

Irregular Morphology and Athematic Verbs in Italo-Romance

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Abstract

The article deals with irregularities in the morphological make-up of Italian verbal forms, focusing on perfect and past participle forms. It aims to account for root-based contextual allomorphy in the framework of Distributed Morphology (Halle & Marantz 1993). Building upon the generalisation that morphological irregularities result whenever the thematic vowel is absent, the article provides a synchronic account and a diachronic analysis by means of a restricted set of morphophonological rules, thus challenging both the traditional view, according to which morphological irregularities follow from stress positioning, and paradigm-based accounts.

Keywords: Italian; morphology; thematic vowel; Distributed Morphology; allomorphy.

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1. Introduction

In a series of recent papers (Calabrese 2012, 2013, 2015), I have investigated the morphophonology of Italian irregular perfect and past participle forms*. In the present article, I clarify, revise, simplify and integrate the main aspects of the different proposals made in them.

When we talk of irregular morphology, we are dealing with morpheme-specific morphology, i.e., with situations in which morphological operations are dependent on morpheme specific information. In (1) I contrast a case of irregular morphology with a case of regular morphology. On one hand, we have the Italian Imperfect marker, which is regular in being always the same across verbs. On the other hand, we have the Italian perfect marker /s/, which appears only with certain verbal roots. In the case of this marker, we need a special vocabulary item that includes reference to root information in the structural description. No such contextual restrictions are needed for regular morphology.

- | | | |
|-----|--|---|
| (1) | Regular morphology
Italian Imperfect marker
<i>amavo/battevo/partivo</i>
/-v-/ ↔ [+imperfect] | Irregular morphology
Italian perfect marker /s/
<i>persi</i>
/-s-/ ↔ [+perfect]/ root ^s ____ (root ^s = perd, etc.) |
|-----|--|---|

One of the most typical case of irregular morphology involves morphological operations dependent on root specific information. Morpheme exponence dependent on root specific information can be referred to as root based contextual allomorphy. Root-based contextual allomorphy is accounted for by: vocabulary items (VI) and morphophonological (MP) rules¹ including root-information in their structural description.

In my work on irregular Italian perfect and past participle forms, I have observed a striking correlation between presence vs. absence of regular morphology and presence vs. absence of thematic vowels,² respectively. Root based contextual allomorphy occurs only when the thematic vowel is absent.

- | | | | |
|-----|--|-----|---|
| (2) | Irregular:
[[[[<i>perd</i>] _{root} ____] _V -s-] _T] <i>i</i> _{AGR}
pérsi 'lose-PRF-1SG' | vs. | Regular:
[[[[<i>part</i>] _{root} -i _{TV} -] _V -Ø-] _T -sti] _{AGR}
partisti 'leave-PRF-1SG' |
|-----|--|-----|---|

* I am grateful to an anonymous reviewer, Jonathan Bobaljik and the students of our Spring 2015 morphology class for their insightful comments and questions, which have much improved this work.

¹ As in Calabrese (2015) I will refer to morpho-syntactically conditioned phonological rules with the term MP rules, instead of readjustments rules, the term usually used in Distributed Morphology.

² As discussed below, the thematic vowels are special morphological elements adjoined to certain functional heads in morphological structure. The thematic vowel that will be relevant in the analysis developed in this paper is the one that is adjoined to the verbal head. This vowel is usually related to the inflectional class of the verb (cf. Embick (2010:75-77) (see (15)), and considered to be a case of "ornamental morphology" (Embick (2010:75). However, as discussed below, it plays a fundamental role in verbal morphology insofar as it is able to disrupt the locality that is needed to access root-based information, and therefore to prevent root-based contextual allomorphy.

[[[*perd*]_{root} ____]_{V -s-}]_T]_{AGR} *o*
 perso ‘lose-PST.PRT-MSG’
Athematic

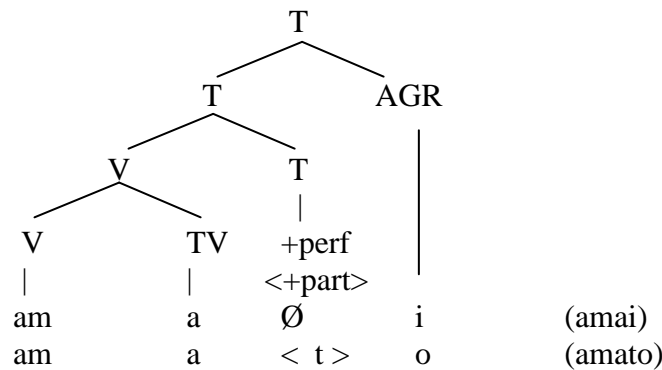
[[[*part*]_{root} -**i**_{TV-}]_{V -t-}]_{T-o}]_{AGR}
 partito ‘leave-TV-PST.PRT-MSG’
Thematic

It thus appears that root-based contextual allomorphy is observed only in athematic morphology. I have accounted for this basic fact by assuming, following Embick (2010), that the transmission of information necessary for morphological operation application, and more generally any morpheme-to-morpheme interaction, can occur only in a local configuration, where locality involves linear adjacency, as stated in the principle below:³

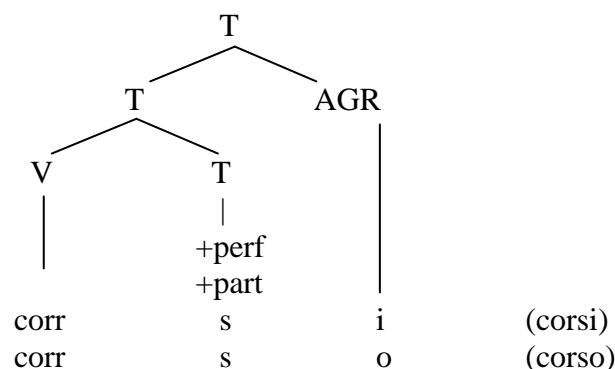
- (3) a. Node α morphologically interact with node β iff α, β are local.
 b. α, β are local if no overt node intervenes (linear adjacency).

Now, whereas in the case of thematic perfect/ past participle we have the structure in (4), in the case of the athematic perfect/past participle we have the structure in (5), where I assume that the Thematic vowel has not been inserted (see below for discussion).

- (4) Thematic



- (5) Athematic

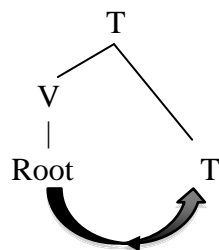


Given (3), the tense morpheme can interact with the root in the structure in (5) but not in the structure in (4). As shown below, root information can be accessed only in the former structure (see (6)a) but not in the latter (see (6)b). Given that root

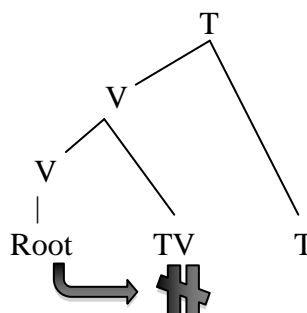
³ Calabrese (2015) argues that the linear adjacency requirement is a subcase of a more general locality principle governing morpheme interaction. This issue is not relevant here.

information cannot be transmitted across the thematic vowel, only default, regular morphology can appear in this case.

(6) a. Athematic



b. Thematic



In this paper, I will revise the analysis of the irregular morphology characterizing these forms as it appears in my previous articles (Calabrese 2012, 2013, 2015) and investigate the development of Latin irregular perfects and participles into Italo-Romance varieties. The paper is organized as follows. After a brief introduction of Distributed Morphology (Section 2), I provide an analysis of Italian regular morphology (Section 3), thus introducing the basic conceptual tools that will be used in the following sections. Then I deal with irregular perfect forms (Section 4). As I already mentioned above, they are athematic because they do not undergo a rule inserting the verbal thematic vowel. I introduce the special VIs and MP rules that account for the allomorphy of the irregular perfect forms. In section 5, the allomorphy in the past participle forms is investigated. Section 6 will summarize the main aspects of the locality-based account of these forms. Section 7 deals with person-based allomorph alternations in the Italian perfect. In section 8, I will deal with alternative analyses of allomorphic alternations found in these irregular verbal forms. Discussion of the development of the Latin perfects and past participle into Italian and Italo-Romance varieties (Sections 9 and 10) will provide further evidence for the analyses provided here.

The paper shows that an adequate analysis of the allomorphy found in Italian irregular perfect and past participle forms, and of its historical development, can be achieved by using simple and motivated morphosyntactic structures, standard morphological segmentation, morphemes (vocabulary items) and morphophonological rules. This provides evidence for models using morphemes organized in a syntactic structure where locality principles can govern morpheme interactions.

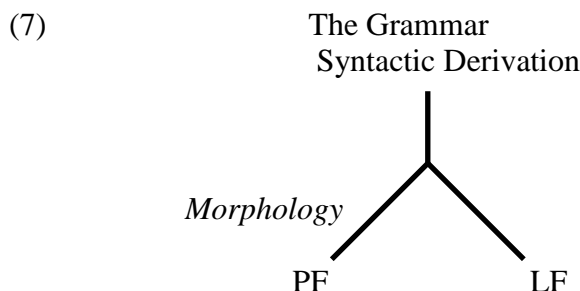
2. Distributed Morphology

The theory of Distributed Morphology (DM; Halle & Marantz 1993) proposes a piece-based view of word formation, in which the syntax/morphology interface is as transparent as possible. It crucially incorporates hierarchical structure into morphology; essentially, it assumes the input to morphology to be syntactic structure, as in (7).

Features (or feature bundles) are distributed over nodes forming morphemes, which in turn are subject to Vocabulary Insertion rules that add phonological material (exponents) to these morphemes.

Contextual allomorphy is accounted for by vocabulary insertion, on one hand, and through the application of MP rules, morpho-syntactically conditioned phonological

rules, and plain phonological rules, on the other.



Allomorphic interactions are constrained by the manner in which Vocabulary Insertion operates, and by the interaction of *linear* and *cyclic* locality conditions. Two different conditions are relevant in this paper. The first of these conditions (8) enforces “inside out” cyclicity (e.g. Halle and Marantz 1993, Bobaljik 2000):

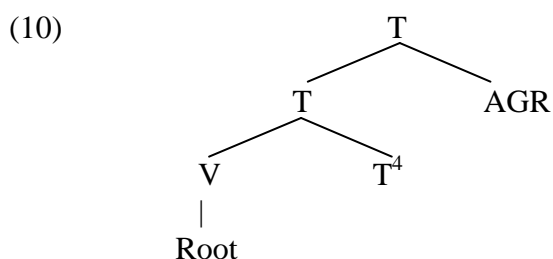
- (8) Vocabulary Insertion proceeds cyclically from the lowest element in the structure outwards.

The second one (see Embick (2010)) specifies a linear condition on contextual allomorphy (see footnote 1):

- (9) a. Node α morphologically interact with node β iff α, β are local.
b. α, β are local if no overt node intervenes (linear adjacency).

