	to set
bhī	*bi-bhê-ti*	*bi-bhī-mas*	to be afraid
bhṛ	*bi-bhar-ti*	*bi-bhṛ-mas*	to carry
hā	*ja-hā-ti*	*ja-hī-mas*	to abandon
hu	*ju-hô-ti*	*ju-hu-mas*	to sacrifice

C.2.5. The nasal infix classes

Infixes in the root

The remaining four classes 5, 7, 8, and 9 show a nasal element. The most ancient constellation can be seen in class 7. For example, the Sanskrit verb for "to join" is *yuj, yunakti* which is best understood as

$\underbrace{yu}$	-	$\underbrace{na}$	–	$\underbrace{k}$	-	$\underbrace{ti}$
beginning of OI root in zero grade		sign in strong form		final root consonant		ending 3. pers. sg.

At first sight, the other classes do not exhibit an infix into the OI root:

√	3. pers. sg.	1. pers. pl.	translation
śak	*śak-nô-ti*	*śak-nu-mas*	to be able
tan	*tan-ô-ti*	*tan-u-mas*	to stretch
pū	*pu-nā-ti*	*pu-nī-mas*	to purify

This first impression is misleading from a historical point of view.

The ninth class as a special instance of the seventh class

It was a close look at classes 7 and 9 that prompted de Saussure to postulate laryngeal sounds in Indo-European. Here is how he argued (in principle).

Consider two verbs, one from the seventh class, the other from the ninth class:

class	gaṇa sign	√	3. pers. sg.	future	infinitive
7	*na*	*yuj*	*yu-na-k-ti*	*yôk-ṣy-a-ti*	*yôk-tum*
9	*nā*	*pū*	*pu-nā-ti*	*pavi-ṣy-a-ti*	*pavi-tum*

The present indicative in class 7 uses *na* as an infix, in our example between *u* and the root-final consonant *j*. In contrast, *nā* in the 9th class occurs after the OI root. De Saussure hypothesised that both verbs are similarly constructed. If that hypothesis is correct, two differences need to be addressed:

1. The ninth class has long *nā*, rather than short *na* in the seventh class.

2. The future and the infinitive forms of *pū* show *i* which seems to come out of nowhere. Traditional Sanskrit grammarians call *pū* an OI sêṭ root (*sêṭ* ← *sa-iṭ*). The OI root does not exhibit *i*, but the latter shows up in some verbal forms.

De Saussure's brilliant idea was this: One sound (that is not to be seen any more) is responsible for both phenomena. Denote this sound by *H*. It had two effects.

1. *H* leads to the lengthening of *na* to *nā*.

2. *H* turns into *i* between consonants.

Then, one can rewrite the above Sanskrit table by a corresponding table with Indo-European forms:

class	*gaṇa sign	√	3. pers. sg.	future	infinitive
7	**ne*	**yug*	**yu-ne-g-ti*	**yeu-g-sy-e-ti*	**yeug-tum*
9	**ne*	**puH*	**pu-ne-H-ti*	**pev-H-sy-e-ti*	**pevH-tum*

Thus, the classes 7 and 9 turn out to obey the same pattern. The only remaining problem is long *ī* in the weak class sign, see *pu-nī-mas*. It is difficult to explain.

The fifth class as a special instance of the seventh class

It can be shown that the seventh class and the fifth class are also basically the same. A prominent representative of the fifth class is

śru, śṛ-ṇô-ti ("he hears").

One should understand this verb as one where, originally, the root-final consonant is the semivowel *v*. Then, before consonants, IE **ne-v* should regularly turn into Sanskrit *nô*. This is, indeed, what happens here. The pres. ind. sg. is best understood by this comparison:

class	*gaṇa sign	IE root	3. pers. sg.	gaṇa sign
7	**ne*	IE **yug*	IE **yu-ne-g-ti* → *yu-nak-ti*	*na*
5	**ne*	IE **ḱlu* → *śru*	IE **ḱl̥-ne-u-ti* → *śṛ-ṇô-ti*	*nô*

Thus, originally, one has the *na*-infix as in *yu-na-k-ti*. The speakers, however, imagined an OI root *śṛ* to which *nô* was added.

The eighth class as a special instance of the fifth class

Now, and this is the final step, the eighth class can be considered a subclass of the fifth one. One may, of course, be tempted to interpret eighth-class verbs in this manner

class	√	3. pers. sg.	gaṇa sign
8	*tan*	*tan-ô-ti*	*ô*

where *ô* is the characteristic gaṇa sign of this class. However, it is better to see the comparison with the fifth-class verbs which are built from the zero grade:

class	gaṇa sign	3. pers. sg.	gaṇa sign
5	IE **ne*	IE **ḱl̥-ne-u-ti* → *śṛ-ṇô-ti*	*nô*
8	IE **ne*	IE **tn̥-ne-u-ti* → *ta-nô-ti*	*nô*

Thus, the *n* is part of a nasal infix and not the final root consonant. The root consonant turns into *a,* according to the sound law **SY__*N*** (pp. 28).

The class signs

According to the above arguments, the nasal classes 5, 8, and 9 can ultimately be seen as special instances of the seventh class with gaṇa sign *na.* Since all classes use the signs in strong and weak forms, the following pattern emerges:

class	strong gaṇa sign	3. pers. sg.	weak gaṇa sign	1. pers. pl.
5	*nô*	*śṛ-ṇô-ti*	*nu*	*śr-ṇu-mas*
7	*na*	*yu-na-k-ti*	*n*	*yu-ñ-j-mas*
8	*ô*	*tan-ô-ti*	*u*	*tan-u-mas*
9	*nā*	*pu-nā-ti*	*nī*	*pu-nī-mas*

If you like, you may also understand the weak signs of the classes 5, 7, and 8 from section B.2.4 (pp. 26). It is not clear why, in the 9. class, one finds *nī* from *nH* which should lead to *ni* instead.

Thus, historically, the four nasal classes all use *na* (going back to IE **ne*). Class 7 is the most basic one. Have a look at figure C.1 to see again how the other classes are derived.

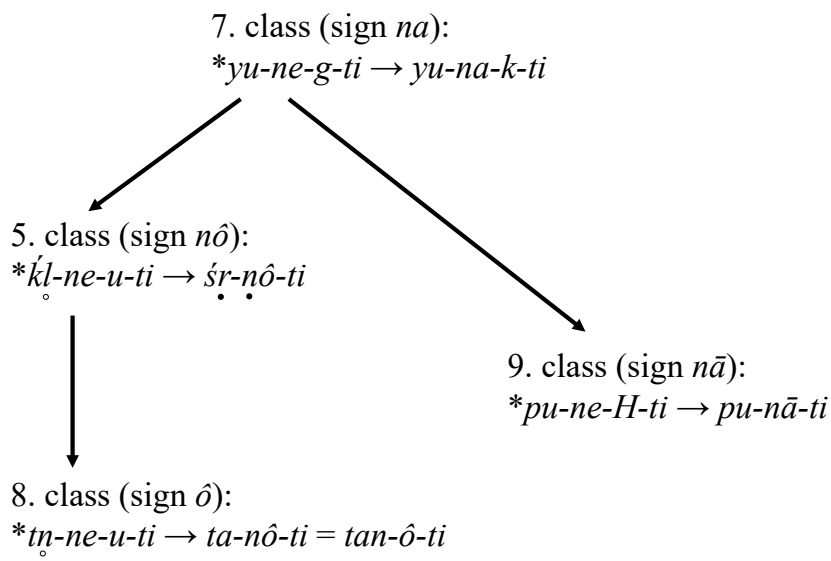

Figure C.1.: The nasal infix classes

C.2.6. The fifth class

Historically, the *nô* and *nu* signs of the fifth class developed from a "misunderstanding" with respect to *śṛ-ṇô-ti*. This was then generalised to other verbs. Here are a few examples, with strong gaṇa sign *nô* and weak gaṇa sign *nu*:

√	3. pers. sg.	1. pers. pl.	translation
āp	*āp-nô-ti*	*āp-nu-mas*	to obtain
śak	*śak-nô-ti*	*śak-nu-mas*	to be able
su	*su-nô-ti*	*su-nu-mas*	to press

C.2.7. The seventh class

The seventh class is the only one of the *n*-infix verbal classes where the *na* or *n* signs are infixed into the OI root, for example,

√	3. pers. sg.	1. pers. pl.	translation
chid	*chi-na-t-ti*	*chi-n-d-mas*	to cut
piṣ	*pi-na-ṣ-ṭi*	*pi-ṃ-ṣ-mas*	to grind
bhid	*bhi-na-t-ti*	*bhi-n-d-mas*	to break
yuj	*yu-na-k-ti*	*yu-ñ-j-mas*	to join

C.2.8. The eighth class

Apart from *tan* with

◇ *ta-nô-ti*, *ta-nu-mas* from the Indo-European point of view, or

◇ *tan-ô-ti*, *tan-u-mas* from the point of view of the traditional gaṇa sign

the OI root *kṛ* ("to make") is traditionally counted among the 8. class verbs. Remember

√	3. pers. sg.	1. pers. pl.	translation
kṛ	*kar-ô-ti*	*kur-mas*	to make

While this root does not show a nasal infix, one might observe that

◇ *kar-ô-ti* is similar to *tan-ô-ti* and

◇ *kur-mas* similar to the alternative form *tan-mas*.

It is important to note that the older Vedic form *kṛṇôti* is well attested. From that perspective, *kṛ* rightly belongs to the verbs with nasals.

C.2.9. The ninth class

Finally, consider these examples for the ninth class:

√	3. pers. sg.	1. pers. pl.	translation
krī	*krī-ṇā-ti*	*krī-ṇī-mas*	to buy
pū	*pu-nā-ti*	*pu-nī-mas*	to purify
vṛ	*vṛ-ṇā-ti*	*vṛ-ṇī-mas*	to choose

In *pu-nā-ti* observe expected short *u*. Long *ī* in *krī-ṇā-ti* is unexpected.

C.3. Infinitive and other normal-grade forms

C.3.1. General rule

The formation of the infinitive follows the general pattern

full-grade root + *tum*

Consider these examples where the full grade clearly shows:

√	3. pers. sg.	infinitive	translation
kṛ	*kar-ô-ti*	*kar-tum*	to make
bhṛ	*bhar-a-ti*	*bhar-tum*	to carry
mṛ	*mri-y-a-tê*	*mar-tum*	to die
vas (f.g.)	*vas-a-ti*	*vas-tum*	to dwell
smṛ	*smar-a-ti*	*smar-tum*	to remember
hṛ	*har-a-ti*	*har-tum*	to take, to rob

Also, roots with *i* regularly have full grade *ê*:

√	3. pers. sg.	infinitive	translation
i	*ê-ti*	*ê-tum*	to go
kṣip	*kṣip-a-ti*	*kṣêp-tum*	to throw
ji	*jay-a-ti*	*jê-tum*	to defeat

while roots with *u* exhibit *ô*:

√	3. pers. sg.	infinitive	translation
śru	*śṛ-ṇô-ti*	*śrô-tum*	to listen
stu	*stâu-ti* (Narten)	*stô-tum*	to praise
hu	*ju-hô-ti*	*hô-tum*	to sacrifice

Expected backward assimilation is often encountered:

√	3. pers. sg.	infinitive	translation
khid	*khid-y-a-ti*	*khêt-tum*	to suffer
tud	*tud-a-ti*	*tôt-tum*	to hit
tyaj (f.g.)	*tyaj-a-ti*	*tyak-tum*	to abandon
nud	*nud-a-ti*	*nôt-tum*	to push
pac (f.g.)	*pac-a-ti*	*pak-tum*	to cook
bhid	*bhi-na-t-ti*	*bhêt-tum*	to break
muc	*muñc-a-ti*	*môk-tum*	to liberate
yuj	*yu-na-k-ti*	*yôk-tum*	to join
vac (f.g.)	*vak-ti*	*vak-tum*	to speak
sad (f.g.)	*sīd-a-ti* (p. 85)	*sat-tum*	to sit

C.3.2. OI roots ending in a nasal

The OI root is full grade in all the examples below. The labial nasal *m* becomes dental *n* before dental *t*:

√ in f.g.	3. pers. sg.	infinitive	translation
gam	*gacch-a-ti*	*gan-tum*	to go
tan	*tan-ô-ti*	*tan-tum*	to stretch
nam	*nam-a-ti*	*nan-tum*	to salute
man	*man-y-a-tê*	*man-tum*	to think
yam	*yacch-a-ti*	*yan-tum*	to restrain
ram	*ram-a-tê*	*ran-tum*	to enjoy
han	*han-ti*	*han-tum*	to hit

C.3.3. Aspiration and cerebralisation

Applying aspiration laws

If an OI root ends in a voiced aspirate, the addition of *tum* necessitates the aspiration shift associated with the name of Christian Bartholomae:

ASh	IE *gh-t*	→	OI *g-dh*
	IE *dh-t*	→	OI *d-dh*
	IE *bh-t*	→	OI *b-dh*
but	IE *dh-s*	→	OI *t-s*
	IE *bh-s*	→	OI *p-s*

The shift is obvious in these verbs:

√	3. pers. sg.	infinitive	translation
kṣubh	*kṣubh-y-a-ti*	*kṣôb-dhum*	to be upset
yudh	*yudh-y-a-tê*	*yôd-dhum*	to fight
labh (f.g.)	*labh-a-tê*	*lab-dhum*	to obtain

Sometimes, the other aspiration law is also applied. Grassmann's law says: Of two aspirated sounds, the first one becomes deaspirated:

DA IE $C^{\texttt{+asp}}VC^{\texttt{+asp}} \rightarrow$ OI $C^{\texttt{-asp}}VC^{\texttt{+asp}}$

Mixing these sound laws with the palatalisation laws **SPal** (pp. 38), one finds

√	3. pers. sg.	infinitive	translation
dah (f.g.)	*dah-a-ti*	**dheg^{w}h-tum* → *dag-dhum*	to burn
dih	*dêg-dhi*	**dheigh-tum* → *dêg-dhum*	to smear
duh	*dôg-dhi*	**dheugh-tum* → *dôg-dhum*	to milk
snih	*snih-y-a-ti*	**sneig^{w}h-tum* → *snêg-dhum*	to love

In more detail, the following developments are postulated:

IE **sneig^{w}h-tum* (full grade and infinitive marker *tum*)
→ *snêgh-tum* (**DIPH**, no **SPal** before consonant)
→ *snêg-dhum* (**ASh**)

and

IE **dheugh-tum* (full grade and infinitive marker *tum*)
→ *dhôgh-tum*
→ *dôgh-tum* (**DA**)
→ *dôg-dhum* (**ASh**)

Applying cerebralisation sound laws

In a few verbs, the infinitive comes with cerebralisation. In this subsection, several cerebralisation laws are needed. First, cerebralisation occurs not only after *ṣ*, but also after *ś*:

Cer*D* OI *ṣ/ś* + *t* → OI *ṣṭ*

This is clearly seen in these verbs:

√	3. pers. sg.	infinitive	translation
kṛṣ	*kṛṣ-a-ti*	*karṣ-ṭum*, *kraṣ-ṭum*	to plough
kruś	*krôś-a-ti*	*krôṣ-ṭum*	to cry out
tuṣ	*tuṣ-y-a-ṭi*	*tôṣ-ṭum*	to enjoy
daṃś (f.g.)	*daś-a-ti* (z.g.!)	*daṃṣ-ṭum*	to bite
diś	*diś-a-ti*	*dêṣ-ṭum*	to show
dṛś	(*paś-y-a-ti*)	*draṣ-ṭum*	to see
dviṣ	*dvêṣ-ṭi*	*dvêṣ-ṭum*	to hate
naś (z.g.!)	*naś-y-a-ti* (z.g.!)	*naṃṣ-ṭum* ← IE **h*$_2$*nenḱ-tu*	to perish
puṣ	*puṣ-y-a-ti*	*pôṣ-ṭum*	to nourish
pracch (f.g.)	*pṛcch-a-ti*	*praṣ-ṭum*	to ask
vṛṣ	*varṣ-a-ti*	*varṣ-ṭum*	to rain
sṛj	*sṛj-a-ti*	*sraṣ-ṭum*	to throw, to let loose
spṛś	*spṛś-a-ti*	*sparṣ-ṭum*, *spraṣ-ṭum*	to touch

In contrast to section B.2.4 (pp. 26) and different from OI root *kṛ* with infinitive *kar-tum*, some verbs above exhibit *ra* rather than *ar*: *kraṣ-ṭum*, *draṣ-ṭum,* and *spraṣ-ṭum* by the sound law **MET_*rSP***. Indeed, *rṣ-ṭ* (as in *karṣ-ṭum, varṣ-ṭum* or *sparṣ-ṭum*) is a rather heavy combination of consonants.

