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The Morphotactics of the Cypriot Greek Augment

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Abstract: This paper adopts a morphological approach to the reduplication of the past-tense augment in Cypriot Greek and explores the morphotactic constraints that apply. Phonological reduplication phenomena have been addressed in morphology by developing a framework that can account for both doubling and metathesis. This phenomenon has been a focus of discussion, but less is known about the application of this mechanism to tense prefixes, known as augments. Doubling of the augment appears in verbal complexes depending on the position of its components, what I will argue are cases that support the post-syntactic morphological doubling and metathesis analysis in Distributed Morphology. The data from this non-standard variety provide a novel analysis of augments and contribute to a better understanding of their distribution by redefining this phenomenon as morphological and supporting a unified framework for the formalism designed to account for similar post-syntactic morphological phenomena.

Keywords: augment; Distributed Morphology; doubling; metathesis; reduplication

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1. The Apparent Unrestricted Placement of Augments in Cypriot Greek

While[1] mostly undefined for its properties, the prefix, traditionally called the augment in different varieties of Greek, can vary in its distribution. This paper focuses mostly on the augment in the understudied variety of Cypriot Greek and provides some discussion on previous analyses from Standard Modern Greek.

The Past Tense augment *e-*, which appears as a prefix (1a), can occur in two positions in the verbal complex (1b). It always appears in a word-initial position, preceding the preverb, and can also optionally surface as left adjacent to the verb root in a verbal complex.

(1) a. E- psi -s -a to.
PAST- cook -PERF -AGR it.CLI
'I cooked it'.

b. E_1- ksana- (e_2-) psi -s -a to.
PAST- again- PAST- cook PERF- AGR it.CLI
'I cooked it again'.

The optionality with respect to e_2- is surprising for the simple fact that the augment in Greek is usually found adjacent to the verb stem. Its appearance in (1b) in a nonadjacent position to the stem is not a predicted form in other cases with the past tense where the augment is always obligatory (i.e., **psisa*). The appearance of the augment in a nonadjacent position to the verb stem is only attested in these cases. The questions I will address concern the morphotactic constraints that allow the dislocation of the augment away from the root as well as its double appearance in verbal complexes. I will argue that the placement of the augment as such can be explained by positing an *Initiality* constraint, which requires a verbal complex to always have a word-initial augment, motivating post-syntactic changes in the linear ordering of morphemes.

In Section 2, I discuss the properties of the augment in Cypriot Greek in simple verbs and explain why the existent analysis cannot be adopted in this variety. I argue for a separate realization of the tense and agreement morphemes, which suggests that a

fission analysis of a portmanteau T-Agr node for the occurrence of the augment is not feasible. Instead, Cypriot Greek provides evidence that the augment is the realization of an independent PAST morpheme occupying a T_{high} position. Additional evidence is given from the co-occurrence of the augment with other morphemes, which it is usually found to compete with under a fission analysis.

In Section 3, I discuss its distribution and relevance to metathesis and copying theories and extend the formalism to augments in other languages. I adopt the analysis for Spanish mesoclisis (Arregi and Nevins 2018) to explain the apparently optional placement by assuming post-syntactic copying and deletion in Distributed Morphology. Here I present additional evidence that the morphemes are copied before Vocabulary Insertion, highlighting the importance of separating phonological exponence from morphosyntactic operations.

2. The Augment *e-*

Standard Modern Greek, as well as Cypriot Greek, show a two-way tense distinction in the morphology of the verb: past and nonpast (Holton et al. 1997). The distinction is evident by the change of the vowel that precedes the agreement suffix and the obligatory appearance of a past-tense prefix, identified as an augment.

(2) a. Psí -n -i -s.
cook -IMPERF -NONPAST -2SG
'You are cooking'.

b. *(É)- psi -n -e -s.
PAST- cook -IMPERF -PAST -2SG

Most work on the description of the augment comes from Standard Modern Greek, where it also appears as a prefix *e-* on the verb, conditioned by the number of syllables and the position of the stress (commonly called the antepenultimate stress). Stress in Standard Modern Greek is traditionally described as "dynamic stress", and it is acoustically manifested as longer duration or higher amplitude of the stressed syllable compared to the unstressed syllable(s) (Arvaniti 1999). Primary stress is always marked on one of the last three syllables, but its position is sometimes affected by specific morphemes (i.e., genitive suffix *u-*, past etc.). The Past Tense augment *e-* is found in two-syllable verbs that are stressed on the penult in the NonPast Tense (as in examples in Merchant 2015; Ralli 2003; Spyropoulos and Revithiadou 2009; van Oostendorp 2012). In these cases, the augment surfaces to hold the stress that retracts leftwards to the antepenultimate syllable in the past (3b). If the verb already has an antepenultimate syllable, then the stress shifts to it and the augment *e-* does not surface, as in (3d).

(3) *Standard Modern Greek*

a. Psí -n -i -s.
cook -IMPERF -NONPAST -2SG
'You are cooking'.

b. *(É)- psi -n -e -s.
PAST- cook -IMPERF -PAST -2SG
'You were cooking'.

c. ðjavá -z -i -s.
read -IMPERF -NONPAST -2SG
'You are reading'.

d. (*E-) ðjáva -z -e -s.
PAST- read -IMPERF -PAST -2SG
'You were reading'.

