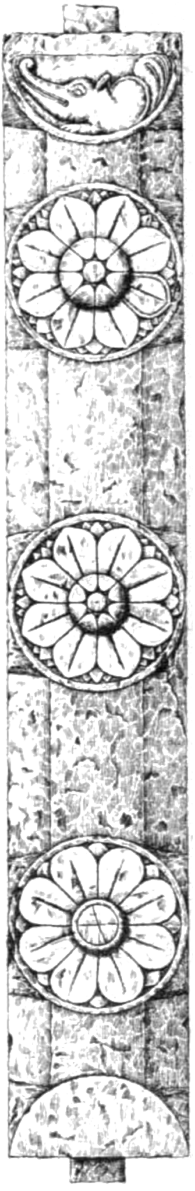


शिखागोविश्वविद्यालये

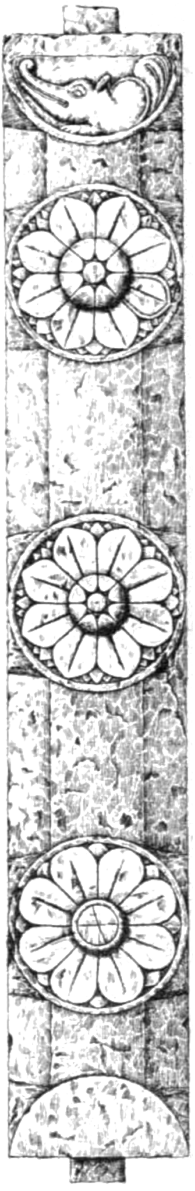
प्रारम्भिकसंस्कृतम्

FIRST-YEAR SANSKRIT

AT THE UNIVERSITY OF CHICAGO

CC BY SA

अल्लटाचार्योद्भावितः पाठक्रमः *Designed by Andrew Ollett*



VOWEL GRADATION

guṇaḥ गुणः

॥वृद्धिः॥
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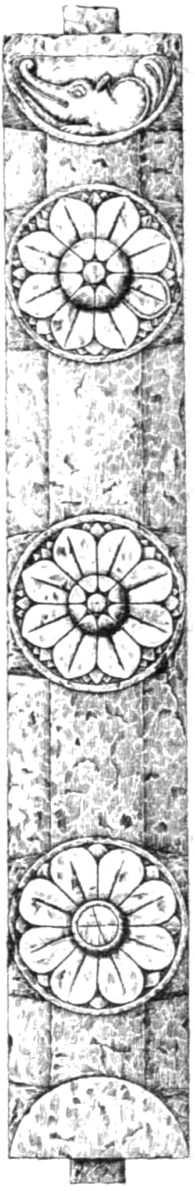

REVIEW OF VOWELS

Simple vowels:

a i u ṛ

॥वृद्धिः॥
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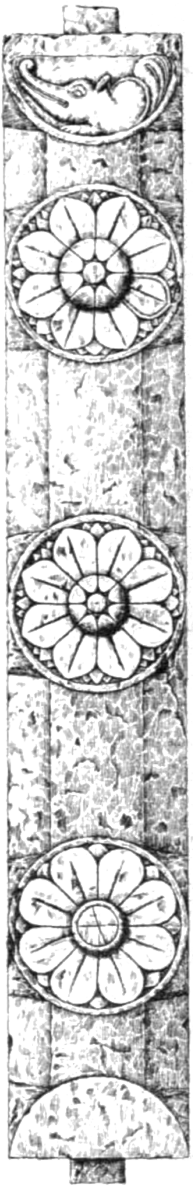

REVIEW OF VOWELS

Simple vowels:

a	i	u	ṛ
ā	ī	ū	ṝ

॥वृद्धिः॥
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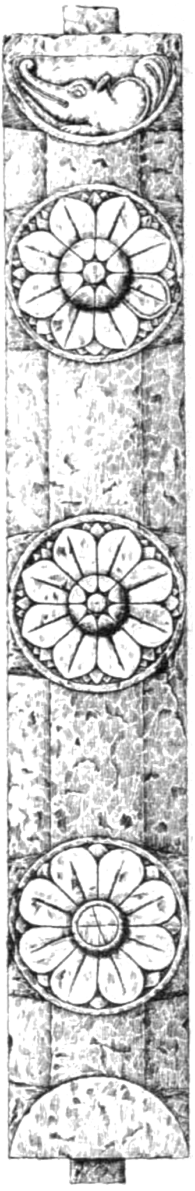


REVIEW OF VOWELS

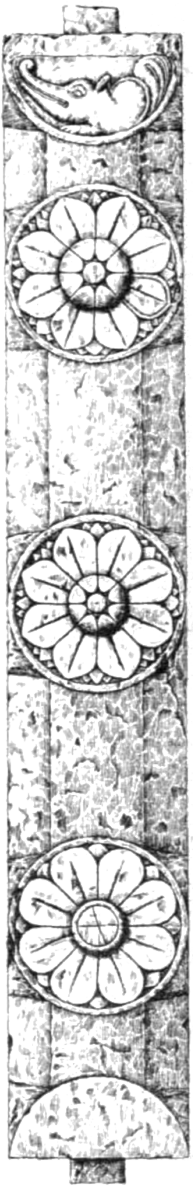
Simple vowels:

a	i	u	ṛ
ā	ī	ū	ṝ

These are called **high vowels** because they are pronounced with the tongue relatively high in the mouth.

Pāṇini calls them *iK*.

Recall that these are the vowels that cause *RUKI...*



REVIEW OF VOWELS

Simple vowels:

a	i	u	ṛ
ā	ī	ū	ṝ

Complex vowels:

ē	ō	ar
ai	au	ār

… along with these complex vowels, for reasons that will become clear immediately.

॥वृद्धिः॥
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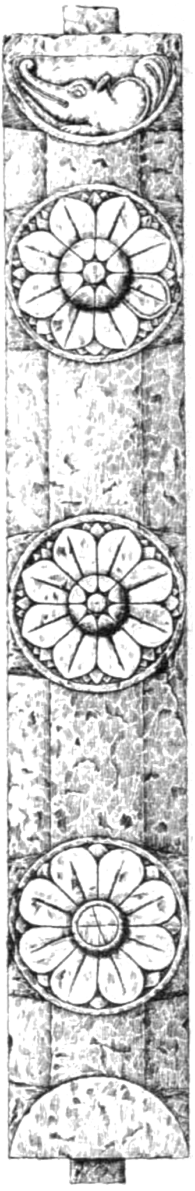

COMPLEX VOWELS

Complex vowels are so called because, despite how they are written (in Dēvanāgarī and in Roman transliteration), they each actually contain **two** underlying phonemes:

/a/ + /i/ → ē

/a/ + /ī/ → ē

॥वृद्धिः॥
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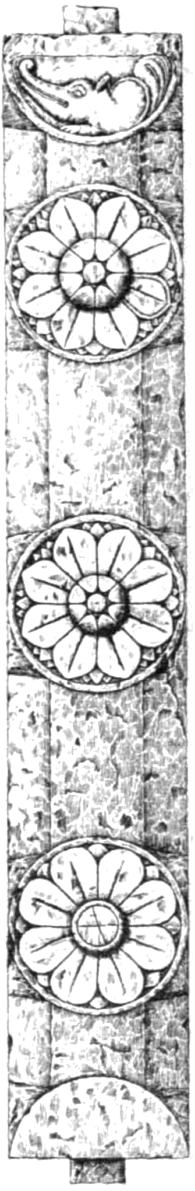

COMPLEX VOWELS

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/a/ + /u/ → ō

/a/ + /ū/ → ō

॥वृद्धिः॥
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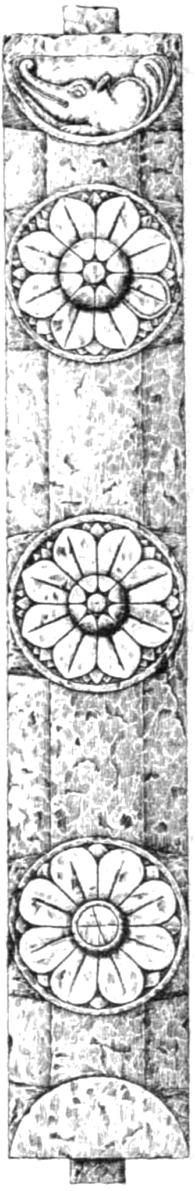