The infinitive of *yaj* ("to sacrifice") is *yaṣ-ṭum*, but should not be: IE **yeǵ* should yield

IE **yeǵ-tum* (full grade and infinitive marker *tum*)
→ *yas-tum* (***sz*** before voiceless consonant)

Presumably, leveling (from the PPP) has done the rest (see p. 122):

	yas-tum	
influenced by	*iṣ-ṭa*	with cerebral *ṣ-ṭ*
turns into	*yaṣ-ṭum*	with cerebral *ṣ-ṭ*

... both aspiration and cerebralisation laws

Turning to a second variant of the above sound law, one obtains

$$\textbf{Cer}\boldsymbol{D} \qquad \text{OI } \dot{z} + d/dh \quad \rightarrow \quad \text{OI } \dot{z} + \dot{d}/\dot{d}h$$

The infinitive *vôḍhum* from *vah, vah-a-ti* ("to flow, to drive") goes back to IE **veǵh*. Cerebralisation has no sound-law justification. One should have obtained

IE **veǵh-tum* (full grade and infinitive marker *tum*)
→ *vaǵ-dhum* (**ASh**)
→ *vaz-dhum* (***sz*** before voiced consonant)
→ *vô-dhum* (**CpL*z*** 1. line, pp. 53)

Here, leveling from regularly formed PPP *ū-ḍha* is responsible for *vôḍhum*, with cerebral *ḍh*. In contrast, the following two examples show regular cerebralisation. First, consider the infinitive of *guh, gūhati* ("to hide"):

IE **gheuǵh-tum* (full grade and infinitive marker *tum*)
→ *geuǵ-dhum* (**DA**, **ASh**)
→ *geuz-dhum* (***sz*** before voiced consonant)
→ *geuż-dhum* (**RUKI**)
→ *gôż-ḍhum* (**DIPH**, **Cer*D***)
→ *gô-ḍhum* (**CpL*z*** 5. line, where *ô* is already long)

Second, a very parallel development leads to the infinitive *lê-ḍhum* of *lihati* ("he licks"):

IE **leiǵh-tum* (full grade and infinitive marker *tum*)
→ *leiǵ-dhum* (**ASh**)
→ *leiz-dhum* (***sz*** before voiced consonant)
→ *leiż-dhum* (**RUKI**)
→ *lêż-ḍhum* (**DIPH**, **Cer*D***)
→ *lê-ḍhum* (**CpL*z*** 5. line, where *ê* is already long)

There exist additional examples of cerebral sounds which are not justified by sound laws, but by analogy. The infinitive of *ruh, rôhati* ("to climb") is *rôḍhum*, but the IE root is **h*$_1$*leudh* (IE *dh* can produce OI *h* according to subsection B.3.6, pp. 50), which should have lead to *rôddhum* (similar to *dôgdhum* or *bôddhum*) instead. Also, observe *sah, sahati* ("to tolerate") with infinitive *sô-ḍhum* although the sound laws show a different result:

IE **seǵh-tum* (full grade and infinitive marker *tum*)
→ *saǵ-dhum* (**ASh**)
→ *saz-dhum* (***sz*** before voiced consonant)
→ *sô-dhum* (**CpL*z***)

Here, the analogy with verbs like *guh* above is responsible for cerebralisation.

C.3.4. Laryngeals

The infinitive of quite a few number of verbs can be explained by laryngeal theory, either in line with sound laws or by later analogy. Remember:

$$\text{IE } CHC \quad \rightarrow \quad \text{OI } CiC$$

By this sound law, the verbs listed below exhibit *i* between the OI full-grade root and the infinitive marker *tum*.

√	3. pers. sg.	infinitive	translation
av (f.g.)	**h*$_2$*evH-e-ti* → *av-a-ti*	**h*$_2$*ev-H-tum* → *av-i-tum*	to help
khan (f.g.)	**khenH-e-ti* → *khan-a-ti*	**khen-H-tum* → *khan-i-tum*	to dig
jan (f.g.)	**ǵn̥H-y-e/o-toi* → *jā-y-a-tê*	**ǵen-H-tum* → *jan-i-tum*	to be born
nī	**neyH-e-ti* → *nay-a-ti*	**ney-H-tum* → *nay-i-tum*	to lead
bhū	**bhevH-e-ti* → *bhav-a-ti*	**bhev-H-tum* → *bhav-i-tum*	to be

Many other roots, even if there is no laryngeal excuse, use *i-tum* rather than just *tum* as the infinitive suffix. This *i* prevents sandhi between the (normal-grade or, more rarely, zero-grade) root and the infinitive marker *tum*: *paṭh-i-tum*, *pat-i-tum, cumb-i-tum*, *bhāṣ-i-tum*, *êṣ-i-tum*, *côray-itum, kôp-i-tum, kart-i-tum, kathay-i-tum, lêkh-i-tum*

Besides *nay-i-tum* which is parallel to *bhav-i-tum,* one also finds *nê-tum.* It is difficult to decide whether *nay-i-tum* or *nê-tum* is the regular development:

◇ In *nay-i-tum,* the laryngeal is of a vowel quality rather than a consonantal one. It stands between the consonants *y* and *t* and hence turns into *i*.

◇ In *nê-tum,* the laryngeal is of a rather consonantal quality. The diphthong *ay* before that consonant turns into the long vowel *ê*. When the laryngeal drops, this vowel cannot be lengthened any further.

There is also a class of verbs with long *ā* before *tum*. The sound law

$$\text{IE } eH \quad \rightarrow \quad \text{OI } \bar{a}$$

is responsible for these examples:

√ in f.g.	3. pers. sg.	infinitive	translation
dā	**de-deh*$_3$*-ti* → *da-dā-ti*	**deh*$_3$*-tum* → *dā-tum*	to give
dhā	**de-dheh*$_1$*-ti* → *da-dhā-ti*	**dheh*$_1$*-tum* → *dhā-tum*	to place
pā	*pi-b-a-ti* (p. 86)	**peh*$_3$*-tum* → *pā-tum*	to drink
śās	*śās-ti*	**ḱeHs-tum* → *śās-tum*	to teach
sthā	*ti-s̤th-a-ti*	**steh*$_2$*-tum* → *sthā-tum* (levelling!)	to stand

C.3.5. Agent nouns, instrument nouns, and action nouns

Masculine action nouns in *a*

Turning to masculine action nouns, many examples can be found with OI *a* added to the full-grade root. The simplest examples are those without semivowels:

√	translation	m. action/agent noun in f.g.	translation
ar (f.g.)	to fit, to connect	*ar-a*	spoke (of a wheel)
kṛ	to make	*kar-a*	doing, hand
		bhās-kar-a	light-maker → sun
gam (f.g.)	to go	*sam-ā-gam-a*	meeting
bhañj (f.g.)	to break	*bhaṅg-a*	breaking, defeat
vṛ	to choose	*var-a*	boon

and

√	translation	m. agent noun in l.g.	translation
kṛ	to make	*kumbha-kār-a*	pot-maker → potter

If the roots contain the semivowels *i* or *u*, the diphthongs *ê* or *ô* show up:

√	translation	m. action noun in f.g.	translation
khid	to be depressed	*khêd-a*	tedium
diś	to show	*dêś-a*	country
bhid	to split	*bhêd-a*	separation, split
vid	to know	*vêd-a*	sacred knowledge

and

√	translation	m. action noun in f.g.	translation
kup	to be angry	*kôp-a*	anger
krudh	to be angry	*krôdh-a*	anger
lubh	to be desire	*lôbh-a*	greed

If a root ends in *i*, note the operation of ***SV*** before the thematic vowel *a*:

√	translation	m. action noun in f.g.	translation
ji	to conquer	*jay-a*	victory

Similarly for *i* ("to go"), where the meanings vary with the prepositions:

√	translation	action noun in f.g.	translation
ati-i	to excel	*aty-ay-a*	transgression
adhi-i	to study	*adhy-ay-a* (also: *adhyāya*)	chapter, section
anu-i	to follow	*anv-ay-a*	succession, progeny
abhi-i	to arrive	*abhy-ay-a*	arrival (of darkness)
ud-i	to go up	*ud-ay-a*	appearance (of a star)
upa-i	to go towards	*upa-ay-a* → *upāy-a*	means, approach
ny-ā-i	to come down	*ny-ā-ay-a* → *nyāy-a*	rule, method
pra-i	to set off	*pra-ay-a* → *prāy-a*	departure from life
vi-i	to disappear	*vy-ay-a*	loss, cost
		a-vy-ay-a	invariant
		a-vy-ay-a-m n. (!)	indeclinable
		a-vy-ay-a	the eternal one, Viṣṇu

Since laryngeals are lost without trace between a consonant (here: the semivowel *y* or *v*, respectively) and a vowel, they affect the root vowel, but not the action noun:

√	translation	action noun in f.g.	translation
bhī ← **bhiH*	to fear	*bhay-a-m* n. (!) ← **bheyH-o-m*	fear, danger
bhū ← **bhuH*	to be	*bhav-a* m. ← **bhevH-o*	being, state

Consider

√	3. pers. sg.	translation	m. action noun in f.g.	translation
yuj	*yu-ñ-j-a-tê* ← IE **yung-e-toi*	he yokes	*yôg-a* m. ← IE **yeug-o*	joining

Secondary palatalisation (**SPal**) lies behind

◇ palatal consonant *j* in *yu-ñ-j-a-tê* (here, the IE thematic vowel is *e*) versus

◇ non-palatal consonant *g* in *yôg-a* (the vowel *a* goes back to IE *o*)

This pattern can also be seen in

√	3. pers. sg.	translation	m. action noun in f.g.	translation
arc (f.g.)	*arc-a-ti*	he shines	*ark-a*	sun
bhaj (f.g.)	*bhaj-a-ti*	he divides	*bhag-a*	wealth

√	3. pers. sg.	translation	m. action noun in f.g.	translation
bhuj	*bhu-na-k-ti*	he enjoys	*bhôg-a*	enjoyment
mih	*mêh-a-ti*	he urinates	*mêgh-a*	rain
yuj	*yu-na-k-ti*	he yokes	*yôg-a*	joining
vi-vic	*vi-vi-na-k-ti*	he sifts	*vi-vêk-a*	discrimination
śuc	*śôc-a-ti*	he grieves	*śôk-a*	grief
sṛj	*sṛj-a-ti*	he releases	*sarg-a* (but see p. 122)	letting go

Neuter nouns in *ana*

Many neuter action nouns in *ana* are found. The first *a* seems to go back to an IE front vowel, i.e., IE **eno* → OI *ana*. Otherwise secondary palatalisation in *bhôj-ana-m* or *vac-ana-m* in the following table could not be explained:

√	translation	n. action noun in f.g.	translation
kṛ	to make	*kar-aṇa-m*	producing
gam (f.g.)	to go	*gam-ana-m*	going
nī	to lead	*nay-ana-m*	leading (→ eye)
bhuj	to enjoy	*bhôj-ana-m*	enjoyment
mṛd	to squeeze	*mard-ana-m*	rubbing, pressing
vac (f.g.)	to speak	*vac-ana-m*	speech
vad (f.g.)	to speak	*vad-ana-m*	speaking (→ mouth)
vi-as (f.g.)	to dissipate	*vy-as-ana-m*	vice
śru	to hear	*śrav-aṇa-m*	hearing
su	to press	*sav-ana-m*	pressing, Soma
sū	to beget	*sav-ana-m*	childbirth

OI root *i* ("to go") gives rise to these examples:

√	translation	n. action noun in f.g.	translation
adhi-i	to study	*adhy-ay-ana-m*	reading, recitation
ud-i	to go up	*ud-ay-ana-m*	rising of the sun, outcome
upa-i	to go towards	*upa-ay-ana-m* → *upāy-ana-m*	approaching
pra-i	to set off, to die	*pra-ay-ana-m* → *prāy-aṇa-m*	going forth, beginning

Remember also *rāma-ay-ana-m* → *rāmāy-aṇa-m*.

Some common laryngeal roots also use the *ana* suffix which looks like a *na* suffix. For example, from *dā* ("to give"), one obtains

$$dā\text{-}ana \quad \rightarrow \quad \text{OI } dā\text{-}na$$

and similarly

√ in f.g.	translation	n. action noun in f.g.	translation
dā	to give	*dā-na-m*	giving, gift
dhā	to put, to place	*dhā-na-m*	container
pā	to drink	*pā-na-m*	drinking, drink
sthā	to stand	*sthā-na-m*	standing, place

Masculine nouns in *ana*

Rarely, the suffix *ana* may also point to an agent noun:

√	translation	m. (!) agent (!) noun in f.g.	translation
nand	to delight	*nand-ana*	delighter
pū	to purify	*pav-ana*	purifyer → wind

Neuter nouns in *as*

Very common neuter words take the suffix *as*. Here is a list:

√	translation	n. action noun in f.g.	translation
cit	to observe	*cêt-as*	thought
tap (f.g.)	to burn	*tap-as*	austerity
tij	to make sharp	*têj-as*	sharpness, heating
nam (f.g.)	to bow	*nam-as*	bowing, homage
pī	to become fat	*pay-as*	milk
man (f.g.)	to think	*man-as*	thought
vac (f.g.)	to speak	*vac-as*	speech

Neuter nouns in *is*

Neuter nouns in *is* are rare. Examples are

√	translation	n. action noun in f.g.	translation
jyut	to shine	*jyôt-is*	light, star
hu	to sacrifice	*hav-is*	oblation

Agent nouns in *tar*

Inifinitives and agent nouns share the special features

◇ of building on the full grade and

◇ of using a *t* suffix, *tum* in the case of the infinitive and *tar* for agent nouns:

√	infinitive	translation	m. agent noun in f.g.	translation
av	*av-i-tum*	to help	*av-i-tar*	helper, friend
kṛ	*kar-tum*	to make	*kar-tar*	doer, maker
kruś	*krôṣ-ṭum*	to shriek	*krôṣ-ṭar*	shrieker → jackal
gam	*gan-tum*	to go	*gan-tar*	goer
ji	*jê-tum*	to defeat	*jê-tar*	conqueror
duh	*dôg-dhum*	to milk	*dôg-dhar*	milker, exploiter
nī	*nê-tum*	to lead	*nê-tar*	leader
pā	*pā-tum*	to drink	*pā-tar*	drinker
budh	*bôd-dhum*	to be awake	*bôd-dhar*	one who knows
bhṛ	*bhar-tum*	to carry	*bhar-tar*	husband
vac	*vak-tum*	to speak	*vak-tar*	speaker
vah	*vô-ḍhum*	to drive	*vô-ḍhar*	bridegroom
śru	*śrô-tum*	to hear	*śrô-tar*	hearer
sū	*sav-i-tum*	to beget	*sav-i-tar*	activator, father, sun
hu	*hô-tum*	to sacrifice	*hô-tar*	priest

Sometimes, the zero grade is taken instead. IE $^*khen\text{-}H$ has zero grade *khā* by the sound law "IE $C\underset{\circ}{n}H \rightarrow$ OI $C\bar{a}$". This is the form seen in *khā-tar* ("digger") ← *khan* ("to dig"), besides the expected full-grade form *khan-i-tar* ← $^*khen\text{-}H\text{-}tor$.