3. Basic Properties of Italian Verbal Morphosyntax

The basic morpho-syntactic structure of Italian verbs is given in (10). It is generated by verb raising to T, morphological merger between V and T and AGR insertion (see Halle and Marantz (1993):



As proposed by Oltra-Massuet (1999), Oltra-Massuet and Arregi (2005), Embick and Halle (2005), every functional/lexical projection in Latin and Romance has a

⁴

A morphosyntactic change occurred in the development of the Romance languages as can be seen in (i), where I compare the Latin pluperfect subjunctive in (ia) with the form that historically derived from it in Italian, i.e., the Imperfect subjunctive (ib):

(i) a. laud - a: + u-i + s + s-e: + mus ‘praise-PRF-PST-SBJ-1PL’
b. lod -a- +ss-i- + mo ‘praise-IMP.SBJ-1PL’

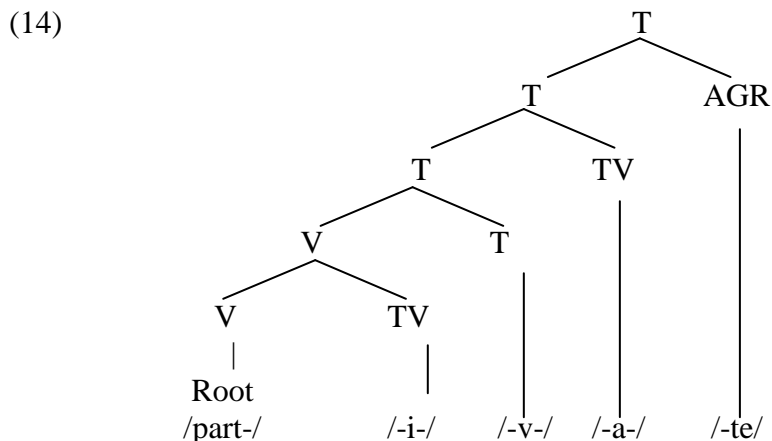
In Italian, functional categories such as aspect, tense and mood are no longer represented as independent morphological pieces as they were in Latin. Instead, a single morpheme appears in their place. I will simply assume that the Asp, Tense and Mood nodes are fused together in Italian (i.e., Tense=Aspect+Tense+Mood).

(11) $X^0 \rightarrow \begin{array}{c} X^0 \\ \swarrow \quad \searrow \\ X^0 \quad TV \end{array}$

(12)

```
graph TD; Root[Root] --> V1[V]; Root --> TV1[TV]; V1 --> V2[V]; V1 --> TV2[TV]; V2 --> V3[V]; V2 --> TV3[TV]; TV3 --> T1[T]; T1 --> T2[T]; T1 --> TV4[TV]; T2 --> T3[T]; T2 --> AGR[AGR];
```

1	2	3	1
Singular			Plural



The vocabulary items needed to account for verbal inflections in the Italian present and imperfect tenses of regular verbs are given below. (In the case of the thematic vowels in (15) the Head can include a root or the head of a functional projection. This accounts for the parallel behavior between roots and inflectional heads;

so both the root /am-/ and imperfect tense have /-a-/ as a thematic vowel):

- (15) TV ↔ /-a-/ Head_a ____
 /-e-/ Head_e ____
 /-i-/ Head_i ____
- (16) AGR Suffixes:
- a. /-mo/ ↔ [+author, +plural]_{AGR}
b. /-te/ ↔ [+participant, +plural]_{AGR}
c. /-no/ ↔ [+plural]_{AGR}
d. /-o/ ↔ [+author]_{AGR} / [-subjunctive]_T ____
e. /-i/ ↔ [+participant]_{AGR} / [-subjunctive]_T ____
f. /Ø/ ↔ [-participant]_{AGR}
- (17) Tense Exponents (the subscript _{-a} indicates that the imperfect Thematic Vowel is /a/ by (15)):
- a. /-v_a -/ ↔ [+imperfect]_T

In the Present Tense (see (18)), there is no overt Tense morpheme, and no Tense thematic vowel. I will assume a) that there is a null morpheme for the present Tense and b) that in Italian there is no TV when a head is null:

- (18) **Italian present indicative**
AMARE ‘love’:
am-o am-i am-a am-ia-mo am-a-te am-a-no
BATTERE ‘beat’:
batt-o batt-i batt-e batt-ia-mo batt-e-te batt-o-no
PARTIRE ‘leave’:
part-o part-i part-e part-ia-mo part-i-te part-o-no
 1 2 3 1 2 3
 Singular Plural

- (19) VI for present tense
 /-Ø -/ ↔ [+present]_{tense}

A phonological rule that is very important in accounting for the surface distribution of the Thematic Vowels is (20), which deletes a TV before a suffixal vowel:

- (20) V --> Ø/ [TV ____] + [V
- (21) [[am]-a]-[[v]-a]-o] amavo 'love-IMP.IND-1SG'
[[am]-a]-o] amo 'love-PRS.IND-1sg.'

Let us turn to the perfect of regular verbs. Also in this case, no overt exponent for Tense and the associated thematic vowel are present.

- (22) *AMARE* ‘love’:
am-a-i am-a-sti am-ò am-a-mmo am-a-ste am-a-ro-no

BATTERE 'beat':

batt-e-i batt-e-sti batt-è batt-e-mmo batt-e-ste batt-e-ro-no

TEMERE 'be afraid':

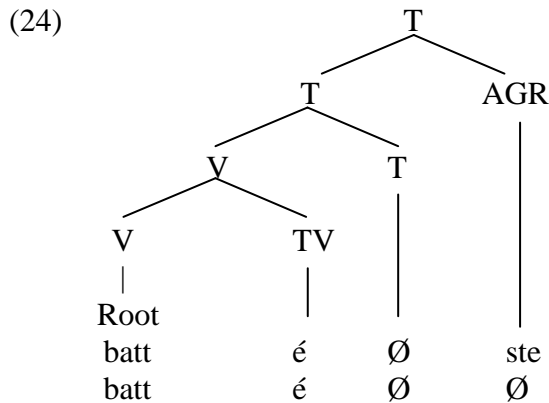
tem-e-i tem-e-sti tem-è tem-e-mmo tem-e-ste tem-e-ro-no

PARTIRE 'leave':

part-i-i part-i-sti part-ì part-i-mmo part-i-ste part-i-ro-no

Given that both the present and the perfect display a null exponent, we can assume that this is the elsewhere tense VI:

- (23) VI for Perfect:
 /-Ø -/ ↔ []_{tense}



The vocabulary items for the AGR terminal node in the Perfect are given in (25):

- (25) VIs for the AGR morpheme in the Perfect.
- | | | | |
|----|----------|--|--|
| | [+round] | | |
| | | | |
| a. | ↔ | [+perfect] /TV _a] _V _____ | [-participant, -plural] _{AGR} |
| b. | /-mmo/ ↔ | [+author, +plural] _{AGR} / [+perfect] _____ | |
| c. | /-ste/ ↔ | [+participant, +plural] _{AGR} / [+perfect] _____ | |
| d. | /-sti/ ↔ | [+participant, -author] _{AGR} / [+perfect] _____ | |
| e. | /-i/ ↔ | [+author] / [+perfect] _{AGR} _____ | |
| f. | /-ro/ ↔ | [-participant, +plural] _{AGR} / [+perfect] _____ | |
| g. | /-Ø / ↔ | [-participant] _{AGR} | = ((16)f) |

The suffix /-no/ that appears in the 3rd pl. of regular Perfect forms is due to an operation fissioning [+plural] in [-part, +plural, +Perf] in the context TV]_V _____. Subsequent application of (16)c) insert the default [+plural] /-no/ (see Halle 1997), Noyer 1992) on morphological fission).

Given that stress plays an important role in analyses of verbal forms in Italian, I provide a brief discussion of it.

Stress in verbal forms in Italian is predictable from the morpho-syntactic structure of the string (cf. Otrá-Massuet and Arregi (2005) on Spanish): if one put aside special AGR endings such the future/conditional (*batterò, batteréi*), stress falls: either on the TV preceding the AGR suffixes of 1st and 2nd Pl. (*battiámo, battevámo*) or on the TV preceding Tense (*battéva, battésse, battè*). Otherwise stress falls on the root: i. if the TV is absent (*pérsi, pérsero*); ii. in the present (both indicative and subjunctive: *báttono,*

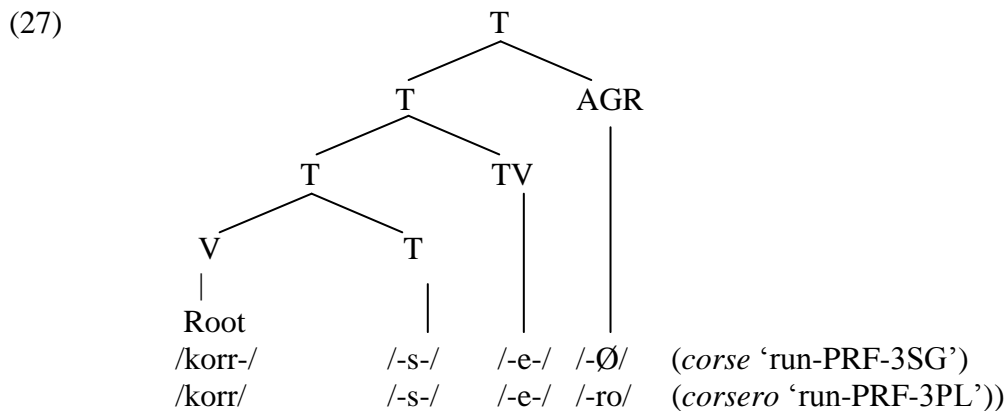
telefonano) (see Calabrese (2012) for more detail and a formal analysis of the stress patterns in Italian verbs)

4. Irregular Perfect forms

We can now discuss irregular perfect forms. They show an overt morpheme for this tense.

(26)	val-e	val-s-e	'be worth'
	ettf��ll-e	ettf��ll-s-e [ettf��lse]	'excel'
	korr-e	korr-s-e [korse]	'run'
	spe�����-e	spe�����-s-e [spense]	'turn off'
	p��rd-e	p��rd-s-e [perse]	'lose'
	vold�����-e	vold�����-s-e [volse]	'turn'

These forms have the constituent structure in (27) where the Vocabulary Item for Tense is given in (28):



As discussed in Calabrese (2012, 2015), the crucial aspect of the structure in (27) is the absence of the Verb Thematic Vowel.⁵

(28) Regular vs. Irregular
 [[[[batt]_V -e]_{ThV} Ø]_{T-i}]_{AGR} [[[[corr]_V -s]_{T-i}]_{AGR} / [[[[perd]_V -s]_{T-i}]_{AGR}

I assume that they are exceptions to the TV insertion rule.⁶ These roots are assigned a special diacritic ^[-TV] indicating that the rule in (11) does not apply when verbal head contains one of these roots. Thus, no verbal TV is inserted.

5 Actually, the forms below contain an underlying Tense TV that is deleted before the suffixal V by (20): [[[[corr]_V-s-e-]T -i]_{AGR} / [[[[perd]_V-s-e-]T -i]_{AGR}. Remember that the 1st sg. of the regular Perfect is an exception to rule (20). For the sake of simplicity, from now on, I will not mention this thematic vowel, if it is eventually deleted by (20) and not otherwise required in the morphological analysis.

⁶ In my previous analyses (Calabrese 2012, 2015), I assumed that rule in (11) applied across-the-board, and, therefore, also in this case. A rule of TV pruning (Embick and Halle 2005) then removed the TV after irregular roots. It is simpler to assume that the verbal TV is simply not inserted.

In addition to /-s-/ (cf. *val-e/val-s-e* 'be worth pres/Perf'), irregular forms of the perfect display other exponents (29)-(30).

(29) Gemination.