COMPLEX VOWELS

Complex vowels are so called because, despite how they are written (in Dēvanāgarī and in Roman transliteration), they each actually contain **two** underlying phonemes:

/ā/ + /i/ → ai

/ā/ + /ī/ → ai

॥वृद्धिः॥
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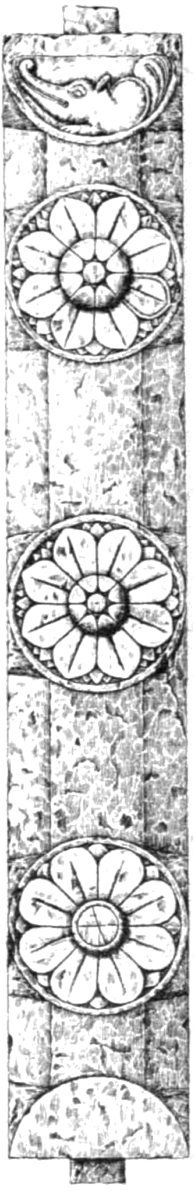

COMPLEX VOWELS

Complex vowels are so called because, despite how they are written (in Dēvanāgarī and in Roman transliteration), they each actually contain **two** underlying phonemes:

/ā/ + /u/ → au

/ā/ + /ū/ → au

॥वृद्धिः॥
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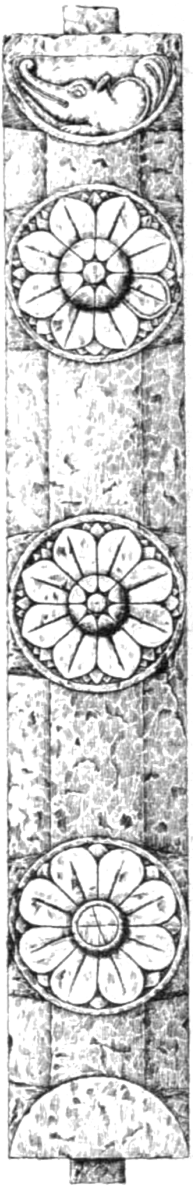
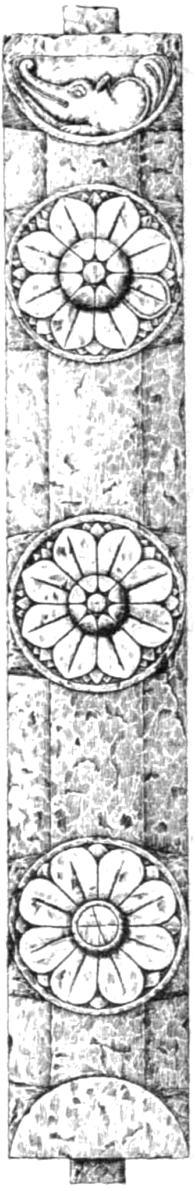


COMPLEX VOWELS

Please note that **in Sanskrit, the identity between a complex vowel and its constituent parts is very strong.** A complex vowel can **always** be analyzed into its constituent parts, which may then undergo *sandhi*.



IKŌ YAṆ ACI

Remember the important *sandhi* rule *iKō yaṆ aCi*: a high vowel turns into its corresponding semivowel when it is followed by another vowel.

i + a → ya

u + a → va

ṛ + a → ra

॥वृद्धिः॥
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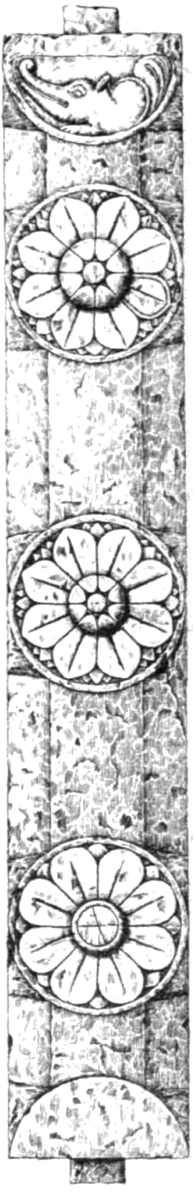

IKŌ YAṆ ACI

This means that, **in general**, when a complex vowel is followed by another vowel, its second component — the high vowel — turns into the corresponding semivowel:

ē + a → a · i · a → aya

ō + a → a · u · a → ava

ar + a → a · r̥ · a → ara

॥वृद्धिः॥
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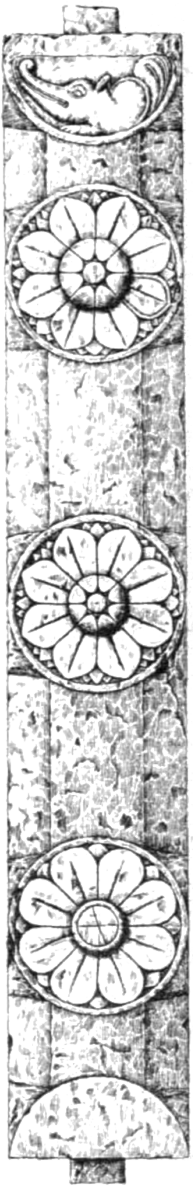

IKŌ YAṆ ACI

This means that, **in general**, when a complex vowel is followed by another vowel, its second component — the high vowel — turns into the corresponding semivowel:

ai + a → ā · i · a → āya

au + a → ā · u · a → āva

ār + a → ā · ṛ · a → āra

॥वृद्धिः॥
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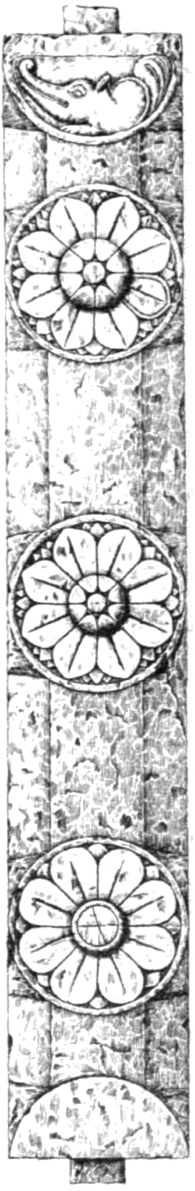

VOWEL GRADATION

Now we turn to vowel gradation properly speaking. In Sanskrit, we can often see a **systematic** relationship between different forms of the “same” word, which have different vowels:

kr̥ + ta- → kr̥tá-

kr̥ + tavya- → kártavya-

kr̥ + ya- → kāryà-

॥वृद्धिः॥
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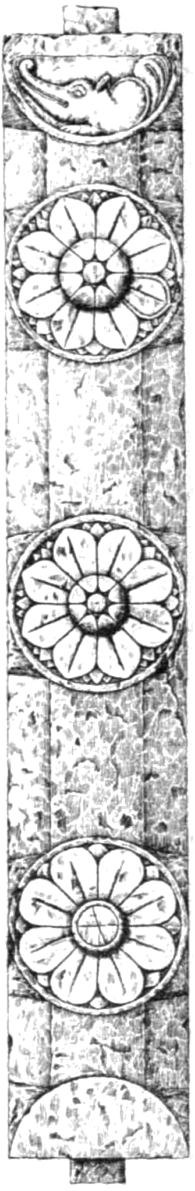

VOWEL GRADATION

We can see **how** these different forms are related to each other very clearly when the vowel of the root is r̥:

kr̥ + ta-	→	kr̥tá-	r̥ on its own
kr̥ + tavya-	→	kártavya-	a + r̥ = ar
kr̥ + ya-	→	kāryà-	ā + r̥ = ār

॥वृद्धिः॥
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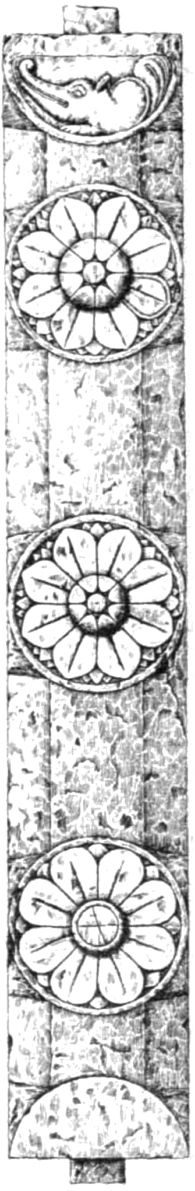

