

# Latin Inflections

David Embick and Morris Halle  
University of Pennsylvania and MIT  
*Going Romance 2003, Nijmegen*

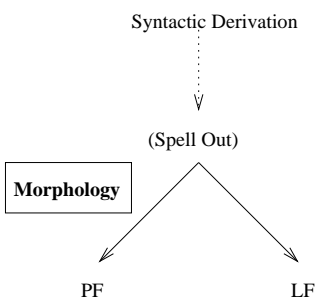
November 21, 2003

## 1 Introduction

Aspects of Latin morphology from the perspective of *Distributed Morphology* (Halle and Marantz (1993), Harley and Noyer (1999), Embick and Halle (forthcoming) and related work).

The architecture of the grammar:

### (1) The Grammar



### (2) Two Important Points:

- Default Case:** Morphological structure is syntactic structure.
- Morphology:** A sequence of operations that apply at PF to interpret the syntactic structure.

The syntax manipulates two types of elements:

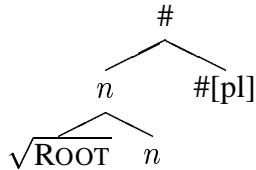
### (3) Terminals

- Abstract Morphemes:** These are composed exclusively of non-phonetic features, such as [Past] or [pl], or features that make up the determiner node D of the English definite article *the*.
- Roots:** These make up the open-class or 'lexical' vocabulary. They include items such as  $\sqrt{\text{CAT}}$ ,  $\sqrt{\text{OX}}$ , or  $\sqrt{\text{SIT}}$ , which are sequences of complexes of phonetic features along with abstract indices (to distinguish homophones) and other diacritics (e.g. class features).

PF contains a process called *Vocabulary Insertion*, whose function is to add phonological content to abstract morphemes.

Individual *Vocabulary Items* are rules that combine a phonological *exponent* with the conditions under which that exponent is added to a terminal. For instance, the English plural:

(4) Structure for the Plural



In the default case, [pl] receives the exponent /-z/, by (5). Other Vocabulary Items make reference to the Root in the local context of [pl], as in (6):

(5) /-z/ ↔ [pl]

(6) -∅ ↔ [pl]/{√MOOSE,√FOOT,...} \_\_  
 -en ↔ [pl]/{√OX, √CHILD, ...} \_\_  
 /-z/ ↔ [pl]

The Vocabulary Items in (6) are ordered so that the most specific one that may apply takes precedence, as encoded in (7):

(7) **Subset Principle:** The phonological exponent of a Vocabulary Item is inserted into a position if the item matches all or a subset of the features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen. (Halle 1997)

**Summary:** Morphology interprets syntax at PF:

1. The hierarchical structure is linearized.
2. Vocabulary Insertion applies to abstract morphemes.

As a matter of the architecture, the strongest possible model of syntax/morphology interactions is maintained.

## 2 The Syntax of Latin Verbal Inflections

- The forms of Latin verbs are derived in hierarchical structures containing discrete nodes.

Latin verbs are often presented in the familiar paradigms of traditional grammar; for instance:

(8) Present Indicative Active

amō ‘I love’  
 amās ‘You love’  
 amat ‘He/she loves’  
 amāmus ‘We love’  
 amātis ‘You love’  
 amant ‘They love’

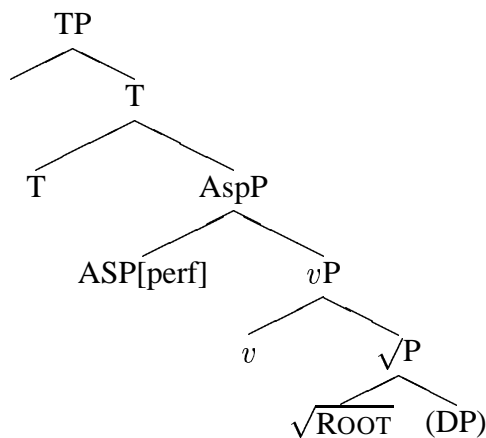
(9) Imperfect Indicative Active

amābam ‘I love’  
 amābās ‘You love’  
 amābat ‘He/she loves’  
 amābāmus ‘We love’  
 amābātis ‘You love’  
 amābant ‘They love’

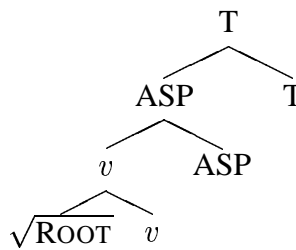
In addition there are the categories of Tense (Present, Past, Future), Mood (indicative versus subjunctive), Aspect (Perfect versus Imperfect), Voice (active versus passive) Agreement (1/2/3, Singular and Plural), and Conjugation class.

