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A synchronic and diachronic analysis of root-adjacent vocalic pieces (AKA theme vowels) in Latin verbal morphology: A case for ornamental bleaching

CRISSP Seminar series

Theme vowels, categories, and categorization

KU Leuven

Main proposals

Plan:

I. I will briefly outline the abstract conditions under which ornamental morphology is postulated.

II. I will argue against recent analyses by Bertocci and Pinzin (2020, 2022), who hypothesized that root-adjacent vocalic pieces preserved their functional status in their development from PIE to Latin so that /-*ā*-/ and /-ī-/ are functional elements in the VP shell whereas /-*ĕ-/* and */-ĭ-/* (as well as /-*ē*-/ in Bertocci and Pinzin's analysis) are actional/aspectual markers.

III. In contrast, I will support Aronoff's (1994) original hypothesis that root-adjacent vocalic pieces in Latin are simply ornamental elements.

Ornamental element=a morphological piece whose distribution cannot be identified in terms of a syntactic function and a common set of syntactico-semantic features.

IV. These formatives developed from Proto-Indo-European VP shell and actional/aspectual formatives. They became ornamental through bleaching/re-analysis.

An outline of ornamental morphology

Basic Analytical Procedures in morphology

(1) a. Identify words.
b. Identify the morphological pieces of words (=exponents) and their structural arrangement on the basis of syntactico-semantic/cartographic biases.
c. Each exponent is assigned to a terminal node of the morpho-syntactic structure

At the same time:

Establish features used in the morpho-syntax of the language L. Assuming a universal set of functional nodes, prune away all nodes whose features are never morphologically realized in L, — where a feature is morphologically realized in L if it is required in accounting for the distribution of an exponent of L (or is included in the structural description of a morpho-phonological rule of L).

The remaining features define paradigms: the set of the morphological realizations of the feature combinations of terminal nodes of the morpho-syntax.

(Bottom-up/top-down procedures)

An outline of ornamental morphology

A theory of vocabulary items

Assuming the abstract notion of paradigm as in (2), defined as the set of feature bundles formed by feature combinations in a given terminal node of the morphosyntax, the featural distribution of an exponent is determined by looking at the paradigm including that exponent. The principle that governs feature assignments to vocabulary items is given in (3) (Calabrese (2008).

(2) A paradigm
Consider three features X, Y, Z of a given terminal node K of the morphosyntax in a language L. The set of their possible combinations is a paradigm.

K	K	K	K	K	K	K	K
|	|	|	|	|	|	|	|
+X	+X	–X	–X	+X	+X	–X	–X
+Y	+Y	+Y	+Y	–Y	–Y	–Y	–Y
+Z	–Z	+Z	–Z	+Z	–Z	+Z	–Z

(3) For each vocabulary item I in a paradigm P, the minimal set of feature specifications able to account for the maximal distribution of I in P is assigned to I.

An outline of ornamental morphology

A theory of vocabulary items

In the ideal case, each of the terminal nodes in the paradigm receives an idiosyncratic exponent as shown below:

(4)

K	K	K	K	K	K	K	K
|	|	|	|	|	|	|	|
+X	+X	–X	–X	+X	+X	–X	–X
+Y	+Y	+Y	+Y	–Y	–Y	–Y	–Y
+Z	–Z	+Z	–Z	+Z	–Z	+Z	–Z
α	**β**	**δ**	**ε**	**ζ**	**η**	**θ**	**ι**

(Exponents)

(3) then requires the following Vocabulary Items for (4):

(5)

a.	[+X, +Y, +Z]	→	**α**
b.	[+X, +Y, –Z]	→	**β**
c.	[-X, +Y, +Z]	→	**δ**
d.	[-X, +Y, –Z]	→	**ε**
e.	[+X, -Y, +Z]	→	**ζ**
f.	[+X, -Y, -Z]	→	**η**
g.	[-X, -Y, +Z]	→	**θ**
h.	[-X, -Y, -Z]	→	**ι**

An outline of ornamental morphology

Syncretic processes (exponent bleaching)

In the normal case, processes of feature-based syncretism reduce exponent complexity by extending the use of certain exponents (**α** and ζ in this case**)**. A system such a that in (6) can then develop.

(6)

K	K	K	K	K	K	K	K	
|	|	|	|	|	|	|	|	
+X	+X	–X	–X	+X	+X	–X	–X	
+Y	+Y	+Y	+Y	–Y	–Y	–Y	–Y	
+Z	–Z	+Z	–Z	+Z	–Z	+Z	–Z	
α	**β**	**α**	**α**	**ζ**	**η**	**ζ**	**ζ**	(Exponents)

In (6), the feature X and Z no longer play a contrastive role in the insertion of **α** and ζ . Given (3), let's say that their specification are eliminated (**bleached**) from the establishment of the exponent distribution. (3) then leads to the VIs in (62).

(7) Vocabulary Items for (6):

a.	[+X, +Y, –Z]	→	**β**
b.	[+X, –Z]	→	**η**
c.	[+Y]	→	**α**
d.	[–Y]	→	ζ

Insertion of phonological exponents is then governed by the Subset Principle (Halle 1997), according to which the phonological exponent of a Vocabulary Item is inserted into a morpheme in the terminal string if the item matches all or a subset of the grammatical features specified. Where several Vocabulary items meet the conditions for insertion, the item matching the greatest num- ber of features specified in the terminal morpheme must be chosen in the terminal morpheme. Therefore, **β** wins the competition over **η** , **α** and ζ ; and Σ over Φ. There is no competition between **α** and ζ .

An outline of ornamental morphology

The elsewhere exponent=an ornamental exponent

Further changes can occur due to phonology or morpho-phonological reanalysis that neutralize phonological differences between exponents. Suppose that **α** and **ζ** undergo such a process of neutralization so that **α** replaces **ζ**, as in (8). Now, no set of features can account for the distribution of **α**. In this case, **α** is inserted by a featurally unspecified "Elsewhere" vocabulary item as in (9c),

(8)

K	K	K	K	K	K	K	K
|	|	|	|	|	|	|	|
+X	+X	–X	–X	+X	+X	–X	–X
+Y	+Y	+Y	+Y	–Y	–Y	–Y	–Y
+Z	–Z	+Z	–Z	+Z	–Z	+Z	–Z
α	**β**	**α**	**α**	**α**	**η**	**α**	**α**

(9)

a. [+X, +Y, –Z] → **β**
b. [+X, –Z] → **η**
c. [] → **α**

We can also call **α** an **ornamental exponent**= morphological piece whose distribution cannot be identified in terms of a common set of syntactico-semantic features.

An outline of ornamental morphology

The development of ornamental nodes (Bleaching of nodes)

Further changes may affect the terminal node K dominating an ornamental exponent so that it is reanalyzed as being devoid of semantic/syntactic features, i.e., an ornamental morpho-syntactic node:

(10)

K	→	K	(Featural bleaching/reanalysis)
|		|	
X			
Y			
Z			
α		**α**	

If other exponents **β, η …** can appear under K**, α , β, η …** acquire the function of word classifiers, i.e., they distinguish different classes of words, e.g. the PIE gender markers became nominal class markers in the Italic language, Greek, and most other IE languages.

If one assumes that the terminal nodes of heads must always contain contentive/functional features, the ornamental K is re-analyzed as adjoined to an adjacent head.

Main proposal

I will argue that Latin root-adjacent vocalic pieces lost semantic specificity and were bleached in meaning/syntactic function due to their disparate etymological sources.

EXAMPLE:
/-*ā*-/ did not develop only from the denominative sequence *-*eh*$_2$-*ye* but also from de-adjectival factitive with the suffix *-*h*$_2$- *novare* 'to renew' from *novus, nova, novum* 'new', and even possibly from a root-final laryngeal as in the case of primary verbs in /-*ā*-/, which do not have a clear etymology: *amāre* 'to (make) love', *arāre* 'to plow', *volāre* 'to fly', *cubāre* 'lie down', *flagrāre* 'to glow'(Note the semantic inhomogeneity of these verbs, which can be transitive, intransitive and also unaccusative).

PROPOSAL:
No common function/meaning (=features) could be assigned to them. They were reanalyzed as morphologically autonomous ornamental elements (=node bleaching)

Latin verbal system

THEMATIC VOWELS IN LATIN

Latin is described as having four conjugations characterized by different thematic vowels (Halle 2018):

Conj. I	*-ā-,* e.g.,	*laud-ā-mus/laud-ā-re;*	
Conj. II	*-ē-,* e.g.,	*mon-ē-mus/mon-ē-re;*	
Conj. III	*-ĕ-,* e.g.,	*dūc-i-mus/duc-ĕ-re;*	*(-ĕ- = UR /-I-/)*
Conj. IlI(i)	*-ĭ-,* e.g.,	*cap-i-mus/cap-ĕ-re,*	
Conj. IV	*-ī-,* e.g.,	*aud-ī-mus/aud-ī-re*	

The Thematic Vowel (TV) may be absent in specific morphological categories such as irregular perfects, past participles, and specific verbs.