VOWEL GRADATION

These are called the **zero, full,** and **lengthened grade** of the vowel in Indo-Europeanist terminology.

kr̥ + ta-	→	kr̥tá-	zero
kr̥ + tavya-	→	kártavya-	full
kr̥ + ya-	→	kāryà-	lengthened

॥वृद्धिः॥
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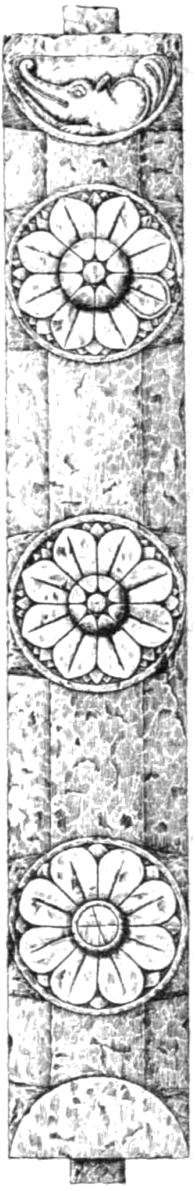

VOWEL GRADATION

In traditional Sanskrit grammar, full and lengthened grade will often correspond to the terms *guṇa-* and *vṛddhi-*.

kr̥ + ta-	→	kr̥tá-	—
kr̥ + tavya-	→	kártavya-	*[guṇa-]*
kr̥ + ya-	→	kāryà-	*[vṛddhi-]*

॥वृद्धिः॥
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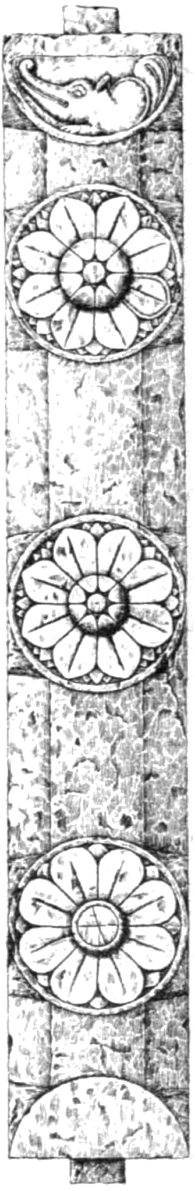

VOWEL GRADATION

We can think of the three-tiered system of vowel gradation as the progressive addition of the vowel *a:*

∅ ·	r̥	→	r̥	zero / —
a ·	r̥	→	ar	full / *guṇa-*
a · a ·	r̥	→	ār	lengthened / *vṛddhi-*

॥वृद्धिः॥
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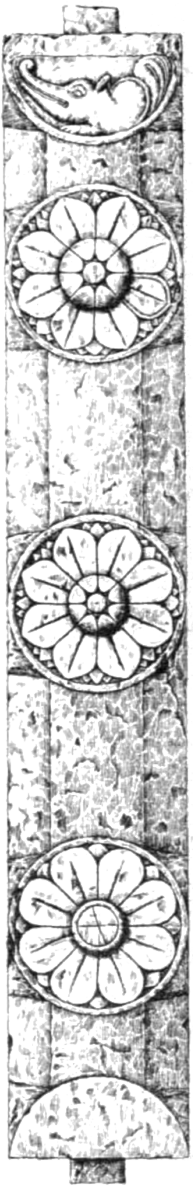
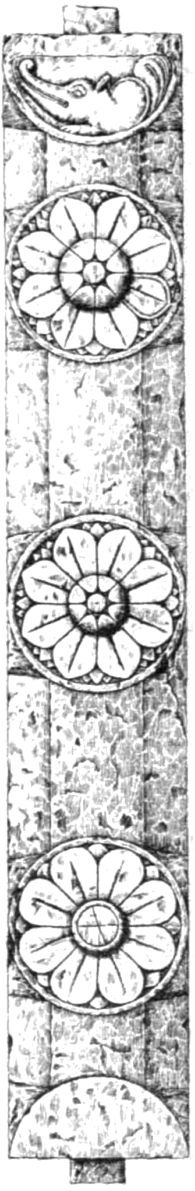


VOWEL GRADATION

The case of r̥ is special, because it **always** becomes a consonant in the full and lengthened grades.

With other high vowels (i/ī, u/ū), the pattern is less obvious, because they only become the corresponding semivowels before a vowel. Before a consonant, and at the end of the word, they **coalesce** with the *a* vowel to form a complex vowel.



VOWEL GRADATION

Before a vowel:

∅ · i	→	y-	zero / —
a · i	→	ay-	full / *guṇa-*
a · a · i	→	āy-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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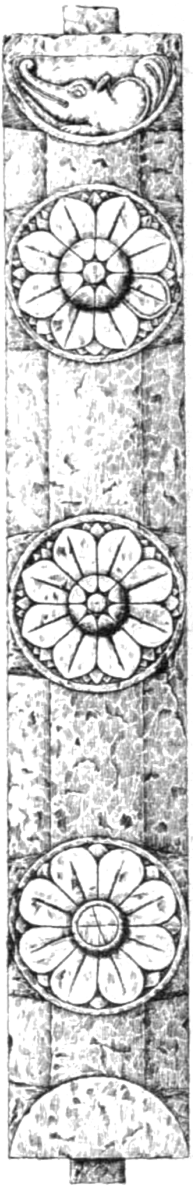

VOWEL GRADATION

Before a vowel:

∅ · ī	→	y-	zero / —
a · ī	→	ay-	full / *guṇa-*
a · a · ī	→	āy-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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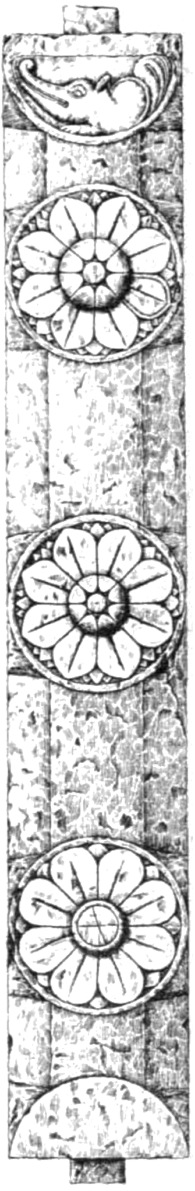

VOWEL GRADATION

Before a vowel:

∅ · u	→	v-	zero / —
a · u	→	av-	full / *guṇa-*
a · a · u	→	āv-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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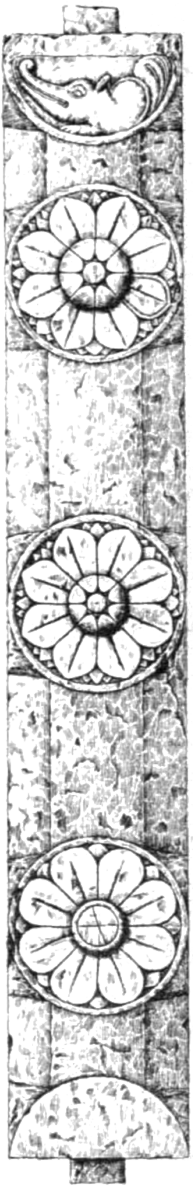

VOWEL GRADATION

Before a vowel:

∅ · ū	→	v-	zero / —
a · ū	→	av-	full / *guṇa-*
a · a · ū	→	āv-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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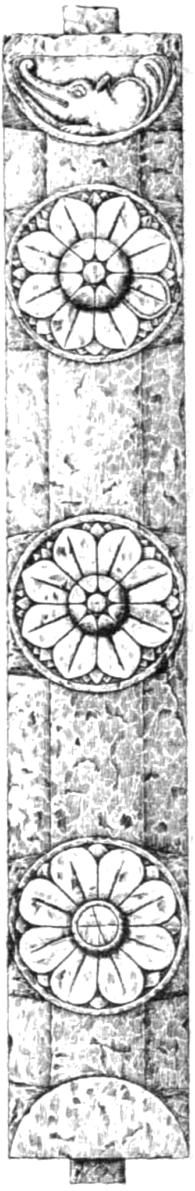