A simple description of this shows that the augment appears when there is no syllable on the verb stem which can bear the antepenultimate stress:

(4) a. Underlying phonological form: /psina/$_{+past}$ 'cook'
b. Antepenultimate past tense stress: [´ + psina]
c. Phonological augment epenthesis: [é + psina]

In a similar way, the Cypriot Greek augment *e-* appears as the antepenultimate syllable in two-syllable verbs (5b) and seems at first glance to again serve stress-related purposes. Surprisingly, it also appears in three-syllable verbs where the antepenultimate is stressed and the augment remains unstressed, as in (5d).

(5) *Cypriot Greek*
a. Psí -n -i -s.
cook -IMPERF -NONPAST -2SG
'You were cooking'.
b. *(É-) psi -n -e -s.
PAST- cook -IMPERF -PAST -2SG
c. θcavá -z -i -s.
read -IMPERF -NONPAST -2SG
'You were reading'.
d. *(E-) θcáva -z -e -s.
PAST- read -IMPERF -PAST -2SG

Under an analysis of the occurrence of this prefix in Standard Modern Greek as a completely phonologically determined element, the generalization that requires its appearance only when it is stressed does not hold. The difference observed here is based on our understanding of the augment as either a phonological phenomenon or an exponent of Past Tense that depends on a particular morphosyntactic structure. Similarly, the use of the augment in Ancient Greek was conceptualized in a different way than the corresponding Standard Modern Greek use. As Joseph and Janda (1988) mention, "the augment, therefore, must be considered to be present in the underlying morphological structure of Ancient Greek past tense forms; furthermore, its occurrence there is not linked to any phonological feature(s)" (Joseph and Janda 1988, p. 198). This point emphasizes exactly that augments in languages that have them should not necessarily be seen as a phonological phenomenon provided the existence of the augment throughout the paradigm and not only under certain phonological conditions. The authors of Joseph and Janda (1988), for example, add that in a similar way the German *ge-*, as in (6), "has remained a morphological rule, albeit one with greater phonological conditioning"(Joseph and Janda 1988, p. 201).

(6) a. Ich komme mit dem bus
I come with the bus
'I am coming with the bus'.
b. Ich bin mit dem bus ge- kommen
I be with the bus AUG- come
'I have come with the bus'. (Joseph and Janda 1988, p. 201)

In this sense, this case of the Cypriot Greek augment is especially interesting in documenting its use as based on morphosyntactic structure. In Table 1, I provide the full paradigm for *psín-* 'to cook', which belongs in the first conjugation, and *fil-* 'to kiss', which belongs in the second conjugation (first class). The augment appears in both Active and NonActive Voice[2].

Table 1. Cypriot Greek verbal morphology in Active and NonActive.

Cypriot Greek Past Tense—Active Voice				
Person	PAST, PERF	Meaning	PAST, PERF	Meaning
1sg	é-psi-s-a	'I cooked'	e-fíli-s-a	'I kissed'
2sg	é-psi-s-e-s	'you cooked'	e-fíli-s-e-s	'you kissed'
3sg	é-psi-s-e-n	'he/she cooked'	e-fíli-s-e-n	'he/she kissed'
1pl	e-psí-s-a-men	'we cooked'	e-filí-s-a-men	'we kissed'
2pl	e-psí-s-e-te	'you cooked'	e-filí-s-e-te	'you kissed'
3pl	e̲-psi̲-s-a-n	'they cooked'	e-fíli̲-s-a-n	'they kissed'
3pl	e-psí-s-a-sin	'they cooked'	e-filí-s-a-sin	'they kissed'
Person	PAST, IMPERF	Meaning	PAST, IMPERF	Meaning
1sg	é-psi-n-a	'I was cooking'	e-fil-ú-s-a	'I was kissing'
2sg	é-psi-n-e-s	'you were cooking'	e-fil-ú-s-e-s	'you were kissing'
3sg	é-psi-n-e-n	'he/she was cooking'	e-fil-ú-s-e-n	'he/she was kissing'
1pl	e-psí-n-a-men	'we were cooking'	e-fil-ú-s-a-men	'we were kissing'
2pl	e-psí-n-e-te	'you were cooking'	e-fil-ú-s-e-te	'you were kissing'
3pl	e̲-psi̲-n-a-n	'they were cooking'	e-fil-ú-s-a-n	'they were kissing'
3pl	e-psí-n-a-sin	'they were cooking'	e-fil-ú-s-a-sin	'they were kissing'
Cypriot Greek Past Tense—NonActive Voice				
Person	PAST, PERF	Meaning		
1sg	e-plí-θ-ik-a	'I was washed'		
2sg	e-plí-θ-ik-e-s	'you were washed'		
3sg	e-plí-θ-ik-en	'he/she was washed'		
1pl	e-pli-θ-ík-a-men	'we were washed'		
2pl	e-pli-θ-ík-e-te	'you were washed'		
3pl	e-pli̲-θ-i̲k-a-n	'they were washed'		
3pl	e-pli-θ-ík-a-sin	'they were washed'		
Person	PAST, IMPERF	Meaning		
1sg	e-plin-ísk-u-mun	'I was being washed'		
2sg	e-plin-ísk-e-sun	'you were being washed'		
3sg	e-plin-ísk-e-tun	's/he was being washed'		
1pl	e-plin-isk-ú-mastan	'we were being washed'		
2pl	e-plin-ísk-e-stun	'you were being washed'		
3pl	e-plin-ísk-u-ndan	'they were being washed'		

The [3] verbal paradigm shows consistent appearance of the augment *e-* in both two-syllable and three-syllable verbs, or, in other words, both those that have an already existing antepenultimate syllable or not. In Cypriot Greek, this contradicts the idea that the augment develops for the antepenultimate stress to be attained or that the antepenultimate stress is an exponent of the PAST or that it is a segmentally empty prefix with lexically encoded stress (Spyropoulos and Revithiadou 2009). The authors of Spyropoulos and Revithiadou (2009) argue that the empty vocalic slot of the prefix materializes under certain conditions, providing a phonological form of this default exponent of PAST. This analysis is built on the assumption that agreement and tense form a fused terminal node (i.e., a portmanteau morpheme), which is subject to fission, and that the empty prefix discharges this specification, which is the [+past] information. In this paper, I propose an analysis that does not follow those assumptions and instead keeps tense and agreement as separate terminal nodes, realized by different exponents in the morphological decomposition of the verb, as presented in the following section.