N.B: Following Halle (2018), I will assume that the short TV *-ĕ-* is underlyingly an abstract [+high, -round, +back] vowel, i.e. [I], which is deleted before suffixal vowels. When this vowel appears before a consonant and is not deleted, it is, according to Halle, fronted (cf. *dūcimus, dūcite,* the /*e*/ in *dūceremus, dūcere* is accounted for by an independently needed rule lowering short [i] before rhotics (*cap-i-mus* vs. *cap-e-re*) (see Halle (2018), Calabrese (2023) for futher discussion.

Aronoff (1994)

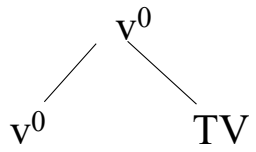
In his analysis of Latin morphology, Aronoff (1994) stresses the double nature of the Latin root-adjacent vocalic pieces *-ā-, -ē-, -ĕ-, -ĭ, -ī*.

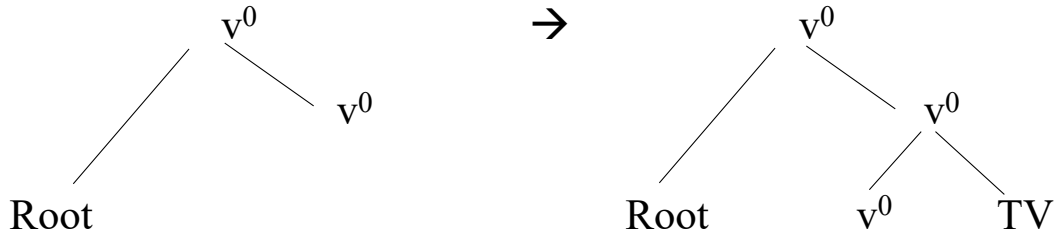
I. On the one hand, these vocalic pieces are legitimate morphemes, separate from the nearby root and/or derivational suffix (on the left side), and the further inflectional suffixes (on the right side). These pieces (a) are in complimentary distribution with one another, and (b) consistently occur within the same verb paradigm.

ii. On the other hand, they seem to carry no consistent syntactico-semantic meaning to the word. According to Aronoff, the most adequate analysis is one in which the Latin TVs are considered purely structural ("ornamental") elements inserted in stem-final position.

Ornamental Thematic Vowels

In the theory adopted here, following Oltra-Massuet and Arregi 2005, they are analyzed as ornamental elements which are devoid of syntactico-semantic functions or content. They are adjoined to the verbalizers (v^0 heads which carry consistent functional meaning) as in by the rule in .

(11) v^0 → 

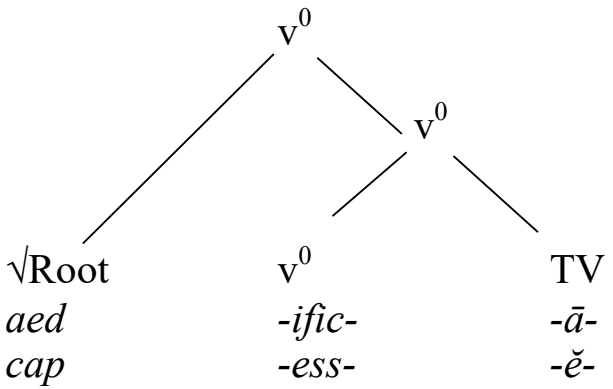
(12) 

Co-occurrence of TVs with overt verbalizers

As epected in this analysis, ornamental elements TVs can co-occur with true overt verbalizers:

aed- ific- ā- re < *aed-e* ‘house’
house-CAUS-TV-INF
‘construct’

cap-ess-ĕ-re < *cap- ‘seize’*
take-INTENS-TV-INF
‘seize eagerly



Athematic Constructions

The Thematic Vowel (TV) may be absent in specific morphological categories such as perfects, past participles, and specific verbs: e.g., *ten-uĭ-mus, vom-uĭ-mus, scrip-sĭ-mus* vs. *am-ā-vĭ-mus, aud-ī-vĭ-mus*.

Calabrese (23a): A structural TV position associated with v^0 present across verbal forms and aspectual contexts. If it is missing in the *perfect*, it is due to a short vowel being deleted by morpho-phonological rules.

I will not discuss athematic forms in detail in this presentation.

Bertocci (2017), Bertocci and Pinzin (2021)

The Latin root-adjacent vocalic pieces have been carefully investigated by Bertocci (2017) and Bertocci and Pinzin (2021) with the precise goal of identifying their morpho-syntactic status and their semantic properties.

They distinguish between the formatives /-*ā*-, -*ī-/,* which are found both in the *īnfectum* and the *perfectum,* and the formatives /-*ē-, -e-, -ĭ-/*, which are found only in the *īnfectum*.

According to their analysis:

I. /-*ā*-/ and /-*ī-/* are productive verbalizer due to the Causative/agentive semantic Aktionsart these verbs have.

II. In contrast, /-*ē-,-ĕ-, -ĭ-/* realize functional features related to the actional-aspectual domain insofar as they are consistently absent with perfective aspect:

First problem: Pattern congruity (which I put aside)

As observed by Aronoff, the other root-adjacent vocalic pieces have the same distribution.

Assuming that /-*ā-*/ or /-*ī-*/ are verbalizers (or as ornamental pieces related to verbalizers) and /-*ē-*/, /-*ĭ-*/, and /-*I-*/ /-aspectual elements implies that root-adjacent, distributionally indistinguishable, vocalic pieces end up being analyzed as having different statuses.

But this violates the analytic criterion of pattern congruity. An identical distribution should entail the same structural position provided that there is no other evidence, which in this case is missing. An analysis that morphological pieces with the same distribution have the same morphological identity is to be preferred over one that assumes that they are different.

Forms such *as laud-ā-bā-mus/ laud- ā-vi-mus, aud-ī-[ē]-bā-mus/aud-ī-vi-mus* show that /-*ā-*/ and /-*ī-*/ cannot be aspectual markers. Therefore, assuming an hypothetical structure where /-*ē-*/, /-*ĭ-*/, and /-*I-*/ are aspectual is inconsistent with this patterning

In fact, the identical morphological patterning of these vocalic pieces has been recognized since early Latin Grammarians such as Varro, Sacerdos and Priscian (Ernout 1953). This has led to the traditional systematization of the Latin verbal conjugations based precisely on these vocalic elements.

Bertocci and Pinzin's analysis of 1st conjugation /-*ā*-/

The verbs of the 1st conjugation, i.e., the verbs that include the vocalic piece /-*ā*-/.

Bertocci and Pinzin's (2021): most /-ā-/-verbs can be thought of as secondary formations (see also De Vaan 2012) where /-ā-/ attaches to a noun or an adjective (*armāre 'to arm'* (cf. *arm-a* 'weapons, arms'), *novāre* 'to make new' (cf. *nov-o-* 'new'), *congregāre* 'to collect into a flock/herd' (cf. *greg-e-* 'flock/herd'), or to an existing verb (*cantāre* 'to sing' (cf. *can-e-* 'sing').

Their proposal: **the piece /-*ā*-/ is a productive verbalizer characterized by a Causative/Agentive Aktionsart.**

Cf. the residual causativizing function in couples like stative *liqu-ē-re* 'to be liquid' vs. Causative *liqu-ā-re* 'to make liquid'; *placēre* 'to please' *vs. placāre* 'to appease' and *sedēre* 'to sit' vs. *sedāre* 'to settle' (but very few pairs of this type)

Problems for the Bertocci and Pinzin's analysis of 1st conjugation /-*ā*-/

Crucially, there is an important subset of the the 1st conjugation verbs that cannot be characterized in this way.

These are verbs that seem to be the direct output of ancient primary verbs, i.e., they cannot be derived from attested nouns, adjectives or verbs (De Vaan 2012). They are verbs like *amāre, arāre, putāre, volāre*, etc. In addition to transitive activity verbs like *amāre* 'to (make) love', *arāre* 'to plough', *dolāre* 'to hew', this third group also contains intransitive verbs like *fāri* 'to speak'and *volāre* 'to fly'.

These verbs mostly have animate subjects which can be considered initiators of processes. However, this is not true for verbs like *cubāre* 'lie down', *flagrāre* 'to glow', which are unaccusative and obviously non-agentive.

cf. *flagrābānt ignes* Ov. F.6, 439 'the fires were glowing' where the verb is clearly unaccusative, not agentive.

The same holds for the IV conjugation /-*ī*-/-verbs

Some of them are indeed clearly related to a nominal/adjectival basis (e.g. *finio* ‘I limit’ -*finis* ‘limit’).

However, many others are not such as *dormio* ‘I sleep, *venio* ‘I come’.