VOWEL GRADATION

Before a consonant, or at the end of a word:

∅ ·	i	→	i-	zero / —
a ·	i	→	ē-	full / *guṇa-*
a · a ·	i	→	ai-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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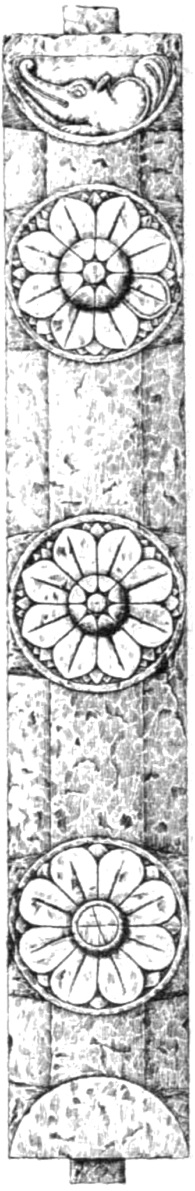

VOWEL GRADATION

Before a consonant, or at the end of a word:

∅ · ī	→	ī-	zero / —
a · ī	→	ē-	full / *guṇa-*
a · a · ī	→	aī-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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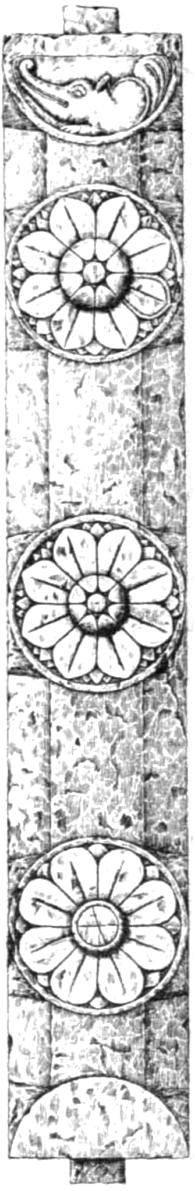

VOWEL GRADATION

Before a consonant, or at the end of a word:

∅ ·	u	→	u-	zero / —
a ·	u	→	ō-	full / *guṇa-*
a · a ·	u	→	au-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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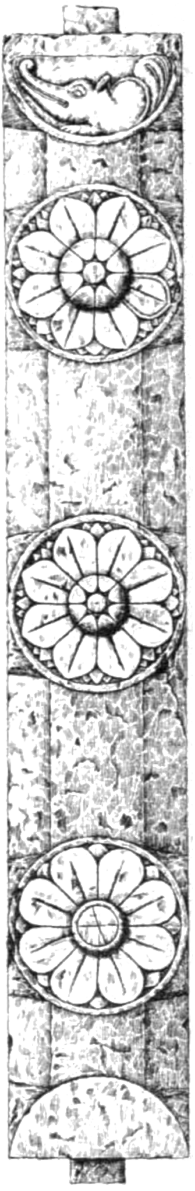

VOWEL GRADATION

Before a consonant, or at the end of a word:

∅ ·	ū	→	ū-	zero / —
a ·	ū	→	ō-	full / *guṇa-*
a · a ·	ū	→	au-	lengthened / *vṛddhi-*

॥वृद्धिः॥
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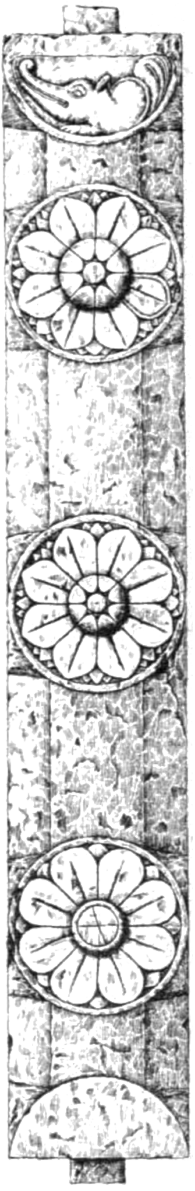
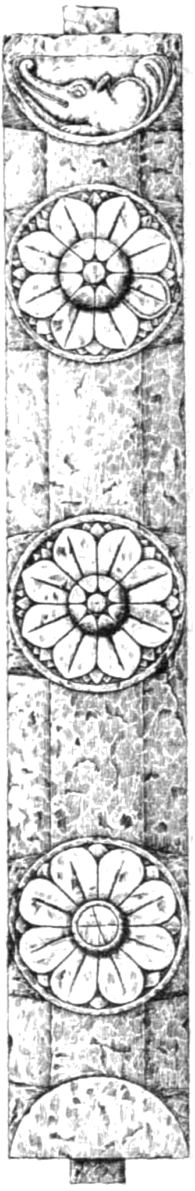


THE GRADATION OF A

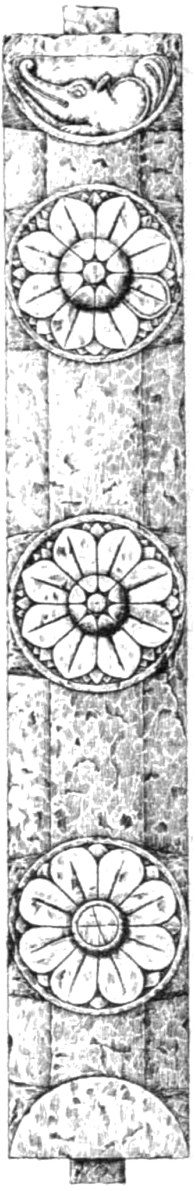
The vowel *a* does not participate in this system of vowel gradation. It is the element *added*, not the element *added to*. For that reason the Indian grammarians say simply that the *guṇa* of *a* is *a*.



EXAMPLES

Let us now looks at some examples using real verbal roots. We will take √*nī* "lead" as an example.

Like the vast majority of Sanskrit roots, **the form in which it is quoted is the zero-grade form**. You can tell this just by looking at it. It has no *a*-vowel or complex vowel in it.



Nī

The past passive participle is formed by adding *-ta-* onto the **zero grade** form of the root:

nī + ta → nīta-

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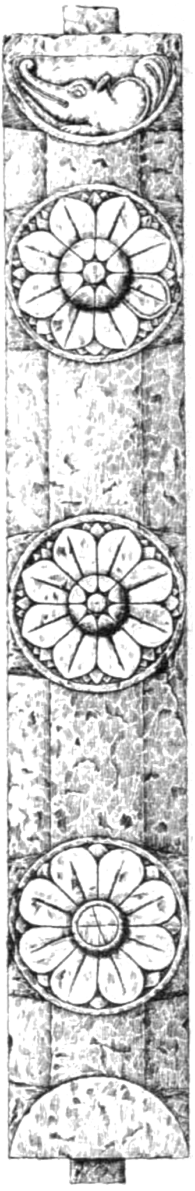

Nī

The infinitive is formed by adding *-tum* onto the **full grade** or *guṇa* form of the root:

nī + tum

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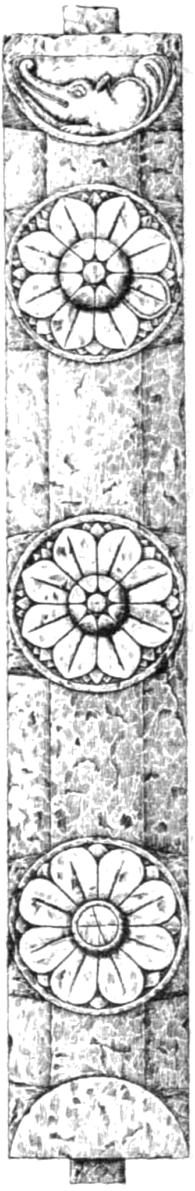

Nī

The infinitive is formed by adding *-tum* onto the **full grade** or *guṇa* form of the root:

nī + tum

n[a]ī + tum

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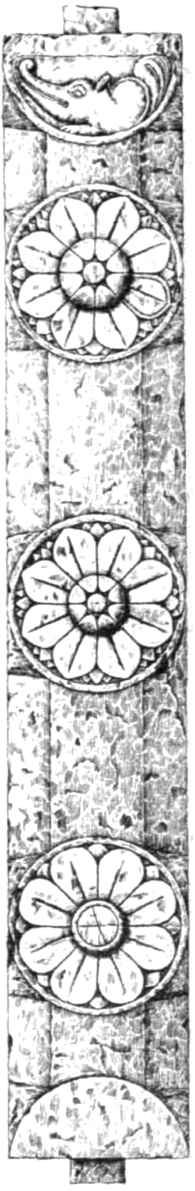

Nī

The infinitive is formed by adding *-tum* onto the **full grade** or *guṇa* form of the root:

nī + tum

n[a]ī + tum → nētum

Note that we use the complex vowel *ē* because the vowels *a* and *ī* coalesce before a consonant.