Imperf.	Perfect	Root	
veniva	venne	ven	'come'
kadeva	kadde	kad	'fall'
voleva	volle	vol	'want'
notfeva	nokk ^w e	nok	'harm'
tatfeva	takk ^w e	tak	'be silent'
(30) fatfeva	fetfe	fatf	'do'
vedeva	vide	ved	'see'

The other VIs in Irregular Perfects are the following:⁷

- (31) a. s ↔ [+perf]_T / Root^S ____ {Root^S = val, skriv, muov, etc.}
 b. X ↔ [+perf]_T / Root^L ____ {Root^L = nok, tak, dzak, etc. }
 Labial
 |
 [+round]
 c. Ø ↔ []_T (i.e, the regular exponent=(23))

(31)b) triggers gemination. The skeletal position is filled in by the preceding consonant. The floating secondary labial articulation is attached to the place node only when the preceding consonant is dorsal (cf. *tatfeva/takk^wi*)

- (32)
- | | | | | | | | | | | |
|---|---|------------|----|----------|-----|---|---|------------|---|------------|
| v | e | n | | i | | v | e | n | n | i |
| X | X | X | -X | -X | --- | X | X | X | X | -X |
| | | | | | | | | | ↗ | |
| | | [+cons] | | | | | | [+cons] | | |
| | | | | | | | | | | |
| | | Place | | | | | | Place | | |
| | | | | | | | | | | |
| | | Coronal | | Labial | | | | Coronal | | Labial ->Ø |
| | | | | | | | | | | |
| | | [+coronal] | | [+round] | | | | [+coronal] | | [+round] |

The surface phonological shape of the roots in the irregular forms of the Perfect also requires the application of MP Rules .

- (33) Coronal [+anterior] stops /t, d/ and /n/ are deleted before /s/:
 metteva/mise, root: mett 'put',
 kyudeva/kyuse, root: kyud 'know'
 uttfideva/uttfise, root: uttfid 'kill'.

⁷ See Calabrese (2015) on the /-v-/ of *parve, apparve* 'appeared'.

- (34) /s/- assimilation. It applies to obstruents (both stops and fricatives) and nasals, but not to liquids:
 condutʃeva/condusse, root: konduk 'conduct',
 skonfiddʒeva/skonfisse, root: skonfigg 'defeat'
 diridʒeva/dirisse, root: dirig 'direct',
 komprimeva/compresse, root: komprim 'compress',
 kwɔtʃeva/kɔsse, root: kwɔtʃ 'cook',
 mwɔveva/mɔsse, root: mwɔv 'move',
 viveva/visse, root: viv 'live',
 skriveva/skrisse, root: skriv 'write'.
- (35) Nasal deletion:
 rompeva/rupte, root: romp 'break'.
- (36) root vowel ablaut:
 fatʃeva/fetʃe, root: fatʃ 'do, make'
 vedeva/vide, root: ved 'see'
 rompeva/rupte, root: romp 'break'.

These changes are implemented by dedicated MP Rules, for example, (37) and (36) are needed to account for (33) and (34), respectively (see Calabrese (2013) for discussion of the other rules needed to account for the irregular perfects allomorphy)

- (37) **Coronal stop deletion:**
- $$X \rightarrow \emptyset \quad / \quad __ [s]_{\text{Tense}}$$
- $$\begin{array}{c} X \\ | \\ [+cons] \\ / \quad | \\ [-cont] \quad Place \\ | \\ Coronal \\ | \\ [+anterior] \end{array}$$

- (38) **Consonantal assimilation**
- $$\begin{array}{ccc} X & & [X]_{\text{Tense}} \\ \swarrow & \nearrow & | \\ +cons & & [-son] \\ <+son> & & | \\ | & & +coronal \\ <+nasal> & & +anterior \end{array}$$

Coronal stop deletion applies before Consonantal assimilation.

Sample derivations for some 3rd pl. irregular perfect forms:

- (39) a.
- | | | | |
|---------------------------|---------------------------|------------------|------------------|
| [[[val] _{root} | +PERF TV |]T -part, +plur] |] AGR |
| TV | [[[val] _{root} | PERF TV |]T +part, +plur] |
| VI | [[[val] _{root} | s e |]T ro] AGR |
| Output: | <i>valsero</i> | | |

b.		[[[perd] _{root} +PERF TV] _T -part, +plur] _{AGR}
TV		[[[perd] _{root} +PERF TV] _T -part, +plur] _{AGR}
VI		[[[perd] _{root} s e] _T ro] _{AGR}
CD	per	s e ro
Output:	<i>persero</i>	
c.		[[[skriv] _{root} +PERF TV] _T -part, +plur] _{AGR}
TV		[[[skriv] _{root} +PERF TV] _T -part, +plur] _{AGR}
VI		[[[skriv] _{root} s e] _T ro] _{AGR}
CA	skris	s e ro
Output:	<i>skrisse</i>	
d.		[[[fond] _{root} +PERF TV] _T -part, +plur] _{AGR}
TV		[[[fond] _{root} +PERF TV] _T -part, +plur] _{AGR}
VI		[[[fond] _{root} s e] _T ro] _{AGR}
A	fund	s e ro
CD	fun	s e ro
ND	fu	s e ro
Output:	<i>fusero</i>	

The complex allomorphy of the Italian irregular perfect forms can, therefore, be synchronically derived in very simple ways.

5. Past Participle

The class of verbs that display irregular morphology in the Perfect may display it also in the past participle. Also in the case of the Past Participle the irregular forms are athematic. The regular exponent for the Participial morpheme is /t/ :

- (40) Regular past participles:
- | | | |
|------------|------|---------|
| am-a-t-o | am | 'love' |
| ten-u-t-o | ten | 'keep' |
| part-i-t-o | part | 'leave' |

Irregular forms may display /-t-/ (see (41)a) or they may display /-s-/ (see (41)b):

- (41) a. *The suffix /-t-/:*
- | | | |
|---------|----------|-------------|
| afflidʒ | afflitto | 'affect' |
| spordʒ | sporto | 'lean out' |
| speɲɲ | spento | 'turn off' |
| voldʒ | volto | 'turn' |
| toλλ | tolto | 'take away' |
- b. *Suffix /-s-/:*
- | | | |
|---------|----------|------------|
| perd | perso | 'lose' |
| spardʒ | sparso | 'hang' |
| ettʃell | ettʃelso | 'excel' |
| korr | corso | 'run' |
| val | valso | 'be worth' |

The distribution of the two exponents of the irregular participle cannot be predicted in phonological terms since both exponents can occur in the same phonological environment:

(42)		/t/	vs.	/s/	
	afflidzere	afflitto		affisso	‘afflict’
	affidzere				‘affix’
	spordzere	sporto			‘lean’
	spardzere			sparso	‘spread’

All roots that are athematic in the past participle are also athematic in the Perfect. The reverse does not hold. Thus, there are roots that are athematic in the Perfect but not in the Past Participle. For example, all the athematic roots that take the geminating exponent in (31)b) are systematically thematic in the past participle.

(43)	kadere	kaddi	kaduto	‘fall’
	venire	venni	venuto	‘come’
	tatfere	takk ^w i	tatfuto	‘be silent’
	nuotSere	nokk ^w i	notfuto	‘harm’

The few athematic roots that have the exponent Ø in the perfect such as *feci*, *vidi* have an athematic past participle with /-t-/ (the /s/ of *visto* is due to a MP rule discussed below):

(44)	fetfì	fatto
	vidi	visto

If we exclude the roots in (43) and (44), we can postulate that if a root is athematic in the past participle, regardless of whether the exponent of the PP is /-t-/ or /-s-/, then it will have /-s-/ as the exponent of the Perfect (cf. Vogel (1994), Calabrese (2015)):

(45)	a.	valere	‘to be worth’
		PP:	valso
		PA	valsi ‘I was worth,
	b.	scuotere	‘shake’
		PP:	skosso
		PA:	skossi ‘I shook

Specifically, if a root takes /s/ in the Past Participle, one predicts that it will take /s/ also in the Perfect. Simply, the roots that take /-s-/ in the Past Participle are a subset of those taking /-s-/ in the perfect.

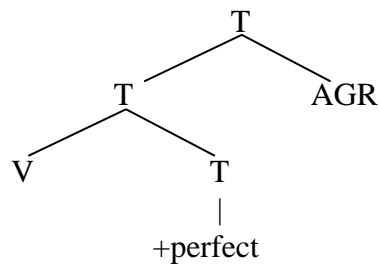
(46)	kyudeva/kyuso/kyuse	‘know’
	fondeva/fuso /fuse	‘melt’
	korreva/korso/korse	‘run’
	mwoveva/mosso/mossi	‘move’

Note that once the past participle takes the suffix /-s-/, then it will also have the same allomorphy as the Perfect:

The similarity in distribution shown above between the Perfect and the Past Participle excludes the possibility that there is simply an accidental homophony between the stem of these forms. There must be a deeper relation between them.

Thus, as proposed in Calabrese (2015), I assume, following Ippolito (1999), that the Past Participle has the structure in (47) with an aspectual [+perfect] feature. A crucial feature of her analysis of the participle involves reference to the morphosyntactic context in which T occurs. In particular, she proposes that a [+perfect] T has finite morphology, i.e., it is a “perfect” form when it is dominated by CP; otherwise it acquires participial morphology. For the sake of simplicity, I will assume the rule in (48), which assigns the feature [+participle] to a [+perfect] T when not dominated by CP.

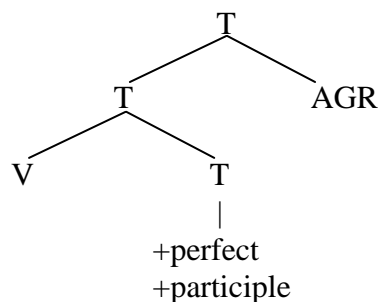
(47)



(48) $\emptyset \rightarrow$ [+participle]/ [+perfect, ____]_T when not dominated by C

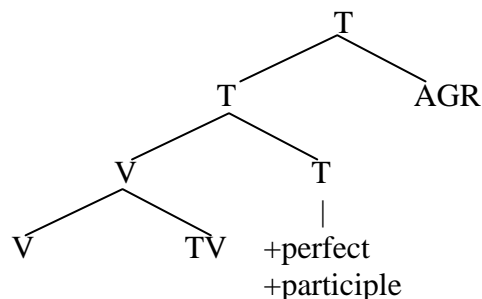
Application of Rule (48) changes (47) into (49).

(49)



The diacritic [-TV] blocks the insertion of the verbal TV also in the irregular past participle. Insertion of the TV in regular ones generates (50):

(50)

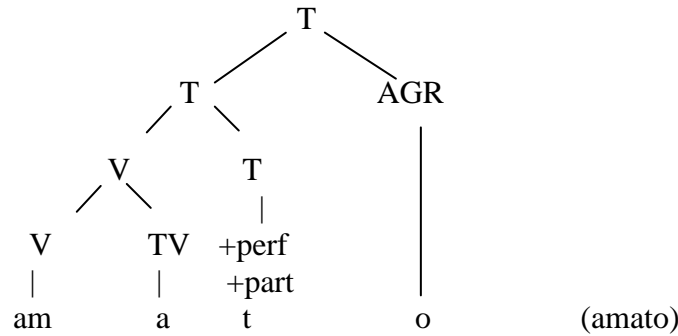


The Vocabulary Items relevant for the Past Participle are as follows:

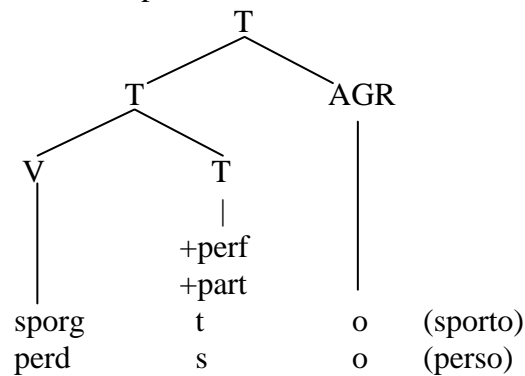
- (51) a. $s \leftrightarrow$ [+perfect, (+participle)]_T/Root^S ____ {Root^S = val, scriv, muov, etc.}
 b. $t \leftrightarrow$ [+participle]

(51)a) is the same VI as (31)a). The round parentheses allow the feature [+participle] to be optionally present so that this VI can be in competition, not only with (51)b) but also with the other VI of the Perfect in (31). The fact that when the participle takes the suffix /-s-/, it will also have the same allomorphy as the Perfect readily follows from the fact that MP Rules such as (37) and (38) simply apply before suffixal /s/ regardless of whether or not the /s/ is the exponent of the Past Participle or of the Perfect.