Problems for the Bertocci and Pinzin's analysis of conjugations /-*ā*-/ and /-*ī*-/

I. **Identifying common semantic properties in the case of the /-*ā*-/ and /-*ī*-/ vocalic pieces is not possible.**

The /-*ā*-/ and /-*ī*-/ verbs are a rather composite class where no clear common features can be established, both in terms of morpho-syntactic and semantic properties.

ii. **A further problem;**
whatever their etymological or derivational bases, all of the /-*ā*-/ and /-*ī*-/ verbs can undergo suppression or demotion of agentivity in Passive or impersonal constructions*: amātur, liqu-ā-tur; plac-ā-tur, sed-ā-tur, congreg-ā-tur, cant-ā-tur, fin-ī-tur* ,etc.

Despite this, they preserve the /-*ā*-/ and /-*ī*-/ markers. This shows that these markers cannot be associated with "agentivity". In this sense, Aronoff is right in proposing that root-adjacent pieces such /-*ā*-/ or /-*ī*-/ do not carry any syntactico-semantic meaning to the word.

Problems for the Bertocci and Pinzin's analysis of conjugations /-*ā*-/ and /-*ī*-/

III. As shown before, vocalic pieces such as /-*ā*-/ can cooccur with Causative verbalizers as in the forms in (3). If /-*ā*-/ carried a Causative/agentive meaning, it should be incompatible with the markers below.

(13) Derivational verb suffixes

Suffixes	Thematic vowel	Meaning	Example	Gloss
-fic-	*ā*	Causative	*aed-ific-ā-re*	'construct'

To account for cases like those in (3), Bertocci and Pinzin propose that a derivative like /-*fic*-/ "lexicalizes *v* only when it is related to complex actional semantics, whereas /-*ā*-/ closes the derivation enhancing the agentive function properly".

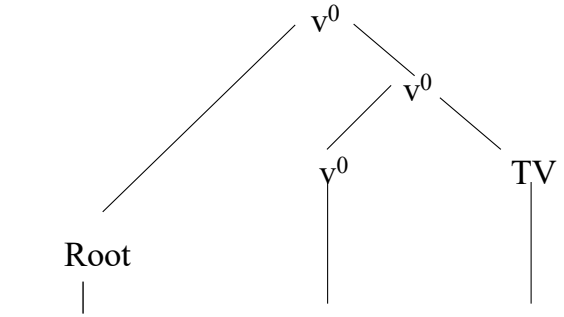
It is unclear to me what this really entails from the syntactic and semantic point of view. The point is that the derivative like /-*fic*-/ includes agentive semantics, and the agentive piece /-*ā*-/ is simply semantically an empty, redundant morphological element.

Problems for the Bertocci and Pinzin's analysis of conjugations /-*ā*-/ and /-*ī*-/

The most adequate analysis of the constructions in (13) is thus Aronoff's original proposal, reanalyzed in DM as involving the complex structure in (14) . It consists of a v^0 head with a clear functional meaning, followed by the "thematic vowel", another v^0-head but without a functional meaning.

The theme vowel in this case is essentially a "redundant" v^0 head devoid of syntactico-semantic functions or content:

(14)



a. [[[[*vīs*]$_{Root}$ [-*it*-]$_{v0}$ [-*ā*]$_{TV}$]$_{v0}$ -*re*]$_{T0+AGR}$ 'see often-infinitive'
b. [[[[*aed*-]$_{Root}$ [-*ific*-]$_{v0}$ [-*ā*]$_{TV}$]$_{v0}$ -*re*]$_{T0+AGR}$ 'construct-Infinitive'
c. [[[[*ēs*-]$_{Root}$ [-*ur*-]$_{v0}$ [-*ī*-]$_{TV}$]$_{v0}$ -*re*]$_{T0+AGR}$ ''be hungry-Infinitive'

Bertocci and Pinzin's analysis of 2nd and 3rd conjugations: the other root-adjacent vocalic pieces /-*ē*-, -*ĭ*-/ and /-*ĕ*-/.

Bertocci and Pinzin propose that the other root-adjacent vocalic pieces /-*ē*-, -*ĭ*-/ and /-*ĕ*-/ realize functional features related to the actional-aspectual domain insofar as they are consistently absent with perfective aspect:

(15)		Present	Perfect			Infinitive
a.	II	*ten-ē- mus*	*ten-u-ĭ-mus*	'hold'	Athematic + *-v-*	*ten-ē-re*
b.	II	*aug-ē-mus*	aug-s-*ĭ-mus*	'increase'	Athematic + *-s-*	*aug-ē-re*
c.	II	*sed-ē- mus*	*sēd-ĭ-mus*	'hold'	Athematic + -Ø	*ten-ē-re*
d.	III(i)	*rap-ĭ-mus*	*rap-u-ĭ-mus*	'pillage'	Athematic + *-v-*	*rap-ĕ-re*
e.	III(i)	*-spec-ĭ-mus*	*spec-s-ĭ-mus*	'look at'	Athematic + *-s-*	*-spec-ĕ-re*
f.	III(i)	*cap-ĭ-mus*	*cēp-ĭ-mus*	'seize'	Athematic + -Ø	*cap-ĕ-re*
g.	III	*vom-ĭ-mus*	*vom-u-ĭ-mus*	'vomit'	Athematic + *-v-*	*vom-ĕ-re*
h.	III	dūc-ĭ-mus	dūc-s-ĭ-mus	'lead'	Athematic + -s-	dū-ĕ-re
i.	III	vert-ĭ-mus	vert-ĭ-mus	'turn'	Athematic + -Ø	vert-ĕ-re

Problems for the Bertocci and Pinzin's analysis of /-ē-/, /-ĭ-/ and /-*ĕ*-/-verbs

Also in this case, there are issues.

I: /-ē-/, /-ĭ-/ and /-*ĕ*-/-verbs cannot be characterized in terms of common special aktionsart properties. As a matter of fact, the same aktionsart properties can be found across Latin verbal conjugations, and it has never been possible to classify Latin conjugation classes in semantic terms. The aktionsart properties of the verbs in question do not change with the change of aspectual features as Bertocci and Pinzin observe.
If the root adjacent vocalic pieces are markers of these properties, it is unclear why they disappear when these properties are still preserved.

The Imperfect Indicative

II. /-ē-/, /-ĭ-/ and /-*ĕ*-/- cannot be characterized as aspectual markers.

Under this analysis, they would realize [-Perfect] Asp^0. Thus, they would be the imperfective counterparts of the [+Perf] Asp^0 exponents /-v-, -s-, -Ø-/

(17)
a. /-ē-/ <--> [-Perfect]Asp^0/Root$^{\bar{e}}$____
b. /-ĭ-/ <--> [-Perfect]Asp^0 /Root$^{\check{i}}$ _____
c. /-*ĕ*-/ <--> [-Perfect]Asp^0 /Root$^{\check{e}}$ _____

But this is inconsistent with the distribution of the exponent /-*b*-/ in a form such as *monēbāmus.*

The distribution of the exponent /-*b*-/ in a form such *laud-ā-bā-mus* (vs. *laud-ā-vi-mus)* requires the feature [-perf] to appear in the /-*b*-/-insertion site together with the Tense feature [+Past] , i.e., /-b-/ <--> [-perf, +past, -irr]

If we assume that/-*ē*-/ is the exponent of the [-perf] Asp^0 in *monēbāmus*, /-*b*-/ can only appear in T^0. This is not consistent with the preceding assumption. Therefore, /-*ē*-/ cannot be an aspectual exponent.

The same holds for forms such as *legēbāmus capiēbāmus*, where the last two forms display the insertion of a long vocalic /-*ē*-/ piece before /-*b*-/ (< /*leg-I-ē-b-ā-mus/, /cap-i-ē-b-ā-mus/.* (</*leg-ĕ-b-ā-mus/, /cap-i-b-ā-mus/.*

Therefore, the hypothesis that vocalic pieces such as /-*I*-/, /-*ē*-/ and /-*ĭ*-/ are exponents of [-perf]$_{\text{Asp}}{}^0$ is difficult to maintain.

Conjugation changes and the preservation of morpho-syntactic structure

Many verbs with the short thematic vowels /-ĭ-/ and /-I-/may have a root adjacent vocalic piece in the Perfect under certain conditions.

Thus, verbs like *petō* 'seek', *quaerō* 'search', *sapiō* (*cf. sapĕre*) 'taste', *cupiō (cf. cupĕre)* 'desire' and all the verbs formed with the suffix /-*ess*-/(cf. *cap-ess-ō* 'seize eagerly') change their thematic vowel to /-*ī*-/ -in the *perfectum* (cf. *petīvī, quaesīvī*, *sapīvī*, *cupīvī, capessīvī)*.

Conjugation changes and the preservation of morpho-syntactic structure

Consider *cap-ess- ĕ -re* 'seize eagerly'. One can exclude that [ĕ] is the exponent of v^0 since this position is occupied by /-*ess*-/.