Our analysis of the Latin verbal system is based on a syntactico-semantic skeleton containing the functional heads *v*, Asp(ect), and T(ense) (cp. Giorgi and Pianesi (1997)):

(10) Hierarchical Structure



(11) Complex Head



An argument for the syntactic approach:

- The existence of synthetic (‘one word’) and analytic (‘two word’) forms in the same verbal system as an argument for a syntactic approach to word formation (cf. Embick (2000)).

In the Latin verbal system there are analytic ‘two word’ in addition to synthetic ‘one word’ forms. Compare the active Perfect of *amō* in (12) and the passive Perfect in (13):

(12) Perfect Indicative Active:

1S am-ā-v-ī  
2S am-ā-v-istī  
3S am-ā-vi-t  
1P am-ā-vi-mus  
2P am-ā-vi-stis  
3P am-ā-v-ērunt

(13) Perfect Indicative Passive:

1S amāt-us/-a/-um sum  
2S amāt-us/-a/-um es  
3S amāt-us/-a/-um est  
1P amāt-ī/-ae/-a sumus  
2P amāt-ī/-ae/-a estis  
3P amāt-ī/-ae/-a sunt

The active Perfect consists of a single word; the passive Perfect consists of an auxiliary (a form of *be*) and a participle.

Given just (12) and (13), one possibility is that the basic clause structure of the Perfect Passive is different from that of the Active Perfect.

–For instance, in English the passive has the syntax of *be*, the active does not.

In the case of the Latin perfect, we demonstrate that:

1. The analytic and synthetic Perfects are realized in the same syntactico-semantic structure
2. They differ in terms of whether head movement stops at Asp (analytic Perfect) or at T (synthetic Perfect)

⇒ These patterns are straightforward in a syntactic approach to morphology.

An excursus into the properties of *deponent verbs* is required:

### *Deponent Verbs*

Consider the case of the *deponent* verbs. These are verbs that lack active forms. The present tense of the deponent verb *hortor* ‘exhort’ has the same forms as the passive of a ‘normal’ verb like *amō*:

(14) Present Passive

am-or 'I am loved'  
am-ā-ris 'you are loved'  
am-ā-tur 'he is loved'  
am-ā-mur 'we are loved'  
am-ā-mini 'you are loved'  
am-a-ntur 'they are loved'

(15) Present of Deponent

hort-or 'I exhort'  
hort-ā-ris 'you exhort'  
hort-ā-tur 'he/she exhorts'  
hort-ā-mur 'we exhort'  
hort-ā-mini 'you exhort'  
hort-a-ntur 'they exhort'

At the same time, these forms of *hortor* (typically) appear in active syntax. A number of deponent verbs have the syntax of normal verbs, but have the morphological property that they appear only in passive forms.

–Being deponent is a property of particular Root

–We assume that deponent Roots possess a diacritic feature [ $\alpha$ ] that makes them morphologically passive:

(16) Deponent Verb

$\sqrt{\text{ROOT}}_{\alpha}$

This feature relates to a feature that is found when passive syntax is generated for normal verbs (see below).

The passive-like behavior of deponents extends to the Perfect as well; deponent verbs have only an analytic Perfect:

(17) Perfect of a Deponent

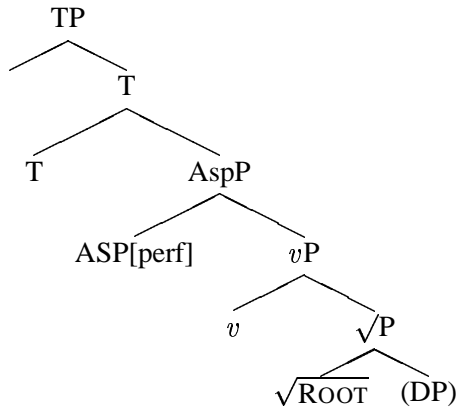
\*hort-ā-v-ī 'I (have) exhorted'; cp. (12)  
hort-ā-t-us sum 'I (have) exhorted'

**Returning to the Perfect:**

1. Analytic form does not result from passive syntax per se; it results from the feature [pass], which is found both (1) in syntactic passives, and (2) when deponent verbs are present.
2. There are no interpretive differences between analytic and synthetic perfects, when the active/passive cases are factored out.