2.1. The Realization of Tense and Agreement

I will pursue here an analysis with tense and agreement forming separate terminal nodes [4] which is a different approach from the analysis developed in Spyropoulos and Revithiadou (2009). A careful look of the surface forms in Table 1 shows a consistent pattern: the suffix *-e* appears in 2ND person and 3RD SING. Other suffixes are *-a* and *-u*, with both appearing in 1ST person and 3RD PL. Given the systematic alternation between these exponents, the change can be the result of morphological operations that include feature-deletion rules yielding syntactic neutralization in surface forms. So *-e* is clearly not associated with any author features, with the common property between the two exponents being the fact that they appear in Past Tense.

(7) a. $T_{[+past]} \leftrightarrow$ /-a/
b. $T_{[+past]} \leftrightarrow$ /-e/ /___$Agr_{[-author]}$

Impoverishment (Bonet 1991), an operation that changes the featural content of morphemes prior to Spell-out via Vocabulary Insertion, deletes certain morphosyntactic features in certain contexts. To explain the distribution of the different exponents in the past, a deletion rule applies in 3RD PL and targets the deletion of the [-author] feature. As a result, *e-* cannot be inserted and *a-* is inserted as the less specified morpheme (e.g., *e-psi-s-a-n*, **e-psi-s-e-n* 'they cooked'). [5]

(8) $Agr_{[-author+3pl]} \rightarrow Agr_{[+3pl]}$

The distribution of *-u* and *-e* in the nonactive imperfective will then work in a similar way, but only specific to this context [6], since *-u* would never appear in the active.

(9) a. $T_{[+past]} \leftrightarrow$ /-u/
b. $T_{[+past]} \leftrightarrow$/-e/ /___$Agr_{[-author]}$

Impoverishment targets the deletion of the [-author] feature, resulting in the use of the less-marked morpheme, namely */-u/* in 3RD PL (e.g., *e-fiy-u-ndan*, **e-fiy-e-ndan* 'they were kissing'). With this analysis, there is a possible way to account for the distribution of the Tense morphemes in the Past without assuming that they are fused with the agreement morphemes. It follows then that an analysis of the Past Tense augment as the result of a fission process of the fused agreement–tense node cannot be directly implemented in the analysis presented here (Spyropoulos and Revithiadou 2009). Fission is defined as an operation that permits a terminal node to have multiple exponents. With the current analysis, there is no fused T-Agr terminal node that can be subject to fission, with the end result involving two separate exponents both specified for [+past] plus α agreement. It cannot be claimed that fission applies on the basis of only agreement being discharged with the tense morpheme employed as an empty prefix. The two analyses differ on the different assumptions presented for the status of the terminal nodes in Greek and Cypriot Greek, correspondingly.

A different argument[7] in favor of separate Tense and Agreement projections comes from the co-occurrence with the perfective morpheme *-ik*. Spyropoulos and Revithiadou (2009) observe that the [+perf] morpheme does not co-occur with the Past Tense augment in Standard Modern Greek independently of the number of syllables and the position of the stress.

(10) a. stráf- -ik -a
throw-up -PERF -PAST
'I threw up'
b. * e- stráf- -ik -a
PAST- throw-up -PERF -PAST
c. mb- -ík -a
enter -PERF -PAST
'I entered'.

d. * e- mb- -ík -a
PAST- enter -PERF -PAST

[Standard Modern Greek]

The example in (10b) is not because of the Trisyllabic rule that allows stress to be positioned in a three-syllable window, and *estráfika* consists of four syllables, assigning the stress on the antepenultimate syllable *straf-*. In (10d), however, the augment does not appear, even though it could form the antepenultimate syllable and hold the stress as predicted by the general rule found in the language. The authors of Spyropoulos and Revithiadou (2009) argue that the competition between insertion of the augment and insertion of *-ik* can be explained if it is seen as a more-specified, in terms of features, morpheme, i.e., [+past, (+perf)]. With both being past tense exponents, *ik-* is selected by perfective aspect. The augment is only specified for [+PAST], therefore insertion of *-ik* wins in perfective forms as the most-specified morpheme.

In Cypriot Greek, the perfective *-ik* is optional[8] in the non-active forms of 2nd and 3rd SING. This clearly shows that θ*ik-* is not a single morpheme in Cypriot Greek (see Joseph and Smirniotopoulos 1993; Ralli 2005; Roussou 2009; Warburton 1973 for Standard Modern Greek), and that the augment has a morphological role in the underlying structure that is not affected by any other morpheme. This optionality seems to be the result of outward sensitivity in contextual allomorphy and the form of the tense morpheme. Insertion of *-ik* is sensitive to a context where the tense morpheme appears as *-e* or *-i*. In the cases where aspect surfaces null, the tense morphemes appear as *-i*; when it surfaces as *-ik*, then it surfaces as *-e*. Tables 2 and 3 show a few examples where the verb form optionally surfaces with *-ik* in 2ND and 3RD PERSON SINGULAR.