॥वृद्धिः॥
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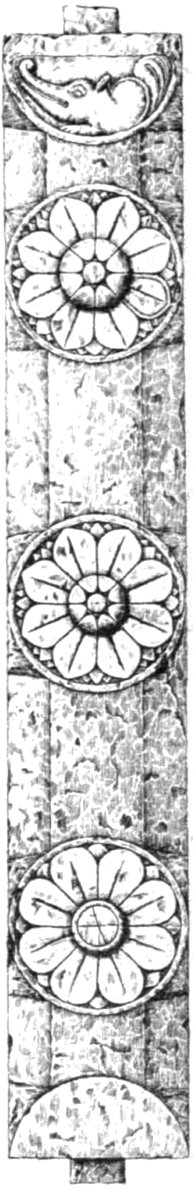

Nī

The present stem is formed by adding -*a*- onto the **full grade** or *guṇa* form of the root:

nī + a-

॥वृद्धिः॥
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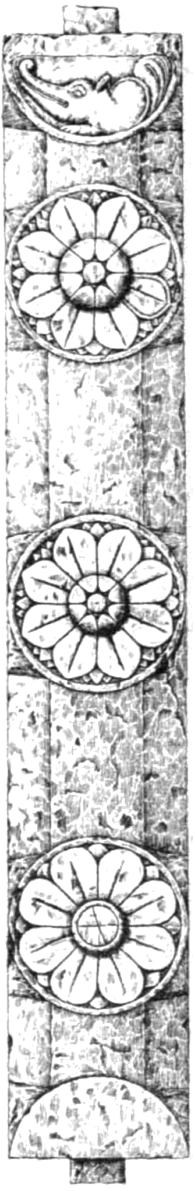

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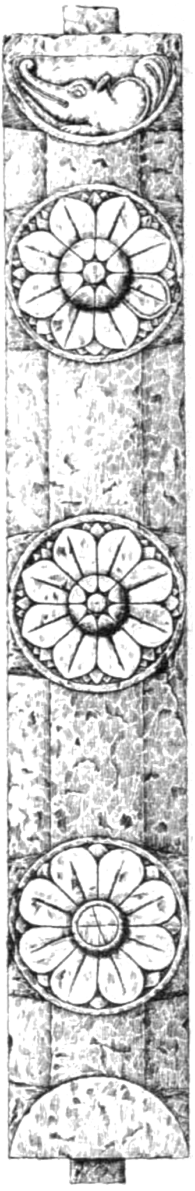
The present stem is formed by adding -*a*- onto the **full grade** or *guṇa* form of the root:

nī + a-

n[a]ī + a-

॥वृद्धिः॥
sanskrit at uchicago



Nī

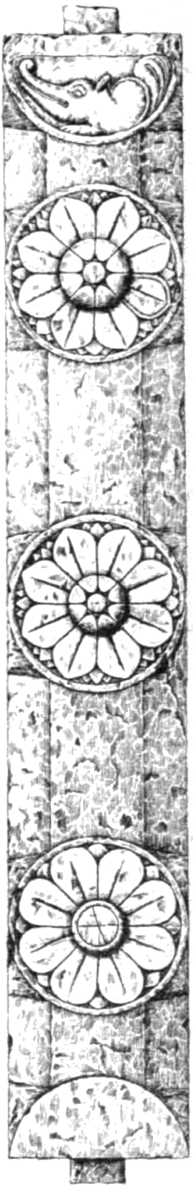
The present stem is formed by adding -*a*- onto the **full grade** or *guṇa* form of the root:

nī + a-

n[a]ī + a- → naya-

Note that we use the sequence -*aya*- because the *ī* of the root becomes the semivowel *y* before the following vowel.

॥वृद्धिः॥
sanskrit at uchicago

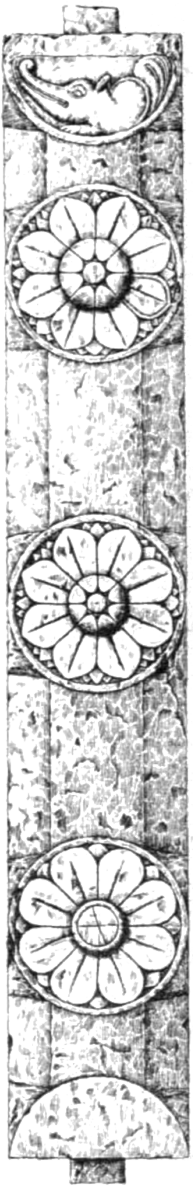


Nī

An agent noun is formed by adding -*aka*- to the **lengthened** grade or *vṛddhi* of the root:

nī + aka-

॥वृद्धिः॥
sanskrit at uchicago



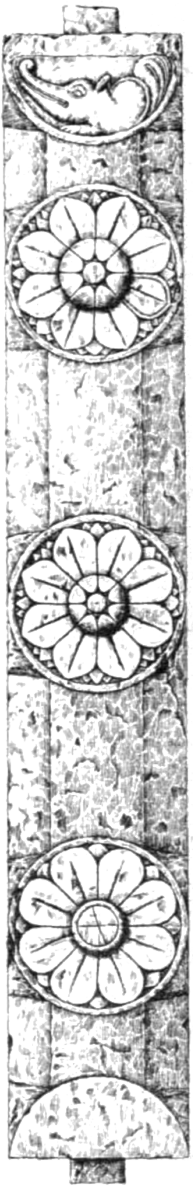
Nī

An agent noun is formed by adding -*aka*- to the **lengthened** grade or *vṛddhi* of the root:

nī + aka-

n[ā]ī + aka-

॥वृद्धिः॥
sanskrit at uchicago



Nī

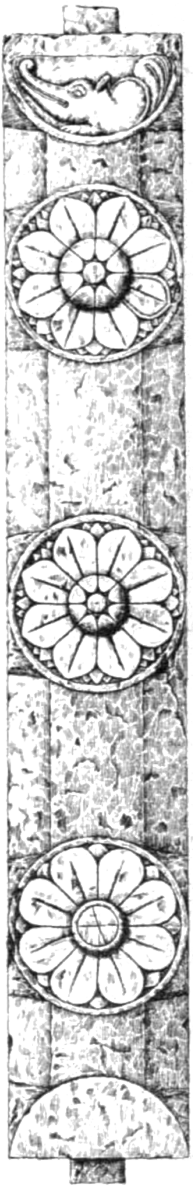
An agent noun is formed by adding -*aka*- to the **lengthened** grade or *vṛddhi* of the root:

nī + aka-

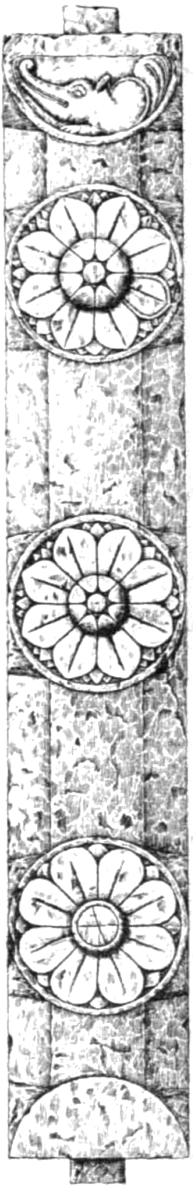
n[ā]ī + aka- → nāyaka-

Note that we use the sequence -*āya*- because the *ī* of the root becomes the semivowel *y* before the following vowel.