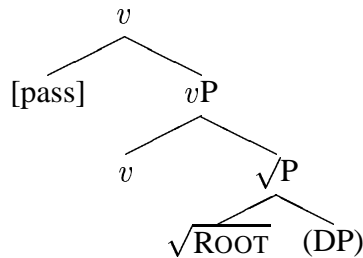
The simplest treatment of these facts is in which the analytic and synthetic Perfect are derived in the same structure:

(18) Perfect Structure



The difference between them is triggered by the presence of the [pass] feature, whatever the origin of this feature (higher structure omitted):

(19) The node Passive



*–The feature [pass] is attached to v in (1) syntactic passives, and (2) when deponent Roots are present.*

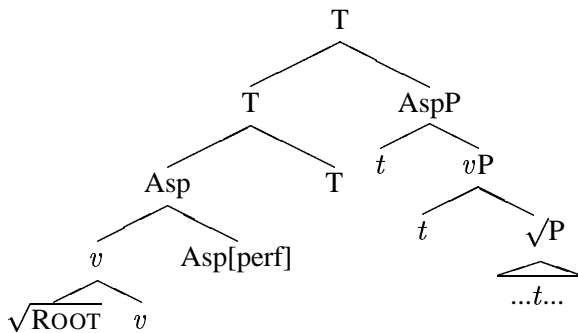
Consider now (20):

(20) Asp[perf] does not move to T when [pass] is present.

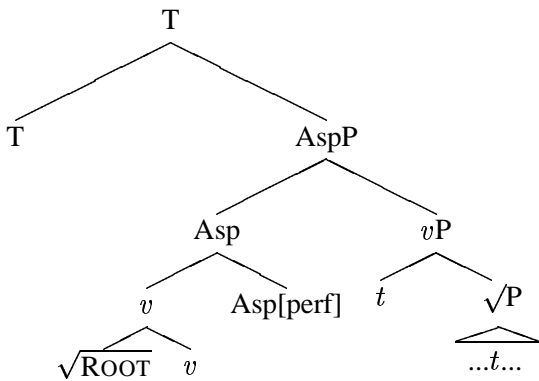
(Whether (20) can be reduced to something else is not clear)

There are then two possibilities: either the verbal complex (*v*-Root) raises all the way to T (synthetic form); or it stops at Asp (analytic form).

(21) Synthetic



(22) Analytic



In the analytic form, *be* is inserted into T (“be-support”).

- The distribution of features in the analytic form– with Tense separate from  $\sqrt{\text{ROOT}}$ -*v*-Asp– is a direct consequence of the syntactic treatment.

### Synthetic versus Analytic Forms and Allomorphy:

ASP is spelled out differently in synthetic Perfects, where it shows the allomorphs *-v-*, *-s-*,  $-\emptyset$ , than it is in analytic Perfects, where it is spelled out as *-t-* or *-s-*:

(23) Finite Perfect Allomorphy

laudō, laudā-v-ī  
scribo, scrip-s-ī  
veniō, vēn-∅-ī

(24) Allomorphy in the Participle

laudō, laudā-t-us  
iubeō, ius-s-us

The spell out rules for Asp make reference to syntactic context– and in particular to the presence of Tense– as well as to lists:

(25) Context of T:

-s- ↔ ASP[perf]/{List1 }\_\_ T  
 -∅- ↔ ASP[perf] /{List2 }\_\_ T  
 -v- ↔ ASP[perf]/\_\_ T

(26) Participial

-s- ↔ Asp/{List3 }\_\_  
 -t- ↔ Asp

**Participles:** Cf. further facts about *-t-/-s-* from Aronoff (1994).

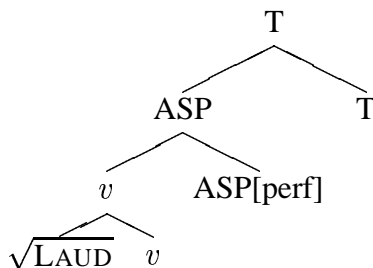
**Conclusions:**

1. The syntactic approach to morphology accounts for analytic/synthetic alternations straightforwardly. Every form is realized in a syntactic structure; there is thus no major difference in kind between synthetic and analytic forms.
2. The existence of analytic forms in the verbal system is problematic for non-syntactic or ‘Paradigmatic’ approaches to morphology. Briefly: Paradigms contain “words”, generated by rules that are not syntactic rules. There is no coherent answer for cases in which paradigms contain syntactically complex objects.

**3 Morphological Operations**

The syntax of the verb is treated in terms of the structure advanced above:

(27) Syntactic Structure (Perfect)



The structure in (27) is that for the Perfect tenses, which contain the head Asp[perf].

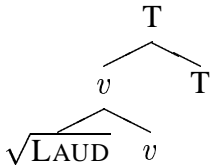
- There is no morphological evidence for a head Asp[imperf] for the imperfective tenses



- We assume that semantically the imperfect can be treated as a kind of default; no feature Asp[imperf] is required.