Table 2. The perfective *-ik* in 2ND PERSON SINGULAR.

Cypriot Greek Perfective *-ik*, 2ND PERSON SINGULAR			
Root	PAST, NONACTIVE	PAST,NONACTIVE	Meaning
skoto-	e- skotó -θ **-ik** -e -s	e- skotó-θ -∅ -i -s	'you were killed'
fakk-	e- fatʃí -θ **-ik** -e -s	e- fatʃí-θ -∅ -i -s	'you were hit'
sandano-	e- sandanó -θ **-ik** -e -s	e- sandanó -θ -∅ -i -s	'you were confused'
aɣap	aɣap -í -θ **-ik** -e -s	aɣapí -θ -∅ -i -s	'you were loved'
psi-	e- psí -θ **-ik** -e -s	e- psí -θ -∅ -i -s	'you were cooked'
vaf-	e- váf -t **-ik** -e -s	e- váf -t -∅ -i -s	'you were painted'
pandrev-	e- pandréft **-ik** -e -s[9]	e- pandréft -∅ -i -s	'you were married'
pe-	e- péxt **-ik** -e -s	e-péxt -∅ -i -s	'you shot yourself'
mbe-	é- mb **-ik** -e -s	é-mb -∅ -i -s	'you entered'
su-	e- súst **-ik** -e -s	e- súst -∅ -i -s	'you were shaken'
ksev-	e- ksév **-ik** -e -s	e- ksév -∅ -i -s	'you got up on something'

Table 3. The perfective *-ik* in 3RD PERSON SINGULAR.

Cypriot Greek Perfective *-ik*, 3RD PERSON SINGULAR *he/she/it*			
PAST, NONACTIVE	PAST,NONACTIVE	Meaning	
skoto-	e- skotó-θ **-ik** -e -(n)	e- skotó-θ **-**∅ -i -(n)	's/he was killed'
fakk-	e- fatʃí -θ **-ik** -e -(n)	e- fatʃí-θ -∅ -i -(n)	's/he was hit'
sandano-	e- sandanó -θ **-ik** -e -(n)	e- sandanó -θ -∅ -i -(n)	's/he was confused'
aɣap-	aɣapí -θ **-ik** -e -(n)	aɣapí -θ -∅ -i -(n)	's/he was loved'
psi-	e- psí-θ **-ik** -e -(n)	e- psí-θ -∅ -i -(n)	'it was cooked'
vaf-	e- váf -t **-ik** -e -(n)	e- váf -t -∅ -i -(n)	's/he was painted'
pandrev-	e- pandré -ft **-ik** -e -(n)	e- pandré -ft -∅ -i -(n)	's/he was married'
pe-	e- péxt **-ik** -e -(n)	e- péxt -∅ -i -(n)	'it was played'
mbe-	é- mb **-ik** -e -(n)	é- mb -∅ -i -(n)	's/he entered'
su-	e- súst **-ik** -e -(n)	e- súst -∅ -i -(n)	'it was shaken'
ksev-	e- ksév **-ik** -e -(n)	e- ksév -∅-i -(n)	's/he got up on something'

As expected, the Cypriot Greek augment distribution is not affected by the alternation from two- to three-syllable verbs stems.

(11) a. **e-** stráf- **-ik** -e -n
PAST- return- -PERF -PAST -AGR
'He returned'.

b. **e-** stráf- -i -n
PAST- return- -PAST -AGR

c. * stráf- **-ik** -e -n
return- -PERF -PAST- -AGR
'He returned'.

d. * stráf -i -n
return- -PAST -AGR

The Vocabulary items for the insertion of *ik-* in Cypriot Greek given the distribution of *-ik* are as follows:

(12) a. Aspect[+PERF]↔/-ik//Voice[-ACT]___
b. Aspect[+PERF]↔∅/Voice[-ACT]___T[*-i*]

Even if this is the case for Standard Modern Greek, *e-* does not compete with *-ik* in irregular verbs in Cypriot Greek, as in (13)[10]. This shows that an analysis where in the competition of the two, *-ik* is defined as the more specified morpheme and blocks insertion of the augment, is not supported, and that *-ik* is the exponent of perfective aspect. It follows that (11d) is possible in Cypriot Greek, as also shown below.

(13) a. mbé -n -o
enter- -IMPERF -NONPAST
'I am entering'.

b. e- mb- -ik -a
PAST- enter- -PERF -PAST
'I entered'.

2.2. Realizing the Augment

The distribution of the augment in Cypriot Greek shows morphosyntactic differences with its close relative, Standard Modern Greek, and the already existing analyses of the Greek augment cannot be adopted here. Even more, the distribution of the Cypriot Greek augment in complex items seems to also differ in cases of verbs preceded by preverbs, verbs or nouns, as will be discussed further below. Most importantly, though, changes in the linear order of morphemes are part of derivational operations that are separate from the phonological exponence of the morphemes.

Cypriot Greek shows a different distribution of the augment compared to its use in Standard Modern Greek in that the Cypriot Greek augment is a Past Tense exponent that surfaces independently of stress. It depends on both the root and the suffixes, and not the

root alone. This cannot be seen in Cypriot Greek given the augment's obligatory presence, but the restrictions in Standard Modern Greek show the pattern in the following examples. Example (14) shows a one-syllable root, and Example (15) a two-syllable root.

(14) a. stél -no
send -NONPAST.1SG
'I am sending'.

b. é- stil -a
PAST- send -PAST.1SG
'I sent'.

c. stíl -a -me
send -PAST -1SG
'We sent'.