Instrument nouns in *tra*

The instruments used by the agents from the previous subsection are characterised by the suffix *tra* + neuter ending *m*. For example, the "drinker" *pā-tar* uses the "drinking-vessel" *pā-tram*.

√	infinitive	translation	n. instrum. noun in f.g.	translation
kṛ	*kar-tum*	to make	*kar-tra-m*	spell, charm
gā (f.g.)	*gā-tum*	to go	*gā-tra-m*	body limb
chad (f.g.)	*chat-tum*	to cover	*chat-tra-m/chatra-m*	umbrella
duh	*dôg-dhum*	to milk	*dôg-dhra-m*	milk-pail
dham (f.g.)		to exhale	*dhami-tra-m* (p. 83)	kindling instr.
nī	*nê-tum*	to lead	*nê-tra-m*	eye
pat (f.g.)	*pat-i-tum*	to fly	*pat-tra-m/patra-m*	wing, leaf
pā (f.g.)	*pā-tum*	to drink	*pā-tra-m*	cup, vessel
yam (f.g.)	*yan-tum*	to hold up/back	*yan-tra-m*	band, instrument
vac (f.g.)	*vak-tum*	to speak	*vak-tra-m*	mouth
vas (f.g.)	*vas-i-tum*	to clothe	*vas-tra-m*	clothing
śas (f.g.)	*śas-tum*	to kill	*śas-tra-m*	weapon
śās (f.g.)	*śās-tum*	to instruct	*śās-tra-m*	scientific text
śru	*śrô-tum*	to hear	*śrô-tra-m*	ear
hu	*hô-tum*	to sacrifice	*hô-tra-m*	sacrifice

Agent or action nouns in *tu*

There exist a few agent or action nouns in *tu*:

√	infinitive	translation	*tu* noun	translation
gā (f.g.)	*gā-tum*	to go	*gā-tu* m.	going, motion
vas (f.g.)	*vas-tum*	to dwell, to be	*vas-tu* n.	substance
hi	*hê-tum*	to send, to impel	*hê-tu* m.	reason, argument

Nouns in *man*

Nouns in *man* are also derived from the full grade. They seem to indicate the result of an action:

√	infinitive	translation	n. noun in f.g.	translation
kṛ	*kar-tum*	to make	*kar-man*	action
chad (f.g.)	*chat-tum*	to cover	*chad-man*	roof, protection
jan (f.g.)	*jan-i-tum*	to beget	*jan-i-man, jan-man*	birth

C.3.6. Comparative and superlative

Comparative and superlative forms are often formed with *tara* and *tama* or with *īyas* and *iṣṭha*, respectively:

adjective	translation	comparative	superlative
priya	dear	*priya-tara*	*priya-tama*
mahant	great	*mahat-tara*	*mahat-tama*
alpa	small	*alp-īyas*	*alp-iṣṭha*
uru	wide	*var-īyas*	*var-iṣṭha*
guru	heavy	*gar-īyas*	*gar-iṣṭha*

Many of the *īyas* and *iṣṭha* forms are built on verbal roots. Then, the adjective builds on the zero grade, while one finds the full grade in both comparative and superlative. This may hold for *uru* and *guru* above and is quite clear in the following table:

√	translation	adjective (z.g.)	translation	comparative (f.g.)	superlatve (f.g.)
kṣip	to throw	*kṣip-ra* (1)	fast	*kṣêp-īyas* (1)	*kṣêp-iṣṭha* (1)
kṣud	to crush	*kṣud-ra* (1)	small	*kṣôd-īyas* (1)	*kṣôd-iṣṭha* (1)
mṛd	to rub	*mṛd-u*	soft	*mrad-īyas* (2)	*mrad-iṣṭha* (2)

1. One class of adjectives is built from the zero grade plus *ra* (as shown on pp. 130). This *r* is not present in the comparative and superlative forms.

2. In contrast to *mard-ana-m* (p. 105) with *ar*, here one finds *ra* for unclear reasons.

C.3.7. Future in *sy*

Forms with and without RUKI

The future meaning has developed from a desiderative one. See E *he will go* which indicates future tense. Its original meaning is "he wants to go"; E *will* is related to NHG *wollen* ("to want"). The Sanskrit desiderative is dealt with on pp. 136. The future is formed from the full grade of the root:

full-grade root + *sy* + *a* + ending

Long-$\bar{a}$ roots (although stemming from laryngeals) provide obvious examples:

$\surd$ in f.g.	translation	infinitive	future, 3. sg.
dā	to give	*dā-tum*	*dā-sy-a-ti*
dhā	to set, to place	*dhā-tum*	*dhā-sy-a-ti*
pā	to drink	*pā-tum*	*pā-sy-a-ti*
sthā	to stand	*sthā-tum*	*sthā-sy-a-ti*

Consider next full grade OI roots with vowel *a*:

$\surd$ in f.g.	translation	infinitive	future, 3. sg.
man	to think	*man-tum*	*maṃ-sy-a-ti* (***Ns***)
yaj	to sacrifice	*yaṣ-ṭum*	*yak-ṣy-a-ti*
ram	to enjoy	*ran-tum*	*raṃ-sy-a-tê* (***Ns***)
labh	to obtain	*lab-dhum*	*lap-sy-a-tê*
vac	to speak	*vak-tum*	*vak-ṣy-a-ti*
sad	to sit	*sat-tum*	*sat-sy-a-tê*
han	to kill	*han-tum*	*haṃ-sy-a-ti* (***Ns***)

In all these examples, backward assimilation to the unvoiced *s* is operative. **RUKI** is encountered after *k* in *vak-ṣy-a-ti*. Also, *labh* and *lap-sy-a-tê* show that the *s* cannot become aspirated, i.e., the aspiration is shifted forward, but has no effect.

Roots with *i* lead to full grade *ê* and hence to

$\surd$	translation	infinitive	future, 3. sg.
i	to go	*ê-tum*	*ê-ṣy-a-ti*
kṣip	to throw	*kṣêp-tum*	*kṣêp-sy-a-ti*
ji	to defeat	*jê-tum*	*jê-ṣy-a-ti*
bhid	to break	*bhêt-tum*	*bhêt-sy-a-ti*

while roots with *u* lead to full grade *ô* clearly seen in

$\surd$	translation	infinitive	future, 3. sg.
muc	to liberate	*môk-tum*	*môk-ṣy-a-ti*
yuj	to join	*yôk-tum*	*yôk-ṣy-a-ti*
śru	to listen	*śrô-tum*	*śrô-ṣy-a-ti*
stu	to praise	*stô-tum*	*stô-ṣy-a-ti*

Laryngeal roots are responsible for *i-ṣy-a-ti*:

√	translation	infinitive	future, 3. sg.
jan (f.g.)	to be born	**ǵen-H-tum* → *jan-i-tum*	*jan-i-ṣy-a-ti*
bhū	to be	**bhev-H-tum* → *bhav-i-tum*	*bhav-i-ṣy-a-ti*

By analogy, this convenient quasi-thematic *i* spreads to other roots without any laryngeal justification:

√	translation	infinitive	future, 3. sg.
kṛ	to make	*kar-tum*	*kar-i-ṣy-a-ti*
gam (f.g.)	to go	*gan-tum*	*gam-i-ṣy-a-ti*
tan (f.g.)	to stretch	*tan-tum*	*tan-i-ṣy-a-ti*
budh	to be awake	*bôdh-i-tum*	*bôdh-i-ṣy-a-ti*
bhṛ	to carry	*bhar-tum*	*bhar-i-ṣy-a-ti*
man (f.g.)	to think	*man-tum*	*man-i-ṣy-a-ti/tê*
smṛ	to remember	*smar-tum*	*smar-i-ṣy-a-ti*
likh	to write	*lêkh-i-tum*	*lêkh-i-ṣy-a-ti*
vad (f.g.)	to speak	*vad-i-tum*	*vad-i-ṣy-a-ti*
vṛt	to turn round	*vart-i-tum*	*vart-i-ṣy-a-tê*
vṛdh	to grow	*vardh-i-tum*	*vardh-i-ṣy-a-tê*

One motivation for the use of "thematic" *i* is clear from the last two verbs in the table above. Without quasi-thematic *i*, they show identical future forms:

√	translation	infinitive	future, 3. sg.
vṛt	to turn round	*vart-i-tum*	*vart-sy-a-ti*
vṛdh	to grow	*vardh-i-tum*	*vart-sy-a-ti*

Aspiration laws (revelation of aspirated root initial)

The aspiration laws lead to interesting future forms:

1. The aspiration shift **ASh** cannot affect *s* or *sy*.

2. Then, there is no need for root-initial deaspiration and IE aspiration becomes apparent:

√	translation	infinitive	future, 3. sg.
gāh (f.g.)	to dive	*gā-ḍhum*	*ghāk-ṣy-a-tê*
dah (f.g.)	to burn	*dag-dhum*	*dhak-ṣy-a-ti* ← **dheg*^{w}*h-s-*
dih	to smear	*dêg-dhum*	*dhêk-ṣy-a-ti* ← **dheigh-s-*
duh	to milk	*dôg-dhum*	*dhôk-ṣy-a-ti* ← **dheugh-s-*
bandh (f.g.)	to bind	*bad-dhum* (z.g.!)	*bhant-sy-a-ti* ← **bhendh-s-*
budh	to be awake	*bôdh-i-tum*	*bhôt-sy-a-ti* ← **bheudh-s-*

Primary palatalisation (revelation of root-final)

Primary palatalisation is seen in the sound law

$$\text{IE } \acute{k} \rightarrow \text{OI } \acute{s}.$$

Now, IE $\acute{k}$ is still visible in OI future forms as OI k:

√	translation	infinitive	future, 3. sg.
daṃś (f.g.!)	to bite	*daṃṣ-ṭum*	*daṃk-ṣy-a-ti* ← **denḱ-s-*
diś	to show	*dêṣ-ṭum*	*dêk-ṣy-a-ti* ← **deiḱ-s-*
dṛś	to see	*draṣ-ṭum*	*drak-ṣy-a-ti* ← **derḱ-s-*
naś (z.g.!)	to perish	*naṃṣ-ṭum*	*naṃk-ṣy-a-ti* ← **h*$_2$*ne(n)ḱ-s-*
pracch (f.g.)	to ask	*praṣ-ṭum*	*prak-ṣy-a-ti* ← **preḱ-s-*
spṛś	to touch	*sparṣ-ṭum*, *spraṣ-ṭum*	*spark-ṣy-a-ti* ← **sperḱ-s-*

A second origin of *k-ṣy* in future forms is **SIB**, in particular

$$\text{OI } ṣ + s \quad \rightarrow \quad \text{OI } k + ṣ$$

Here are some examples:

√	translation	infinitive	future, 3. sg.
kṛṣ	to plough	*karṣ-ṭum*, *kraṣ-ṭum*	*kark-ṣy-a-ti*
tuṣ	to enjoy	*tôṣ-ṭum*	*tôk-ṣy-a-ti*
dviṣ	to hate	*dvêṣ-ṭum*	*dvêk-ṣy-a-ti*
puṣ	to nourish	*pôṣ-ṭum*	*pôk-ṣy-a-ti*

Finally, remember the **SIB** rule

$$\text{OI } s + s \quad \rightarrow \quad \text{OI } t + s$$

with the following example:

$\surd$	translation	infinitive	future, 3. sg.
vas	to dwell	*vastum*	*vat-sy-a-ti*

C.3.8. Causatives

As a rule, causatives are built from the full grade. Let us first consider *i*-roots such as

$$\underbrace{viś}_{\text{OI root in zero grade}} \quad , \quad \underbrace{vêś}_{\text{root in full grade}} \quad - \quad \underbrace{ay}_{\text{suffix}} \quad - \quad \underbrace{a}_{\text{thematic vowel}} \quad - \quad \underbrace{ti}_{\text{ending 3. pers. sg.}}$$

and roots with *u*:

◇ *bôdh-ay-a-ti* (“causes to be awake → awakens”) ← *budh* (“to be awake”)

◇ *kôp-ay-a-ti* (“causes to be angry → enrages”) ← *kup* (“to be angry”)

◇ *śôbh-ay-a-ti* (“causes to shine → decorates”) ← *śubh* (“to shine”)

OI roots ending on long vowel $\bar{a}$ (full grade due to a laryngeal) use *p* to mark causatives:

◇ *sthā-p-ay-a-ti* (“causes to stand → sets”) ← *sthā* (“to stand”)

◇ *dā-p-ay-a-ti* (“causes to give → makes pay”) ← *dā* (“to give”)

◇ *snā-p-ay-a-ti* (“causes to swim → to bathe”) ← *snā* (“to swim”)

◇ *jñā-p-ay-a-ti* (“causes to know → inform”) ← *jñā* (“to know”)

Since the IE root vowel is *o* for causatives, Brugmann’s law applies. Therefore, one often observes $\bar{a}$:

◇ *kār-ay-a-ti* (“causes to do → orders”) ← *kṛ* (“to make”)

◇ *tyāj-ay-a-ti* (“causes to abandon → expels”) ← *tyaj* (“to abandon”)

◇ *pāṭh-ay-a-ti* (“causes to read → teaches”) ← *paṭh* (“to read”)

◇ *mār-ay-a-ti* (“causes to die → kills”) ← *mṛ* (“to die”)

◇ *vāc-ay-a-ti* (“makes [a text] speak → read”) ← *vac* (“to speak”)

◇ *śrāv-ay-a-ti* (“causes to hear → proclaim”) ← *śru* (“to hear”)

◇ *sād-ay-a-ti* (“causes to sit → places”) ← *sad* (“to sit”)

Application of Brugmann’s law is regularly prevented by laryngeals. In the first of these examples, the two consonants *n* and *H* follow IE *o*:

√	3. pers. sg.	translation
jan	*jan-ay-a-ti* ← IE **ǵonH-ey-e-ti*	he begets
dam	*dam-ay-a-ti* ← IE **domH-ey-e-ti* (s.v. *dam*)	he tames

In contrast, observe “wrong”

◇ *bhāv-aya-ti* (“causes to be → makes”) from OI root *bhū* (“to be”) ← IE **bhuH,* where the laryngeal should have prevented application of **L*o***,

◇ *cumb-aya-ti* (“causes to kiss”) ← *cumb* (“to kiss”), where the two consonants following *u* might be responsible for the zero grade.

C.3.9. Gerunds in *am* and *yam*

There exists a rare gerund that is formed with *am*. It mostly uses the full grade:

√	translation	gerund in *am*, full grade
kṣip	to throw	*kṣêp-am*
dṛś	to see	*darś-am*
bandh (f.g.)	to bind	*bandh*-am
bhuj	to enjoy	*bhôj-am*

By **L*o***, one often witnesses long *ā* in open syllables:

√	translation	gerund in *am*, lengthened grade
kṛ	to make	*kār-am*
grah (f.g.)	to grab	*grāh-am*
taḍ (f.g.)	to hit	*tāḍ-am*
dah (f.g.)	to burn	*dāh-am*
paṭh (f.g.)	to read	*pāṭh-am*

√	translation	gerund in *am*, lengthened grade
vah (f.g.)	to carry	*vāh-am*
śru	to hear	*śrāv-am*
smṛ	to remember	*smār-am*

Verbs like *dhyâi* (but see p. 82) regularly lead to *dhyāy-am*:

√	translation	gerund in *am*, full grade
gâi	to sing	*gāy-am*
trâi	to protect	*trāy-am*
dhyâi	to meditate	*dhyāy-am*

The root *dhyâi* seems to be a misunderstanding in the sense that *dhyāy-a-ti* was considered a 1. class verb from root *dhyâi*. Historically, it might be more correct to consider the root *dhyā*. Of course, *dhyā-am* → *dhyām* would hardly be recognisable. In any case, *dhyāy-am* might (on the basis of the root *dhyā*) be segmented as *dhyā-yam*. And hence a gerund marker *yam* came into being:

√	translation	gerund in *yam*, full grade
dā	to give	*dā-yam*
dhā	to set, to place	*dhā-yam*
pā	to drink	*pā-yam*
mā	to measure	*mā-yam*

C.4. Past participle and other zero-grade forms

C.4.1. Root nouns

Before dealing with the past participles, the so-called root nouns are presented. Here, endings are directly affixed to the root. Most of them are feminine. Root nouns are typically indicated by

- ◇ the root in zero grade and
- ◇ the nom. sg. which does not exhibit any case ending. Since nom. sg. m. and f. are usually characterised by *s*, the latter would have been lost here due to **CCl**. The root-final consonant is characterised by loss of both voice and aspiration as explained on pp. 47.