(52) Thematic past participle



(53) Athematic Past Participle:



There are restrictions on the distribution of irregular past participles. The roots with the diacritic ^L, which are athematic in the Perfect, and therefore must also have the diacritic ^[-TV] lose this diacritic in the Past participle by means of the impoverishment operation in (54).⁸ Therefore, they are thematic in the past Participle.

(54) Delete diacritic ^[-TV] in the context root^L – [+participle], Root^L=ven, cad, etc.

(55) venne vs. venuto
kadde kaduto

Another Impoverishment operation accounts for why verbs with athematic perfect forms such *vinsi*, *tolsi*, *sconfissi*, etc with a /-s-/ exponent do not have it in the Past Participle (cf. *vinto*, *tolto*, *sconfitto*, etc.).

(56) Delete diacritic ^[+s] in the context root^X – [+participle], Root^X=vinc, togl, sconfig, etc.

⁸ See Calabrese (2012) for discussion of impoverishment operations removing lexical diacritics. See also below, section 6.

- (57) vinsi vs. vinto
 tolsi tolto
 skonfissi skonfitto

This accounts for why the roots that take /-s-/ in the Past Participle are a subset of those taking /-s-/ in the perfect.

The morphophonological rules in (37) and (38) also apply in the past participle, with some peculiarities, for example, rule (37) deleting coronals before /-s-/ is subject to some exceptions in the Past Participle. Thus, it does not apply to *met* 'put', so that this root undergoes /s/-assimilation in (38):

- (58) mett messo misi 'put'

Rule (38) also accounts for the allomorphy we observe with the suffix /-t-/ in athematic verbs:

- (59) fatʃ fatt 'do'
 skonfiddʒ skonfitt 'defeat'
 komprim kompress 'compress'

Some additional rules are also needed. For example, the rule of coronal fricativization in (60) is needed to account for forms such as those in (61):

- (60) [+consonantal, +coronal] → [+continuant]/ [__]_{Root^X} – [+part], Root^X=pon,
 kyed, ved, etc.
- (61) pon posto 'put'
 kyed kyesto 'ask'
 ved visto 'see'

Other rules are discussed in Calabrese (2015).

6. Locality

We can now account for the generalization that the presence or absence of regular morphology correlates with presence or absence of thematic vowels, respectively.

As discussed in the introduction, irregular inflectional VIs crucially require access to root information, cf. the VI for the exponent /-s-/ of the Perfect in (31)a), repeated here as (62):

- (62) /s/ ↔ [+Perfect, (+participle)]_T / Root^s __ (Root^s = corr, etc.)

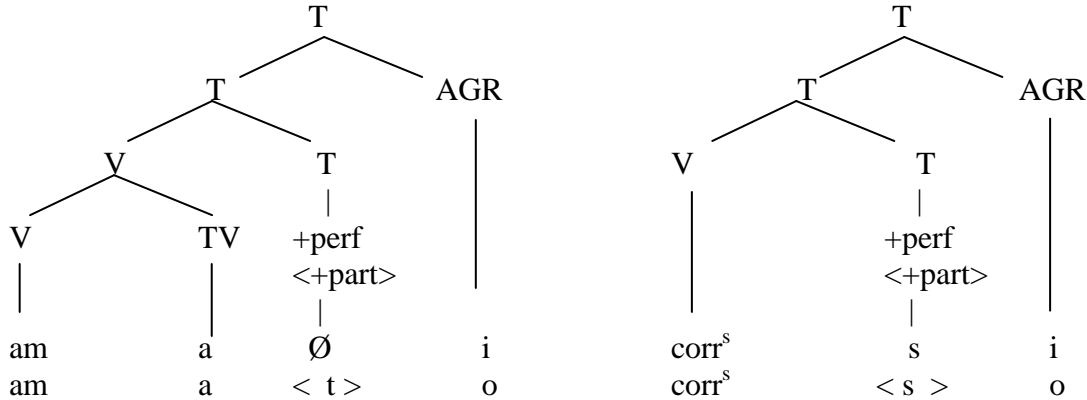
Assuming the principles in (8) and (9), repeated here as (63)-(64), respectively, linear adjacency is required between root and tense morpheme.

- (63) Vocabulary Insertion proceeds cyclically from the lowest element in the structure outwards.

- (64) a. Node α morphologically interacts with node β iff α, β are local.
 b. α, β are local if no overt node intervenes (linear adjacency).

Due to these locality requirements, (62) can apply only when the Thematic Vowel is missing.

- (65) a. Thematic Perfect/past participle b. Athematic perfect/past participle:



In fact, given the two conditions in (63) and (64), the presence of the thematic vowel prevents application of such VI. When the cyclic application of vocabulary insertion reaches T, root information cannot be accessed because the root is not linearly adjacent to T due to the presence of the thematic vowel. Hence, (64) blocks application of (62). So it can apply in the structure in (66) but not in (68) where the TV is present. Thus forms such as those in ((66)-(67)) are licit; forms such as those in (68)-(69) are illicit:

- (66) a. $[[[[\text{kor}^S]_{\text{root}}] +\text{PERF TV}^9]_{\text{T} +\text{part}, -\text{auth}, -\text{plur}}]_{\text{AGR}}$
 b. $[[[[\text{kor}^S]_{\text{root}}] s]_{\text{T} i }]_{\text{AGR}}$
 c. kor-s- i
- (67) a. $[[[[\text{kor}^S]_{\text{root}}] +\text{PERF}, +\text{PART}]_{\text{T}} [-\text{fem}, -\text{plur}]_{\text{AGR}}$
 b. $[[[[\text{kor}^S]_{\text{root}}] s]_{\text{T} o }]_{\text{AGR}}$
 c. kor-s-o
- (68) a. $[[[[\text{kor}^S]_{\text{root}} \text{TV}] +\text{PERF TV}]_{\text{T} +\text{part}, +\text{auth}, -\text{plur}}]_{\text{AGR}}$
 b. $[[[[\text{kor}^S]_{\text{root}} e] s]_{\text{T} i }]_{\text{AGR}}$
 c. *kor-e-s-i
- (69) a. $[[[[\text{kor}^S]_{\text{root}} \text{TV}] +\text{PERF}, +\text{PART}]_{\text{T}} [-\text{fem}, -\text{plur}]_{\text{AGR}}$
 b. $[[[[\text{kor}^S]_{\text{root}} e/u] s]_{\text{T} o }]_{\text{AGR}}$
 c. *kor-e/u -s-o
- (70) *perdesisti
 *skrivesisti

The presence of the Thematic Vowel also interferes with the adjacency that is required for the application of MP rules .

⁹ See note 5.

- (71)
- | | | |
|-----------|----------------|------------------|
| *fetfesti | (cf. fatfesti) | ‘do-PRF-2SG’ |
| *videsti | (cf. vedesti) | ‘see-PRF-2SG’ |
| *ruppesti | (cf. rompesti) | ‘break-PRF-2sSG’ |
| *rumpesti | (cf. rompesti) | |
| *ropesti | (cf. rompesti) | |

The unmodified form of the root, therefore, appears before the thematic vowel since the rules introducing irregular allomorphy cannot apply. If the TV is present, only regular VI can be inserted.

- (72)
- | | |
|----|--|
| a. | [[[batt] _{root} TV] +PERF TV] _T +part, +auth, -plur] _{AGR} |
| b. | [[[batt] _{root} e]] Ø] _T i] _{AGR} |
| c. | batt-e-i |
- (73)
- | | |
|----|--|
| a. | [[[[batt] _{root} TV] +PERF, +PART] _T [-fem, -plur] _{AGR} |
| b. | [[[batt] _{root} u] t] _T o] _{AGR} |
| c. | batt-u-to |

Therefore, the following forms are impossible:¹⁰

- (74)
- *persei
 - *spensei
 - *vissei
 - *vennei

A simple account of the allomorphy observed in the irregular perfect forms of Italian can be achieved.

7. Allomorphic alternation in the perfect forms

The irregular perfect verbal forms are characterized by distinctive pattern of alternations:

- (75)
- | | | | | | |
|-------|----------|-------|----------|----------|---------|
| 1 | 2 | 3 | 1 | 2 | 3 |
| vénni | venísti | vénne | venímmo | véniste | vénnero |
| mísi | mettésti | míse | mettémmo | mettéste | mísero |
| fétfi | fatfèsti | fétfe | fatfémmo | fatfèste | fétfero |

We observe a regularity in the irregularity: In the 1st, 3rd sg and 3rd pl there is an athematic form of the verb, thus the root appears in a idiosyncratic irregular form. In the 1^s, 2nd pl. and 2nd sg, there is a thematic form of the verb, thus the form of the root is that regularly appearing with other tenses

- (76) **Irregular:** [[[perd]_{root}]V -s-]TNS] i]_{AGR} vs. **Regular:** [[[perd]_{root} -e_{TV}-]V -Ø-]TNS -i]_{AGR}
Athematic **Thematic**

¹⁰ There is a single exception to this generalization in Italian: vissuto, the past participle of vivere ‘live’ (cf. perf. vissi) where a irregular stem form is found in a thematic context. See below for discussion.

I have account for this alternation as follows. An important operation in Distributed Morphology is Impoverishment (Bobaljik 2003, Bonet 1991, Halle 1997, Halle and Marantz 1993, Harley 2008, Nevins 2011, Noyer 1992, 1998 (but also Calabrese 1994, 2008 for critical discussion of some of its uses). Impoverishment deletes or removes features from the morpheme in a terminal node. By doing this, it blocks the insertion of a more specific Vocabulary item and allows the insertion of a less specified one. This results in what we can call the retreat to the general case

In Calabrese (2012), I proposed that impoverishment can also delete diacritic indices thereby preventing the application of morphophonological rules. Specifically, I proposed that in the second singular and plural and in the first plural, the special root index blocking the insertion of the TV by rule (11) is deleted by the impoverishment rule in (77).

(77) $\text{Root}^{[-\text{TV}]} \rightarrow \text{impoverishment} \rightarrow \text{Root}$

(78) Delete $[-\text{TV}]$ in the context $[+\text{perfect}, +\text{participant}, <+\text{author}>, <+\text{plural}>]_{\text{AGR}}$

Once the diacritic $[-\text{TV}]$ is deleted, the TV insertion rule is no longer blocked from applying, and the verbal thematic vowel is regularly inserted in the structure. The presence of the thematic vowel prevents the application of the special VIs and morphophonological rules. Only regular unmarked morphology will occur.