If /- ĕ -/ is not an ornamental TV, it must belong to $[\text{-perf}]_{Asp^0}$

But then this exponent should be replaced by a [+Perf] exponent in the *perfectum* and the form should be athematic (see ii) as expected in Bertocci and Pinzin's approach:

(18) i. Present vs. ii. Perfect

$[[[cap]_{Root}\ ess\text{-}]_{v0}\ \text{-}\ \check{e}\ ]_{[\text{-perf}]Asp0}\ \ldots$ $[[[[cap]_{Root}\ ess\text{-}]_{v0} - ?X?\ ]_{[\text{+perf}]Asp0}\ \ldots$

Preservation of morpho-syntactic structure and Conjugation changes

The presence of the long /-*ī*-/ of *capessīvī* is therefore totally unexpected. It can belong neither to v^0 , which is occupied by /-ess/, nor to Asp^0, which is realized by /-v-/. Its presence cannot be motivated in semantic, morpho-syntactic, or phonological terms.

Bertocci and Pinzin must stipulate the insertion of an Ornamental-like position special to the *perfectum* of these verbs.

The most parsimonious analysis for these forms is instead one that assumes there is an ornamental TV for both the *īnfectum* and the *perfectum*. This position can be realized as /-e-/ in *cap-ess-e-re, petō* 'seek', *quaerō, etc.* or as /-ĭ-/ in the case of s*apiō* (*cf. sapere*) taste', *cupiō (cf. cupere)* 'desire'. The process of lengthening in (9) accounts for what happens in the Perfect with these verbs:

(19)

This is to be expected if there is preservation of morpho-syntactic structure

Participial [i]

Similar evidence against root-adjacent vocalic pieces being Asp^0 realizations is provided by /-*ē*-/ and some /-*I*-/ verbs that display a root adjacent [i] in the participle.

As argued in Calabrese (2020) (see also Embick and Halle (2004) Remberger (2012)), the piece /-t-/ is an exponent of $[+perf]_{Asp^0}$ in participle forms:

(20)	*monēre*	*monuimus*	*monĭtum*	'warn'
	gignere	*genuimus*	*genĭtum*	'beget'
	molere	*moluimus*	*molĭtum*	'grind'
	cubāre	*cubuimus*	*cubĭtum*	'recline'

Participial [i]

As before, the most adequate analysis preserves the morpho-syntactic structure across forms.

Calabrese (2023): in these forms, the TV is reduced to a short vowel /-I-/.

This accounts for the appearance of the Perfect exponent /v-/, which, as Calabrese (2023) proposes, occurs only after vowels.

The thematic element /-I-/ is deleted by a phonological rule before /v-/ but is preserved before /-t/, thus accounting for the pre-aspectual vocalic element of the participles.

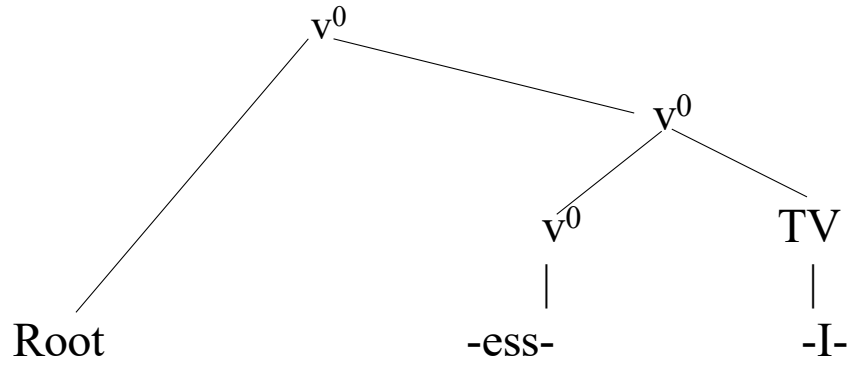
(21) [[[*mon*]$_{Root}$ -ē-]$_{V}^{0}$ +*perf*]$_{Asp}^{0}$... → + d) → [[[*mon*]$_{Root}$ -*I*-]$_{V}^{0}$ +*perf*]$_{Asp}^{0}$... → *VI* → [[[*mon*]$_{Root}$ *I*]$_{V}^{0}$-***v***-]$_{Asp}^{0}$... →
→ [[[*mon*]$_{Root}$]$_{V}^{0}$ -***v***-]$_{Asp}^{0}$... → *[resyllabification]* → [[[*mon*]$_{Root}$]$_{V}^{0}$ -***u***-]$_{Asp}^{0}$... → …. → *monuimus*

[[[*mon*]$_{Root}$ -ē-]$_{V}^{0}$+*perf*]$_{Asp}^{0}$... → + d) → [[[*mon*]$_{Root}$ -*I*-]$_{V}^{0}$ +*perf*]$_{Asp}^{0}$... → *VI* → [[[*mon*]$_{Root}$ -*I*-]$_{V}^{0}$ -*t*-]$_{Asp}^{0}$...
→ → [[[*mon*]$_{Root}$ -*i*-]$_{V}^{0}$ -***t***-]$_{Asp}^{0}$... *monĭtum*

The most adequate analysis: /-ē-/, /-ĭ-/ and /-*ĕ*-/- are ornamental TVs are attached to v and not in Asp^{0}

All root-adjacent vocalic pieces are ornamental

If this analysis is on the right track, one must conclude that all root-adjacent vocalic pieces are the same: they are devoid of syntactic and semantic properties and are, therefore, ornamental. Thus, the pieces /-*I*-, -*ē,*/and -/-*ĭ*-/ are inserted by the rule in , as shown in for the form *cap-ess-e-re.*



[[[[*cap*]$_{Root}$ [-*ess*]$_{v0}$ [-*I*]$_{TV}$]$_{v0}$ -*re*]$_{T0+AGR}$ 'seize eagerly-infinitive'

Other Vocalic pieces

We can now turn to the different exponents we see in the strings in (22) and consider the status of the vocalic pieces appearing within. Specifically, the vowels that appear in the inflections in (22) must be considered.

Putting aside the /u/ of /-*mus*/, which is part of the 1plural ending, what is the role of the vowel /*ā*/ of -*bāmus*-, -*verāmus* or the /i/ of -*bimus-, -vimus, -verāmus*- (>/e__r), and -*verimus*? Consider the different phonological pieces that can be associated with each of the functional nodes in - as shown in :

(22)	-u -i <--> $[+perf]_{Asp}{}^{0}$	laud-ā+**v-i**+Ø+Ø+mus	*laudā**vi**mus*
	-s -i <--> $[+fut]_{T}{}^{0}$ / $[+perf]_{Asp}{}^{0}$ ___	laud-ā+v-i+**s-i**+Ø+mus	*laudāve**ri**mus*
	-b -i <--> $[+fut]_{T}{}^{0}$ / ___ $[-irr]_{Mood}{}^{0}$	laud-ā+Ø+**b-i**+Ø+mus	*laudā**bi**mus*
	-b -ā <--> $[+Past]_{T}{}^{0}$ / $[-perf]_{Asp}{}^{0}$ ___	laud-ā+Ø+**b-ā**+Ø+mus	*laudā**bā**mus*
	-s -ā <--> $[+Past]_{T}{}^{0}$ / $[+perf]_{Asp}{}^{0}$ ___	laud-ā+v-i+**s-ā**+Ø+mus	*laudāve**rā**mus*
	-s -ē <--> $[-perf, +Past, +irr]_{Mood}{}^{0}$	laud-ā+Ø+Ø+**s-ē**+mus	*laudā**rē**mus*
	-s -Ø <--> $[+Past]_{T}{}^{0}$ / $[+perf]_{Asp}{}^{0}$ ___ $[+irr]_{Mood}{}^{0}$	laud-ā+v-i+**s-Ø**+s-ē+mus	*laudāvi**s**sēmus*
	-Ø -ē <--> $[-Past]_{T}{}^{0}$ / $[-perf]_{Asp}{}^{0}$ ___$[+irr]_{Mood}{}^{0}$	aud-ā+Ø+Ø+**Ø-ē**+mus	*laudēmus*

Other Vocalic pieces

A system that considers all the pieces in (22) as possible exponents of the different functional nodes is not very parsimonious.

A simpler system can be achieved if we segment away vowels and consonants as independent pieces.

There is a striking overlap between the functional vowels and the verbal thematic vowels. The functional vowels and the thematic vowels display the same set of phonemes [*ā, ē, ī, ĭ*] and [*I]*. There are seven other contrastive Latin vowels; such an overlap can only be accounted for if it is the same set of vowels that occur in both functional and thematic positions.

Other Vocalic pieces

This follows if the exponents of the functional nodes are the consonants (see below for an analysis) and the vowels are ornamental "thematic" elements. These thematic vowels are simply the set [*ā, ē, ī, ĭ, I]*. An overarching generalization of Latin morpho-phonology, therefore, appears to be that the **exponents of the verbal functional nodes are consonantal pieces and that vowels have just an ornamental function**.

Ornamental TVs are inserted by the rule in (26) to all functional nodes.