Dental root-final consonant

In the case of dental root-final consonant, the "no voice, no aspiration" rule yields the obvious results:

◇ nom. sg. *yut* (stem *yudh*) ("battle")

◇ nom. sg. *mṛt* (stem *mṛd*) ("clay")

◇ nom. sg. *vidyut* (stem *vidyut*) ("flash of lightning")

Full grade

The root may sometimes be in full grade, for pretty obvious reasons (see pp. 81):

◇ nom. sg. *upa-ni-ṣat* (stem *upa-ni-ṣad*) ← IE **sed* (post-Vedic, preclassical literature)

◇ nom. sg. *saṃ-sat* (stem *saṃ-sad*) ("assembly") ← IE **sed*

◇ nom. sg. *pari-ṣat* (stem *pari-ṣad*) ("assembly") ← IE **sed*

◇ nom. sg. *ā-pat* (stem *ā-pad*) ("calamity") ← IE **ped*

k or *ṭ* as root-final consonants

When the root ends in OI *ś*, one should not be suprised to see OI *k* instead because OI *ś* goes back to IE palatal *ḱ* (p. 37):

◇ nom. sg. *dṛk* (stem *dṛś*) ("sight") ← IE root **derḱ*

But one also finds *ṭ*:

◇ nom. sg. *viṭ* (stem *viś*) ("house, people") ← IE root **veiḱ*

Examples for root-final velars are

◇ nom. sg. *bhuk* (stem *bhuj*) ("enjoyment, utility") ← IE root **bheug*

◇ nom. sg. *miṭ* (stem *mih*) ("mist, haze, fog") ← IE root **meigh*

◇ nom. sg. *śuk* (stem *śuc*) ("flame, grief") ← IE root **ḱeuk*

See subsection B.3.5, pp. 47 for a few attempts to distill rules.

C.4.2. General rule for PPP

Roughly speaking, the past participle (PPP) is constructed in this manner:

zero-grade root + *ta* (IE **to*)

Consider these examples with syllabic *ṛ* in both OI root and PPP:

√	3. pers. sg.	PPP	translation
kṛ	*kar-ô-ti*	*kṛ-ta*	made
bhṛ	*bhar-a-ti*	*bhṛ-ta*	carried
mṛ	*mri-ya-tê*	*mṛ-ta*	dead
smṛ	*smar-a-ti*	*smṛ-ta*	remembered
hṛ	*har-a-ti*	*hṛ-ta*	taken

Roots with *i* preserve this *i* in the PPP:

√	3. pers. sg.	PPP	translation
i	*ê-ti*	*i-ta*	gone
kṣip	*kṣip-a-ti*	*kṣip-ta*	thrown
ji	*jay-a-ti*	*ji-ta*	defeated

Regarding *i* with prefixes, consider:

√	translation	PPP	translation
adhi-i	to study	*adhī-ta*	well read, learned
upa-i	to go towards	*upê-ta*	endowed with
pra-i	to set off, to die	*prê-ta*	gone forth → dead
vi-i	to diverge, to disappear	*vī-ta*	gone, freed from

Likewise, roots with *u* (or f.g. root with initial *v*) preserve this *u* in the PPP:

√	3. pers. sg.	PPP	translation
muc	*muñc-a-ti*	*muk-ta*	liberatee
yuj	*yu-na-k-ti*	*yuk-ta*	joined
vac (f.g.)	*vak-ti*	*uk-ta*	spoken
vap (f.g.)	*vap-a-ti*	*up-ta*	sowed
śru	*śṛ-ṇô-ti*	*śru-ta*	listened
stu	*stâu-ti* (Narten)	*stu-ta*	praised
hu	*ju-hô-ti*	*hu-ta*	sacrificed

Instead of the *ta* marker, a few verbs use *na*. All the roots in the table below end in *d* so that the expected backward assimilation results:

√	3. pers. sg.	PPP	translation
ud	*u-na-t-ti*	*un-na*	wet
khid	*khid-ya-ti*	*khin-na*	depressed
tud	*tud-a-ti*	*tun-na*	hurt
nud	*nud-a-ti*	*nun-na*	pushed
pad	*pad-ya-tê*	*pan-na*	fallen, gone
bhid	*bhi-na-t-ti*	*bhin-na*	broken
vā	*vāyati*	*ū-na* ← IE $^*h_1uh_2$*-no*	less, deficient
sad (f.g.)	*sīd-a-ti*	*san-na*	set down

But stems that end in OI *j* also use the *na* marker:

√ in f.g.	3. pers. sg.	PPP	translation
bhañj	*bha-na-k-ti*	*bhag-na*	broken
majj	*majj-a-ti*	*mag-na*	sunk

In contrast to the PPP, the infinitive (pp. 97) is normally formed by adding OI *tum* to the full-grade root. Since the suffixes begin with *t* in both cases, there are quite a number of similarities as will become obvious in the following subsections.

Basically, gerunds ending with *tvā* use the zero-grade root as does the PPP. However, in many verbs, the infinitive seems to have influenced the formation of the gerund. Hence, there exist many gerunds that use the normal grade, often along with a form in zero grade.

C.4.3. OI roots ending in a nasal

Sometimes, the OI root is not in zero grade and therefore, it is not suitable for the purpose of forming the PPP. An important class concerns the OI roots ending in a nasal. According to subsection B.5.2 (pp. 69), a nasal that becomes syllabic turns into OI *a*. Consider these examples:

$\sqrt{}$ in f.g.	3. pers. sg.	PPP	translation
gam	*ga-cch-a-ti*	IE $^*gm̥$-*to* → *ga-ta*	gone
tan	*ta-nô-ti*	IE $^*tn̥$-*to* → *ta-ta*	stretched

and this list:

$\sqrt{}$ in f.g.	3. pers. sg.	PPP	translation
nam	*nam-a-ti*	*na-ta*	bent
man	*man-ya-tê*	*ma-ta*	believed
yam	*yacch-a-ti*	*ya-ta*	restrained
ram	*ram-a-tê*	*ra-ta*	pleased
han	*han-ti*	*ha-ta*	struck

The last example goes back IE $^*g^when$ ("to kill, to hit"), where secondary palatalisation (before IE *e*) produces *han-ti*. Secondary palatalisation cannot be invoked for the zero grade, where one should have obtained $^*g^whn̥$-*to* → *gha-ta*. *ha-ta* is easily explained by proportional analogy:

tan	with root-initial consonant *t*:	*ta-ta*
just as		
han	with root-initial consonant *h*:	*ha-ta*

C.4.4. Aspiration and cerebralisation

Applying aspiration laws

If an OI root ends in a voiced aspirate, the addition of *ta* necessitates the aspiration shift **ASh** (see section B.3.3, pp. 39):

√	3. pers. sg.	PPP	translation
kṣubh	*kṣubh-ya-ti*	*kṣub-dha*	upset
yudh	*yudh-ya-tê*	*yud-dha*	fought
labh (f.g.)	*labh-a-tê*	*lab-dha* (f.g.!)	obtained
vṛdh	*vardh-a-tê*	*vṛd-dha*	grown

Note that *lab-dha* is full grade. While *l* might become syllabic, the resulting u.at. *l̥b-dha* would be unusual.

Sometimes, Grassmann's law is also applied. Nice examples are provided by these PPP:

√	future 3. pers. sg.	PPP	translation
bandh (f.g.)	*bhant-sy-a-ti* ← **bhendh-s-*	*bad-dha* ← **bhn̥dh-to*	bound
budh	*bhôt-sy-a-ti* ← **bheudh-s-*	*bud-dha* ← **bhudh-to*	awake

where

◇ the root initial *bh* becomes deaspirated (**DA**)

◇ the root final *dh* undergoes the aspiration shift (**ASh**) due to Bartholomae.

Consider, now, OI f.g. root *dah* that leads to the PPP

IE **dheg*^{w}*h-to* (f.g. with PPP marker *to*)
→ *dhegh-to* (no **SPal** before consonant *t*)
→ *dhag-dha* (***aā***, **ASh**)
→ *dag-dha* (**DA**)

OI z.g. root *snih* leads to

IE **snig*^{w}*h-to* (z.g. with PPP marker *to*)
→ *snigh-to* (no **SPal** before *t*)
→ *snig-dha* (**ASh**, ***aā***)

Consider these examples:

√	3. pers. sg.	PPP	translation
dah (f.g.)	*dah-a-ti*	**dheg*^{w}*h-to* → *dag-dha* (f.g.!)	burned
dih	*dêg-dhi*	**dhigh-to* → *dig-dha*	smeared

√	3. pers. sg.	PPP	translation
duh	*dôg-dhi*	**dhugh-to* → *dug-dha*	milked
snih	*snih-y-a-ti*	**snig*^{w}*h-to* → *snig-dha*	loved

A small mystery is provided by *nah* ("to bind") with PPP *nad-dha*. Presumably, *nadh* is the "correct" OI full-grade stem from which *nah* was produced as a dialectal variant (see pp. 50). From *nadh*, the PPP *nad-dha* ("bound") is obtained by Bartholomae's law. The problem is that *naddha* would then be in full grade. The zero grade u.at. *addha* is not found in the dictionaries. Also unattested is a hypothetic full-grade root *nandh* which could have produced the PPP *nad-dha* just like *bandh* ("to bind") leads to *bad-dha.*

Applying cerebralisation sound laws

In a number of verbs, the PPP involves cerebralisation, in particular due to

Cer*D*	OI *ṣ/ś* + *t*	→	OI *ṣṭ*
	ẓ + *d/dh*	→	*ẓ* + *ḍ/ḍh*

First, consider OI roots that end in *ś* (that goes back to IE *ḱ*):

◇ *daṃś* ("to bite") ← IE **denḱ* with

IE **dn̥ḱ-to* (z.g. with PPP marker *to*)
→ *daś-to* (syllabic *n̥* → *a*, **PPal**)
→ *daṣ-ṭa* (**Cer*D***, ***aā***)

◇ *dṛś* ("to see") ← IE **derḱ* with

IE **dr̥ḱ-to* (z.g. with PPP marker *to*)
→ *dṛś-to* (**PPal**)
→ *dṛṣ-ṭa* (**Cer*D***, ***aā***)

◇ *pracch* ("to ask") ← IE **preḱ-sḱ* with

IE **pr̥ḱ-to* (z.g. with PPP marker *to*)
→ *pṛś-to* (**PPal**)
→ *pṛṣ-ṭa* (**Cer*D***, ***aā***)

◇ *viś* ("to enter") ← IE **veiḱ* with

IE **viḱ-to* (z.g. with PPP marker *to*)
→ *viś-to* (**PPal**)
→ *viṣ-ṭa* (**Cer*D***, ***aā***)

A second important cerebralisation rule is the **RUKI** rule. It combines with **Cer*D*** in these examples:

◇ *iṣ* (“to wish”) ← IE **h*$_2$*eis* with

IE **h*$_2$*is-to* (z.g. with PPP marker *to*)
→ *iṣ-to* (**RUKI**)
→ *iṣ-ṭa* (**Cer*D***, ***aā***)

◇ *kṛṣ* (“to plough”) ← IE **kers* with

IE **kr̥s-to* (z.g. with PPP marker *to*)
→ *kṛṣ-to* (**RUKI**)
→ *kṛṣ-ṭa* (**Cer*D***, ***aā***)

◇ *dviṣ* (“to hate”) ← IE **dveis* with

IE **dvis-to* (z.g. with PPP marker *to*)
→ *dviṣ-to* (**RUKI**)
→ *dviṣ-ṭa* (**Cer*D***, ***aā***)

◇ *vṛṣ* (“to rain”) ← IE **vers* with

IE **vr̥s-to* (z.g. with PPP marker *to*)
→ *vṛṣ-to* (**RUKI**)
→ *vṛṣ-ṭa* (**Cer*D***, ***aā***)

Finally, before application of **RUKI**, a ***sz*** rule is applied in the PPP *iṣ-ṭa* of OI *yaj* (“to sacrifice”):

IE **iǵ-to* (z.g. with marker *to*)
→ *is-to* (***sz*** before voiceless cons.)
→ *iṣ-to* (**RUKI**)
→ *iṣ-ṭa* (**Cer*D***, ***aā***)

One might think that the PPP of *sṛj* (“to throw, to create”) functions similarly:

IE **sr̥ǵ-to* (z.g. with PPP marker *to*)
→ *sṛs-to* (***sz*** before voiceless cons.)
→ *sṛṣ-to* (**RUKI**)
→ *sṛṣ-ṭa* (**Cer*D***, ***aā***)

But the contrast

◇ *sṛj-a-ti* ← IE **sr̥g-e-ti*

◇ *sarg-a* ← IE **serg-o*

points to IE velar *g* and secondary palatalisation in *sṛj-a-ti*. This discrepancy of IE palatal *ǵ* in *sṛṣṭa* versus IE velar *g* in *sarga* is a serious difficulty.

Interestingly, *iṣ-ṭa* is the regularly formed PPP of both

◇ OI *iṣ* ("to wish") ← IE full grade **h₂eis* (see p. 122) and

◇ OI *yaj* ("to sacrifice") ← IE full grade **yeǵ* (see above)

... both aspiration and cerebralisation laws

Even more complicated is the explanation for the past participle of *vah* ("to flow, to carry") which is *ūḍha*. Very strange? Well, yes. But regular. The IE origin is **veǵh*, with zero grade *uǵh* (***SV***) so that one obtains

IE **uǵh-to* (z.g. with PPP marker *to*)
→ *uǵ-dho* (**ASh**)
→ *uz-dho* (***sz*** before voiced stop)
→ *uẓ-dho* (**RUKI**)
→ *uẓ-ḍha* (**Cer*D***, ***aā***)
→ *ū-ḍha* (**CpL*z*** 3. line)

A very parallel development leads to the past participle *līḍha* of *lih, lihati* ("to lick"), this time lengthening *i* rather than *u*:

IE **liǵh-to* (z.g. with PPP marker *to*)
→ *liǵ-dho* (**ASh**)
→ *liz-dho* (***sz*** before voiced stop)
→ *liẓ-dho* (**RUKI**)
→ *liẓ-ḍha* (**Cer*D***, ***aā***)
→ *lī-ḍha* (**CpL*z*** 2. line)

Similarly, but with Grassmann's law, *guh* ("to hide") goes back to IE **gheuǵh* and one gets

IE **ghuǵh-to* (z.g. with PPP marker *to*)
→ *guǵ-dho* (**DA** and **ASh**)
→ *guz-dho* (***sz*** before voiced stop)
→ *guẓ-dho* (**RUKI**)
→ *guẓ-ḍha* (**Cer*D***, ***aā***)
→ *gū-ḍha* (**CpL*z*** 3. line)

Also, with root vowel $\underset{\circ}{l}$ rather than *i* or *u*, one finds IE **delǵh* ("to be fix") with PPP

IE **d*$\underset{\circ}{l}$*ǵh-to* (z.g. with PPP marker *to*)
→ *dṛǵ-dho* (***rl*** and **ASh**)
→ *dṛz-dho* (***sz*** before voiced stop)
→ *dṛẓ-dho* (**RUKI**)
→ *dṛẓ-ḍha* (**Cer*D***, ***aā***)
→ *dṛ-ḍha* (loss of voiced *ẓ* without expected **CpL*z***)

As in similar infinitive cases, one finds cerebral sounds which are not justified by sound laws. For example, the PPP of *ruh, rôhati* ("to climb") is *rūḍha*, but the IE root is **h*$_1$*leudh* (IE **dh* can produce OI *h* according to subsection B.3.6, pp. 50) which should have lead to *rud-dha* (similar to *dug-dha* or *bud-dha*) instead.