We can now account for the difference between the 1 sg. and the 1st pl. of the verb /scriv/ as follows. In ((79)a), /scriv/ has the diacritic $[-\text{TV}]$ that blocks the application of the TV insertion (11) as in (79)ii). The exponent /-s-/ for the T +perfect can be inserted by ((31)a) and rule (34) can apply so that we get (79)iii).

- (79) i. $[[[\text{skriv}^{[-\text{TV}]}]_{\text{root}} +\text{Perfect}]_{\text{T} +\text{part}, +\text{auth}, -\text{plur}}]_{\text{AGR}}$
 ii. $[[[\text{skriv}^{[-\text{TV}]}]_{\text{root}} +\text{Perfect}]_{\text{T} +\text{part}, -\text{auth}, -\text{plur}}]_{\text{AGR}}$
 iii. $[[[\text{skris}]_{\text{root}} \text{ s }]_{\text{T} \text{ i } }]_{\text{AGR}}$
 skriss i

In (80) impoverishment deletes the diacritic $[-\text{TV}]$ as in (ii). TV /e/ is inserted, the regular exponent of the past tense must be inserted and no MP rules may apply.

- (80) i. $[[[\text{skriv}^{[-\text{TV}]}]_{\text{root}}] +\text{Perfect}]_{\text{tns} +\text{part}, +\text{auth}, -\text{plur}}]_{\text{AGR}}$
 ii. $[[[\text{skriv}]_{\text{root}} \text{ TV}] +\text{Perfect}]_{\text{tns} +\text{part}, +\text{auth}, -\text{plur}}]_{\text{AGR}}$
 iii. $[[[\text{skriv}]_{\text{root}} \text{ e}] \emptyset]_{\text{tns} \text{ mmo}}]_{\text{AGR}}$
 skrivemmo

In Calabrese (2012) I proposed that impoverishment in this case, as a historical innovation, is due to the principle of compensation (Brøndal 1940, 1943). This principle disfavors the cumulation of idiosyncratic exponence in words containing marked categories. This is the case in the morphological context $[+\text{perfect}, +\text{participant}, +\text{plural}]$. Special vocabulary items and readjustment rules create idiosyncratic exponence in the Perfect, a marked morphological category. By removing the lexical diacritic blocking the insertion of the thematic vowel, impoverishment prevents the appearance of idiosyncratic exponence in the 1st and 2nd singular and plural, which are also marked, both phonologically (the geminate [mm] in the 1plur and the cluster [st] in the 2 sg and pl) and morphologically (see discussion of the markedness of the 1 and 2 pl

in Calabrese 2011, 2012). Thus, only regular morphology appears in these morphological contexts.

It is to notice that the alternations we observe in the perfect forms are part of one of the most characteristic general patterns governing Italo-Romance verbal morphosyntax: the tendency to avoid idiosyncratic, “marked”, exponency in the first and second plural. Exponents in these two persons tend to be syncretic, to disappear (=be defective), or to display regular morphological behavior. This is what we can call the 1st and 2nd Plural conspiracy (Calabrese 2011, 2012):

- (81) a. In the many Italian dialects, the exponent of the 1st plural oblique clitic was replaced by the exponent of a locative. The same thing happened for the 2nd plural one.
- b. In the other Italian dialects, the exponent of the 1st Plural oblique clitic was replaced by the exponent of a partitive (< Latin INDE).
- e. In the Campidanese dialect of Sardinian, the exponent of the reflexive clitic /si/ has also become the exponent of first and second plural oblique clitics.
- c. In the Tuscan dialect of Lucca, the exponent of the reflexive/impersonal clitic /si/ has also become the exponent of 1st plural oblique clitic.
- d. In Tuscan the 1st plural subject inflectional suffix is replaced by the reflexive/impersonal clitic /si/. The verb appears in the 3rd sg.
- f. First and second plural subject clitics undergo syncretism or are missing in most varieties with subject clitics.
- g. In all the paradigms characterized by irregular stem allomorphy, regular stem allomorph are found in 1st and 2nd plural verbal forms. For example in the following forms, special morphological operation apply in all persons except 1st and 2nd (and in the forms that are always regular: the imperfect and the infinitive): morphophonological rules in (82)a-b, insertion of extension /-isk-/ in(82)c, suppletion in (82)d, irregular deletion of imperfect marker ((82)e).

- (82) a. *odo odi ode udyamo udite odo*, cf. *udivano/udire* ‘hear’
- b. *esko effi effe uffyamo ufite eskono*, cf. *uffivano/uffire* ‘go out’
- c. *finisko finiffi finiffe finyamo finite finiskono*, cf. *finivano/finire* ‘finish’
- d. *vado vai va andyamo andate vanno* cf. *andavano/andare* ‘go’
- e. *ero eri era eravamo eravate erano* cf. ‘be’ cf. *parlava/parlavano* ‘speak’

As discussed in Calabrese (2011, 2012), the 1st and 2nd plural conspiracy effects can be accounted for by assuming that i) these two persons are marked¹¹ (see Calabrese

¹¹

This does not mean that there is no markedness difference between the 1st and 2nd plural. In fact, the markedness effect seems to be stronger with the 2nd plural. For example, there are cases in which it is only the 2nd plural that displays regular allomorphy: e.g., *voglio, vogliamo, volete* ‘want-PRS.1SG/1PL, 2PL(cf. *voleva/volere* want-IMP3SG/INF), *posso, possiamo/potete* (cf. *poteva, potere*) ‘be able’. See also the irregular perfect in some southern Italian varieties where the 1PL displays irregular morphology like the 1SG, 3SG and 3PL (Mussomeli: *sappi, sappi, sappimu, sappiru* ‘know-PRF1SG/3SG/1PL, 3PL’, but not the 2PL (and SG.): *sapistivu/sapisti*

(2011) for arguments) and that idiosyncratic exponence (including contextual allomorphy) for marked categories tend to be removed in historical changes (see Calabrese (2008)).¹² Different repairs may implement this removal: syncretism and deletion account for (81)a-f. (see Calabrese (2011) for more discussion); the cases in (81)g can be instead accounted for by assuming that they involve a different type of repair, the one discussed in this paper: impoverishment of the diacritics triggering contextual allomorphy: MP rules in (82)a-e, and (82)g, and suppletion in (82)f (Calabrese 2012).¹³

8. Alternative accounts

In this section, I will address alternative accounts of the distribution of irregular stem allomorphs in perfect and past participle forms, and show that they cannot be maintained.

I will begin with the traditional phonological account (Buchholtz 1889, Meyer-Lübke 1972, Lausberg 1976, Rohlfs 1966, Tekavcic 1980) of the development of person-based alternations in Italian perfect forms. This account assumes that the irregular perfect stem alternants must be stressed on the root, and derives this property from the development of the Perfect exponent /-u-/ of Latin in postconsonantal position, i.e., in athematic stems. In particular, it is hypothesized that this /u/, after becoming the labio-velar glide [w], triggered gemination of the preceding consonant. Crucially according to this account, this occurred only after stressed syllable, the labio-velar glide was instead deleted in pretonic positions:

(83)	<i>venui</i>	<i>vénni</i>	<i>cádui</i>	<i>cáddi</i>	<i>vólui</i>	<i>vólli</i>	‘1sg.’
	<i>venuísti</i>	<i>venísti</i>	<i>caduísti</i>	<i>cadísti</i>	<i>voluísti</i>	<i>volísti</i>	‘2sg.’
	‘come’		‘fall’		‘want’		

‘know-PRF.2PL/SG.’. Understanding all of the factors that play a role in these changes obviously requires further research.

¹² Here, as always when one deals with markedness, obviously, we have tendencies, other factors may play a role in them, and there are always potential complications. Still the tendency to avoid idiosyncratic exponence, and special contextual allomorphy, in the case of the 1st plural, and especially in the case of the 2nd plural, appears to be quite robust in Romance, and clearly requires an account.

¹³ Maiden (2010) accounts for the behavior of the 1st and 2nd plural by invoking exemplar-based paradigmatic patterning. In his approach, what matters in this case is the replication of a distributional pattern among the cells of an inflectional paradigm. Thus, according to him, in the case of (2), we are dealing with what he calls the N-pattern, a pattern of alternations in which the first, second singular and the third singular and plural share a root allomorph distinct from that of the rest of the paradigm. The distribution of stress, which falls on the thematic vowel in the first and second plural, but on the root in other persons, cannot account for the morphophonological changes we observe in the allomorphs, as Maiden also proposes (see next section on stress in these forms). We are just dealing with arbitrary and unmotivated morphological patterning. The issue, however, is accounting for the distribution of the allomorphs in the N-pattern paradigms and for the fact that regular stem allomorphs occur in the first and second plural and the irregular ones in the other persons. For Maiden, in fact, we could also have the inverse distribution: irregular stem allomorphs in the first and second plural, and regular ones in the other persons; in this case, we would still talk of an expected replication of the N-pattern. But we never find a similar situation. Only regular forms are found in the first and second plural. Relying on the diachrony of the different forms cannot account for this fact (cf. the distribution of the perfect marker /-s-/ in the irregular perfect forms). An account for the formal properties of the allomorphs distribution in the N-pattern can instead be achieved naturally by assuming markedness induced impoverishments of diacritics, as proposed here.

Therefore, when the roots of the athematic Perfect were not stressed, they became identical to the basic stem allomorph found in the imperfect, in the infinitive, and other regular forms:

- | | | | |
|------|-----------------|-----------------|-----------------|
| (84) | <i>ven-ísti</i> | <i>cad-ésti</i> | <i>vol-ésti</i> |
| | <i>ven-ívo</i> | <i>cad-évo</i> | <i>vol-évo</i> |
| | <i>ven-íre</i> | <i>cad-ére</i> | <i>vol-ére</i> |

The verbs in which this occurred were not many (*venire, cadere, volere, avere, sapere, nuocere, tacere*). To account for what happened to the other irregular verbs, the traditional account assumes that given the alternations in (83), a generalization was postulated:

- (85) If the root is unaccented, it is regular
 If the root is accented, it is irregular

According to this view, it was this generalization that led to a restructuring of all irregular perfect forms by analogical levelling.

- | | | | | | |
|------|------------------|------------------|-------------------|----------------------------|---------|
| (86) | <i>piac-évo</i> | <i>piac-ére</i> | <i>piac-ésti</i> | (vs. 1sg. <i>piácqui</i>) | ‘like’ |
| | <i>ved-évo</i> | <i>ved-ére</i> | <i>ved-ésti</i> | (vs. 1sg. <i>vídi</i>) | ‘see’ |
| | <i>scriv-évo</i> | <i>scriv-ére</i> | <i>scriv-ésti</i> | (vs. 1sg. <i>scríssi</i>) | ‘write’ |

There are several problems with this account. In the first place, as Maiden (2000) observes, it is unclear why the labio-velar glide should cause gemination only after stressed vowels but not after unstressed ones. There are no phonological reasons for such asymmetry. In the same way, it is unclear why there should be deletion of the labio-velar glide after unstressed vowels. Observe at this regard that in nouns, differently than in verbs, consonants are geminated before a labiovelar glide also after unstressed vowels:

- | | | | |
|------|------------------|----------------|-----------|
| (87) | <i>januárius</i> | <i>gennáio</i> | ‘January’ |
| | <i>manuária</i> | <i>mannáia</i> | ‘cleaver’ |

The evidence for lack of consonant gemination after unstressed vowels is therefore provided only by the evolution of the irregular perfect forms. The traditional explanation, therefore, is fundamentally circular (Maiden (2000)).