(15) a. kaθar -i -z -o
clean -v -IMPERF -NONPAST.1SG
'I am cleaning'.

b. kaθar -i -s -a
clean -v -PERF -PAST.1SG
'I cleaned'.

c. kaθar -i -s -a -me
clean -v -PERF -PAST -1PL
'We cleaned'.

In (14b), the suffix that follows the root is one syllable, but in (14c) the suffixes that follow the root form two syllables. The augment appears only in (14b), but it does not appear when the suffixes that follow the root form more than one syllable. This clearly shows that the augment *e-* in Standard Modern Greek is conditioned by the count of syllables of the stem, and not the root. On the other hand, (15) shows a two-syllable root, and, given the number of syllables as suffixes, the augment does not appear in any of these.

As I have shown in Table 1, this generalization is irrelevant to Cypriot Greek, which I argue instead follows the following set of rules[11] :

(16) a. T[+PAST] →e/___C
b. T→∅

By the Elsewhere principle, Cypriot Greek vowel-initial verbs will not show *e-*, as in the following example:

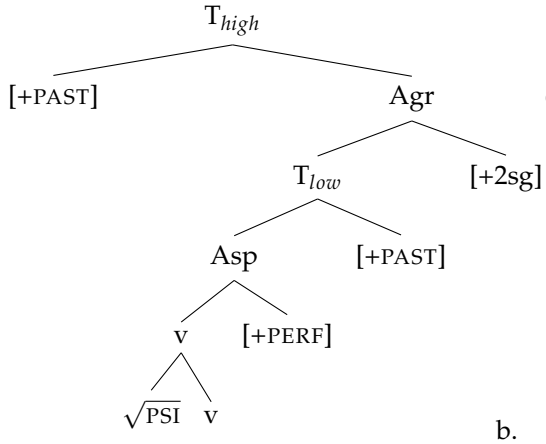
(17) a. aɣap -á -s.
love -NONPAST -2SG
'You love'.

b. (*e)- aɣáp -i -s -e -s.
PAST- love -v -PERF -PAST -2SG
'You loved'.

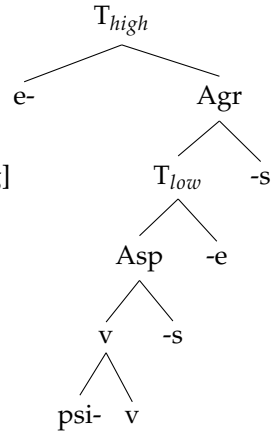
The following trees illustrate the appearance of the augment *e-* in Cypriot Greek after head movement has been applied. Given the two different tense morphemes, there are two T projections, which are labeled a T_{low} and T_{high}. T_{high} realizes an exponent only in Past Tense, similarly to particular allomorphs appearing in a T_{high} position in the analysis of the verb in Irish (Ostrove 2015)[12].

(18) é- psi -s -e -s
PAST- cook -PERF -PAST -AGR
'You cooked (it)'.

(19) a.



b.



The main claim here is that the Cypriot Greek augment *e-* is an exponent of [+PAST] and not an empty prefix (Spyropoulos and Revithiadou 2009) in a feature hierarchy where T and Agr do not form a fused terminal node. Given the clear morphological, rather than morphophonological, status of the augment in Cypriot Greek, a different distribution should also be expected in verbal complexes that make use of it. More specifically, the morphological nature of the Cypriot Greek augment is also seen in cases of Doubling and Metathesis, where abstract morphemes are subject to the relevant operation that generate a particular linear order. The following section presents cases of verbal complexes, the restrictions on the positioning of prefixes and preverbs, and the doubling and metathesis of the augment.

3. The Augment in Verbal Complexes

The view of the augment as part of the morphosyntactic structure that precedes exponence or Vocabulary Insertion is clearly seen with the absence of any changes based on prosodic conditions in the examples above. Furthermore, double exponence of the augment and, more specifically, cases of Metathesis and Doubling as will be discussed for the examples to follow, support the proposal that in a derivational view of morphology, the operations that affect the augment apply before Vocabulary Insertion and at a stage without phonological exponence.

The data in this section are cases of verbal complexes (i.e., compounds, see Ralli (2010) for discussion on compounding in Standard Modern Greek) in Cypriot Greek, which previous work classifies in different categories according to the properties of the preverb (Alexiadou 1997; Dimela and Melissaropoulou 2009; Ralli 2004, among others). Some of the preverbs discussed below are first constituents of compounds, which is not the case with prefixes that do not have this phrasal status. This classification is relevant here with respect to the appearance of the augment in some of these categories, but not others: adverbs, verbs and nouns serving as first constituents in the verbal complexes allow double appearance of the augment (21a). On the other hand, prefixes only allow the augment word-initially (21b).

(20) a. E_1- para- (e_2-) psi -s -a to.
PAST- over- PAST- cook -PERF -PAST it
'I overcooked it'.

b. E_1- ksí- (*e_2-) va -ps -a to.
PAST- de- PAST- color- -PERF -PAST it
'I decolored it'.

The distribution of the augment partly confirms the need for this classification to exist, with one group of preverbs allowing post-syntactic operations to take place and the other group disallowing them. I argue that the cases described here have different syntax in terms of the position of the preverb and the prefix in the structure.

3.1. Preverbs

The augment *e-* can appear in two positions[13] when the verb combines with an adverb[14] . In these cases, e_2- can be omitted, but when it is present and serves as the antepenultimate syllable, it holds the stress. The preverbs *psil-, mis-, poll-* are also free morphemes used as adjectives (e.g., *psilo xtirio* 'tall building') and *kal-, siɣ-* can be used as adverbs (e.g., *parpato siɣa* 'I walk slowly').