Thus in addition to (27), the syntax of Latin generates the structure in (28)

(28) Syntactic Structure (Not Perfect)



General Assumption:

- (29) Non-Agreement functional heads possess unary features; functional heads are not projected if they contain no such features.

The features that we posit for Latin are as follows:

- (30) **Tense:** [past], [pres], [fut]  
**Aspect:** [perf]

The structures in (27) and (28) contain the nodes and features (from (30)) that are essential for syntax and semantics.

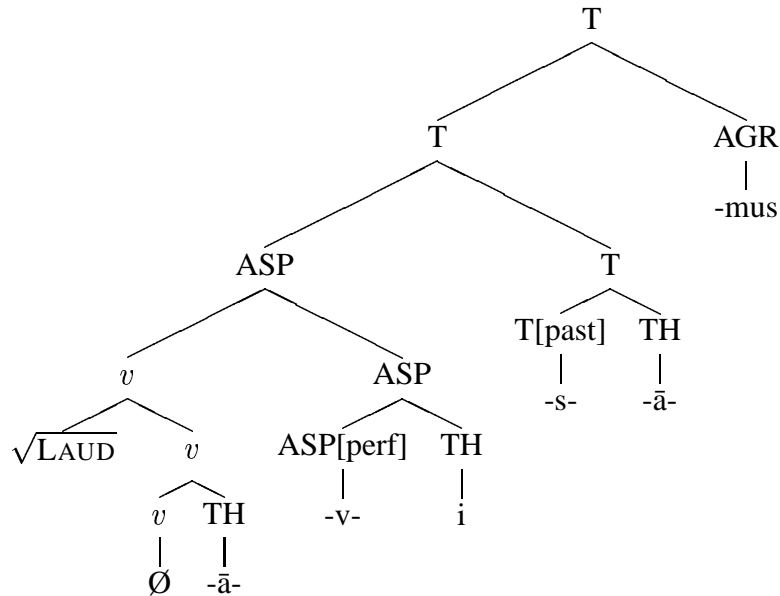
**However:** Fully inflected Latin verbs have a structure more complex than (27) and (28). Consider the Pluperfect (the ‘+’ juncture is for theme vowels):

(31) Pluperfect Indicative

- 1S laud+ā-v+e-r+a-m
- 2S laud+ā-v+e-r+ā-s
- 3S laud+ā-v+e-r+a-t
- 1P laud+ā-v+e-r+ā-mus
- 2P laud+ā-v+e-r+ā-tis
- 3P laud+ā-v+e-r+a-nt

These forms are realized in a structure that contains *Theme* nodes, as well as an AGR(ement) node, as in (32):

(32) Structure of the Pluperfect



The structure (32) is derived at PF from the syntactic structure (27) through a sequence of morphological operations.

In general, there are cases in which the derivation of the morphophonological forms of words requires the application of distinct types of rules at PF (i.e. rules in addition to Linearization and Vocabulary Insertion):

- Rules affecting the number of nodes relevant for Vocabulary Insertion (*Fusion* and *Fission* of nodes)
- Rules adding adding morphological objects (Agreement nodes, Theme nodes)
- Rules deleting features/nodes under specified conditions (*Impoverishment*)
- Morphophonological rules

TWO POINTS:

1. While direct syntax/morphology interactions are predicted simply as a matter of the architecture of the theory, there is the possibility that language-particular rules at PF will modify the structure derived in syntax.
2. A major component of the Distributed Morphology research program involves giving a restrictive theory of these modifications.

In the remaining sections we illustrate some of the modifications that are required in the analysis of the Latin conjugation.

### 3.1 Morphophonological Rules

- The operation of phonological rules can also create apparent mismatches between syntax and morphology.

Recall that there is a theme vowels in certain verbal forms (33); but compare (34):

(33)	Conjugations and Theme Vowels		(34)	1S Forms
	<b>Conjugation</b>	<b>Example</b>	<b>Theme Vowel</b>	
	I	laud-ā-mus	-ā-	laud-ō
	II	mon-ē-mus	-ē-	mon-ē-ō
	III	dūc-i-mus	-i-	dūc-ō
	III(i)	cap-i-mus	-i-	cap-i-ō
	IV	aud-ī-mus	-ī-	aud-i-ō

In two cases– Conj. I and Conj. III– there is no overt theme vowel in the surface form.

The deletion of /a/ before the vowel /ō/ suggests a phonological formulation in which Conj. III verbs have the theme vowel  $-\dot{i}$ : *dūc- $\dot{i}$ -mus*.