Also notice that if the changes accounting for the development of the forms in (83) were only phonological, we should expect Italian *cadisti, volisti* (cf. *venisti*) with preservation of the vocalic quality of the Latin Perfect Thematic Vowel, instead of the actual *cadesti, volesti* where we see the appearance of the Verb Thematic Vowel. This can be explained only by assuming some form of morphological restructuring, which involves a complication of the purely phonological account that is assumed for the development of the forms in (83).

Furthermore, note that the 1st pl. is stressed on the root vowel in Latin. Therefore, according to the traditional account, one should expect gemination in this case in Italian, contrary to the facts.

(88)	<i>vénuimus</i>	‘come-PRF-1PL’	>	<i>*vennimo/*vennemo</i>
	<i>cáduimus</i>	‘fall-PRF-1PL’	>	<i>*caddimo/*caddemo</i>

As in the preceding case, here too, we need to resort to a morphological account, which, therefore, undermines the assumption that the development of the forms in (83) was purely phonological.

Finally, assuming that the phonological account assumed traditionally is correct, it is unclear why a few alternations such as those in (83) could lead to such a robust generalization that caused analogical restructuring in all other verbs. One can wonder why analogical pressure did not work in the opposite way so as to remove the few marginal alternations by extending to them the irregular stem form. In conclusion, the traditional phonological explanation cannot be maintained.

Let us again consider the rhizotonic nature of irregular stems. As discussed earlier, traditional analyses of verbal irregular morphology postulate that stress plays a crucial role in the selection of the irregular stem allomorph: irregular stems/roots are inherently stressed. The same postulation, or a variation of it, is found in the most recent accounts of Italian verbal morphology (cf. Burzio (1998), Maiden (2000, 2010), Pirelli and Battista (2000), Vogel (1994)).

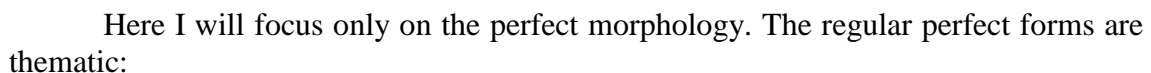
Here I want to argue that the fact of being stressed is not the identifying property of irregular stems/roots, and that this property cannot be used to account for their distribution. The point is that verbal stress is fundamentally predictable from morphosyntactic composition of the string: as already mentioned in section 2, if one put aside the future/conditional where stress falls on the AGR suffix, it is a TV that is assigned stress: either the TV preceding the AGR suffixes of 1st and 2nd Pl. (*battiámo*, *battévámo*) or the TV preceding Tense (*battéva*, *battésse*, *battè*). Otherwise stress falls on the root: i. if the TV is absent (*pérsi*, *pérsero*); ii. in the present (both indicative and subjunctive: *báttono*, *teléfonano*) where one can argue that unmarked present Tense is actually missing (see Calabrese (2012) for more detail and a formal analysis of the stress patterns). Therefore, the fact that the irregular perfect and past participle stems are stressed follows directly from the fact that in the case of these stems the verbal Thematic Vowel, i.e., TV preceding Tense, is missing. Both the accentual and the morphological properties of these stems then follow from the fact that they are athematic. More generally, it is a fact that all generalizations regarding irregular verbal stem allomorphy in Italian crucially refers to the property of being athematic. For example, as discussed in section 4, the distribution of irregular stem forms in the past participle can be readily captured when one observes that all roots that are athematic in the past participle are also athematic in the Perfect. Notice that the generalization does not refer to the actual phonological shape of the stem which can be quite different: *feci/fatto*, *tolsi/tolto*, *sconfissi/sconfitto*, *valsi/valso*, but to an abstract property: presence vs. absence of the TV. What unifies these pairs is the fact that they are athematic, and therefore accessible to contextual allomorphy, which may generate the same stem forms (*corsi/corso*), but does not necessarily do so (*tolsi/tolto*).

Furthermore, observe that assuming that irregular perfect and past participle stems are stressed not because of idiosyncratic morphological property, but because of how stress is assigned in verbs predicts that they will not be stressed in non verbal contexts. As a matter of facts, this prediction is borne out: irregular stem allomorphs can also appear unstressed in past-participle based nominalizations, which are discussed in detail in Calabrese (2015):

- We can conclude that it is not true that irregular verbal stems/roots are inherently stressed. The fact that they are stressed follows from the fact that they are athematic. Being athematic is the characterizing property of these roots/stem, from which all other properties follow.

We can now turn to the development of Italian perfects. The morpho-syntactic structure of Latin Verb (Embick and Halle (2005) is given in (90). A crucial assumption is that rule (11) inserting TV is active in Latin, as in Italian, the only difference between Italian and Latin, other than in the shape of exponents, is that Latin has a more complex verbal structure than Italian, aspect, tense and mood are fused in a single node (see note 3):

- (91)



(92)	Present	Perfect	
	laud-ā-mus	laud-ā-v-i-mus	‘praise’
	aud-ī-mus	aud-ī-v-i-mus	‘hear’

Irregular morphology is found in athematic verbs (the standard case in Conjugations II and III, unusual in Conjugations I and IV.)

- (93) Perfect forms:
- a. mon-u-i-mus ‘remind’ (Athematic forms with /-v-/)
 - sorb-u-i-mus ‘suck up’
 - b. aug-s-i-mus ‘grow’ (trans) (Athematic forms with /-s-/)
 - fulg-s-i-mus ‘glow’
 - c. prand-i-mus ‘breakfast’ (Athematic forms with /-Ø-/ (+ablaut))
 - strid-i-mus ‘screech’
 - d. to-tond-i-mus ‘shear’ (pres. tond-ē-mus) (Athematic forms with /-Ø-/
 - mo-mord-i-mus ‘bite’ (pres. mord-ē-mus) +reduplication)

The absence of the root thematic vowel is accounted for as before by a special diacritic [-TV] that blocks insertion of the TV vowel.

The verbs in (92) and (93)a) form the Perfect with the suffix -v-. The verbs in (93)b) form the Perfect with the suffix -s-, whereas those in (93)c,d) take the suffix -Ø-. In (93)d) there is also root reduplication, which, I assume, is due to a special MP rule, not discussed here. Each of these Asp[perf] exponents is followed by the vowel -i-, which is the realization of a TV position attached to Asp

- (94)
- | | | | | |
|----|---------|---|-----|---------------------------------|
| a. | Perfect | ↔ | /Ø/ | Root-Ø ____, root = vert, etc |
| b. | Perfect | ↔ | /s/ | Root-Ø ____, root = scrib, etc. |
| c. | Perfect | ↔ | v | |

I mention some of the morphophonological rules necessary to account for the allomorphy we see in Latin perfects. We need an ablaut rule to account for alternations in root vowels such as those in (95):

- (95) Ablaut
- | | | |
|-------|---------|-------------|
| sedeō | sēd-Ø-ī | ‘sit’ |
| agō | ēg-Ø-ī | ‘do, drive’ |

Differently than in Italian there is no systematic consonantal assimilation. The addition of /-s-/ creates consonantal clusters where voiced consonants are devoiced before this consonant: (96), (97), (98).

- (96) Obstruent devoicing:
- | | |
|-----------------------|---------|
| <i>scribo scripsi</i> | ‘write’ |
|-----------------------|---------|

We need a process of Coronal deletion, and of Cluster simplification after liquid codas:

- (97) Coronal deletion
- | | |
|-----------------------|----------|
| <i>divido divisi</i> | ‘divide’ |
| <i>claudio clausi</i> | ‘close’ |

- (98) Cluster simplification after liquid codas

<i>algeo</i>	<i>alsi</i>	‘feel cold’
<i>mergo</i>	<i>mersi</i>	‘merge’
<i>spargo</i>	<i>sparsi</i>	‘spread’

An important difference between the Latin Inflectum and Perfectum involves the infix /-n-/ which characterizes the forms of the inflectum in many verbs. Since this infixal /n/ may be absent in the perfect we have alternations like those in (99):

- | | | | |
|------|--------|-------|-------------|
| (99) | vinco | vīci | ‘win’ |
| | fundo | fūdi | ‘pour/melt’ |
| | rumpo | rūpi | ‘break’ |
| | frango | frēgi | ‘break up’ |

After this brief description of Latin perfect morphology, we can turn to the development of Italian perfect forms. We need both phonological and morphological changes.

Some of the phonological changes, which are not relevant to the analysis here, are the following:

1. Consonant assimilation removed many consonant cluster of Latin which became geminate in Italian:
Example: scripsi → scrissi, etc. ‘write’
2. In Latin, prevocalic, post-consonantal high vocoid /u/ (together with /i/) was syllabified as a syllabic nucleus (e.g. ve.nu.i, ka.du.i)--although not after /r/ (e.g. par. wi). A fundamental change of Proto-Romance was the elimination of hiatus configuration by glide formation which lead to the resyllabifications and gemination (see Calabrese (2013) for an account of this gemination process)

Example: venui/kadui/takui → venni/kaddi/takk^wi ‘come/fall/be silent’

We can now address the morphological changes, the main topic of discussion in this section:

1. Reduplication was eliminated, i.e., the diacritic triggering Reduplication was impoverished. The null exponent characteristic of the reduplicated forms was replaced by /s/ or /v/.

- | | | | | | |
|-------|---------|---------|---|-------|--------|
| (100) | mordere | momordi | → | morsi | ‘bite’ |
| | currere | cucurri | → | cursi | ‘run’ |
| | cadere | cecidī | → | cadui | ‘fall’ |

2. The diacritic blocking insertion of thematic vowels was removed (impoverished) in a number of verbs such as those in (101). Thus, they became thematic, and displayed regular morphology in the perfect.

(101)	exigere	exegi	→	esidgere	esidzei/esidzetti	‘require’
	potere	potui	→	potere	potei	‘be able’
	debere	debui	→	dovere	dovei/dovetti	‘must’

3. The application of morphophonological rules was extended to new verbs. For example, vowel fronting was extended to sap-u-i>sep-u-i> It. *seppi*.
4. The final, and most important, change to account for the non-phonological differences between Latin and Italian, was a redistribution of exponents of the perfect, and specifically a drastic restriction in the use of the null exponent /-Ø-/ in athematic perfects:

(102)	accendere	accend-Ø-i	→	accend-s-i	It.: attfesi	‘light’
	leggere	leg-Ø-i	→	leg-s-i	lessi	‘read’
	absolvere	absolv-Ø-i	→	absol-s-i	absolsi	‘absolve’
	respondere	respond-Ø-i	→	respond-s-i	risposi	‘answer’
	movere	mov-Ø-i	→	mov-s-i	mossi	‘move’
	venire	ven-Ø-i	→	venui	venni	‘come’
	bibere	bib-Ø-i	→	bibui	bevvi	‘drink’
	etc.					

We can now turn to the development of Participle. In Latin the original suffixal exponent for the past participle inherited from IE was /-t-/ which is regularly preserved in thematic roots. A change affected it in roots with athematic past participle: In early Latin, clusters of heteromorphemic coronal stops were affected by a process that changed them into a geminate coronal fricative: *tt--> ss*. This geminated fricative was degeminated after long vowels: *rīd-to* → *rīssu* → *rīsu* but *mit-to* → *missu*.