(26) $X^0 \rightarrow$ X^0 (dominating X^0 and TV)

Other Vocalic pieces

Thematic vowels are inserted by the rules in (27). They are sensitive to a special diacritic assigned to the head. For v^0, the diacritic is inherited or copied from the root; it is assigned by the rules in (28) for other functional nodes. The diacritics $^{\bar{e}}$, $^{\bar{\imath}}$, $^{\check{\imath}}$, and ^{I} are idiosyncratically specified as root information, and from there transmitted to v^0. The diacritic $^{\bar{a}}$ is instead inserted as the default diacritic for v^0 by c) when an idiosyncratic root diacritic is missing. This accounts for the default status of the ā-conjugation. On the other hand, the fact that I is the most common inflectional vowel is accounted for by (28d).

(27) a. Ø ➔ /-ē-/ /Head$^{\bar{e}}$ [__]$_{TV}$
b. /-ī-/ /Head$^{\bar{\imath}}$ [__]$_{TV}$
c. /-ĭ-/ /Head$^{\check{\imath}}$ [__]$_{TV}$
d. /-I-/ /Head^{I} [__]$_{TV}$
e. /-ā-/ /Head$^{\bar{a}}$ [__]$_{TV}$

(28) a. Ø➔$^{\bar{e}}$ / [+Irrealis]$_{Mood}{}^0$ —
b. Ø➔$^{\bar{a}}$ / [+Past]$_{Mood}{}^0$ —
c. Ø➔$^{\bar{a}}$ / v^0 —
d. Ø➔^{I} / X^0 —

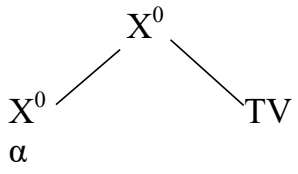
Final discussion of TVs

Still some refinements are needed. Note that the thematic vowels are not present in all functional nodes. The following generalization can be postulated: thematic vowels always occur after v^0, after a [+Perfect] Asp^0, and after the highest node that contains a [+F] feature in the verbal complex X^0, where F could be [Irrealis], [Past] or [Future]. Thus, there can be a maximum of three TVs per verbal form. So, we have a form like that in (29a) instead of a form like that in (29b) where each functional head has the expected TV.

(29) a. *laud-ā -v-i-s-s-ē -mus* 'praise.pluprf.sbjv.1pl'
[[[[***laud-***]$_{Root}$ [***-a***]$_{TV}$]$_{v}^{0}$***-v-***[***-i***]$_{TV}$]$_{[+perf]\text{-}Asp}^{0}$] ***-s***]$_{[+Past]\text{-}T}^{0}$ ***-s -***[- ē]$_{TV}$]$_{[+irr]\text{-}Mood}^{0}$]***-mus***]$_{[1pl\text{-}AGR}$

b. †l*aud-a-v-i-r-ā-r-ē-mus* /UR: *laud-a-v-i-s- ā- s-ē-mus/.*

In order to account for this fact, I propose that a TV is adjoined only to X^0 containing marked feature specifications (see(30) with the proviso that above Asp^0 only the highest marked functional node receives it: the output constraint in (31) accounts for this restriction. It blocks the insertion of a TV in T^0 if there is a marked mood feature:

(30) X^0 → 

(α=marked feature, V^0 is always marked)

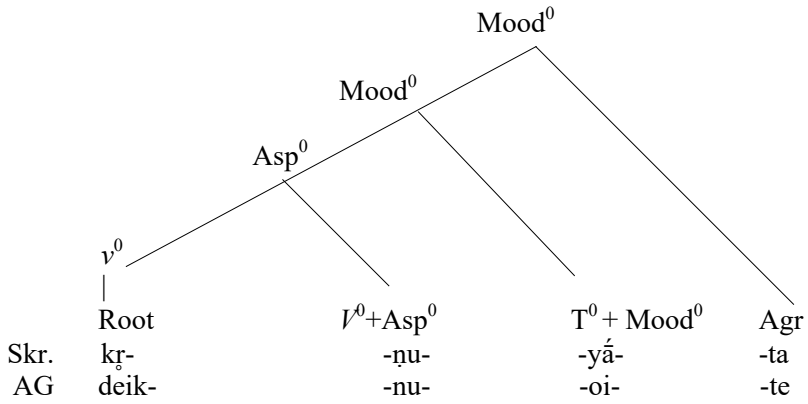
(31) *[TV]$_T$0 / __ [+F]$_X$0

THE HISTORICAL DEVELOPMENT OF LATIN THEMATIC VOWELS

Morpho-syntactic structure of PIE verbs

The basic structure of the later Proto-Indo-European verbs (as illustrated by Sanskrit and Ancient Greek (AG) (Calabrese & Petrosino (2023), Calabrese and Grestenberger (2024, forthcoming):

(3a)



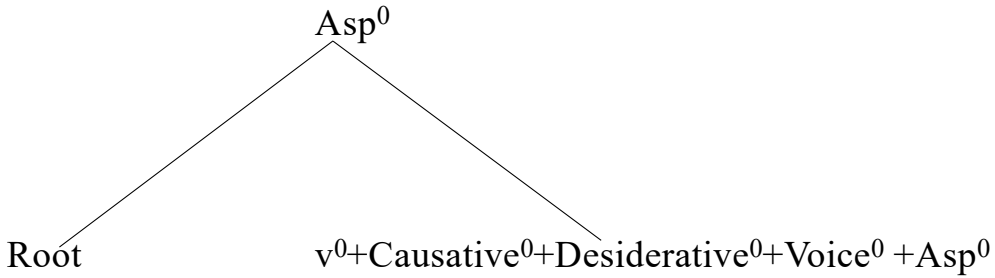
Skt. kr̥-ṇu-yá-ta
make-PRES-OPT-3SG.ACT
's/he would make'

AG deik-nú-oi-te
show-PRES-OPT-3SG.ACT
's/he would show'

Historical development of Latin TVs

PIE Asp and VP-shell structure (Calabrese 2019, 2023, Calabrese and Petrosino 2023)

(33)



This accounts for why different exponents or morphological constructions were required for Aorist or Perfect [+perf] Asp^0 of secondary derived stems. For example, -Ø- was used in Aorist Denominative forms, or Perfect Causative forms were periphrastic.

A SINGLE POSITION INCLUDING VP-SHELL CATEGORIZER AND ASP NODES—PORTMANTEAU EXPONENCE

The PIE Present (Imperfect) system

In PIE, as in ancient IE languages such as Sanskrit and Greek, the Present (Imperfect) system displays a wide variety of affixes (cf. Ringe (2006), Rix (1986, 2001), Szemerenyi (1996)), which traditionally form the different classes of the Present and involve root dependent realizations of [-Perfect] aspect.›

(34)

	Sanskrit	PIE	cf. Greek
[[*bhav*]$_{\text{Root}}$	- *a*]$_{\text{Aspect}}$	*- *e*] $_{\text{Aspect}}$	- *e*]$_{\text{Aspect}}$
[[*raudh*]$_{\text{Root}}$	- *na*]$_{\text{Aspect}}$	*- *ne*] $_{\text{Aspect}}$	- *ne*]$_{\text{Aspect}}$
[[*pas*]$_{\text{Root}}$	- *ya*]$_{\text{Aspect}}$	*- *ye*] $_{\text{Aspect}}$	- *ye*]$_{\text{Aspect}}$
[[*star*]$_{\text{Root}}$	- *nau*]$_{\text{Aspect}}$	*- *new*] $_{\text{Aspect}}$	-*nü*]$_{\text{Aspect}}$
[[*ad*]$_{\text{Root}}$	- *Ø*]$_{\text{Aspect}}$	*- *Ø*] $_{\text{Aspect}}$	- *Ø*]$_{\text{Aspect}}$
		*- *sk'ē*-] $_{\text{Aspect}}$	- *skē*-] $_{\text{Aspect}}$

Note: ➢ PIE root adjacent vocalic piece *e is an aspectual exponent. Simplifying a little bit, it is the exponent of [-perf] aspect.

The PIE Aorist and Perfect system

The Perfect and Aorist system are also characterized by the same complex root-dependent realization of Asp^0 one observes in the Present system.

(34) II. a. Root perfects:

**woyd-Ø-* ~ **wid-Ø-*	'know'

b. Reduplicated perfects:

**me-món-Ø-* ~ **me-mn-Ø-*	'remember'

III. a. The root Aorist with no overt suffixal element:

**gwém-Ø-* ~ **gwm̥-Ø-*	'step'
**bhuh$_2$-Ø-*	'become'

b. The /*-s-*/ Aorist.

**déyk'-s-*	'point out'
**wégʼh-s-*	'transport'

c. The /*-é-*/ Aorist (traditionally called the thematic Aorist)

**h$_2$ludh-é-*	'arrive'

d. Reduplicating Aorist

**wé-wk-e-*	'say' (root *wek)*

Co-occurrence restrictions in PIE Aspect systems

Perfect and Aorist formatives may never co-occur with different Present system exponents, *within the same conjugation*. Table below is from Sanskrit, while also generalizable to PIE (cf. Ringe 2006, Szemerenyi 1996). shows that , at the paradigmatic level, none of the affixes occurring in the Present stem occurs in the Aorist stem of the same verb.