The behavior of 1S forms is then captured by means of the rule (35):

(35) *Back-Vowel Deletion*

$$\left[ \begin{array}{c} X \\ +back \\ -round \end{array} \right] \rightarrow \emptyset \text{ in env. } \left[ \begin{array}{c} X \\ | \\ V \end{array} \right]$$

When  $-\dot{i}$  is not deleted, it surfaces as  $-\dot{i}$ -./.

Note that in the 3PL, *-nt/-unt* allomorphy is conditioned by  $[\pm high]$  of the Theme Vowel (36); the presence of *-unt* in Conj. III follows naturally from the treatment above:

(36) 3PL Forms

laud-a-nt  
 mon-e-nt  
 dūc-unt (<dūc- $\dot{i}$ -unt)  
 cap-i-unt  
 aud-i-unt

*The  $-\dot{i}$  theme of Conj. III conditions insertion of -unt, and is subsequently deleted by (35).*

A further rule relevant to the discussion below is seen in the infinitives:

(37) Infinitives

Conjugation I	laud-ā-re
Conjugation II	mon-ē-re
Conjugation III	dūc-e-re
Conjugation III(i)	cap-e-re
Conjugation IV	aud-ī-re
Athematic	es-∅-se

The simplest analysis of these facts is one in which the exponent of T[inf] is *-s-*, which is subject to a rule of *Rhotacism* (familiar from standard works on Latin historical phonology):

(38) *Rhotacism*

$/s/ \rightarrow /r/$  in env. V\_\_V

(Also at play in (37) is a rule that lowers /i/ to /e/ in certain contexts)

### 3.2 The Addition of Nodes

A familiar component of the Latin verb is the *theme vowel*, which reflects the organization of the verbs into different *conjugation classes*; in (40) we illustrate the representation of conjugation class features as diacritics:

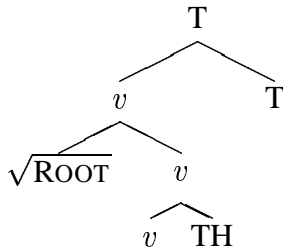
(39) Conjugations and Theme Vowels

Conjugation	Example	Theme Vowel
I	laud-ā-mus	-ā-
II	mon-ē-mus	-ē-
III	dūc-i-mus	-i-
III(i)	cap-i-mus	-i-
IV	aud-ī-mus	-ī-
Athematic	es-∅-se	-∅-

(40)  $\sqrt{\text{AUD}}_{\text{[IV]}}$

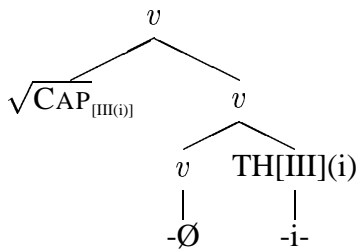
We assume that the TH position is attached to *v* in the examples in (39):

(41) TH attached to  $v$

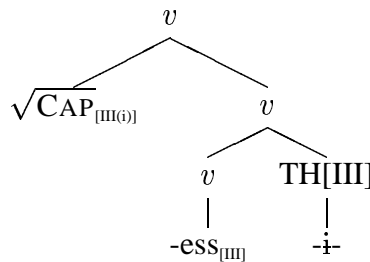


Attachment to  $v$  is motivated by cases in which there is an overt exponent of  $v$ . We assume that this is the case with e.g. desiderative *-ess-* cp. (42) and (43):

(42) Lower Structure for *capimus*

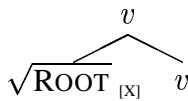


(43) Lower structure for *capessō*

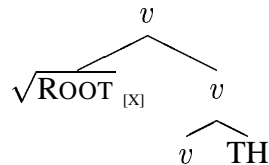


The fact that the TH position attached to  $v$  receives the feature [III] of the exponent *-ess* and not the [III(i)] feature of  $\sqrt{\text{CAP}}$  is a matter of locality: the TH head receives the feature of the closer terminal, the [III] of *-ess*<sub>[III]</sub> and not the [III(i)] of  $\sqrt{\text{CAP}}$ <sub>[III(i)]</sub>.

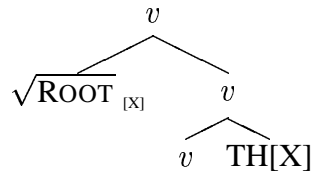
(44) Input



(45) TH Added



(46) Concord



- An additional observation is that the notion of Theme is generalized to the other functional heads (ASP and T) in the verbal complex (for this approach to Theme positions see Oltra (1999) and Arregi (1999); for similar suggestions in the case of Latin, cf. Buck (1933:301) (in a way), Williams (1981), Aronoff (1994)).