At a certain point in preclassical Latin, the shortened /s/ resulting from this process was reanalyzed as a suffixal element. One can speculate that the /s/ of cases such as *rīsu* was reanalyzed as being the exponent of the Vocabulary Item in (94)b), which was already present in Latin. In fact, in Latin, we find many cases in which we have /s/ in the past participle instead of the etymologically expected /t/ (see also Vincent (1978)). I assume that these cases involve extension of the application of the Vocabulary Item in (94)b), to new roots:

(103)	<i>maneo</i>	<i>mansus</i>	‘stay’
	<i>flecto</i>	<i>flexus</i>	‘bend’
	<i>spargo</i>	<i>sparsus</i>	‘spread’
	<i>salto</i>	<i>salsus</i>	‘jump’
	<i>curro</i>	<i>cursus</i>	‘run’
	<i>labor</i>	<i>lapsus</i>	‘fall/slide’

The development of the Italian Past Participle simply involves further expansion of the use of the Vocabulary Item in (94)b), to still other roots. Thus, /s/ is reanalyzed as being a single suffix both in Past Participle and Perfect forms, as I proposed in the analysis in (51)a), in section 4.

10. Innovations from Latin to Italo-Romance

When we look at development of perfect forms in other Italo-Romance varieties, we again observe that there is essentially preservation of the morphological properties of the Latin perfect system: irregularity in the athematic forms/ regularity in the thematic forms.¹⁴ Thus, forms with suffixal /-s-/ are found in all Italo-Romance varieties that have synthetic perfect forms. Many of these are new creations. Crucially, if a new form is created, /s/ is attached directly to the root in an athematic construction. The relevant morphophonological rules then apply to generate the surface forms:

- (104) Italian: attfesi (< attend-s-i) 'light', offesi (< offend-s-i) 'offend', risposi (< rispond-s-i) 'answer', nascosi (< nascond-s-i) 'hide', fusi (< fond-s-i) 'melt', resi (< rend-s-i) 'give', difesi (< difend-s-i) 'defended', tesi (< tend-s-i) 'tightened', morsi (< mor-s-i) 'bite', korsi (< korr-s-i) 'run', persi (< perd-s-i) 'lose', offersi (< offr-s-i) 'offer', apersi (< apr-s-i) 'open', parsi (< par-s-i) 'seem', volsi (< vol-s-i) 'turn', felsi (< fελλ-s-i) 'choose', kolsi (< kolλ-s-i) 'pick', tolsi (< tolλ-s-i) 'take away', valsi (< val-s-i) 'be worth', dolsi (< dol-s-i) 'feel pain', mossi (< mov-s-i) 'move'
- Tuscan dialects: volsi (< vol-s-i) 'turn', salsi (< sal-s-i) 'clim', fersi (< fελλ-s-i) 'choose', sensi (< sent-s-i) 'feel', morse (< mor-s-i) 'die', konviense (< conven-s-i), divense (< diven-s-i) 'become', vense, viense, (< ven-s-i) 'come'
- Umbrian: krese (< kred-s-i) 'believe', tienzi (< ten-s-i) 'hold', morze (< mor-s-i) 'die'
- Salentino: wesi/ose (< ol-i) 'want', krise (< kred-s-i) 'believe', morse (< mor-s-i) 'die', perse (< perd-s-i) 'lose'.

Forms with suffixal /-X-/ are also found. They also involve addition of this suffix to the root in an athematic construction:

- (105) Italian: seppi (< sap-X-i) 'know', pyovve (< piov-X-i) 'rain', bevvi (< bev-X-i) 'drink', kaddi (< kad-X-i) 'fall', ruppi (< romp-X-i) 'break', volli (< vol-X-i) 'want', vEnni (< vEn-X-i) 'come', tEnni (< tEn-X-i) 'keep', pyakk^wi (< pyak-X-i) 'please', nokk^wi (< nok-X-i) 'harm', takk^wi (< tak-X-i) 'be silent, nakk^wi (< nak-X-i) 'be born'
- Old Italian forms: potti (< pot-X-i) 'be able', viddi (< vid-X-i) 'see', debbe (< dov-X-i) 'have to'
- Old Roman: vikk^we (< vik-X-i) 'win'
- Old Neapolitan: potte (< pot-X-i) 'be able', sappe (< sap-X-i) 'know'
- Sicilian: potti (< pot-X-i) 'be able', vitti (< vit-X-i) 'see', vippi (< vip-X-i) 'drink'
- Salentino: kyoppe/kyovve (< kyov-X-i) 'rain', vidde (< vid-X-i) 'see'

There is also preservation of athematic morphology in participial forms. Forms with suffixal /-s-/ in participial forms are also athematic in Italo-Romance varieties:

¹⁴ In the limited space of this article, I will not be able to deal with all other Romance varieties, a brief description of some of their properties appears in note 13.

- (106) Italian: attfeso (< attfend-s-o) 'light', appeso (< append-s-o) 'hang', appreso (< apprend-s-o) 'learn', arso (< ard-s-o) 'burn', kyuso (< kyud-s-o) 'close', difeso (< difend-s-o) 'defend', diviso (< divid-s-o) 'divide', evaso (< evad-s-o) 'run away', fesso (< fend-s-o) 'break', flesso (< flett-s-o) 'bend', fuso (< fond-s-o) 'melt', invaso (< invad-s-o) 'invade', messo (< mett-s-o) 'put', morso (< mord-s-o) 'bite', nascoso (< nascond-s-o), offeso (< offend-s-o) 'offend', perso (< perd-s-o) 'lose', persuaso (< persuad-s-o) 'persuade', preso (< prend-s-o) 'take', raso (< rad-s-o) 'erase', reso (< rend-s-o) 'give back', riso (< rid-s-o) 'laugh', roso (< rod-s-o) 'gnaw', sceso (< Send-s-o) 'go down', fisso (< find-s-o) 'separate', skosso (< skwot-s-o) 'shake', teso (< tend-s-o) 'tighten', ucciso (< uttfid-s-o) 'kill', immerso (< immerg-s-o) 'dip', sparso (< sparg-s-o) 'spread', terso (< terg-s-o) 'clean', apparso (< appar-s-o) 'appear', corso (< cor-s-o) 'run', mosso (< mov-s-o) 'move', oppresso (< opprim-s-o) 'oppress', parso (< par-s-o) 'appear', valso (< val-s-o) 'be worth'
- Old Italian: kosso (< kok-s-o) 'cook', visso (< viv-s-o) 'live', volso (< vol-s-o) 'turn' dolso (< dol-s-o) 'feel pain', rimaso (< riman-s-o) 'remain'.
- Latium: kreso (< kred-s-o) 'believe'
- Genuese: komposo (< kompon-s-o) 'compose', desposo (< despond-s-o) 'answer'

From what we see in (104)-(106), we can conclude simply that irregular morphology in Italo-Romance varieties is restricted only to athematic constructions, as expected in the theory developed in this paper. Only in these type of constructions, in fact, do we have the local structural configuration that allows root based contextual allomorphy. Therefore, only regular morphology is possible when the verbal thematic vowels is present.

It is important to observe that there are indeed cases in which the special suffix /-s-/ is found in thematic constructions. Crucially in this case, it has become the regular exponent of the perfect (Rohlf's (1968)) Thus, the suffix /s/ is found with regular verbs such as 'eat', 'sing', and 'think' in these varieties:

- | | | | |
|-------|--------------------------|------------|--------------|
| (107) | Colle Sannita: | vəɳize | 'he came' |
| | | morize | 'he died' |
| | | təneze | 'he kept' |
| | | faceze | 'he did' |
| | | magnaze | 'he ate' |
| | Melfi: | cantaze | 'he sang' |
| | San Bartolomeo in Galdo: | faceze | 'he did' |
| | | diceze | 'he said' |
| | | penzese | 'he thought' |
| | | vendicheze | 'he avenged' |

The same is found for the participle: There are cases in which a special suffixal form typical of athematic constructions is found in thematic constructions. Crucially again, it has become the regular exponent of the past participle in the e-conjugation.

(108) Corso:	korresto	‘run’
	kredesto	‘believed’
	movesto	‘moved’
	perdesto	‘lost’
	pyovesto	‘rained’
	avesto	‘had’
	dovesto	‘had to’
	ritſevesto	‘received’
Veneto:	vedesto	‘seen’
	ponesto	‘put’

This is what one expects in the framework adopted here.¹⁵

However, there are also problematic cases, those in (109). They are restricted to the past participle. In the case of these forms, an irregular stem allomorph is found in a thematic construction. These are exceptions to the generalization that irregular stem forms appear only when the TV is absent.

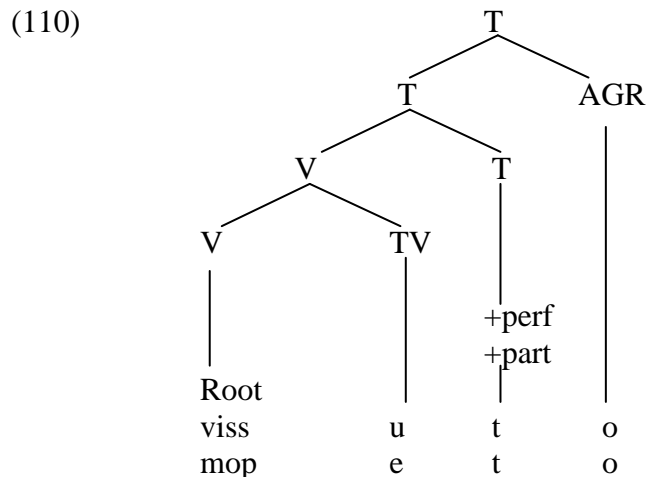
(109) Toscano:	vissuto ‘lived’, volsuto, vensuto ‘come’
Corso	parsutu ‘appeared’
Old Neapolitan:	kyoppeto ‘rained’, mosseto ‘moved’, liessito ‘read’, tolleto ‘taken’, kurzeto ‘run,’
Modern Neapolitan:	apparzeto ‘appeared’, kurzeto ‘run’, kyuoppeto ‘rained’, muoppeto, parzeto, skurzeto, vippeto ‘drunk’
Southern Lucanian:	vippətə ‘drunk’, moppətə, kyoppətə ‘rained’, sappətə ‘know’
Calabrese:	kyoppitu ‘rained’, movvitu ‘move’, vippitu ‘drunk’

Take the past participle of the verb *vivere* ‘live’ in Toscan, and later in standard Italian, which is *vissuto*. Given that the perfect of this verb is *vissi*, one should expect irregular Past Participle forms such as *visso*, *vitto*—which is the etymologically expected form from Latin *victu*—or the regularized *vivuto*. All of these forms were attested in earlier stages of Italian, but were eventually replaced by *vissuto*. Given the

¹⁵ The dichotomy: irregularity in the athematic forms/ regularity in the thematic forms is characteristic feature of all other Romance varieties. Despite the phonological diversity, there is preservation across Romance of the morphological system of Latin, essentially the one with discussed for Italo-Romance perfect (and Participle). For example, take the Old Spanish perfect system: the vocabulary items for the perfect are: /-v-/ (e.g. *has* ‘has’ *ovo*, *conoce* ‘knows’ *conovo*), /-s-/ (e.g. *quiere* ‘wants’ *quiso*, *pone* ‘puts’ *puso*, *escribe* ‘writes’ *escribo*) /-Ø-/ (e.g. *viene* ‘comes’ *vino*, *sabe* ‘knows’ *sobo*); the morphophonological rules include vowel ablaut (*ven-o* → *vino* ‘came’, *haz-o* → *hizo* ‘did’, *sap-o* → *sopo* ‘knew’, coronal deletion (e.g. *reman-s-o* → *remaso* ‘stayed’, *quer-s-o* → *quiso* (with ablaut) ‘wanted’, *pon-s-o* → *puso* (with ablaut) ‘put’, cluster resolution *ten-v-o* → *tovo* (with ablaut) ‘held’, *conoc-v-o* → *conovo* ‘knew’), etc. (see section 3 for the Italian perfect). However, all other Romance varieties, with the exception of some Ibero-Romance varieties (cf, Maiden (2010: 200) are crucially different from Italo-Romance in not having the impoverishment rule deleting the diacritic [-TV], which, as discussed, blocks the insertion of the TV in irregular perfect forms. Therefore, differently than in Italo-Romance, these Romance varieties do not have alternations between thematic and athematic forms in the perfect (Spanish: *puse*, *pusiste*, *puso*, *pusimos*, *pusiero* ‘put’, where—nota bene—the TV /-i-/ is not the verbal TV, but the outer perfect TV, i.e., [[[pon] -s-]-i-] -mos], cf. (27)), and hence stem shape will not correlate with stress position.

analysis proposed in this paper, this form can only be analyzed in terms of the suppletive allomorph */vissu-/* appearing in the context of the Past Participle—thus as a case of suppletion in an athematic context.