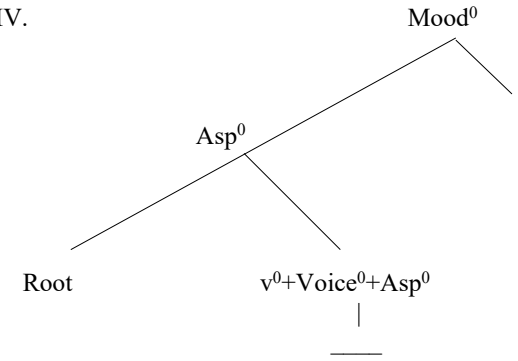
(35) IV.

Present stem	Aorist stem	
ján-a-	jan-	‘generate’
bháv-a-	bhu-	‘be’
srj̥-á-	srj/sraj-	‘emit’
vr̥h-á-	vr̥k-śa-	‘tear’
ruh-á-	rauh-/ruh-/rauk-sa/	‘ascend’
bhi-n-d-/bhi-na-d-	bhid-/bhaid-	‘split’
ru-n-dh-/ru-na-dh-	rudh-/raudh-	‘obstruct’
kar-nau-/kar-nu-	kar-/kr̥-	‘make’
su-nau-/nu-	sau-/su-	‘press’

Formal structure of PIE Verb

It follows that the Present, Aorist, and Perfect suffixes appear to compete for the same morpho-syntactic position. Given their semantics, one can propose that all of them are exponents inserted under the Asp^0 node in (36IV):

(36) IV.



One can therefore propose that Aspect is realized through the different root dependent VIs listed below. Note that /*-*e*-/ can be treated as an elsewhere aspectual exponent insofar as it also appears as the exponent of the Aorist. Otherwise, Ø is inserted.

(36) V. a. /*-*s*-/ <--> $[+PFV, -STAT]_{Asp0}$ / Root $^{-s-}$____

b. /*-*ye*-/ <--> $[-PFV]_{Asp0}$ / Root $^{-ya-}$____

c. /*-*ne*-/ <--> $[-PFV]_{Asp0}$/ Root $^{-na-}$____

d. /*-*new*- / <--> $[-PFV]_{Asp0}$ / Root $^{-neu-}$____

e. /*- *sk'ē*-/ <--> $[-PFV]_{Asp}0$ / Root $^{-sk'ē-}$____

f. /*-*e*-/ <--> [ ]$_{Asp}0$

Otherwise /*-Ø-/

Splitting of Asp from VP-shell derivatives

This structure is preserved in Ancient Greek. There is evidence, however, that VP-shell exponents began to co-occur with aspectual exponents at some point in the history of late PIE as in Vedic Sanskrit.

The cases are few but clearly show a trend:

(37) Aorist Denominative/Causative

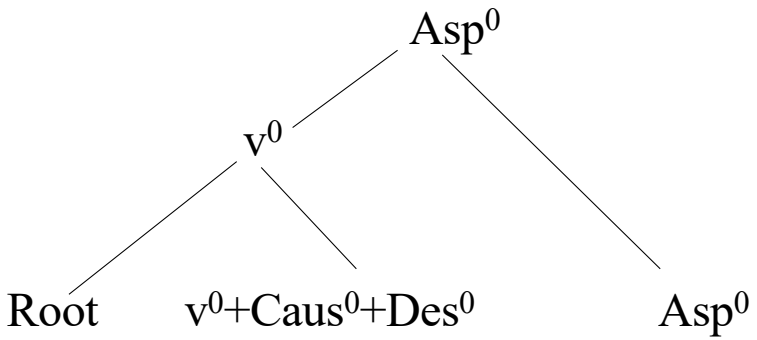
pāpa-y-iṣ-	Aorist of *pāpa-yá-*	(Denominative /-ya-/)	'lead into evil (*pāpa*)'
vyath-áy-iṣ-	*vyath-áya-*	(Causative /-aya-/)	'disturb'
dhvan-áy-iṣ-	*dhvan-áya-*	"	'envelope'

Splitting of Asp from VP-shell derivatives

Forms like those in must have been reanalyzed as involving a dedicated VP-shell node, so that VP-shell features were inserted in this position.

Therefore, there was no longer bundling with Asp^0; hence this node could get its own exponent. The derived verbs in (37) then had the morpho-syntactic structure in (38):

(38)

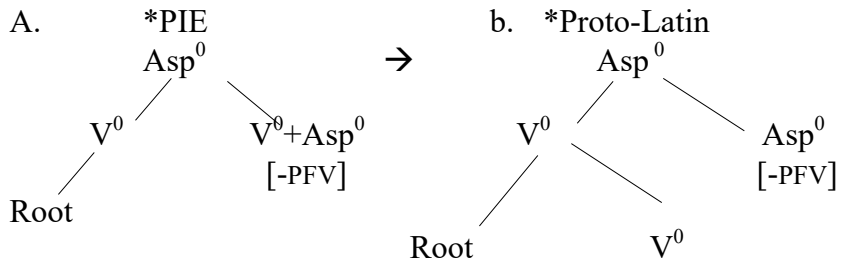


Splitting of Asp from VP-shell derivatives

NOTA BENE: V^0 and Asp^0 nodes were bundled . PIE VP-shell derivatives, i.e., denominatives, causatives, etc., occurred in only the present system only (i.e., imperfective aspect).

In a prehistorical stage Latin (or better Italic) reanalyzed PIE V^0+Asp^0 formatives (i.e., denominative *-*yé-,* causative/iterative *-*éye*-, etc.) as realizing the V^0 node (and the features therein) only. As not bundled with V^0 anymore, Asp^0 could get its own dedicated exponence (cf. Latin *am-ā-vĭ-mus* vs Skt. *á-bhār-s-ma*

(39)



The Development of TVs in Latin

➢ Latin TVs such as *-ā-, -ē-, -ī-, and -ĭ-* had disparate sources; they developed mostly from VP-shell derivatives but also from other sources (see Ernout (1989), Sihler (1995), Meiser (2003), Weiss (2009) Bertocci &Pinzin (2022).

➢ /*-ā-*/ < from the Denominative sequence /*-eh_2-ye-/
< from de-adjectival factitive with the suffix /*-h_2/. *novare* 'to renew' from *novu-,* 'new.'
< from a root-final laryngeal (in the primary verbs in /*-ā-*/ cf. *amāre* 'to (make) love', *arāre* 'to plow', *volāre* 'to fly', *cubāre* 'lie down', *flagrāre* 'to glow' (

➢ /-ī-/ < from the Denominatives in /*-*ye*-/,
< from deverbal actional/aspectual /*-*ye-*/.

➢ ./-*ē*-/ < from statives in *-eH_1- : e.g., *sedēre* 'to be sitting' (< **sed-*eH_1-); < from causatives in *-*eye*-: e.g. *monēre* 'to warn' (< **mon-eye*-).

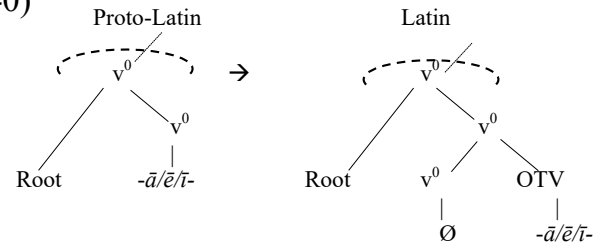
HYPOTHESIS: Learners could no longer assign a clear semantic or morpho-syntactic function to derivatives like /-ā-/ and /-ī-/. Thus, they became devoid of syntactic or semantic features. The same happened with the other root-adjacent vocalic pieces. Given this generalization, these derivatives were reanalyzed as ornamental nodes inserted by rule.