(21) a. E_1- psil- o- (e_2-) psi -s -a to.
PAST- little- CM- PAST- cook -PERF -PAST.1SG it
'I barely cooked it'.

b. E_1- mis- o- (e_2-) psi -s -a to.
PAST- half- CM- PAST- cook -PERF -PAST.1SG it
'I half cooked it'.

c. E_1- kal- o- (e_2-) psi -s -a to.
PAST- good- CM- PAST- cook -PERF -PAST.1SG it
'I cooked it well'.

d. E_1- poll- o- (e_2-) psi -s -a to.
PAST- much- CM- PAST- cook -PERF -PAST.1SG it
'I cooked it a lot'.

e. E_1- para- (e_2-) psi -s -a to.
PAST- over- PAST- cook -PERF -PAST it
'I overcooked it'.

f. E_1- siɣ- o- (e_2-) psi -s -a to.
PAST- slow- CM- PAST- cook -PERF -PAST it
'I slow-cooked it'.

In (21), the stress surfaces on the augment since the verb *psín-* 'to cook' belongs in the first conjugation, where stress is found on the penult. In fact, when the stress is on the final syllable, then stress shifts to the penultimate syllable, as in *ksana-pon-ó* > e_1*-ksana-(*e_2*-)pón-u-n* 'I was in pain again'. So, stress always retracts a syllable to the left in the past.

There are no restrictions on the appearance of the augment in three-syllable verbs, as is already predicted by the basic distribution of the augment.

(22) a. E_1- psil- o- (e_2-) θkjáva -s -a.
PAST- little- CM- PAST- read -PERF -PAST
'I studied a little'.

b. E_1- mis- o- (e_2-) θkjáva -s -a.
PAST- half- CM- PAST- read -PERF -PAST
'I studied enough, but not everything'. (lit. I half studied.)

c. E_1- ksana- (e_2-) θkjáva -s -a.
PAST- again- PAST- read -PERF -PAST
'I studied again'.

Following these examples, it is not surprising that omitting the first augment is not allowed.

(23) a. * Siɣ- o- (e_2-) psi -s -a to.
slow- CM- PAST- cook -PERF -PAST it
'I cooked it slowly'.

b. * Mis- o- (e_2-) psi -s -a to.
half- CM- PAST- cook -PERF -PAST it
'I half cooked it'.

c. * Mis- o- (e_2-) θkjáva -s -a.
half- CM- PAST- read -PERF -PAST
'I studied enough, but not everything'. (lit. I half studied.)

Another case where the PAST can surface in two positions is with the use of *ksana* 'again', which also forms a compound with the verb. Unlike the cases seen above, the compound marker *-o* does not show up with the use of *ksana*, since the vowel *-a* is part of the root and a vowel does not need to be inserted between the two members of the compound. Unlike *ksana*, *-a* is not always part of the root; this can be seen by the appearance of the e_2-, as in *met-á-* 'after', e_1*-metá-lav-a* > e_1*-met-é*$_2$*-lav-a* 'to receive communion' and in *par-a-*, e_1*-par-á-lav-a* > e_1*-par-é*$_2$*-lav-a* 'to receive'.

(24) a. En na to ksana- psí -s -o.
be to it again- cook -PERF -NONPAST
'I will cook it again'.

b. E_1- ksana- (e_2-) psi -s -a to.
PAST- again- PAST- cook -PERF -PAST it
'I cooked it again'.

c. En na to ksana- pé -ps -o.
be to it again- send -PERF -NONPAST
'I will send it again'.

d. E_1- ksana- (e_2-) pe -ps -a to.
PAST- again- PAST- send -PERF- PAST it
'I sent it again'.

As in the examples given before, e_1- is obligatory with the use of *ksana*.

(25) a. * Ksana- (e_2-) psi -s -a to.
again- PAST- cook -PERF -PAST it
'I cooked it again'.

b. * Ksana- (e_2-) pe -ps -a to.
again- PAST- send -PERF -PAST it
'I sent it again'.

3.2. N–V and V–V Compounds

Double augments also appear in compounds[15] which show once again that the e_2- does not have to be stressed. In the following example, the stress is on the final syllable in the NonPast and retracts one syllable to the left in the Past. When e_2- is present, it is unstressed.

(26) a. I Patu tʃiy- o- pon -á kaθi mera.
the Patu abdomen- CM- hurt- -NONPAST every day
'Patu has a stomachache every day'.

b. I Patu e_1- tʃiy- o- (e_2-) pón -e -n extes.
the Patu PAST- abdomen- CM- PAST- hurt- -PAST -AGR yesterday
'Patu had a stomachache yesterday'.

The following tables (see Tables 4 and 5) show more examples with two-syllable and three-syllable verb stems, irregular and suppletive verbs that are part of N–V and V–V verbal complexes.

Table 4. Verbal complexes with two-syllable verb stems.

NON-PAST, PERF	PAST,PERF	PAST,PERF, +e_2	Meaning
tsul-o-káts-o	e_1-tsul-ó-kats-a	e_1-tsul-o-$é_2$-kats-a	'to sit with knees bent'
ɣaur-o-mnjá-z-o	e_1- ɣaur-ó-mnja-s-a	e_1- ɣaur-o-$é_2$-mnja-s-a	'to look like a donkey'
anav-o-svín-o	anav-ó-svin-a	anav-o-$é_2$-svin-a	'to flicker'
tʃiy-o-pon-ó	e_1-tʃiy-o-pón-u-n	e_1-tʃiy-o-e_2-pón-u-n	'to have a stomachache'
xask-o-ɣel-ó	e_1-xask-o-ɣél-u-n	e_1-xask-o-e_2-ɣél-u-n	'to gape and laugh'

Table 5. Verbal complexes with three-syllable verb stems.