॥वृद्धिः॥
sanskrit at uchicago



Zero grade	Guṇa / Full grade		Vṛddhi / Lengthened grade	
	Before C / end of word	Before V	Before C / end of word	Before V
i	ē	ay	ai	āy
ī	ē	ay	ai	āy
u	ō	av	au	āv
ū	ō	av	au	āv
ṛ	ar	ar	ār	ār



OTHER PATTERNS

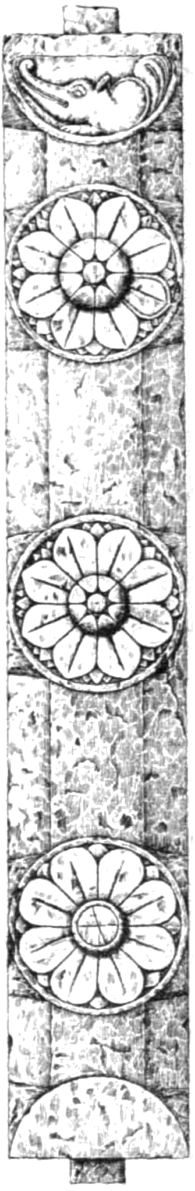
In Indo-European, nasals and laryngeals participated in the same pattern of vowel gradation. In Sanskrit, it looks as if these are highly irregular:

√gam

gata-

gantum

gamaka-

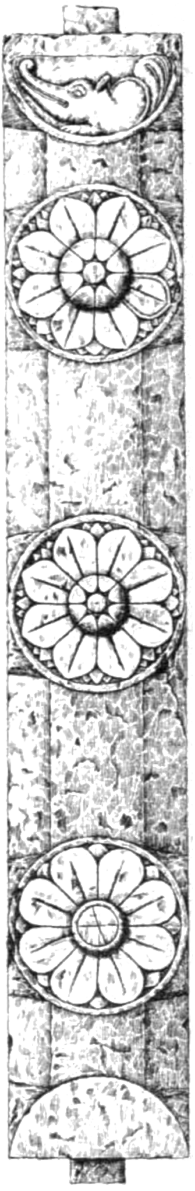


OTHER PATTERNS

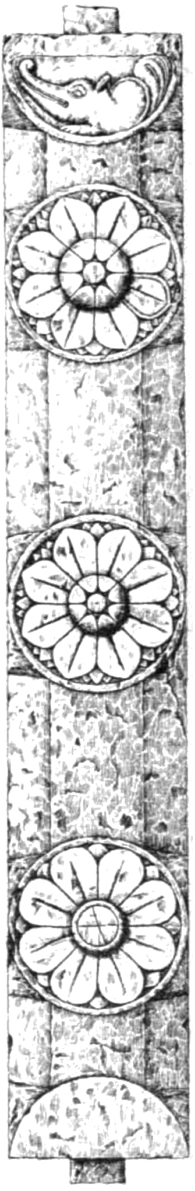
But if we use our historical X-ray vision to see what they looked like in Proto-Indo-European, they are totally regular:

√gʷem

gʷmto-	zero grade
gʷentum	full grade
gʷemeko-	full grade



Zero grade	Full grade	[Lengthened grade]
a (< m̥)	am	ām
a (< n̥)	an	ān



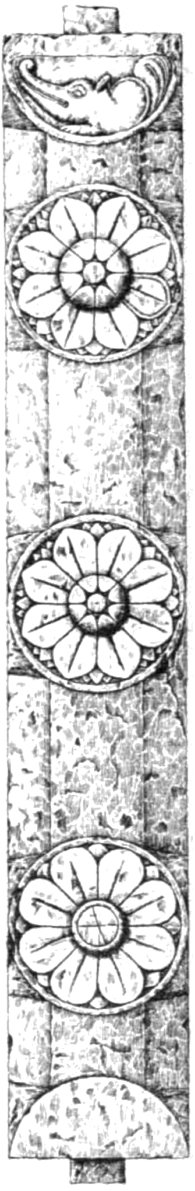
OTHER PATTERNS

Same thing with laryngeal roots:

√sthā

sthita-

sthātum

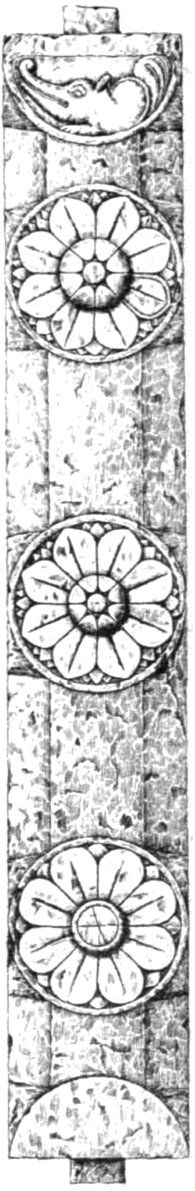


OTHER PATTERNS

Same thing with laryngeal roots:

$\sqrt{steh_2}$

sth_2o-	zero grade
$steh_2tum$	full grade



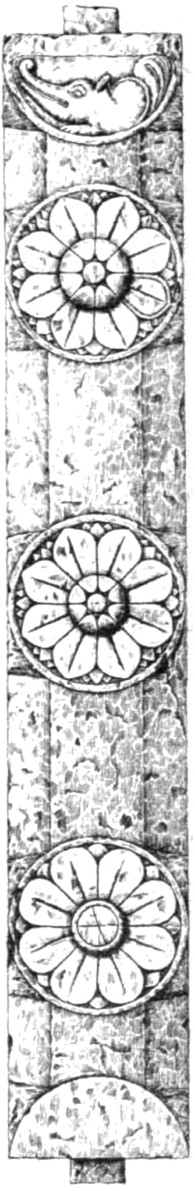
OTHER PATTERNS

Same thing with laryngeal roots:

√śram

śrānta-

śramitum

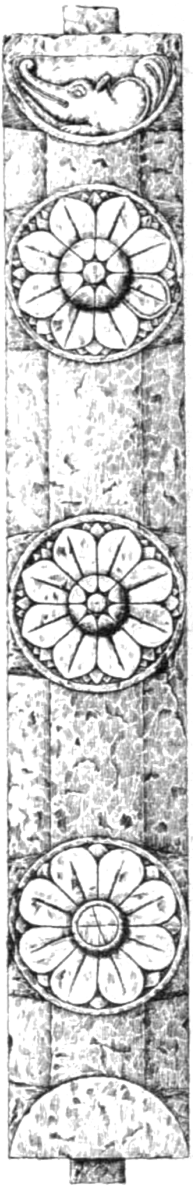


OTHER PATTERNS

Same thing with laryngeal roots:

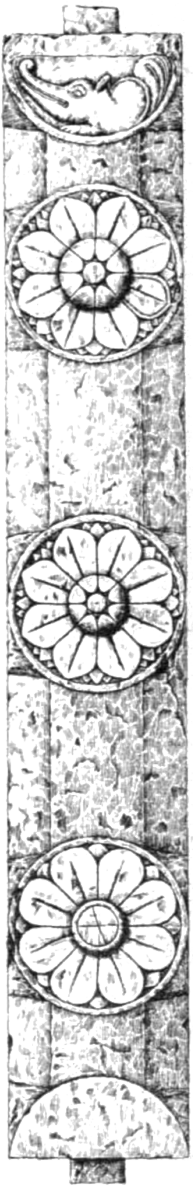
$\sqrt{\text{k̂remh}_2}$

$\text{k̂rmh}_2\text{to-}$	zero grade
$\text{k̂remh}_2\text{tum}$	full grade



SAṀPRASĀRAṆA

Typically we add *a* **before** the high vowel to form the full grade. But when the root ends in a consonant, we often add it **after**, to avoid having multiple consonants in a row. (This is not an iron-clad rule, since sometimes the root will **begin** with multiple consonants, too, and we'll want to avoid a traffic jam there, too.)