A second example is *sah, sahati* ("to tolerate") with PPP *sô-ḍha*, where the sound laws do not justify cerebral *ḍh*:

IE **seǵh-to* (full grade (!) and PPP marker *to*)
→ *seǵ-dho* (**ASh**)
→ *saz-dha* (***sz*** before voiced stop, ***aā***)
→ *sô-dha* (**CpL*z*** 1. line)

Here, as in *rūḍha* above, analogy must have come into play.

C.4.5. Laryngeals

The PPP of quite a number of verbs can be explained by laryngeal theory. The reader is reminded of these sound laws:

IE neighborhood of laryngeal	sound law
after $i/u/e/o$	IE $iH/uH/eH/oH \rightarrow \bar{\imath}/\bar{u}/\bar{a}/\bar{a}$
after $\underset{\circ}{n}$	IE $C\underset{\circ}{n}H \rightarrow C\bar{a}$
after $\underset{\circ}{m}$	IE $C\underset{\circ}{m}H \rightarrow C\bar{a}m$
after $C^{\texttt{+lab}}\underset{\circ}{r}$	IE $C^{\texttt{+lab}}\underset{\circ}{r}H \rightarrow C\bar{u}r$
after $C^{\texttt{-lab}}\underset{\circ}{r}$	IE $C^{\texttt{-lab}}\underset{\circ}{r}H \rightarrow C\bar{\imath}r$
between consonants	IE $CHC \rightarrow CiC$
between consonant and vowel	IE $CHV \rightarrow CV$

In line with these sound laws, several lists of laryngeal verbs are now presented. Consider, first, examples where the laryngeal leads to long $\bar{\imath}$ or $\bar{u}$:

$\surd$	3. pers. sg.	PPP	translation
$n\bar{\imath}$	$^*neyH\text{-}e\text{-}ti \rightarrow nay\text{-}a\text{-}ti$	$^*ni\text{-}H\text{-}to \rightarrow n\bar{\imath}\text{-}ta$	led
$bh\bar{\imath}$	$^*bhi\text{-}bheiH\text{-}ti \rightarrow bi\text{-}bh\hat{e}\text{-}ti$	$^*bhiH\text{-}to \rightarrow bh\bar{\imath}\text{-}ta$	afraid
$bh\bar{u}$	$^*bhevH\text{-}e\text{-}ti \rightarrow bhav\text{-}a\text{-}ti$	$^*bhu\text{-}H\text{-}to \rightarrow bh\bar{u}\text{-}ta$	been
$p\bar{u}$	$^*pu\text{-}ne\text{-}H\text{-}ti \rightarrow pu\text{-}n\bar{a}\text{-}ti$	$^*pu\text{-}H\text{-}to \rightarrow p\bar{u}\text{-}ta$	purified

Now come PPP formed with the marker *na* rather than *ta*:

$\surd$	3. pers. sg.	PPP	translation
$l\bar{\imath}$	$^*liH\text{-}y\text{-} \rightarrow l\bar{\imath}\text{-}ya\text{-}t\hat{e}$	$^*liH\text{-}no \rightarrow l\bar{\imath}\text{-}na$	attached
$l\bar{u}$	$^*lu\text{-}ne\text{-}H\text{-}ti \rightarrow lu\text{-}n\bar{a}\text{-}ti$	$^*luH\text{-}no \rightarrow l\bar{u}\text{-}na$	cut off

Rather difficult is

$\surd$ in f.g.	3. pers. sg.	PPP	translation
$p\bar{a}$	$^*pi\text{-}ph_3\text{-}e\text{-}ti \rightarrow pi\text{-}b\text{-}a\text{-}ti$ (p. 86)	$^*ph_3i\text{-}to \rightarrow {}^*pih_3\text{-}to \rightarrow p\bar{\imath}\text{-}ta$	drunk

where the PPP is often explained by the metathesis $^*ph_3it \rightarrow {}^*pih_3t$ (**Lar_MTh**).

Now, consider, these laryngeal roots where the PPP is explained by "IE $CHC \rightarrow CiC$":

$\surd$ in f.g.	3. pers. sg.	PPP	translation
$d\bar{a}$	$^*de\text{-}deh_3\text{-}ti \rightarrow da\text{-}d\bar{a}\text{-}ti$	$^*dh_3\text{-}to \rightarrow di\text{-}ta$ (1)	given
$dh\bar{a}$	$^*de\text{-}dheh_1\text{-}ti \rightarrow da\text{-}dh\bar{a}\text{-}ti$	$^*dhh_1\text{-}to \rightarrow hi\text{-}ta$ (2)	set, placeed
$sth\bar{a}$	$ti\text{-}\dot{s}\dot{t}h\text{-}a\text{-}ti$	$^*sth_2\text{-}to \rightarrow sthi\text{-}ta$ (3)	stood

1. *dā* has two different PPP, the regular *di-ta* given in the list above and the irregular (but more common) *dat-ta*. Perhaps, *da-dā-mi* was misunderstood as *dad-ā-mi*, where a PPP *datta* ← *dad-ta* might be expected.

2. The word initial *dh* from *dhā* sometimes turns into *h* (see p. 50).

3. The aspirated root *sthā* is explained by analogy as is aspiration in the PPP *sthi-ta*, where the laryngeal has caused aspiration and is reflected by *i* at the same time.

Laryngeals can lengthen syllabic nasals:

√ in f.g.	3. pers. sg.	PPP	translation
kam	no present tense	$^*kmH$*-to* → *kān-ta* (2)	loved
kram	$^*krmH$*-ye-ti* → *krām-ya-ti* (1)	$^*krmH$*-to* → *krān-ta* (1)	walked
khan	$^*khenH$*-e-ti* → *khan-a-ti*	$^*khnH$*-to* → *khā-ta*	dug
jan	$^*ǵnh_1$*-ye-toi* → *jā-ya-tê*	$^*ǵnh_1$*-to* → *jā-ta*	born
dam	$^*dmH$*-ye-ti* → *dām-ya-ti* (1)	$^*dmH$*-to* → *dān-ta* (1)	tamed
śam	$^*ḱmH$*-ye-ti* → *śām-ya-ti* (1)	$^*ḱmH$*-to* → *śān-ta* (1)	quiet
śram	$^*ḱrmH$*-ye-ti* → *śrām-ya-ti* (1)	$^*ḱrmH$*-to* → *śrān-ta* (1)	tired

1. *krām-ya-ti* belongs to the 4. class, i.e., it is built on the zero-grade root. Here, "IE CmH → *Cām*" (**Lar_SY**) is regularly applied.

2. *kān-ta* is readily explained by this laryngeal rule and by **BA.**

In contrast, *jñā-ta* from the root *jñā* (IE $^*ǵneh_3$) can only be explained by levelling. See the dictionary.

Finally, some comments on a group of verbs where long vowels *ī* or *ū* go back to *rH:*

$$\begin{aligned} \text{IE } C^{\texttt{+lab}}rH &\rightarrow C\bar{u}r \\ \text{IE } C^{\texttt{-lab}}rH &\rightarrow C\bar{\imath}r \end{aligned}$$

All these forms have *na* as the PPP marker (as do *lī-na* and *lū-na* above):

√	3. pers. sg.	PPP	translation
kṝ	IE root $^*kerH$ (no **SPal**!)	$^*krH$*-no* → *kīr-ṇa*	scattered

√	3. pers. sg.	PPP	translation
jr̥̄	**ǵr̥H-ye-ti* → *jr̄-ya-ti*	**jr̥-H-no* → *jr̄-ṇa*	wasted away
tr̥̄	**terH-e-ti* → *tar-a-ti*	**tr̥-H-no* → *tr̄-ṇa*	passed
dr̥̄	**dr̥-ne-H-ti* → *dṛ-ṇā-ti*	**dr̥-H-no* → *dr̄-ṇa*	torn
pr̥̄	**pl̥-ne-H-ti* → *pṛ-ṇā-ti*	**pl̥-H-no* → *pūr-ṇa*	filled

It seems that *stṛ, stṛṇôti* ("to spread") also belongs to this list because one has the PPP *stīr̥-ṇa* similar to *tīr̥ṇa.* Presumably, the IE root is **sterH.* But note the second PPP *stṛta.*

As a final (almost regular) example, turn to

√	3. pers. sg.	PPP	translation
div	**diHv-ye-ti* → *dīv-ya-ti*	**dyHv-to* → **dyuH-to* → *dyū-ta*	to play

Here, starting with IE **deiHv*, the zero-grade present indicative *dīv-ya-ti* is regular. Sound-law **Lar_MTh** yields the PPP.

Note that many verbs show quasi-thematic vowel *i* between the root (zero or even full grade) and the infinitive marker *ta*: *paṭh-i-ta*, *cumb-i-ta*, *bhāṣ-i-ta*, *uṣ-i-ta* (from *vas* with **RUKI**). Inserting *i* makes the forms more transparent.

C.4.6. Nouns and adjectives

Feminine action nouns in *ti*

Having dealt with feminine action nouns with zero suffix above (see pp. 115), consider now derivations with suffixes. For many verbs, the PPP provides a model of how to form the noun in *ti*. Pretty obvious cases are

√	PPP	translation	noun in *ti*	translation
kṛ	*kṛ-ta*	to make	*kṛ-ti*	doing, deed
kṣip	*kṣip-ta*	to throw	*kṣip-ti*	throwing
bhṛ	*bhṛ-ta*	to carry	*bhṛ-ti*	support
muc	*muk-ta*	to liberate	*muk-ti*	liberation
mṛ	*mṛ-ta*	to die	*mṛ-ti*	death
yuj	*yuk-ta*	to join	*yuk-ti*	connection
vac (f.g.)	*uk-ta*	to speak	*uk-ti*	speech
vap (f.g.)	*up-ta*	to sow	*up-ti*	sowing seeds

√	PPP	translation	noun in *ti*	translation
śru	*śru-ta*	to listen	*śru-ti*	vedic text
stu	*stu-ta*	to praise	*stu-ti*	praise, hymn
smṛ	*smṛ-ta*	to remember	*smṛ-ti*	tradition

Furthermore, *s-ti* ("being (close to a master) → dependent, vassal") is the regular noun in *ti* from *as* ("to be"). One also finds Ved. *sti-pā* ("protecting the dependents"). The very common root *i* ("to go") is contained in these nouns in *ti*:

√ *i*	PPP	translation	noun in *ti*	translation
adhi-i	*adhī-ta*	to study	*adhī-ti*	study
anu-i	*anv-i-ta*	to follow	*anv-i-ti*	following after
abhi-i	*abhī-ta*	to arrive	*abhī-ti*	attack
ud-i	*ud-i-ta*	to go up	*ud-i-ti*	sunrise
upa-i	*upê-ta*	to go towards	*upê-ti*	approach
pra-i	*prê-ta*	to set off	*prê-ti*	escape

OI roots ending in a nasal lead to the feminine noun in *ti* seen in the following table:

√ in f.g.	PPP	translation	noun in *ti*	translation
gam	*ga-ta*	to go	*ga-ti*	path
tan	*ta-ta*	to stretch	*ta-ti*	mass, crowd
nam	*na-ta*	to salute	*na-ti*	salutation
man	*ma-ta*	to think	*ma-ti*	thought
yam	*ya-ta*	to restrain	*ya-ti*	control
ram	*ra-ta*	to enjoy	*ra-ti*	pleasure
han	*ha-ta*	to hit	*ha-ti*	killing

As is the case for PPP, the aspiration shift **ASh** leaves its expected traces. For example, *vṛdh* ("to grow") has PPP *vṛd-dha* and the feminine noun *vṛd-dhi*. Funnily, *vṛd-dhi* ("growth, lengthened grade") is in zero grade! Cerebralisation is involved in these examples:

√	PPP	translation	noun in *ti*	translation
iṣ	*iṣ-ṭa*	to wish	*iṣ-ṭi*	wish
kṛṣ	*kṛṣ-ṭa*	to plough	*kṛṣ-ṭi*	ploughing, harvest
dṛś	*dṛṣ-ṭa*	to see	*dṛṣ-ṭi*	sight
yaj (f.g.)	*iṣ-ṭa*	to sacrifice	*iṣ-ṭi*	sacrifice
vah (f.g.)	*ū-ḍha*	to flow, to carry	*ū-ḍhi*	carrying
viś	*viṣ-ṭa*	to enter	*viṣ-ṭi*	compulsory work
vṛṣ	*vṛṣ-ṭa*	to rain	*vṛṣ-ṭi*	rain
sṛj	*sṛṣ-ṭa*	to create	*sṛṣ-ṭi* (see p. 122)	creation

Furthermore, consider these two groups of laryngeal roots. The first one is without a nasal:

√	PPP	translation	noun in *ti*	translation
jī̱r	*jīr-ṇa*	to waste away	*a-jīr-ti*	indigestibleness
dā (f.g.)	*di-ta*	to give	*di-ti*	offering, largess
	dat-ta	to give	*dat-ti*	giving, gift
dā (f.g.)	*di-ta*	to bind	*a-di-ti*	freedom, name of a goddess
dhā (f.g.)	*hi-ta*	to set, to place	*hi-ti*	mission, mandate
nī	*nī-ta*	to lead	*nī-ti*	conduct, policy
pā (f.g.)	*pī-ta*	to drink	*pī-ti*	drinking, tavern
pū	*pū-ta*	to purify	*pū-ti*	purity
pī̱r	*pūr-ṇa*	to fill	*pūr-ti*	filling, reward
bhī	*bhī-ta*	to be afraid	*bhī-ti*	fear, danger
bhū	*bhū-ta*	to be	*bhū-ti*	existence, welfare
sthā (f.g.)	*sthi-ta*	to stand	*sthi-ti*	rule, standing

The second group contains a nasal together with a laryngeal. Observing the sound laws

IE $C\overset{\circ}{n}H \rightarrow C\bar{a}$
IE $C\overset{\circ}{m}H \rightarrow C\bar{a}m$

one obtains:

√ in f.g.	PPP	translation	noun in *ti*	translation
kam	*kān-ta*	to love	*kān-ti*	desire, female beauty
kram	*krān-ta*	to walk	*krān-ti*	going, attacking
khan	*khā-ta*	to dig	*khā-ti*	digging
jan	*jā-ta*	to be born	*jā-ti*	birth, caste
dam	*dān-ta*	to tame	*dān-ti*	self-restraint, subjection
śam	*śān-ta*	to get quiet	*śān-ti*	quietness, ease
śram	*śrān-ta*	to toil	*śrān-ti*	fatigue, weariness

Adjectives with *ra*

Quite a few adjectives exist that are built by adding *ra* to the zero grade of the verb:

√	PPP	translation	adjective in *ra*	translation
ukṣ or *vaj*		to get strong	*ug-ra*	powerful
ud	*un-na*	to make wet	*ud-ra*	otter
kṛś or *kṛṣ*?	*kṛṣ-ṭa*	to moan	*kṛcch-ra* (**SIB**?)	painful
krū (1)		to form a crust	*krū-ra*	bloody
kṣip	*kṣip-ta*	to throw	*kṣip-ra*	fast, quick
kṣud	*kṣun-na*	to crunch	*kṣud-ra*	mean
gṛdh	*gṛd-dha*	to be greedy	*gṛdh-ra*	greedy, vulture
cit	*cit-ta*	to observe	*cit-ra*	bright
			cit-ra-m	picture
chid	*chin-na*	to cut	*chid-ra*	leaky, hole
dhī	*dhī-ta*	to reflect	*dhī-ra*	steady
nādh (f.g.)		to be needy	*ādh-ra* (2)	poor, weak
miś	*miṣ-ṭa*	to mix	*miś-ra*	diverse
rud	*rud-i-ta*	to roar	*rud-ra*	terrific
vip		to tremble	*vip-ra*	excited, wise
śvit		to be white	*śvit-ra*	whitish
sidh	*siddha*	to succeed	*sidh-ra*	perfect, good
sthā (f.g.)	*sthi-ta*	to stand	*sthi-ra*	steady, durable

√	PPP	translation	adjective in *ra*	translation
sphāy (f.g.)		to grow fat	*sphi-ra*	abundant, vast
hiṃs	*hiṃs-i-ta*	to hurt	*hiṃs-ra*	hurting, vicious

1. See *kravis* in dictionary chapter.

2. **nHdh-ro* → *ādh-ra* (**Lar__SY**)

If the OI root begins with *a*, one observes the full grade instead. Thus, *asra* ("throwing, painful") is built on the full grade of *as, asyati* ("to throw, to shoot"). Levelling seems to underlie this case. Also with full grade is *nam-ra* ("bowing down, humble") from OI root *nam*. The zero grade would have been *na-ra* (by **SY__*N***), similar to the PPP *nata*. Similarly, consider these adjectives in *ra* from full grades:

√ in f.g.	translation	adjective in *ra*	translation
as	to throw	*as-ra*	throwing, painful
dabh	to destroy	*dabh-ra*	little, deficient
		also *dah-ra* (see pp. 50)	small, tender
vak	to go crookedly	*vak-ra*	crooked, curved
vaj	to be hard or strong	*vaj-ra*	as hard as diamond

Finally, the zero-grade adjectives

◇ *tīv-ra* ("severe, violent, intense")

◇ *śīgh-ra* ("quick")

are based on (probably laryngeal) roots that are scarcely attested.