NON-PAST, PERF	PAST,PERF	PAST,PERF, +e_2	Meaning
xar-o-palé-fk-o	e_1-xar-o-pále-ps-a	e_1- xar-o-(e_2-)pále-ps-a	'to be at death's door'
ɣlik-o-kitá-z-o	e_1-ɣlik-o-kíta-ks-a	e_1- ɣlik-o-(e_2-)kíta-ks-a	'to have a sweet gaze'
strif-o-ɣirí-z-o	e_1-strif-o-ɣíri-z-a	e_1- strif-o-(e_2-)ɣíri-z-a	'to whirl around'
kli-o-stomnjá-z-o	e_1-kli-o-stómnja-s-a	e_1-kli-o-(e_2-)stómnja-s-a	'to stop talking'

The double appearance of *e-* confirms that it does not surface to only hold the stress in Cypriot Greek and that it is not affected by the classification of other prefixes.

3.3. Prefixes

Prefixes, unlike preverbs, verbs and nouns, do not show the same distribution with the augment. More specifically, they do not allow the augment to appear to the immediate left of the verb root, but only allow it word-initially (i.e., e_1-). This is the case with *po-* and *andi-* in the examples below [16].

With *po-*:[17]

(27) a. E_1- pó- (*e_2)- fkal -e -s ton.
PAST- *po-* PAST- take.out- -PAST -AGR him
'You exhausted him'.

b. E_1- pó- (*e_2)- spa -s -e -s ton.
PAST- *po-* PAST- break- -PERF -PAST -AGR him
'You beat him'.

c. E_1- po- (*e_2-) kúppi -s -a to.
PAST- po- PAST- flip- -PERF -PAST it
'I flipped it'.

The following shows that e_2- is also not possible with *andi-*:

(28) Andi- (*e_2-) mili -s -a .
against- PAST- talk- -PERF -PAST
'I talked back'.

3.4. A Syntactic Approach

A crucial difference between the different types of complexes presented above is the one between preverbs and prefixes. I argue here that preverbs and prefixes show a different syntax for the linear sequences given below.

(29) a. Aug PV root Asp T Agr
b. Aug PV Aug root Asp T Agr

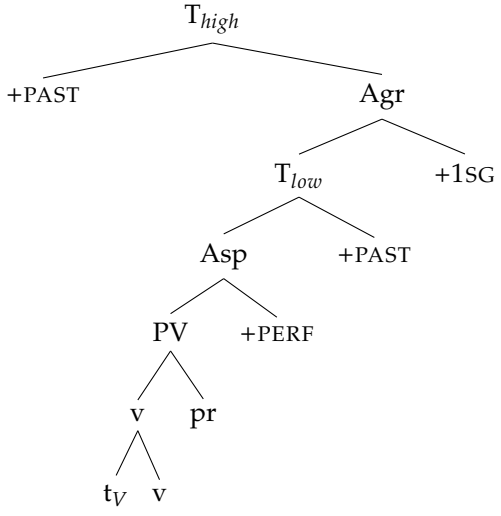
The crucial aspect of the cases discussed here is the time of the Merge of the verb root with the preverb (or prefix) (hence, PV below), that is, whether the verb root and the prefix have merged before verb raising to T. If the verb root and the preverb form a verbal complex before V raised to T, then the complex can only be merged with an augment

linearly preceding both the preverb and the verb. On the other hand, if the verb root raised to T before the preverb and the verb merge together, then the root (along with all other functional exponents) can merge with the augment.

Prefixes that are merged lower in the structure will only appear to allow the augment in the first position, as they have already formed a verbal complex when the augment is merged to the structure, as in the example repeated below.

(30) E_1- pó- fkal -e -s ton.
PAST- *po*- take.out- -PAST -AGR him
'You exhausted him'.

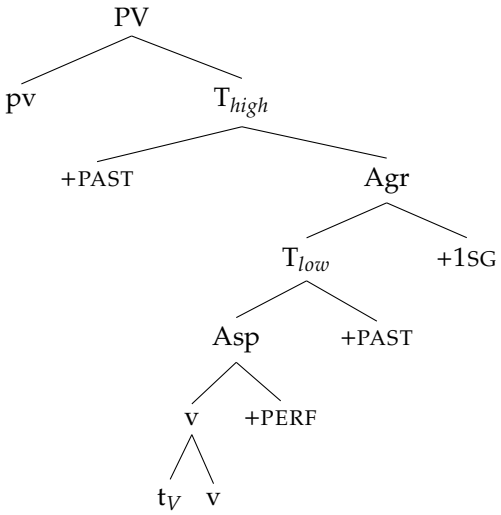
As the verb raises, the prefix and the verb form a verbal complex before the verb gets to T.



(31)

In the cases where the augment is allowed both to the left of the root and also at the first position, the verb root and the preverb do not form a verbal complex before the verb raises to T, since the preverb is merged higher than the T position in the structure.

(32) E_1- ksan<u>a</u>- (<u>e_2</u>)- pe- -ps -a to.
PAST- again- PAST- send -PERF -PAST it
'I sent it again'.