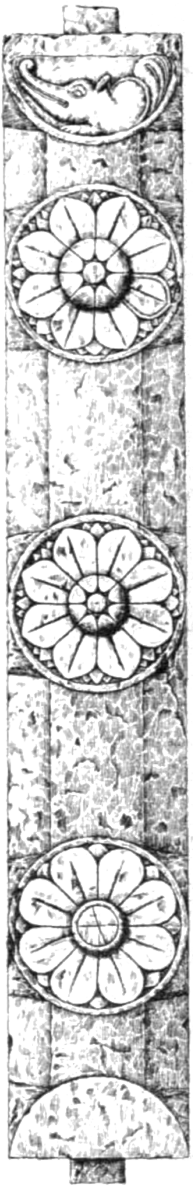


SAṀPRASĀRAṆA

vadati

grahītum

yajati



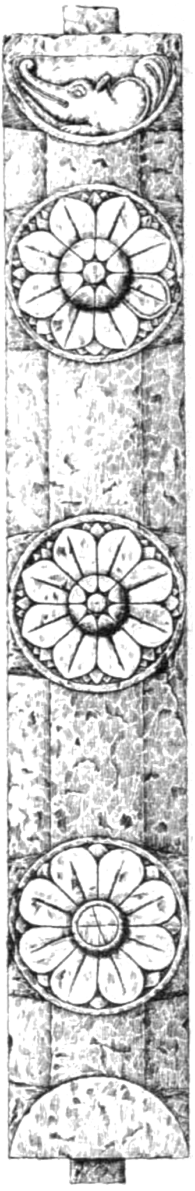
SAṀPRASĀRAṆA

vadati → **ud**

grahītum → **gṛh**

yajati → **ij**

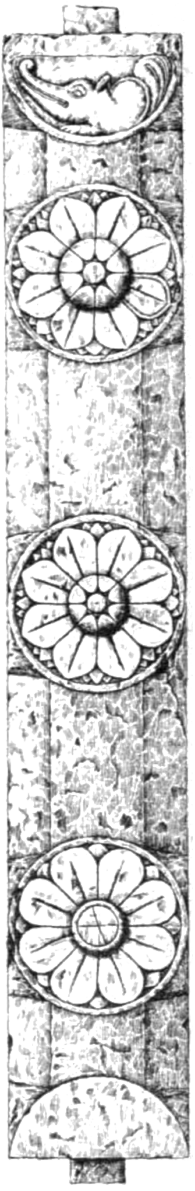
If we were to “guess” the zero-grad forms, we would probably say:



SAṀPRASĀRAṆA

****ōd-**	←	**ud**
****garh**	←	**gṛh**
****ēj**	←	**ij**

But this wouldn't tell us where to correctly put the *a* vowel in the full grade forms!



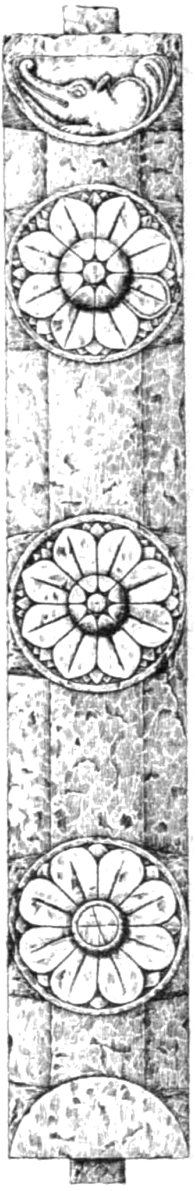
SAṀPRASĀRAṆA

vadati → √**vad**

grahītum → √**grah**

yajati → √**yaj**

That’s why the Indian grammarians teach these forms in the **full** grade.



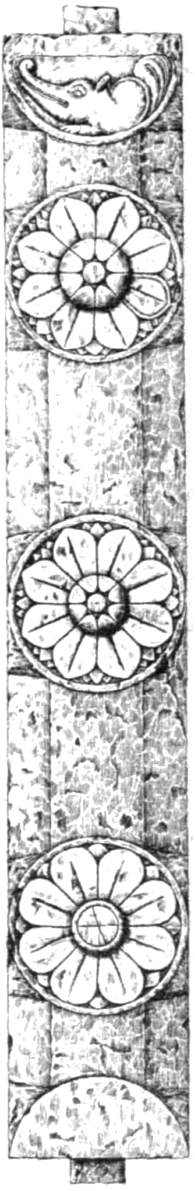
SAṂPRASĀRAṆA

√**vad** →

√**grah** →

√**yaj** →

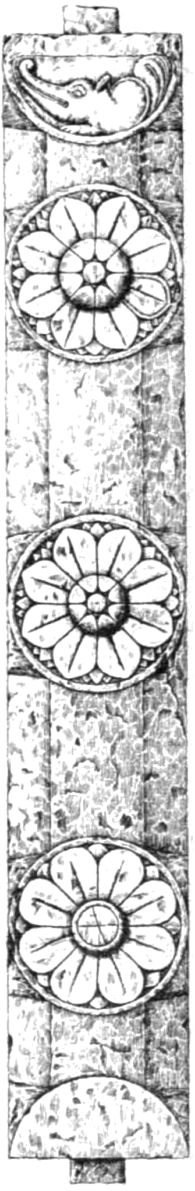
But this means that we need to do something to these forms in order to get the corresponding zero-grade forms.



SAṀPRASĀRAṆA

√**vad**	→	**ud-i-ta-**
√**grah**	→	**gṛh-ī-ta-**
√**yaj**	→	**ij-ta → iṣṭa-**

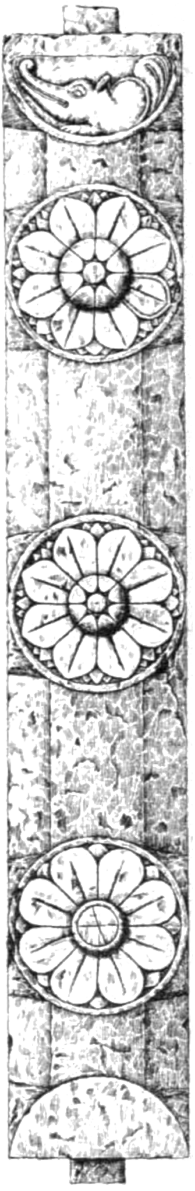
We do *samprasāraṇa* (lit. “drawing out”), which means “squeezing” out the existing *a*-vowel and converting the adjoining semivowel into a high vowel.



SAṀPRASĀRAṆA

Not all roots that have a semivowel before *a* undergo *samprasāraṇa*, but many do:

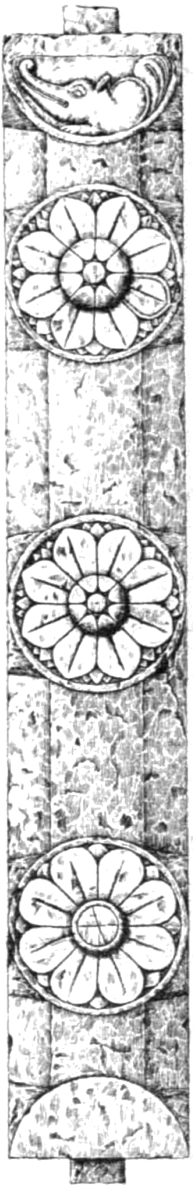
√**va**d	→	**u**d-
√**va**c	→	**uc**-
√**va**s	→	**u**ṣ-
√**va**h	→	**u**h-
√s**va**p	→	s**u**p-



SAṀPRASĀRAṆA

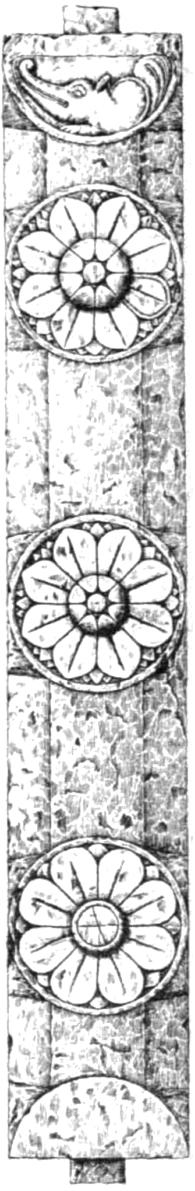
Not all roots that have a semivowel before *a* undergo *samprasāraṇa*, but many do:

√g**ra**h	→	g**ṛ**h-
√v**ya**dh	→	v**i**dh-
√v**ya**c	→	v**i**c-
√**ya**j	→	**i**j-



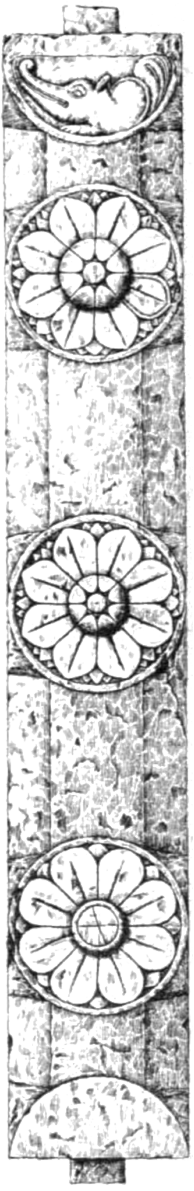
BUT WHY?