Masculine nouns in *āna*

According to an as-yet unpublished paper by Kulikov, sound law **L*o*** may underlie the following very few masculine agent nouns in *āna*, i.e., IE **ono* → OI *āna*.

√	translation	m. (!) agent (!) noun in f.g.	translation
budh	to be awake	*budh-āna*	prudent, spiritual guide
yudh	to fight	*yudh-āna*	warrior → enemy

See s.v. *ghṛ* and s.v. *carman.*

C.4.7. Passive voice

Zero grades

The general rule for the passive voice is this:

OI root + *y* + *a* + ātmanêpada ending

In many cases, the zero grade can readily be recognised:

	√	3. pers. sg. active	3. pers. sg. passive	translation
IE root with *er*	*kṛṣ*	*kṛṣ*-a-ti	*kṛṣ-y-a-tê*	to plough
	dṛś	(*paśyati*)	*dṛś-y-a-tê*	to see
	sṛj	*sṛj-a-ti*	*sṛj-y-a-tê*	to create
IE root with *ei*	*iṣ*	*icch-a-ti*	*iṣ-y-a-tê*	to wish
	kliś	*kliś-y-a-tê* (1)	*kliś-y-a-tê* (1)	to suffer
	kṣip	*kṣip-a-ti*	*kṣip-y-a-tê*	to throw
	viś	*viś-a-ti*	*viś-y-a-tê*	to enter
IE root with *eu*	*nud*	*nud-a-tê*	*nud-y-a-tê*	to push
	budh	*bôdh-a-ti*	*budh-y-a-tê*	to be awake
	mud	*môd-a-ti*	*mud-y-a-tê*	to rejoice

1. *kliś-y-a-tê* is an example where ātmanêpada forms of the 4. class (with *ya*) cannot be told apart from the passive voice.

The zero grade is also obvious for some OI roots with initial *ya* or *va*:

√ in f.g.	3. pers. sg. active	3. pers. sg. passive	translation
yaj	*yaj-a-ti*	*ij-y-a-tê*	to sacrifice
vac	*vak-ti*	*uc-y-a-tê*	to speak
vad	*vad-a-ti*	*ud-y-a-tê*	to speak
vas	*vas-a-ti*	*uṣ-y-a-tê*	to dwell
vah	*vah-a-ti*	*uh-y-a-tê*	to flow, to carry

In the following examples, **SY__*N*** is responsible for *a* in the zero grades:

√ in f.g.	3. pers. sg. active	3. pers. sg. passive	translation
granth	*grath-nā-ti*	*grath-y-a-tê*	to compile
bandh	*badh-nā-ti*	*badh-y-a-tê*	to bind
manth	*math-nā-ti*	*math-y-a-tê*	to stir, to shake

From subsection B.2.2 (pp. 22), remember the *mr-iy-a-tê* rule:

$$CryV \quad \rightarrow \quad CriyV$$

The following passive forms fall under this rule:

√	3. pers. sg. active	3. pers. sg. passive	translation
kṛ	*kar-ô-ti*	*kr-iy-a-tê*	to make
bhṛ	*bhar-a-ti*	*bhr-iy-a-tê*	to carry
mṛ	*mr-iy-a-tê* (1)	*mr-iy-a-tê* (1)	to die
vṛ	*vṛ-ṇā-ti*	*vr-iy-a-tê*	to choose
sṛ	*sar-a-ti*	*sr-iy-a-tê*	to flow, to move
hṛ	*harati*	*hr-iy-a-tê*	to take, to rob

1. Same forms in ātmanêpada and passive.

Let us now turn to laryngeal verbs where both PPP and passive use the zero grade:

√	PPP	3. pers. sg. passive	translation
kṝ	*kīr-ṇa*	*kīr-y-a-tê*	to scatter
jṝ	*jīr-ṇa*	*jīr-y-a-tê*	to waste away
tṝ	*tīr-ṇa*	*tīr-y-a-tê*	to pass
dṝ	*dīr-ṇa*	*dīr-y-a-tê*	to tear, to pierce
pṝ	*pūr-ṇa*	*pūr-y-a-tê*	to fill

Knowing the PPP (here with *ta*) is also very helpful for these laryngeal words:

√	PPP	3. pers. sg. passive	translation
khan (f.g.)	*khā-ta*	*khā-y-a-tê*	to dig
nī	*nī-ta*	*nī-y-a-tê*	to lead
pū	*pū-ta*	*pū-y-a-tê*	to purify
bhī	*bhī-ta*	*bhī-y-a-tê*	to be afraid
bhū	*bhū-ta*	*bhū-y-a-tê*	to be

Observe

√	PPP	3. pers. sg. passive	translation
pā (f.g.)	*pī-ta*	*pī-y-a-tê*	to drink

where long *ī* might be explainable by metathesis $^*ph_3i \rightarrow {}^*pih_3$.

Passive forms like *nī-y-a-tê* or *pī-y-a-tê* with long *ī* are responsible for those forms where long *ī* is not, etymologically, justified:

√ in f.g.	PPP	3. pers. sg. passive	translation
dā	*di-ta*	*dī-y-a-tê*	to give
dhā	*hi-ta*	*dhī-y-a-tê*	to set, to place
sthā	*sthi-ta*	*sthī-y-a-tê*	to stand
hā (f.g.)	*hī-na/hā-ta*	*hī-y-a-tê*	to abandon

It seems that long *ū* that is expected in *pūr-y-a-tê*, *pū-y-a-tê*, or *bhū-y-a-tê* above might also be responsible for the following forms by analogy:

√	PPP	3. pers. sg. passive	translation
stu (see pp. 178)	*stu-ta*	*stū-y-a-tê*	to praise
hu	*hu-ta*	*hū-y-a-tê*	to sacrifice

Irregular full grades

In contrast to the regular zero grade, some passives use the full grade:

√	PPP	3. pers. sg. passive	translation
ghuṣ	*ghuṣ-ṭa*	*ghôṣ-y-a-tê* (1)	to proclaim
cur		*côr-y-a-tê* (1)	to steal

√	PPP	3. pers. sg. passive	translation
paṭh (f.g.)	*paṭh-i*-ta (2, 3)	*paṭh-y-a-tê* (3)	to read
pat (f.g.)	*pat-i-ta* (2, 3)	*pat-y-a-tê* (3)	to fall
tyaj (f.g.)	*tyak-ta* (4a)	*tyaj-y-a-tê* (4a)	to abandon
labh (f.g.)	*lab-dha* (4b)	*labh-y-a-tê* (4b)	to obtain
sad (f.g.)	*san-na* (3)	*sad-y-a-tê* (3)	to sit
smṛ	*smṛ-ta*	*smar-y-a-tê* (5)	to remember

1. U.at. zero grades *ghuṣ-y-a-tê* or *cur-y-a-tê* would not pose any problem.

2. Some verbs like *pat* use *i-ta* as the PPP marker without etymological justification.

3. In roots like *pat*, neither the root-initial nor the root-final consonant can become syllabic. Therefore, the full grade cannot be avoided.

4. Sometimes, the regularly formed PPP and the passives would be difficult to understand:
   a) While possible, *tik-ta* or *tij-y-a-tê* would have been confused with the corresponding forms from the root *tij*, *têjati* ("to be sharp, to become sharp").
   b) In root *labh*, *l* might become syllabic. Levelling might have rectified the u.at. outcomes *l̥b-dha* and *l̥bh-y-a-tê*.

5. At a first glance, u.at. *smṛ-ya-tê* seems possible. However, it would violate the *mr-iy-a-tê* rule (pp. 22):

$$CryV \quad \rightarrow \quad CriyV$$

   which would then lead to u.at. and difficult to recognise *smr-iy-a-tê* → *sar-iy-a-tê*.

Full grades are consistently present in nasal roots:

√ in f.g.	PPP	3. pers. sg. passive	translation
gam	*ga-ta*	*gam-y-a-tê*	to go
tan	*ta-ta*	*tan-y-a-tê*	to stretch
nam	*na-ta*	*nam-y-a-tê*	to salute
man	*ma-ta*	*man-y-a-tê*	to think
yam	*ya-ta*	*yam-y-a-tê*	to restrain
ram	*ra-ta*	*ram-y-a-tê*	to enjoy
han	*ha-ta*	*han-y-a-tê*	to hit

There are very good reasons for the irregular full grade here. For example, the regularly built passive form from *nam* is not *nam-y-a-tê* but *na-y-a-tê* ← **nm̥-* (where *a* derives from syllabic *m̥*). And this *na-y-a-tê* might easily be understood as *nay-a-tê* from *nī* ("to lead").

C.4.8. Desideratives

Reduplication

Desideratives use reduplication. Additionally, reduplications are found in four other grammatical instances as well:

- ◇ The reader is invited to compare the verbs of the third class (pp. 92), which also function with reduplication.
- ◇ Sanskrit perfect forms are mostly formed in a reduplicative fashion (see pp. 203).
- ◇ One of the aorist formations is by way of reduplication (see pp. 213).
- ◇ Frequentative verbs also use reduplication (see pp. 148).

Simple examples from the zero grade or, occasionally, the full grade

Roughly speaking, desideratives are built according to this rule:

IE root	→	OI desiderative
C_1FgC_2	→	C_1Zg-C_1ZgC_2-*s*-

Consider the quite transparent example of *yuj* with

- ◇ *u*-reduplication,
- ◇ zero grade, and
- ◇ *s* marker:

*yu-yug-s-
→ *yu-yuk-s-* (**BA**)
→ *yu-yuk-ṣ-* (**RUKI**) → *yu-yuk-ṣ-a-ti* he wishes to yoke

Apart from the verbal desiderative, a corresponding adjective and a corresponding noun are (often) formed. For example, the root *yudh* ("to fight") yields the desideratives

*yu-yudh-s-
→ *yu-yuth-s-* (**BA**)
→ *yu-yut-s-* (**ASh**, but *s* cannot be aspirated) → *yu-yut-s-a-ti* he wishes to fight
→ *yu-yut-s-u* combative
→ *yu-yut-s-ā* desire to fight

Instead of the reduplication with *u*, one finds reduplication with *i*, which is more common. This is the rule:

Desiderative reduplication	with *u* if *u* is the root vowel
	with *i* otherwise

Similarly, but with some difficulties here and there, compare

√	3. pers. sg.	adjective	noun
jñā (f.g.)	*ji-jñā-s-a-tê* (1) he wants to know	*ji-jñā-s-u* inquisitive	*ji-jñā-s-ā* curiosity
tij	*ti-tik-ṣ-a-tê* he wants to become sharp	*ti-tik-ṣ-u* enduring patiently	
tyaj (f.g.)	*ti-tyak-ṣ-a-ti* (1a) he wants to abandon		
pā (f.g.)	*pi-pā-s-a-tê* (1) he wants to drink	*pi-pā-s-u* thirsty	*pi-pā-s-ā* thirst
man (f.g.)	*mi-māṃ-s-a-tê* (1c) he examines		*mī-māṃ-s-ā*
miś		*mi-mik-ṣ-u* desirous for mixing	
muc	*mu-muk-ṣ-a-ti* he wants to liberate	*mu-muk-ṣ-u* wanting liberation	*mu-muk-ṣ-ā* desire for liberation
vac (f.g.)	*vi-vak-ṣ-a-ti* (1b) he wants to say	*vi-vak-ṣ-u* (1) wanting to say	*vi-vak-ṣ-ā* (1) desire to speak
vṛt	*vi-vṛt-s-a-ti* (2) he wishes to turn		
	vi-vart-i-ṣ-a-ti (3) he wishes to turn		
vṛdh	*vi-vṛt-s-a-ti* (2) he wants to grow		
vardhay (4)	*vi-vardhay-i-ṣ-a-ti* (1, 3) he wants to augment	*vi-vardhay-i-ṣ-u* (1, 3) wishing to augment	

1. In order to bring out the root most clearly, one sometimes sees the full grade. For example:

a) *ti-tik-ṣ-a-tê* is desiderative from *tij*, *têjati* ("to be sharp, to become sharp"), but would also be the regularly formed desiderative from *tyaj*.

b) *vi-vak-ṣ-a-ti* follows the pattern of $C_1Zg\text{-}C_1FgC_2\text{-}s\text{-}$. Theoretically, the zero-grade desiderative of *vac* is u.at. *vy-uk-ṣ-a-ti*. In the syllabic conflict between *i/y* and *u/v* the latter would win by **SY_Conf**.

c) *mi-māṃ-s-a-tê* is irregular with long *ā*. The zero-grade desiderative of *man* is u.at. *mi-ma-s-a-tê*, where syllabic *n̥* would have turned into *a*. See p. 144. If built with the full grade, one should expect u.at. *mi-maṃ-s-a-tê*, similar to the future *maṃ-sy-a-ti* by ***Ns***.