The Development of TVs in Latin

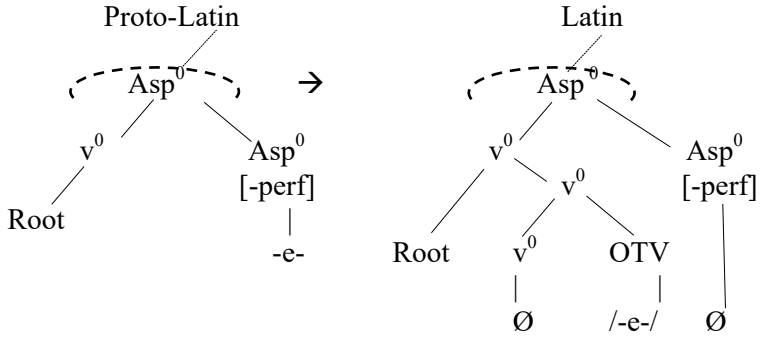
Once this happened, new verbalizers (e.g., *-fic-*) developed and were able to cooccur with the newly formed ornamental TVs. Cf. forms such iterative [[[[*vīs*]$_{Root}$ *-it*]$_{v^0}$ *-ā-*]$_{TV}$]$_{v^0}$*-re*]$_{T^0+AGR}$ 'see.often-infinitive', causative [[[[*ex-carn-*]$_{Root}$ *ific-*]$_{v^0}$ *-ā-*]$_{TV}$]$_{v^0}$*-re*]$_{T^0+AGR}$ 'flesh out-Infinitive', desiderative [[[[*ēs-*]$_{Root}$ *-ur -*]$_{v^0}$ *-ī-*]$_{TV}$]$_{v^0}$*-re*]$_{T^0+AGR}$ ''be hungry-Infinitive'

All root adjacent vocalic pieces became ornamental TV. This includes not only /*-ā-*/ and /*-ī-*/, and /*-ē-*/, which developed from a VP-shell element but also /*-ĕ-*/ and some of the /*-ĭ-*/, which developed from /*-e-/ and from /*-*ye-*/, which were both true aspectual [-perf] markers in Proto-Indo-European.

(40)



(41)



Athematicity accounted as deletion of short TVs in the perfect results from the reanalysis of the absence of short *e in the perfect forms

Latin TVs

As a summary, I assume that this historical development involved the following steps: at first, v^0 and Asp^0 appeared to be bundled into a single node in the proto-language.

Eventually they were reanalyzed as involving different independent nodes; the verbalizers were positioned under v^0, as expected, and therefore could co-occur with (regular) aspectual markers.

Finally, in Italic/Latin, verbalizers were re-analyzed as ornamental TV.

The development of inflectional Thematic Vowels

I assume that the same generalization was extended to the other vowels appearing in the inflections.

They were re-analyzed as ornamental TVs inserted by the rule in (30)

As assumed earlier, this re-analysis was motivated by a morphological generalization: an ornamental role was assigned to vocalic pieces and a functional one to consonantal pieces.

Thus, as proposed earlier, the Imperfect Indicative /-ā-/ and the Subjunctive /-ē-/ were re-analyzed as ornamental TVs.

Importantly, these are etymologically based on original vocalic exponents of the relevant functional nodes (cf. Ernout (1953), Meiser (2003), Sihler (1995) and Weiss (2009)). This led to the development of alternative consonantal functional exponents such as /-b-/ and /-s-/ in these cases.

This eventually developed into the Romance situation investigated by Oltra-Massuet and Arregi (2000), where all verbal inflectional vowels (both those associated with v^0 as well those associated with other functional nodes) behave as a single class of ornamental elements in terms of stress and other phenomena.

The development of athematicity

Recall that the PIE formatives that developed into the Latin TVs were originally restricted to the Present system, i.e., to what became the Latin *īnfectum*.

So, when they are found in the *perfectum*, one must assume that these formatives were generalized across forms in the same paradigm. However, this extension was not consistent.

As a matter of fact, paradigmatic TV spreading occurred only with the verbal forms characterized by TVs /-ā-/ and /-*ī-*/. In this case, these TVs spread from the form of the *īnfectum* to those of the *perfectum (*see below). In this way, thematic forms such Present, Imperfect, and Perfect ones such as those in (42) developed:

(42)	*am-ā-mus*	*am-ā-bāmus*	*am-ā-bimus*	*am-ā-vimus*	*am-ā-verāmus*	*am-ā-verimus*	*'love'*
	aud-ī- mus	*aud-ī-ēbāmus*	*aud-ī-ēmus*	*aud-ī-vimus*	*aud-ī-verāmus*	*aud-ī- verimus*	*'hear'*
	Pres. Ind.	Imperf. Ind.	Fut. Ind.	Perf. Ind	Pluperf.Ind	Fut.Perf. Ind	

As already observed, verbal TVs such as /-*I*-/, /-ĭ-/ and /-*ē*-/ show up only in the *īnfectum* and not in the *perfectum*.

Given the analysis proposed earlier, we can assume that this is just a surface property of forms in the *perfectum*.

The development of athematicity

PROPOSAL:

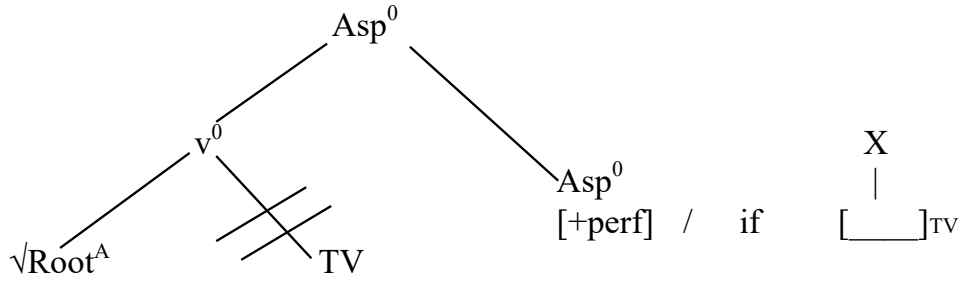
A structural v^0 -TV position was systematically introduced across verbal forms and aspectual contexts: the structural presence of a verbal TV became the characteristic feature of the *īnfectum* and of the *perfectum* regardless of the root.

If it was missing in the *perfectum*, this was due to a short vowel (either /-I-/ or /- ĭ-/) being deleted (see Calabrese (2023) for an analysis)

The development of athematicity

The most parsimonious and adequate account for this situation is then the one, already proposed before, where a rule like (43) applies in a general fashion to all verbs, and where athematicity is, instead, analyzed as being due to rules pruning or deleting short TVs.

(43)



Root- Asp^0 interaction and athematic morphology

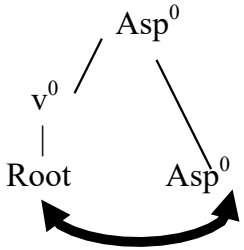
Root- Asp^0 interaction is observed only in athematic morphology.

Following Embick (2010, 2013), see also Embick and Shwayder 2018), I account for this basic fact by assuming, , that any morpheme-to-morpheme interaction, can only occur locally, where locality involves adjacency (See Calabrese (2019) for refinements of this idea).

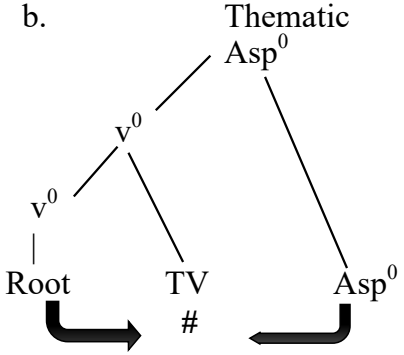
Root-conditioned [+Perfect] Asp^0 exponents, as well as aspect-conditioned root morpho-phonological changes such as vowel-lengthening, ablaut and reduplication—not discussed here (see Calabrese(2023)—can only appear in athematic contexts.

Only regular morphology can appear in thematic forms (where the bolded hashsign # indicates impossibility of morphological interaction):

(44) a. Athematic



b. Thematic



Perfect exponence and locality form PIE to Latin

These innovations from PIE to Latin led to a situation in which there was irregularity in the athematic forms, therefore in the *perfectum*, and regularity in the thematic forms.

For example, root-conditioned exponents became characteristic of the *perfectum* system (cf. the III conjugation forms below) since their insertion was possible only in athematic structures, where root-Asp^0 interactions could occur:

(45) Athematic Perfects

dūc-s-īmus	*dūc-s-erāmus*	*dūc-s-erimus*	*dūc-s-erīmus*	*dūc-s-issemus*
(dūximus)	*(dūxerāmus)*	*(dūxerimus)*	*(dūxerīmus)*	*(dūxissemus)*
lēg-Ø-i	*lēg-Ø-erāmus*	*lēg-Ø-erimus*	*lēg-Ø-erīmus*	*lēg-Ø-issemus*
crē-v-imus	*crē-v-erāmus*	*crē-v-erimus*	*crē-v-erīmus*	*crē-v-issemus*
momord-Ø-imus	*momord -Ø-erāmus*	*momord -Ø-erimus*	*momord -Ø-erīmus*	*momord -Ø-issemus*
Perf. Ind	Pluperf.Ind.	Fut.Perf. Ind	Perf. Subj.	Pluperf. Subj.

If there is root-conditioned contextual allomorphy, then there is no TV.

On irregular allomorphy

Despite all the restructuring, irregular allomorphy still occurred under the required local configurations. So, reduplication, ablaut and vowel lengthening were never extended to thematic configurations. Thus, it also follows that allomorphic complexity—the possibility of multiple root conditioned exponents for Asp^0— is restricted to cases in which Asp^0 is adjacent to the root node, i.e. in athematic contexts.

Note that in all these diachronic developments, the actual forms changed; they were not preserved. There was no preservation of actual forms. What was preserved, however, was a structural property: complex root-conditioned allomorphy was possible only under adjacency with the root.