Consider the exponents of Tense/Mood:

(47) Tense/Mood Exponents

<b>Tense/Mood</b>	<b>Form</b>	<b>Tense/Mood Exponent</b>
Present Indicative	laud+ā-mus	--
Imperfect Indicative	laud+ā-bā-mus	-bā-
Perfect Indicative	laud+ā-vi-mus	--
Pluperfect Indicative	laud+ā-ve-rā-mus	-rā- (<-sā-)
Future	laud+ā-bi-mus	-bī-
Future Perfect	laud+ā-ve-ri-mus	-rī- (<-sī-)
Perfect Subjunctive	laud+ā-ve-rī-mus	-rī- (<-sī-)
Present Subjunctive	laud-ē-mus	(∅)ē-
Imperfect Subjunctive	laud+ā-rē-mus	-rē- (<-sē-)
Pluperfect Subjunctive	laud+ā-vi-s-sē-mus	-s-, -sē-

**NOTE:** There are no ‘extra’ pieces for Mood in this system. Where there are two pieces– in the Pluperfect Subjunctive– there is motivation for two heads from the semantics. We assume that Mood is not a separate head distinct from Tense in Latin. Rather, the descriptive categories of Tense and Mood both relate to properties of the head T (this position is often found in the typological literature; cf. Iatridou (2000) as well).

In principle it would be possible to treat this system with the spell-out rules in (48):

(48) Provisional spell out of Tense/Mood exponents

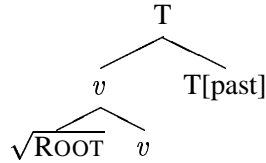
- sī- ↔ [pres,subj]/\_\_ [perf]
- ē- ↔ [pres,subj]/[I]\_\_
- ā- ↔ [pres,subj]
- sē- ↔ [past,subj]
- sā- ↔ [past]/\_\_ [perf]
- sī- ↔ [fut] \_\_ [perf]
- ∅ ↔ [pres]
- bā- ↔ [past]
- bī- ↔ [future]

Two sets of considerations suggest that further decomposition is in order:

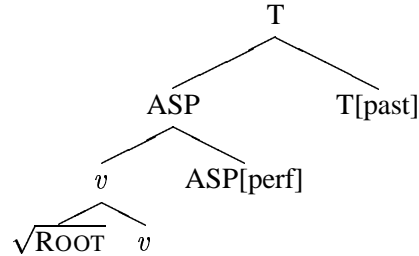
1. Without exception, the exponents of Tense/Mood consist of either *b-*, *s-*, or  $\emptyset$ - followed by a vowel. But the vowels in question are not an arbitrary subset of the vowels of Latin: they are precisely the vowels that surface as Theme Vowels in the TH position attached to *v*. That is, /ā,ē,ī,i,ī/ (and  $\emptyset$ ), not some other set.
2. In certain cases, the vowel is predictable given the value of Tense.

(a) *Imperfect and Pluperfect*. Both contain T[past]:

(49) Imperfect



(50) Pluperfect



Forms:

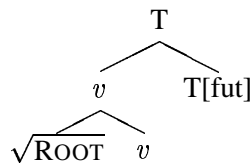
(51) Imperfect: laud- $\bar{a}$ -b $\bar{a}$ -mus

Pluperfect: laud- $\bar{a}$ -ve-r $\bar{a}$ -mus

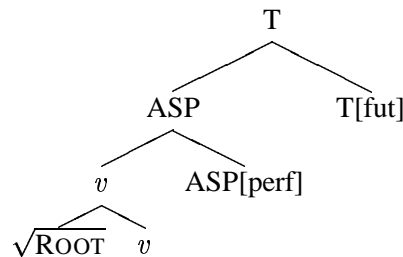
The theme vowel is  $\bar{a}$ - whether there is  $-b-$  or  $-s-$ ; this suggests that T[past] takes an  $\bar{a}$ - theme, whether T[past] itself is spelled out as  $-b-$  or  $-s-$ .

(b) *Future and Future Perfect*. Both contain T[fut]:

(52) Future



(53) Future Perfect



Forms (Conj. I and II Future):

(54) Future: laud- $\bar{a}$ -b $\bar{i}$ -mus, laud- $\bar{a}$ -b- $\bar{o}$ ,

Future Perfect: laud- $\bar{a}$ -ve-r $\bar{i}$ -mus, laud- $\bar{a}$ -ve-r- $\bar{o}$

-T[fut] takes the theme  $\bar{i}$ /, whether T[fut] is itself realized as  $-b-$  or  $-s-$ .