2. The desideratives from roots *vṛt* and *vṛdh* coincide (backward assimilation, *s* not aspiratable).

3. In order to avoid difficult forms, quasi-thematic *i* is sometimes introduced.

4. Causative of *vṛdh*

Applying Grassmann's deaspiration

A close look look at a few desiderative examples is in order. The following desideratives involve Grassmann's deaspiration. From OI *bhid* ← IE **bheid* one obtains

*bhi-bhid-s-
→ bi-bhid-s- (**DA**)
→ bi-bhit-s- (**BA**) → bi-bhit-s-a-ti he wishes to split
→ bi-bhit-s-u wishing to split
→ bi-bhit-s-ā desire to split

from OI *bhuj* ← IE **bheug:*

*bhu-bhug-s-
→ bu-bhug-s- (**DA**)
→ bu-bhuk-s- (**BA**)
→ bu-bhuk-ṣ- (**RUKI**) → bu-bhuk-ṣ-a-ti he wishes to eat
→ bu-bhuk-ṣ-u hungry
→ bu-bhuk-ṣ-ā hunger

and from OI *bhū* ← IE **bheuH:*

*bhu-bhuH-s-
→ bu-bhū-s- (**DA**, **Lar_V**)
→ bu-bhū-ṣ- (**RUKI**) → bu-bhū-ṣ-a-ti he wishes to be
→ bu-bhū-ṣ-u wishing to be
→ bu-bhū-ṣ-ā desire of being

Consider now a few examples that involve root-final velars and palatals, such as *lih* ← IE **leiǵh*:

	**li-liǵh-s-*			
→	*li-lik-s-* (**ASh**, **BA**)			
→	*li-lik-ṣ-* (**RUKI**)	→	*li-lik-ṣ-a-ti*	he wishes to lick

OI *guh* ← IE **gheuǵh*:

	**ghu-ghuǵh-s-*			
→	*gu-ghuǵh-s-* (**DA**)			
→	*gu-ghuk-s-* (**ASh**, **BA**)			
→	*gu-ghuk-ṣ-* (**RUKI**)	→	*gu-ghuk-ṣ-a-ti*	he wishes to hide
		→	*gu-ghuk-ṣ-u*	wishing to hide
		→	*gu-ghuk-ṣ-ā*	desire of hiding

and *duh* ← IE **dheugh*:

	**dhu-dhugh-s-*			
→	*du-dhugh-s-* (**DA**)			
→	*du-dhuk-s-* (**ASh**, **BA**)			
→	*du-dhuk-ṣ-* (**RUKI**)	→	*du-dhuk-ṣ-a-ti*	he wishes to milk
		→	*du-dhuk-ṣ-u*	wishing to milk
		→	*du-dhuk-ṣ-ā*	desire of milking

Later desideratives may not contain the root-initial aspiration, undoubtedly by levelling. An example is *du-duk-ṣ-* in contrast to *du-dhuk-ṣ-* from the root *duh.*

From IE **ghrebh*$_2$ → OI *grah* (**Lar__*CH***) one obtains the desiderative *ji-ghṛk-ṣ-u* which is a bit difficult because the IE root-final is labial:

	**ghi-ghr̥̊h-s-*			
→	*gi-ghr̥̊h-s-* (**DA**)			
→	*ji-ghr̥̊h-s-* (**SPal**)			
→	*ji-ghṛk-ṣ-* (analogy with roots like *guh* above)	→	*ji-ghṛk-ṣ-a-ti*	he wishes to grab
		→	*ji-ghṛk-ṣ-u*	wishing to rob
		→	*ji-ghṛk-ṣ-ā*	desire to rob

Merging of the reduplication syllable with the zero-grade root

In contrast to these examples, deaspiration in the reduplication syllable does not take place for *bhaj* ("to allot, to divide") ← IE **bheǵ*:

* *bhi-bhǵ-s-*
→ *bhi-bj-s-* (**ASh**, but *s* not aspiratable)
→ *bhi-pk-s-* (**BA**)
→ *bhi-k-s-* (**CCl**)
→ *bhi-k-ṣ-* (**RUKI**) → *bhik-ṣ-a-ti* he wishes to share
→ *bhik-ṣ-u* beggar
→ *bhik-ṣ-ā* the act of begging

Here are a few other examples (and see *hiṃ-s-* below) where the reduplication syllable merges with the z.g. root. Consider *śak* ("to be able") ← IE * *ḱek*:

* *śi-śk-s-* (**PPal**)
→ *śi-k-s-* (**CCl**)
→ *śi-k-ṣ-* (**RUKI**) → *śik-ṣ-a-ti* he learns
→ *śik-ṣ-u* desirous of learning
→ *śik-ṣ-ā* science

āp (a reduplicated present form, see dictionary) ← IE * $h_1 ep$:

* $h_1 i$-$h_1 p$-*s-*
→ *īp-s-* (IE *iH* → OI *ī*) → *īp-s-a-ti* he wishes to obtain
→ *īp-s-u* desirous of
→ *īp-s-ā* desire to obtain

akṣi n. ("eye") ← IE * $h_3 ek^w$:

* $h_3 i$-$h_3 k^w$-*s-*
→ *īk*^{w}-*s-* (IE *iH* → OI *ī*)
→ *īk-s-* (see pp. 37)
→ *īk-ṣ-* (**RUKI**) → *īk-ṣ-a-tê* he watches over
→ *īk-ṣ-ā* sight

IE * $h_2 nek$́:

* $h_2 i$-$h_2 nk$́-*s-*
→ *īak-s-* (**Lar__*V***, **SY__*N***, **SY__Conf**, **SIB**)
→ *iyak-s-* (***V*+*SV***)
→ *iyak-ṣ-* (**RUKI**) → Ved. *iyak-ṣ-a-ti* he wishes to reach

an ("to breath") ← IE **h*$_2$*enh*$_1$:

**h*$_2$*i-h*$_2$*nh*$_1$*-s-*
→ *īni-s-* (twice **Lar_ *V***)
→ *īni-ṣ-* (**RUKI**)
→ *anini-ṣ-* (by levelling with *an*) → *anini-ṣ-a-ti* he wishes to breathe

dā ← IE **deh*$_3$:

**di-dh*$_3$*-s-*
→ *di-d-s-* (**Lar_ *V***: just loss of laryngeal)
→ *di-t-s-* (**BA**)
→ *dit-s-a-ti* he wishes to give
→ *dit-s-u* desirous of giving
→ *dit-s-ā* desire to give

dhā ← IE **dheh*$_1$:

**dhi-dhh*$_1$*-s-*
→ *dhi-dh-s-* (**Lar_ *V***: just loss of laryngeal)
→ *dhi-th-s-* (**BA**)
→ *dhi-t-s-* (**ASh**) → *dhit-s-a-ti* he wishes to set

and *dabh* ← IE **dhebh*:

**dhi-dhbh-s-*
→ *dhi-bh-s-* (**CCl**)
→ *dhi-ph-s-* (**BA**)
→ *dhi-p-s-* (**ASh**) → *dhip-s-a-ti* he wishes to injure

(besides levelled *dipsati*)

And the three final examples *daś* (see s.v. *daśas*) ← IE **deḱ* :

**di-dḱ-s-*
→ *dīḱ-s-* (**CpL *dḱ***)
→ *dīk-ṣ-* (**SIB**) → *dīk-ṣ-a-tê* he consecrates
→ *dīk-ṣ-ā* consecration

pad ← IE **ped*:

**pi-pd-s-*
→ *pi-pd-s-* (**CCl**)
→ *pi-t-s-* (**BA**) → *pit-s-a-ti* he wishes to go
→ *pit-s-u* desirous of going
→ *pit-s-ā* desire to go

and *labh* ← IE **lebh*

**li-lbh-s-*
→ *li-bhs-* (**CCl**)
→ *li-ph-s-* (**BA**)
→ *li-p-s-* (**ASh**) → *lip-s-a-ti* he wishes to obtain
→ *lip-s-u* desirous of obtaining
→ *lip-s-ā* desire to obtain

Secondary palatalisation

Some desideratives are instances of secondary palatalisation:

√	3. pers. sg.	adjective	noun
kṛ	*ci-kīr-ṣ-a-ti* (1) he wants to make	*ci-kīr-ṣ-u* (1) intending to make	*ci-kīr-ṣ-ā* (1) desire to make
gam	*ji-gam-i-ṣ-a-ti* (2, 3) he wants to go	*ji-gam-i-ṣ-u* (2, 3) intenting to go	*ji-gam-i-ṣ-ā* (2, 3) intenting to go
granth	*ji-granth-i-ṣ-a-ti* (2, 3) he wants to string together		
ghas	*ji-ghat-s-a-ti* (2, 4) he wants to consume	*ji-ghat-s-u* (2, 4) intending to consume	*ji-ghat-s-ā* (2, 4) desire to consume

1. *ci-kīr-ṣ-a-ti* etc. show surprising lengthening (perhaps due to analogy, see *ti-tīr-ṣ-u* in the next table).
2. *ji-ghat-s-a-ti* and others show full grade of the root.
3. *ji-gam-i-ṣ-a-ti* etc. use "thematic" *i* without etymological justification.
4. **SIB** line 1

Laryngeal roots ending on *rH*

Roots with long syllabic *r̥̄* ← IE *rH* form the desiderative from the full grade or from the zero grade.

√ *CerH*	3. pers. sg.	adjective
kr̥̄	*ci-kar-i-ṣ-a-ti* (1, 2) he wants to pour out	*ci-kar-i-ṣ-u* (1, 2) desirous to pour out
tr̥̄	*ti-tīr-ṣ-a-ti* ← IE **ti-tr̥°H-s* (3) he wants to cross	*ti-tīr-ṣ-u* (3) desirous of crossing
dr̥̄	*di-dīr-ṣ-a-ti* (3) he wants to tear	*di-dīr-ṣ-u* (3) desirous of tearing
pr̥̄	*pi-par-i-ṣ-a-ti* (2) he wants to spend completely (time)	
	pu-pūr-ṣ-a-ti ← IE **pu-pr̥°H-s* (4) he wants to spend completely (time)	

1. **SPal**
2. Full grade plus *i*, reflecting a laryngeal
3. **Lar_SY** after non-labial consonant
4. **Lar_SY** after labial consonant

Laryngeal suffix

It seems that instead of the desiderative suffix *s*, alternatively a desiderative suffix *Hs* was employed:

√	3. pers. sg.	adjective	noun
ji	*ji-gī-ṣ-a-ti* (1) he wants to conquer	*ji-gī-ṣ-u* (1) imperialist	*ji-gī-ṣ-ā* (1) desire to conquer
mr̥	*mu-mūr-ṣ-a-ti* (2) he wants to die	*mu-mūr-ṣ-u* (2) wanting to die	*mu-mūr-ṣ-ā* (2) desire to die
śru	*śu-śrū-ṣ-a-tê* (1) he wants to hear	*śu-śrū-ṣ-u* (1) obedient	*śu-śrū-ṣ-ā* (1) obedience
sr̥	*si-ṣīr-ṣ-a-ti* (3) he wants to run		

1. Long *ī* in *ji-gī-ṣ-a-ti* may be explainable by a suffix *Hs* rather than just *s*. Similarly, long *ū* in *śu-śrū-ṣ-a-tê* may also be due to suffix *Hs*.

2. The same laryngeal is responsible for *mu-mūr-ṣ-a-ti*. In *pu-pūr-ṣ-a-ti* above, the laryngeal stems from the root. Here, the laryngeal would originate in the suffix. In both cases, the labial (!) *m* is responsible for producing *mūr* in the main syllable and hence *mu* as the reduplicative syllable.

3. Similar to *ti-tīr-ṣ-a-ti* above, one obtains *īr-ṣ* from *r̥Hs*, but note

   a) IE root **terH* and desiderative **ti-tr̥H-s-* → *ti-tīr-ṣ-* versus

   b) IE root **ser* and desiderative **si-sr̥-Hs-* → *si-ṣīr-ṣ-*

   Perhaps, this explanation overuses laryngeals. Analogy may be an alternative explanation.

There exist several desideratives for *man* ("to think") ← IE **men* with desiderative suffix *s*, a few of which have been mentioned above. Employing the desiderative suffix *Hs* one may, with too many tricks, arrive at the name for one of the six philosophical systems:

	**mi-mn̥-Hs-*			
→	**mi-mn̥H-s-*			
→	*mi-mā-s-* (laryngeal after syllabic *n̥*)			
→	*mi-māṃ-s-* (lev. from *maṃ-sy-a-ti*?)			
→	*mī-māṃ-s-* (long *ī* for unclear reasons)	→	*mī-māṃ-s-a-tê*	he doubts
		→	*mī-māṃ-s-ā*	investigation

There exist two different desideratives for *han* ("to kill") ← IE **gʷhen*, depending on the suffix. On the one hand, one finds the *Hs*-desiderative:

	**gʷhi-gʷhn̥-Hs-*			
→	*gʷhi-gʷhā-s-* (laryngeal after syllabic *n̥*)			
→	*gʷi-gʷhā-s-* (**DA**)			
→	*ji-ghā-s-* (**SPal**)			
→	*ji-ghāṃ-s-* (lev. from *haṃ-sy-a-ti*?)	→	*ji-ghāṃ-s-a-ti*	he wishes to kill
		→	*ji-ghāṃ-s-u*	revengeful
		→	*ji-ghāṃ-s-ā*	revenge

On the other hand, the *s* suffix yields:

	$^*g^whi\text{-}g^whn\text{-}s\text{-}$			
→	$hi\text{-}g^whn\text{-}s\text{-}$ (**SPal**)			
→	*hi-n-s-* (**CCl**)			
→	*hi-ṃ-s-* (***Ns***)	→	*hiṃ-s-a-ti*	he injures
		→	*hiṃ-s-ā*	injury

C.4.9. Compound-final "zero grades"

At the end of compounds, forms like *dvi-ja* or *kha-ga* vaguely resemble zero grades. Some can be understood as employing only the root-initial consonant. Remember the consequentials of the second subgroup (pp. 82) that are derived in a similar fashion. Let us call the forms to be presented now ultra-zero grades. A few might indeed be understood as zero grades:

◇ *gam, gacch-a-ti* ("to go") with PPP *ga-ta*

- *kha-ga* ("moving in the ether → bird/sun")
- *a-ga* ("not going → tree")

◇ *dhā, dadhāti* ("to set") with PPP $^*dhh_1$*-to* → *hi-ta*

- *ab-dhi* m. ("holding water → ocean") ← *ap* ("water") with apparent backward assimilation

◇ *nī, nayati* ("to lead") with PPP $^*niH$*-to* → *nī-ta*

- *pat-nī* f. ("lead by husband (*pati*) → wife")
- *sênā-nīs* m. ("army leader, general")
- *grāma-ṇīs* m. ("village leader")
- *agra-ṇīs* m. ("leader")

◇ *vid, vêt-ti* ("to know") with PPP *vit-ta, vid-i-ta*

- *vêda-vit* ("*Veda* knowing")
- *ātma-vit* ("knower of the self")

Three odd examples add *t* (perhaps in analogy to *vêda-vit*):

◇ *ji, jayati* ("to conquer") with PPP *ji-ta*

- *indra-jit* m. ("conqueror of *Indra*")
- *apsu-jit* ("conquering in the region of the clouds, i.e., Indra"), with loc. pl. of *ap* ("water") instead of stem form (see also *apsu-ja* below)

◇ *bhṛ, bharati* ("to bear") with PPP *bhṛ-ta*

- *śastra-bhṛt* (“weapon bearer → warrior”)

◇ *kṛ, karôti* with PPP *kṛ-ta*

- *duṣ-kṛt* (“acting in an evil manner”) ← *dus* (“bad, evil”)

The other examples presented below do not use the zero grade, but just short *a*:

◇ *chad, chadati* (“to cover”) with PPP **channa*

- *a-ccha* (“uncovered”) (gemination by a sandhi rule), also a common Hindi word as *a-cchā*

◇ *jan, jāyatê* (“to beget, to be born”) with PPP **ǵn̥-h*$_1$*-to* → *jā-ta*

- *dvi-ja* (“twice-born”) with *dvi-ja* m. (“brahmin, bird, tooth”)
- *ātma-ja* (“self-produced, son”) and *ātma-jā* (“daughter”)
- *pra-ja* (“bringing forth”) with *pra-jā* f. (“progeny, offspring”)
- *apsu-ja* (“born in the waters”) with loc. pl. of *ap* (“water”) instead of stem form

◇ *jñā, jānāti* (“to know”) with f.g. (!) PPP IE **ǵneh*$_3$*-to* → *jñā-ta*

- *sarva-jña* (“all-knowing”)

◇ *dā, dadāti* (“to give”) with PPP **dh*$_3$*-to* → *di-ta* besides *dat-ta*

- *vara-da* (“giving boons, *Brahmā*”)
- *ab-da* (“water giver → cloud”, “when clouds reappear → year”) ← *ap* (“water”) by **BA**

◇ *pā, pibati* 1. class (“to drink”) with PPP **ph*$_3$*i-to* → **pih*$_3$*-to* → *pī-ta*

- *sôma-pa* (“drinking *Soma*”)
- *pāda-pa* (“foot-drinker → tree”)

◇ *pā, pā-ti* (“to protect”) with PPP *pā-ta*

- *pra-jā-pa* (“protecting the subjects → king”)
- *nṛ-pa* (“man protecting → king”)

◇ *sthā, ti-ṣṭh-a-ti* (“to stand”) with PPP **sth*$_2$*-to* → *sthi-ta*

- *gṛha-stha* (“householder”)
- *sattva-stha* (“established in *sattva*, firm in purity”)
- *grantha-stha* (“(knowledge) present in a book”)
- *kaṇṭha-stha* m. (“(knowledge) present in the throat → known by heart”)

One might try to explain

◇ *pra-bhu* m. (“lord, master”)

◇ *a-bhv-a* (“not being (good) → monstrous, powerful”)

by positing the zero grade of IE root **bheuH* without the laryngeal (i.e., just the first syllable-closing consonant remains).