A restructuring in irregular exponence

Meanwhile, irregular allomorphy due to root-Asp^0 interactions disappeared from the *īnfectum* system where only thematic structures were possible. So, even in the case of the III conjugation, Asp^0 allomorphy was no longer possible in this system; the forms below are perfectly regular from that point of view.

(46) *dūc-i-mus* *dūc-ē-bāmus* *dūc-ē-mus* *dūc-ā-mus* *dūc-e-remus* *dūc-e-re*
leg-Ø-imus *etc.*
Pres. Ind. Imperf. Ind. Fut. Ind. Pres. Subj Imperf. Subj. Inf.

Aspect exponence does show irregularities in the *īnfectum* but they are conjugation-based, i.e., conditioned by the TV properties, and not by the root properties.

A restructuring in irregular exponence

It follows that Latin stand in contrast to Sanskrit and Greek , where root-conditioned irregular aspectual exponents can be found in all aspectual systems.

In these languages, Asp^0 is always adjacent to the root, and therefore irregular exponence is present not only in the Aorist and the Perfect (equivalent to the Latin *perfectum*) but also in the Present (equivalent to the Latin *īnfectum*).

In Latin, however, irregular aspectual exponents became a characteristic feature of the *perfectum* system.

Generalization of the TV in the primary verbs īnfectum

It is now important to discuss a crucial difference between the distribution of the PIE FTV /*-e-/ (/-a-/, /-e-/ of Sanskrit and Greek, respectively) and that of the Latin short TV /-I-/, which may be etymologically related with this /*-e-/ (see below for an analysis of the development of /-I-/ from /*-e-/).

In fact, the Latin TV /-I-/ can co-occur with the other pieces that represented [-perf] aspect in the other languages (cf. (35-36I).

Since the TV insertion rule applied systematically across verbs, restricted only in the *perfectum*, the primary verbs display it regularly in the *īnfectum*. Therefore, they display an TV /-I-/ associated with v^0, together with a [-perf] Asp^0 with Ø exponence.

Generalization of the OTV in the primary verbs īnfectum

It follows that original Asp^0 exponence, mostly *ne*-infixation, but also more sporadically /-*nu*-/ and /-*sk*-/ suffixation, had to be reanalyzed as being part of the root. This includes undergoing morpho-phonological readjustments in the *perfectum*, i.e., a rule deleting a nasal coda in cases such *sper-n-ō/sprēvi, findō/fidī,* but not in *iungo, /iunxi/iunctus*. A radical restructuring of the aspectual exponence was thus achieved.

(47) *Īnfectum Perfectum*

Nasal suffix:	cer-n-*i-mus*	crē-v-ī	'see'sight'
	sper-n-*i-mus*	sprē-v-ī	'spurn'
	ster-n-*i-mus*	strā-v-ī	'spread, strew'
Nasal infix:	fi-n-d-*i-mus*	fid-ī	'split'
	fu-n-d-*i-mus*	fūd-ī	'pour (metal)'
	sci-n-d-*i-mus*	scid-ī	'tear, split'
Suffix /sk-/	crē-sc--*i-mus*	crē-v-ī	'grow larger, increase'
	nō-sc-*i-mus*	nō-v- ī	'examine'
	adolē-sc-*i-mus*	adolē-v- ī	'grow up'

Generalization of the TV in the primary verbs īnfectum

Note at this point that the exponent of the III conjugation TV—what I assume is /-*I*-/ cannot be directly developed from the PIE FTV /*-*e*-/.

It must really be a new morphological entity.

One can indeed assume that in primary verbs that originally had a F-thematic /-*e*-/, /-*I*-/ developed directly from this element by reanalysis as an TV (cf.).

This, however, cannot be the case for the primary non-F-thematic verbs, in particular for those with suffixal or in infixal /-*n*-/as in .

In this case, the TV exponent cannot be the original /*-*e*-/ and must be a new entity.

The phonological nature of the new TV in originally primary verbs (i.e., III conj.)

TV in these verbs must be a new morpho-phonological entity.

This vowel is normally [+high] (i.e., [*i*]) in surface representations unless it is before a rhotic, where it is [-high] (i.e., [*e*]; or it is before other vowels where it is deleted). This distribution readily indicates that this vowel is underlying [+high].

PROPOSAL: a short high vowel was inserted as the TV of the *īnfectum* of III conjugation verbs—the primary verbs— in all cases where there was no reanalyzed TV from PIE **-e-*. We can also assume that the latter *-e- was eventually phonologically reanalyzed as being an underlyingly [+high, -round] vocalic segment.

➢Distribution of 3rd Plural suffixal /-unt/ after [+high]: III and IV conjugations

The phonological nature of the new TV in originally primary verbs (i.e., III conj.)

➢ Consider the development of the 1st sg. ending /-*o*/, which is characteristic of the present of all conjugations.

➢ Historically, this ending was restricted to the 1st sg. of the primary verbs with thematic */-*e*-/ and involved an /-*o*-/ alternant of this vowel (cf. Greek *lú̓-ɔ,* Ernout 1953, Sihler 1995, Meiser 1998, Weiss 2005*)*.

➢ Once the alternation e/o was no longer rule-governed in Proto-Latin, this element became re-analyzed as the ending of the 1st person and extended to the derived conjugations, where a general Latin rule shortened vowels before another vowel (/*ā, ē, ī*/➔[*a, e, o*]/ __ V).

(48) a. [[[*laud*]$_{\text{Root}}$ -*a*-]$_{\text{TV}}$ *ō*]$_{\text{T+AGR}}$1sg],
b. [[[*mon*]$_{\text{Root}}$ -*e*-]$_{\text{TV}}$ *ō*]$_{\text{T+AGR}}$1sg]
c. [[[*aud*]$_{\text{Root}}$ -*i*-]$_{\text{TV}}$ *ō*]$_{\text{T+AGR}}$1sg]

This is the situation in Italic.

The phonological nature of the new TV in originally primary verbs (i.e., III conj.)

➢ **In early Latin, the hiatus cluster /-*a*-]$_{TV}$ *ō*]/ was disliked and removed by the deletion of the vowel /*a*/:**

(49) ***a*➔ Ø / __ V**

Compare:

a. **[[[*laud*]$_{Root}$ *ō*]$_{T+AGR^{1sg}}$]** **vs.** **b.** **[[[*mon*]$_{Root}$ *-e-*]$_{TV}$ *ō*]$_{T+AGR^{1sg}}$]**

c. **[[[*aud*]$_{Root}$ *-i-*]$_{TV}$ *ō*]$_{T+AGR^{1sg}}$]**

➢ Now consider the old primary verbs where the /- ō / appeared adjacent to the root *duk-ō* 'lead-Pres.1sg, *leg-ō* 'gather-Pres.1sg., *ed-ō* 'eat-Pres.1sg ([[[leg]$_{Root}$ -I-]$_{TV}$ ō]$_{T+AGR^{1sg}}$]), etc..

➢ Once a structural TV position was generalized across all verbs and aspectual contexts, as proposed earlier, one had to hypothesize the following UR structures for the just mentioned 1sg forms: [[[*duk*]$_{Root}$ *-I-*]$_{TV}$ *ō*]$_{T}$, [[[*leg*]$_{Root}$ *-I-*]$_{TV}$ *ō*]$_{T}$, [[[*ed*]$_{Root}$ *-I-*]$_{TV}$ *ō*]$_{T}$, etc.

➢ **To account for the surface forms *duk-ō*, *leg-ō*, *ed-ō*, etc., it is plausible to assume that the inserted (high) TV was reanalyzed as undergoing a process of vowel deletion before vocalic endings such as the first person [-ō]. The I conjugation /-ā-/was the only TV that behaved like that.**

- **This parallelism triggered a reanalysis in which this vowel was assigned [+back]**

Conclusion: Reanalysis by bleaching

I. Featural bleaching=it includes preservation of some semantic/featural content

i. Upward raising of roots (Roberts and Rossou 2002, Robert 2010): an operation of semantic impoverishment (=bleaching) that affects the root semantics in such a way that 1) it removes its ability to identify and describe an independent eventuality but 2) it preserves its abstract logical framework
cf. will 'want' > will 'FUTURE', in English, or avere 'have' > 'must' in Italo-Romance varieties

ii. Feature bleaching of exponents=loss of morpho-syntactic feature in VI (contextual syncretism in paradigms.e.g. in the Latin case system: exponent /-i:/ for Genitive-Dative sing in I and V declension; ornamental /-s/ in all declension)

II**. Ornamental bleaching= full loss of semantic content/morpho-syntactic features**

- **The exponent requires the insertion of an autonomous morphological position adjoined to a functional head but not present in the syntax.**

The Latin TVs

The piece *–ē-* in the indicative imperfect forms *mon-ēbā-mus, leg-ēbā-mus cap-i-ēbā-mus* vs. *laud-ā-bā-mus*

The other Latin verbal inflectional vowels.