The misanalysis behind this innovative form, however, involves extension of the stem of the perfect to a thematic context (i.e., __ -u-), in other words, a case in which the complex root + Tense suffix has been incorporated in a suppletive root form:



Thus, these forms show that this extension is potentially possible. What is striking is that this type of misanalysis is apparently rare even in dialects like Neapolitan where there appears to be more attestations. Irregular root morphology seems indeed to be associated with lack of the thematic vowel. What happened with these forms, however, needs to be better understood.

11. Conclusions

As discussed by Kiparsky (1968), historical changes in grammatical structures provide the best “window” on the actual composition of these structure in so far as we expect that the components of the structures play a role in the changes.

The morphological changes, we observe in the historical development of the Perfect and past Participle forms in Italo-Romance are most adequately accounted for when analyzed in terms of the following components:

- (i) Morphemes such as roots, thematic vowels, and Tense;
- (ii) Vocabulary Items, rules that add phonological material to morphemes;
MP Rules, morphosyntactically conditioned phonological rules,

We saw that these components are also crucial to account for the allomorphy of these forms synchronically. Both in the diachrony and in the synchrony of Italo-Romance we observe a correlation between presence vs. absence of regular morphology and presence vs. absence of thematic vowels. This correlation can be easily accounted for if the morphemes are organized in syntactic structures governed by locality principles.

References

- Bobaljik, Jonathan David. 2000. "The ins and outs of contextual allomorphy." In Kleanthes K. Grohmann & Caro Struijke (eds.). *Proceedings of the Maryland Mayfest on Morphology 1999*. 35–71. University of Maryland Working Papers in Linguistics 10.
- Bobaljik, Jonathan David. 2012. *Universals in Comparative Morphology: Suppletion, Superlatives and the Structure of Words*. Cambridge, MA: MIT Press.
- Brøndal, Viggo. 1940. "Compensation et Variation, Deux Principes de Linguistique Générale." *Scientia* 61, 101-109 [Reprinted in V. Brøndal (1943), *Essais de Linguistique Générale*. Copenhagen: Munksgaard, 105-116].
- Brøndal, Viggo. 1943. "Structure et Variabilité des Systèmes Morphologiques." In V. Brøndal, *Essais de Linguistique Générale*. Copenhagen: Munksgaard, 1-24.
- Buchholtz, H. 1889. "Lockere und straffe italienische Perfektformen." *Archiv für das studium der neuen Sprachen*, 82: 133-166.
- Burzio, Luigi. 1998. "Multiple Correspondence." *Lingua* 103: 79-109.
[http://dx.doi.org/10.1016/s0024-3841\(97\)00025-9](http://dx.doi.org/10.1016/s0024-3841(97)00025-9)
- Calabrese, Andrea. 1994. "Syncretism Phenomena in the Clitic Systems of Italian and Sardinian Dialects and the Notion of Morphological Change." In J. Beckman (ed.). *Proceedings of NELS 25*. 151-173. Amherst, MA: GLSA.
- Calabrese, Andrea. 2005. *Markedness and Economy in a Derivational Model of Phonology*. Berlin: Mouton de Gruyter.
<http://dx.doi.org/10.1515/9783110197600>
- Calabrese, Andrea. 2008. "On absolute and contextual syncretism. Remarks on the structure of paradigms and on how to derive it." In Andrew Nevins & Asef Bachrach (eds.). *The bases of Inflectional Identity*. 156-205. Oxford: Oxford University Press.
- Calabrese, Andrea. 2011. "Investigations on Markedness, Syncretism and Zero Exponence in Morphology." *Morphology* 21.2: 283-325.
<http://dx.doi.org/10.1007/s11525-010-9169-y>
- Calabrese, Andrea. 2012. "Allomorphy in the Italian Passato Remoto: A Distributed Morphology Analysis." *Language and Information Society*. 1-75. Sogang University, Korea.
- Calabrese, Andrea. 2013 "The irregular forms of the Italian "Passato Remoto": A synchronic and diachronic analysis." In Sergio Bauuw, Frank. Dijkonings, Luisa Meroni & Manuela Pinto (eds.). *Romance Languages and Linguistic Theory 2011. Selected Papers from "Going Romance" Utrecht 2011*. 17-58. Amsterdam: John Benjamins.
<http://dx.doi.org/10.1075/rllt.5.02cal>
- Andrea Calabrese. 2015. "Locality effects in Italian Verbal Morphology." In Elisa Di Domenico, Cornalia Hamann & Simona Matteini (eds.). *Structures, Strategies and Beyond: Studies in honor of Adriana Belletti*. 97-132. Amsterdam: John Benjamins,
- Calabrese, Andrea. Forthcoming. "Essays on Morpho-Phonology." Ms., University of Connecticut.
- Embick, David. 2000. "Features, Syntax and Categories in the Latin Perfect." *Linguistic Inquiry*, 31(2): 185-230.
<http://dx.doi.org/10.1162/002438900554343>
- Embick, David. 2010. *Localism versus Globalism in Morphology and Phonology*. Cambridge, MA: MIT Press.

- <http://dx.doi.org/10.7551/mitpress/9780262014229.001.0001>
- Embick, David. 2013. "Morphemes and Morphophonological Loci." In Ora Matushansky & Alec Marantz (eds.). *Distributed Morphology Today. Morphemes for Morris Halle*. 151-166. Cambridge, MA: MIT Press.
<http://dx.doi.org/10.7551/mitpress/9780262019675.003.0009>
- Embick, David and Halle, Morris. 2004. "The Latin conjugation." Ms., University of Pennsylvania and MIT.
- Embick, David, & Halle, Morris. 2005. "On the status of stems in morphological theory." In Twan Geerts, Ivo van Ginneken & Haike Jacobs (eds.). *Romance languages and linguistic theory 2003*. 59-88. Amsterdam: John Benjamins.
<http://dx.doi.org/10.1075/cilt.270.03emb>
- Embick, David, and Alec Marantz. 2008. "Architecture and blocking." *Linguistic Inquiry* 39:1, 1-53.
<http://dx.doi.org/10.1162/ling.2008.39.1.1>
- Halle, Morris. 1997. "Impoverishment and fission. PF: Papers at the Interface." In Benjamin Bruening, Yoonjung Kang, & Martha McGinnis (eds.). *MIT Working Papers in Linguistics* 30. 425-450. Cambridge, MA: MITWPL.
- Halle, Morris & Marantz, Alec. 1993. "Distributed Morphology and the pieces of inflection." In Kenneth Hale & Samuel Jay Keyser (eds.). *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*. 111-176. Cambridge, MA: MIT Press.
- Harley, Heidi. 2008. "The Importance of Impoverishment." In Daniel Harbour, David Adger & Susana Bejar (eds.). *Phi Theory. Phi features across modules and interfaces*. 251-294. Oxford: Oxford University Press,
- Ippolito, Michela. 1999. "On the Past Participle Morphology in Italian." In Karlos Arregi, Benjamin Bruening, Cornelia Krause & Vivian Lin (eds.). *Papers on Morphology and Syntax, Cycle One. MIT Working Papers in Linguistics* 33. 111-138.
- Kiparsky, Paul. 1986. *Explanation in Phonology*. Dordrecht: Foris.
- Lausberg, Heinrich. 1976. *Linguistica Romanza*. Milano: Feltrinelli.
- Maiden, Martin. 2000. "Di un cambiamento intramorfologico: origini del tipo dissidicesti ecc." *Archivio Glottologico Italiano* 85(2): 137-171.
- Maiden, Martin. 2010. "Morphophonological Persistence." In Martin Maiden, John Charles Smith, Adam Ledgeway (eds.). *The Cambridge History of the Romance Languages*, Vol. 1. 155-215. Cambridge: Cambridge University Press.
<http://dx.doi.org/10.1017/chol9780521800723.006>
- Meyer-Lübke, Wilhelm. 1972. *Grammatica Storica della lingua italiana e dei dialetti succedanei*. Torino: Loescher.
- Marantz, Alec. 2007. "Phases and words." In Sook-Hee Choe (ed.). *Phases in the theory of grammar*. 191-222. Seoul: Dong In.
- Marvin, Tatjana. 2002. *Topics in stress and the syntax of words*. PhD dissertation, MIT
- Nevins, Andrew. 2010. *Locality in Vowel Harmony*. Cambridge, MA: MIT Press.
<http://dx.doi.org/10.7551/mitpress/9780262140973.001.0001>
- Nevins, Andrew. 2011. "Marked Targets versus Marked Triggers and Impoverishment of the Dual". *Linguistic Inquiry* 42.3: 413-444.
http://dx.doi.org/10.1162/ling_a_00052
- Noyer, Rolf. 1992. *Features, Positions, and Affixes in Autonomous Morphological Structure*, PhD dissertation, MIT, Cambridge, MA.
- Noyer, Rolf. 1998. "Impoverishment theory and morpho-syntactic markedness." In Steven G. Lapointe, Diane K. Brentari & Patrick M. Farrell (eds.). *Morphology*

-
- and its relation to phonology and syntax.* 264-285. Stanford: CSLI.
- Oltra-Massuet, Maria Isabel. 1999. *On the Notion of Theme Vowel: A New Approach to Catalan Verbal Morphology*, Master's Thesis, MIT.
- Oltra-Massuet, Isabel & Arregi, Karlos. 2005. "Stress by Structure in Spanish." *Linguistic Inquiry* 36(1): 43-84.
<http://dx.doi.org/10.1162/0024389052993637>
- Pirrelli, Vito and Battista, Marco. 2000. "The Paradigmatic Dimension of Stem Allomorphy in Italian Verb Inflection." *Rivista di Linguistica*, 12 (2): 307-380.
- Rohlf, Gerhard. 1966-9. *Grammatica storica della lingua italiana*. Torino; Einaudi.
- Tekavcic, Pavao. 1980. *Grammatica storica dell'italiano: I Fonematica, II. Morfosintassi, III Lessico*. Bologna: Il Mulino.
- Väänänen, Veikko. 1981. *Introduction au Latin Vulgaire*. Paris: Klincksieck
<http://dx.doi.org/10.2307/4345830>
- Vincent, Nigel. 1978. "Towards an explanation of some analogies in perfect and past participle stems in Latin and Italian." *Semasia* 5: 47-64.
- Vogel, Irene. 1994. "Verbs in Italian morphology." In Geert Booij & Jaap Marle (eds.). *Yearbook of Morphology 1993*. 219-254. Dordrecht: Kluwer.
http://dx.doi.org/10.1007/978-94-017-3712-8_7