C.5. Lengthened-grade forms and forms using several grades

C.5.1. Rare lengthened grade in action nouns

On pp. 103, some derivatives on *a* are mentioned like

◇ *jay-a* (“victory”) ← *ji* (“to conquer”)

◇ *bhav-a* (“being, state”) ← IE **bhevH-o* (OI z.g. root *bhū*)

Building on the same verbal roots, one also finds lengthened-grade words:

◇ *jāyā* f. (“she who has been captured, the wife”)

◇ *bhāv-a* (“being, state”)

Sometimes, the OI root is not in zero grade. Then, the lengthened grade becomes more likely, as in

◇ *anu-tāpa* m. (“remorse”) ← *tap, tapati* (“to heat”)

◇ *vi-ṣāda* m. (“sorrow”) ← *sad, sīdati* (“to sit”)

◇ *bhāga* m. (“part”) ← *bhaj, bhajati* (“to divide, to allot”)

C.5.2. Derivatives

Derivative adjectives regularly use the lengthened grade. Examples abound:

◇ *mānas-a* (“mental”) ← *manas* n. (“mind”) ← *man* (“to think”)

◇ *tāpas-a* (“ascetic”) ← *tapas* n. (“asceticism”) ← *tap* (“to burn”)

◇ *pāca-ka* (“cook”) ← *pac* (“to cook”)

C.5.3. Frequentatives

Two patterns and six constructions

Frequentative verbs work with reduplication similar to desideratives. In the latter forms, the reduplicated syllable is "emphasised" more strongly. Frequentatives mostly follow one of two patterns:

marker	frequentative
ya marker	reduplication syllable + root + *ya* + ātm.
ī marker	reduplication syllable + root + *ī* + par.

Observe:

◇ Any given verb might exhibit both patterns.

◇ With these two patterns, frequentatives usually follow either of six (or so) different constructions.

Without any of the two markers, adjectives are occasionally formed. *car* ("to go, to stir") ← IE $^*k^w el$ has the frequentative adjective *ca-kr-a* ("unsteady → wheel").

First construction

For each of the six constructions, the general model is described together with a few examples. The first construction involves semivowels:

1. construction		IE root	→	OI frequentative
	ya marker	C_1FgC_2	→	C_1Fg-C_1ZgC_2-*ya* + ātm.
	ī marker	C_1FgC_2	→	C_1Fg-C_1ZgC_2-*ī* + par.
example	*ya* marker	*reud*	→	*rô-rud-ya-tê*
	ī marker	*reud*	→	*rô-rud-ī-ti*

For example, consider

√	3. sg. ātm. (*ya* suffix)	3. sg. par. (*ī* suffix)	translation
budh	*bô-budh-ya-tê*	*bô-budh-ī-ti*	to be awake
bhid	*bê-bhid-ya-tê*	*bê-bhid-ī-ti*	to split
lih	*lê-lih-ya-tê*	*lê-lih-ī-ti*	to lick
śuc	*śô-śuc-ya-tê*	*śô-śuc-ī-ti*	to grieve
śubh	*śô-śubh-ya-tê*	*śô-śubh-ī-ti*	to shine

√	3. sg. ātm. (*ya* suffix)	3. sg. par. (*ī* suffix)	translation
svap (f.g.)	*sô-ṣup-ya-tê*	see 2. construction	to sleep

Second construction

The first construction uses the sequence *Fg-Zg*, the second construction employs higher grades, namely *Lg-Fg*:

2. construction		IE root	→	OI frequentative
	ya marker	C_1FgC_2	→	C_1Lg-C_1FgC_2-*ya* + ātm.
	ī marker	C_1FgC_2	→	C_1Lg-C_1FgC_2-*ī* + par.
example	*ya* marker	*sed*	→	*sā-sad-ya-tê*
	ī marker	*sed*	→	*sā-sad-ī-ti*

All the examples are pretty transparent. But note: as in desideratives like *śu-śrū-ṣ-u*, only the first root-initial consonant gets reduplicated in *jval* and *svap,* (i.e., resonants as second root-initial consonants are not reduplicated) in contrast to *smṛ*:

√ in f.g.	3. sg. ātm. (*ya* suffix)	3. sg. par. (*ī* suffix)	translation
jval	*jā-jval-ya-tê*	*jā-jval-ī-ti*	to burn
pac	*pā-pac-ya-tê*	*pā-pac-ī-ti*	to cook
yac	*yā-yac-ya-tê*	*yā-yac-ī-ti*	to sacrifice
vad	*vā-vad-ya-tê*	*vā-vad-ī-ti*	to speak
smṛ (z.g.)	*smā-smar-ya-tê*	*smā-smar-ī-ti*	to remember
svap	see 1. construction	*sā-svap-ī-ti*	to sleep

Third construction

In contrast to the first and second construction, the third one repeats the full-grade root:

3. construction		IE root	→	OI frequentative
	ya marker	C_1FgC_2	→	C_1FgC_2-C_1FgC_2-*ya* + ātm.
	ī marker	C_1FgC_2	→	C_1FgC_2-C_1FgC_2-*ī* + par.
example	*ya* marker	*nem*	→	*nan-nam-ya-tê*
	ī marker	*nem*	→	*nan-nam-ī-ti*

Here are a few examples:

√	3. sg. ātm. (*ya* suffix)	3. sg. par. (*ī* suffix)	translation
kram	*cańkramyatê* (1, 2, 3)	*cańkramītiti* (1, 2, 3)	to walk
gam	*jańgamyatê* (2, 3)	*jańgamītiti* (2, 3)	to go
car		*carcarītiti* (2)	to walk
bhram	*bambhramyatê* (1, 4)	*bambhramītiti* (1, 4)	to roam

1. Regularly, only the first word-initial consonant gets reduplicated. The resonant *r* as the second root-initial consonant is not reduplicated. Therefore: *cańkramyatê* and *bambhramyatê*.

2. Secondary palatalisation seems behind *cańkramyatê* and *jańgamyatê*. But the evidence is far from clear. Perhaps, other explanations using analogy might be more convincing.

3. The verbs that end in a nasal show expected backward assimilation where the suitable class nasal (here: the velar one) is used.

4. Grassmann deaspiration

Note that most of the above examples are nasal stems. Its construction could have been misunderstood in this manner:

3. construction		IE root	→	OI frequentative
	ya marker	C_1FgC_2	→	C_1Fg-*N*-C_1FgC_2-*ya* + ātm.
	ī marker	C_1FgC_2	→	C_1Fg-*N*-C_1FgC_2-*ī* + par.
example	*ya* marker	*bhrem*	→	*bambhramyatê*
	ī marker	*bhrem*	→	*bambhramītiti*

That is, omitting the root-final consonant, a nasal is infixed after the reduplication syllable. This is relevant for understanding frequentatives like

√	3. sg. ātm. (*ya* suffix)	3. sg. par. (*ī* suffix)	translation
cal	*cañcalyatê*		to stir, to quiver
jap	*jañjapyatê*	*jañjapītiti*	to recite
dah	*dandahyatê*	*dandahītiti*	to burn

Fourth construction

In the fourth construction, long *ī* is inserted after the reduplication syllable:

4. construction		IE root	→	OI frequentative
	ya marker	$C_1 erC_2$	→	$C_1 ar\text{-}\bar{\imath}\text{-}C_1 \underline{r} C_2$-*ya* + ātm.
	$\bar{\imath}$ marker	$C_1 erC_2$	→	$C_1 ar\text{-}\bar{\imath}\text{-}C_1 \underline{r} C_2\text{-}\bar{\imath}$ + par.
example	*ya* marker	*serp*	→	*sar-ī-sṛp-ya-tê*
	$\bar{\imath}$ marker	*serp*	→	*sar-ī-sṛp-ī-ti*

Consider these examples that are exactly formed like *sar-ī-sṛp-ya-tê*:

√	3. sg. ātm. (*ya* suffix)	3. sg. par. ($\bar{\imath}$ suffix)	translation
nṛt	*nar-ī-nṛt-ya-tê*	see 5. construction	to dance
vṛt	*var-ī-vṛt-ya-tê*	*var-ī-vṛt-ī-ti*	to turn

Fifth construction

The fifth construction is similar to the fourth one. It shows up only in parasmâipada, but without the $\bar{\imath}$ suffix:

5. construction	IE root	→	OI frequentative
	$C_1 erC_2$	→	$C_1 ar\text{-}\bar{\imath}\text{-}C_1 arC_2$- + par.
examples	*vert*	→	*var-ī-vart-ti*
	nert	→	*nar-ī-nar-ti*

Sixth construction

The sixth construction is applied to long $\bar{a}$ roots with laryngeal origin:

√	3. sg. ātm. (*ya* suffix)	3. sg. par.	translation
dā	*dê-dī-ya-tê*	*dā-dā-ti*	to give
pā	*pê-pī-ya-tê*	*pā-pā-ti*	to drink

Similarly, compare *jê-jīr-ya-tê* from root *jī̯r* (to decay).

C.5.4. Gerundives

Gerundives are formed with *tavya*, *anīya*, or *(t)ya*. They occur in all grades:

√	translation	f.g.	z.g.	l.g.
kṛ	to make	*kar-tavya* (1), *kar-aṇīya*	*kṛ-tya*	*kār-ya*
gam	to go	*gan-tavya* (1), *gam-anīya*, *gam-ya*		

√	translation	f.g.	z.g.	l.g.
ji	to conquer	*jê-tavya* (1), *jê-ya*, *jay-ya* (2)		
tyaj	to abandon			*tyāj-ya*
dviṣ	to hate	*dvêṣ-ya*		
bhū	to be	*bhav-i-tavya* (1, 3), *bhav-ya*		

1. All *tavya*-forms are built on the full grade as the infinitives in *tum* or the agent nouns in *tar* (pp. 97).
2. *jê-ya* versus *jay-ya* is not totally clear. Since the *ya*-form begins with a consonant, *jê-ya* is expected by **DIPH**. In contrast, *jay-ya* is difficult.
3. *bhav-i-tavya* is regular as is the infinitive *bhav-i-tum* due to the laryngeal root IE **bheuH.*

Some gerundives surprisingly exhibit *ê*, such as

√	translation		
dā	to give	*dê-ya*	*ā-dê-ya* (“to be taken”)
dhā	to set, to place	*dhê-ya*	*vi-dhê-ya* (“to be determined, duty”)
jñā	to know	*jñê-ya*	
pā	to drink	*pê-ya*	
sthā	to stand	*sthê-ya*	

Perhaps, *pê-ya* is regularly formed in the following manner:

* *peh*$_3$*i-yo*
→ *pāi-ya* (**Lar_ *V***)
→ *pê-ya* (like *vêṭ* according to **VS** 2. line, pp. 32)

while the other long *ā* verbs do not exhibit *i* in the root and are built by analogy with *pê-ya*.

C.6. Miscellanea

C.6.1. Derivatives

A number of derivatives seem to use something like the lengthened grade. However, it is not the verbal root that is lengthened (see pp. 147) but the first syllable. Consider these examples:

lengthened form	translation	origin
jānakī	daughter of *Janaka*	*Janaka* (name of a king)
dāśa-rath-i	son of *Daśa-rath-a*	*daśa* (“ten”) + *rath-a* (“chariot”)
pārvat-ī	daughter of the mountain	*parvat-a* (mountain)
pâutr-a	grandson	*putr-a* (“son”)
prā-kṛt-a	elementary, natural	*pra-kṛt-a* (“accomplished”)
lâuk-ik-a	worldly	*lôk-a* (“world”)

Rarely, alpha privativum is lengthened in similar instances:

lengthened form	translation	origin
ā-kasmika	unforeseen	*a-kasmāt* (“without a why or a wherefore”)
ā-jasr-ik-a	perpetual	*a-jasra* (“perpetual”)

Lengthened forms also occur in neuter nouns in *ya* indicating “-ness” or “-ity”.

lengthened form	translation	origin
ā-tith-ya-m	hospitality	*a-tith-i* (“guest”)
ā-rôg-ya-m	health	*a-rôg-a* (“health”) ← *ruj*
ā-las-ya-m	idleness	*a-las-a* (“idle”) ← *las*
âiśvar-ya-m	lordship	*īśvar-a* (“lord”)
jāḍ-ya-m	stupidity	*jaḍ-a* (“stupid”)
trâiguṇ-ya	pertaining to the three *guṇa*s	*triguṇ-a* (“with three *guṇa*s”)
dāridr-ya-m	poverty	*daridr-a* (“poor”)
dhâir-ya-m	resolution	*dhīr-a* (“steady, persistent”)
pāṇḍit-ya-m	scholarliness	*paṇḍit-a* (“scholar”)
mādhur-ya-m	sweetness	*madhur-a* (“sweet”)
mâitr-ya-m	friendship	*mitr-am* (“friend”)
vāṇij-ya-m	trade	*vaṇij* (“merchant”)
śaur-ya-m	valor	*śūr-a* (“brave”)
svā-sth-ya-m	health	*sva-stha* (“well at ease”) ← *sthā*

C.6.2. Ātmanêpada present-tense participles

The ātmanêpada present-tense participles vary according to whether thematic or athematic verbs are concerned.

◇ For athematic verbs, the ending *āna* is attached to the weak present stem. For example, the present participle from *duh, duh-mas* ("to milk") is *duh-āna.*

◇ For thematic verbs, the thematic vowel OI *a* and the ending *māna* is attached to the present stem. For example, the present participle from *man, man-y-a-tê* ("to think") is *man-y-a-māna.*

It is argued that

$$\text{IE } {}^{*}mh_1no$$

is the underlying form. It is also present in the Lat. B *alu-mnu-s.* Depending on whether the verb is athematic or thematic, one obtains:

◇ Athematic verbs attach mh_1no directly to their weak stem causing m to become syllabic. Then **Lar_SY** (IE $C\underset{\circ}{m}HC \rightarrow C\bar{a}C$) regularly produces *āna.*

◇ By **Lar_*V***, thematic verbs should have produced *a-mina* (a Prakrit form *mina* does indeed exist). Analogy was then responsible for producing OI and even Ved. *a-māna*:

	a-mina	
influenced by	*āna* in athematic verbs	with long $\bar{a}$ before n
turns into	*a-māna* in thematic verbs	with long $\bar{a}$ before n

The suffix *āna* may have a second (confounded?) origin, see p. 131.