Generalizing the notion of theme in the manner described above:

(55) Functional heads (*v*, Asp, T) receive a TH position in morphology.

⇒ Allows the generalizations about Tense/Mood exponents to be stated systematically.

⇒ Allows for an analysis of the Tense/Mood system in which there are

1. Three exponents of Tense/Mood:  $-b-$ ,  $-s-$ , and  $-\emptyset$ .

2. Rules for theme nodes/features on functional heads.
3. Spell out of TH positions.

For details see Embick and Halle (forthcoming).

### 3.3 Operations on Nodes: Fusion

(56) Present Indicative Active

laud-*ō* ‘I praise’  
 laud-*ā-s* ‘You praise’  
 laud-*a-t* ‘He/she praises’  
 laud-*ā-mus* ‘We praise’  
 laud-*ā-tis* ‘You praise’  
 laud-*a-nt* ‘They praise’

(57) Present Passive

laud-*or* ‘I am praised’  
 laud-*ā-ris* ‘You are praised’  
 laud-*ā-tur* ‘He is praised’  
 laud-*ā-mur* ‘We are praised’  
 laud-*ā-minī* ‘You are praised’  
 laud-*a-ntur* ‘They are praised’

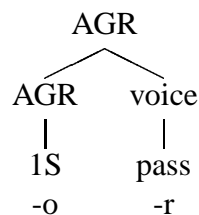
The AGR component in the passive is related to the AGR in the active:

(58) Passive and Active

1S Passive: **-(o)r**; cp. Active *-ō*  
 2S Passive: **-ris**; cp. Active *-s*  
 3S Passive: **-tur**; cp. Active *-t*  
 1P Passive: **-mur**; cp. Active *-mus*  
 2P Passive: **-minī**; no Active counterpart  
 3P Passive: **-ntur**; cp. Active *-nt*

The exception to this is the 2PL, with unanalyzable *-minī*. The structure found in the passive involves an AGR component and a [pass] component, illustrated in (59). The behavior of the 2PL is captured in terms of the Fusion rule in (60):

(59) AGR component



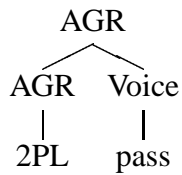
(60) Fusion

AGR[2PL] fuses with [pass]

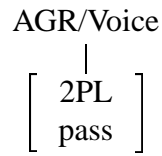


The effects of (60) are seen in (61-62):

(61) Input



(62) Output



There is a single node with the features [2PL pass]; the Vocabulary Item inserting *-minī* makes reference to these features, and blocks e.g. passive *-r*. There is a single node because of (60), and a single exponent is inserted (list of VIs not exhaustive):

(63) *-minī* ↔ [pass 2PL]

*-r* ↔ [pass]

*-tis* ↔ 2PL

### 3.4 Movement(?)

There are cases in which it appears that PF performs minor movement operations (cf. “affix hopping”; for a recent view, see Embick and Noyer (2001)).

Consider once again the morphology of the passive in Latin:

(64) Present Indicative Active

laud-ō ‘I praise’  
 laud-ā-s ‘You praise’  
 laud-a-t ‘He/she praises’  
 laud-ā-mus ‘We praise’  
 laud-ā-tis ‘You praise’  
 laud-a-nt ‘They praise’

(65) Present Passive

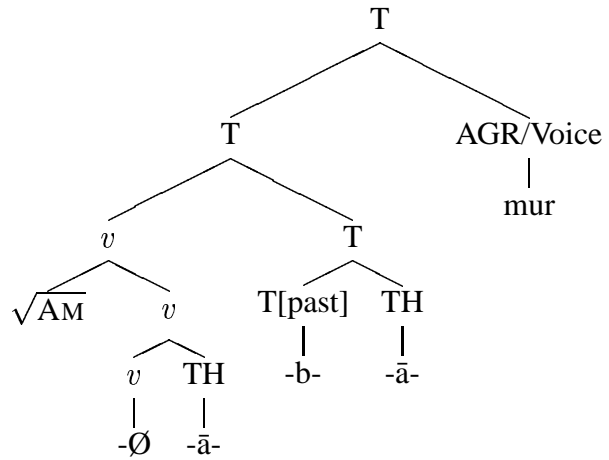
laud-or ‘I am praised’  
 laud-ā-ris ‘You are praised’  
 laud-ā-tur ‘He is praised’  
 laud-ā-mur ‘We are praised’  
 laud-ā-minī ‘You are praised’  
 laud-a-ntur ‘They are praised’

As the Imperfect shows, this pattern obtains even when there is an exponent of Tense intervening between the position of *v* and the position of AGR:

(66) Imperfect Passive

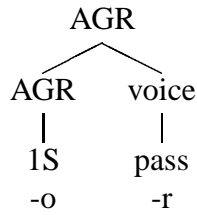
(67) Structure

am-ā-ba-r  
 am-ā-bā-ris  
 am-ā-bā-tur  
 am-ā-bā-mur  
 am-ā-bā-mini  
 am-ā-ba-ntur



–But as discussed above, the evidence indicates that [pass] is adjacent to AGR when Vocabulary Insertion occurs:

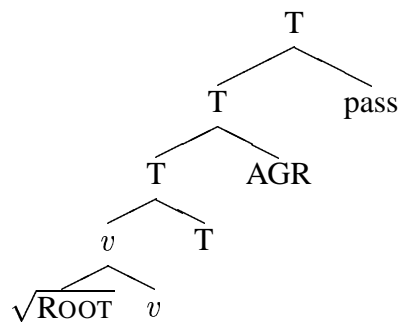
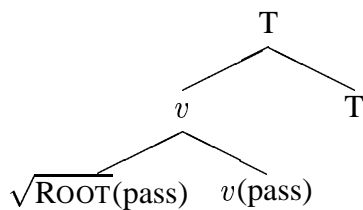
(68) AGR component (1S)



**However:** In terms of the structure for Latin verbs, the feature [pass] seems to be related to a position much lower in the structure; either *v* or the Root:

(69) Syntactic Structure

(70) Morphological Structure



- In syntactic passives, the locus of passivization is *v*: passivization crucially involves

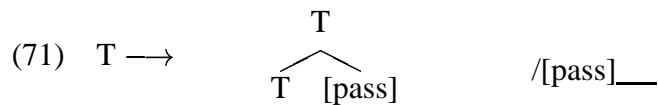
the (absence of the) external argument.

- In the case of deponent verbs, the property of being deponent is a property of the Root.

QUESTION: How is [pass] realized in the AGR component?

Options:

1. Movement: Requires that [pass] be a separate terminal with both passives and deponents. What is the movement process?
2. “Concord”-type process:



(Might be necessary to distinguish between [pass] and [pass']; in addition, no need for a separate [pass] node low in the structure)

- Questions about the status of [pass] are difficult because the theory is accountable to syntax, semantics, and morphological form; this is a point in favor of the approach.

#### 4 Conclusions

Morphology interprets the output of the syntactic derivation.

- The derivation of the Latin conjugation is syntactic; verbs are realized in the structures we have advanced above.
- Morphological rules add nodes to and minimally adjust the syntactic structure.
- The rules we have presented here extend to a treatment of the Latin conjugation. Additional notions like ‘paradigm’ are entirely derivative, as the rules do not need to make reference to paradigms or paradigmatic structures. The paradigm is generated by the grammar, but has no place in the grammar.

## References

- Aronoff, M. (1994) *Morphology by Itself: Stems and Inflectional Classes*, MIT Press, Cambridge, MA.
- Arregi, K. (1999) "How the Spanish Verb Works," ms., MIT.
- Buck, C. D. (1933) *Comparative Grammar of Greek and Latin*, University of Chicago Press.
- Embick, D. (2000) "Features, Syntax and Categories in the Latin Perfect," *Linguistic Inquiry* 31:2, 185–230.
- Embick, D., and M. Halle (forthcoming) *Word Formation: Aspects of the Latin Conjugation in Distributed Morphology*, Mouton de Gruyter.
- Embick, D., and R. Noyer (2001) "Movement Operations after Syntax," *Linguistic Inquiry* 32:4, 555–595.
- Giorgi, A., and F. Pianesi (1997) *Tense and aspect: From semantics to morphosyntax*, Oxford University Press.
- Halle, M. (1997) "Distributed Morphology: Impoverishment and Fission," *MIT Working Papers in Linguistics* 30, 425–449.
- Halle, M., and A. Marantz (1993) "Distributed Morphology and the Pieces of Inflection," in K. Hale and S. Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, MIT Press, Cambridge, MA, 111–176.
- Harley, H., and R. Noyer (1999) "Distibuted Morphology," *Glott International* 4:4, 3–9.
- Iatridou, S. (2000) "The Grammatical Ingredients of Counterfactuality," *Linguistic Inquiry* 31:2, 231–270.
- Oltra, M. I. (1999) *On the Notion of Theme Vowel: A New Approach to Catalan Verbal Morphology*, Master's Thesis, MIT.
- Williams, E. (1981) "On the notions *lexically related* and *head of a word*," *Linguistic Inquiry* 12, 245–74.