Why can’t Sanskrit just use the same form all the time?



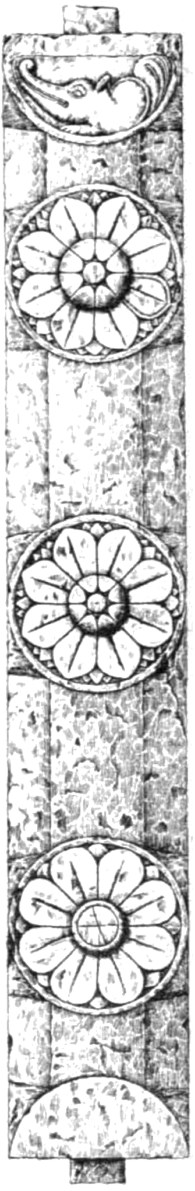
BUT WHY?

Vowel gradation is a strategy of marking different grammatical categories, just like **suffixes** do in many languages. In fact Indo-European vowel gradation was usually tied to the suffix that was used with a word.



BUT WHY?

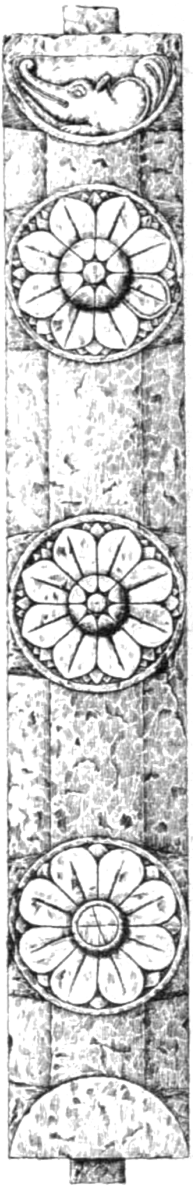
Accented suffixes like -*tá*- (the past passive participle), as well as -*máḥ* and -*váḥ* (the verbal suffixes of the dual and plural), tended to draw the accent away from the root, which is why they tend to "force" the root into its zero grade form.



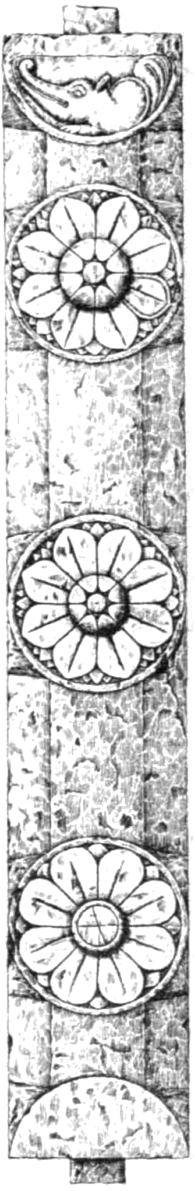
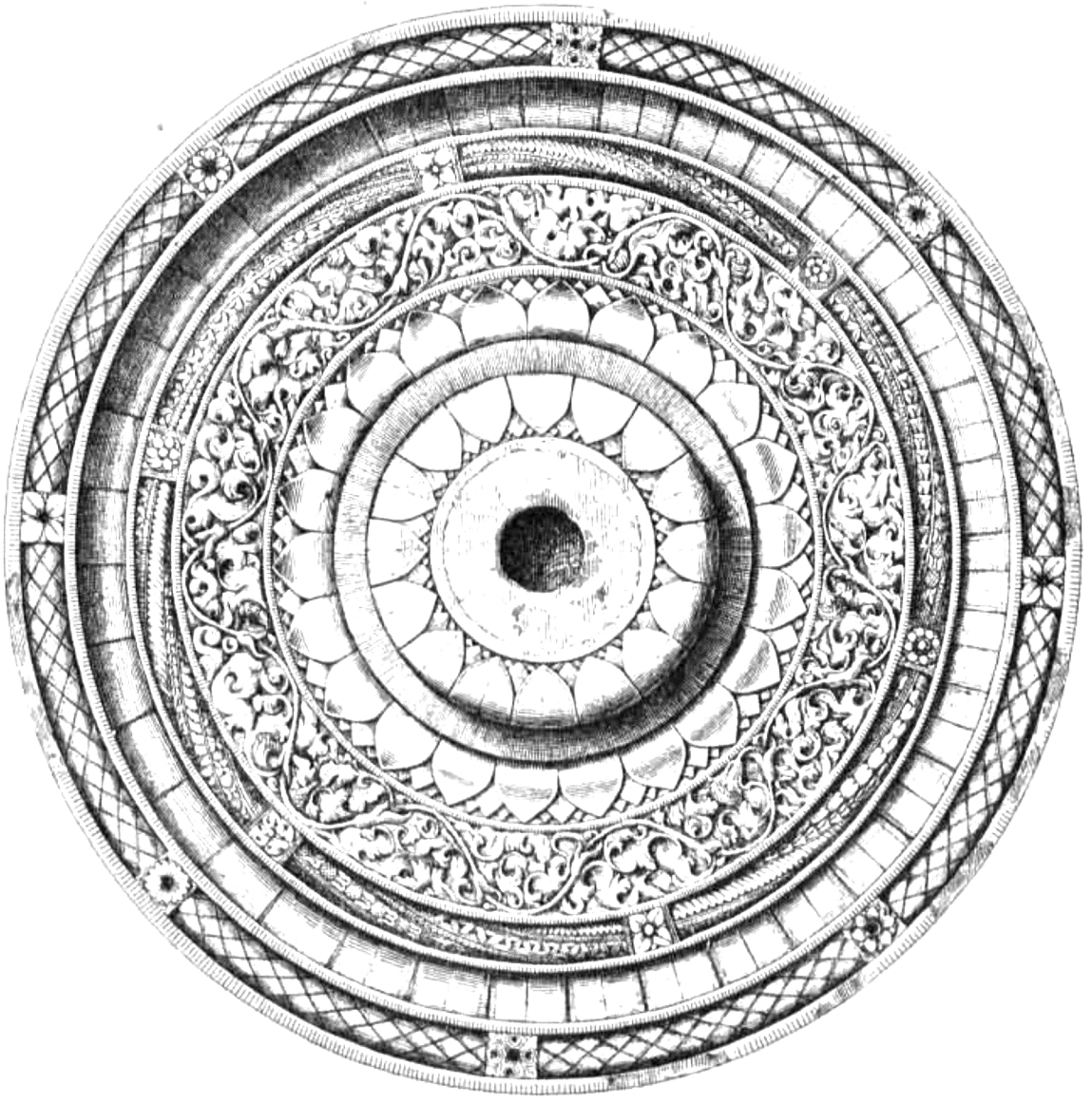
BUT WHY?

Unaccented suffixes like *-mi*, *-si* and *-ti* in the present verbal endings tended to allow the accent to remain on the root, which meant that they tend to occur with the full grade or *guṇa* form of the root.

Of course these are only very general tendencies. Thousands of years of linguistic evolution has obviously changed the situation somewhat.



BUT WHY?

Consider the paradigm of √*as* “to be”:

	Singular	Dual	Plural
First person	**ás-mi**	**s-váḥ**	**s-máḥ**
Second person	**ás-[s]i**	**s-tháḥ**	**s-thá**
Third person	**ás-ti**	**s-táḥ**	**s-ánti**