(33)

The case of the German particle verbs and their distribution with the morpheme *ge-*, where the particle can be separated from the verb or be part of the verbal complex, is also

similar. When it is part of the verbal complex, the augment appears to the left of the verb root and is preceded by the particle, as in (34a). This is not a first position restriction, since the verb particle can be separated from the verb allowing *ge-* to be word-initial (34b).

(34) a. Sie hat ihn nicht rangelassen /*ranlassen
she has him not at.it.let
'She didn't let him touch her/him/it' or
'She didn't let him get at her/him/it'. (Müller 2002, p. 263)

b. An haben wir damit gefangen, daß...
PART(on) have we there.with caught that
'We got started on this by talking about...' (Müller 2002, p. 277)

c. Wir haben damit angefangen, daß...
we have there.with began that
(Grohmann, pc)

However, this is not the case with every particle in German, possibly suggesting a different syntax for these cases that do not allow the particle to be separated from the verb[18] (see Nevins 2016 for more arguments on the position of *ge-*).

(35) a. eintrat der Studienrat
in.stepped the teacher
'The teacher came in'.

b. * Ein war der Studienrat getreten.
in was the teacher stepped
Intended: 'The teacher had entered'. (Müller 2002, p. 278)

In a similar way to the German particles that act as free morphemes, the preverbs that allow the double augment can also be used as free morphemes in a clause.

(36) a. E_1- kal- <u>o</u>- (<u>e_2</u>-) psi- -s -a to.
PAST- good- CM- PAST- cook -PERF -PAST it
'I cooked it well'.

b. E- psisa to kala.
PAST- cook it well
'I cooked it well'.

c. E_1- pó- fkal -e -s ton.
PAST- *po-* take.out- -PAST -AGR him
'You exhausted him'.

d. * E- fkal -e -s ton po.
PAST- take.out- PAST -AGR it po
(int.'You exhausted him'.)

Therefore, the distribution of the augment in verbal complexes acts as a diagnostic on the status of the preverb with regard to its syntactic position in the structure. In the following section, I develop the analysis to capture the double occurrence and dislocation of the augment in the cases presented here.

4. Doubling and Metathesis of the Augment *e-*

Following Arregi and Nevins (2012) (also Arregi 2015), morphological Metathesis and Doubling are ordering phenomena of Generalized Reduplication that apply to the output of Linearization in the postsyntactic component. Generalized Reduplication is defined in Harris and Halle (2005) as:

> "reduplication is a process of word formation whereby a designated contiguous subsequence of elements in a base form is repeated—that is, appears twice—in its entirety ("full reduplication") or in part ("partial reduplication") in a derived

> form" and it is believed that "not only phonological segments but syntactic and morphological elements as well can be both triggers and targets of reduplication" (Harris and Halle 2005, p. 198).

Doubling (copying) and Metathesis (displacement) of linear sequences are operations that change the linear order of particular morphological contexts to satisfy certain constraints, and they take place at the Linear Operations module before Vocabulary Insertion (VI).

Reduplication, as defined in Harris and Halle (2005), is a process of word formation whereby a designated contiguous subsequence of elements in a base form is repeated; that is, it appears twice in its entirety or in part in a derived form. This process of repeating particular elements is driven by a condition specific to the language where the phenomenon appears. Importantly, the string reduplicated is a contiguous subsequence in the word.

(37) XWYZ
X⟦WY⟧Z
XWYWYZ

The brackets used here are unpronounceable elements and must be eliminated before the phonological realization. They are part of readjustment rules that specify the relevant morphological conditions driving the changes. In addition to the brackets, partial reduplication is the result of partial deletion, indicated by unpaired angle brackets inside a sequence delimited by paired square brackets.

(38) XWYZ
X⟦W⟩Y⟧Z
XWYWYZ
XYWYZ

The angled bracket indicates deletion of the element to its left, resulting in what appears on the surface as partial reduplication. For example, the formalism applies in Madurese as follows:

(39) ⟦es⟩tre⟧an → estre-estre-an=tre-estre-an (Harris and Halle 2005)

Here I argue that the distribution of the augment in verbal complexes shows both doubling and metathesis and supports the idea that these are operations taking place before VI. A well-known example for a post-syntactic analysis of reduplication is the case of the Spanish double exponents *n-*, which mark the plural.

(40) a. Venda -∅ -lo.
sell -IMP.2.SG -CL.ACC.M.SG
'Sell(Sg) it (imperative)'.
b. Venda -n -lo.
sell -IMPR.2.PL -CL.ACC.M.SG
'Sell (Pl) it'. (Arregi and Nevins 2012, p. 244)

The plural inflectional exponent *-n* can appear to the right of the postverbal clitic (41a) or appear twice, as in (41b).

(41) a. Venda -lo -n.
b. Venda -n -lo -n. (Harris and Halle 2005, p. 196)

The formalism in Arregi and Nevins (2012) derives Doubling (Partial Reduplication) and Metathesis (Local Dislocation) with the presence or absence of certain symbols that marks the changes to take place. These processes take place after Linearization and before Vocabulary Insertion, applying in abstract terminal nodes as opposed to phonological elements. The use of '⟩' marks deletion before the first copy and use of '⟨' deletion after the second copy, and use of '⟦ ⟧' marks the subsequence that undergoes these changes. Examples from abstract linearized sequences, where these symbols are used, are given below:

(42) a. ABCD → A⟦BC⟧D → A-BC-BC-D
b. ABCD → A⟦B⟩C⟧D → ~~B~~C-BC-D → A-C-BC-D
(Leftward Doubling (Copying): Delete before ⟩ in first copy.)
c. ABCD → A⟦B⟨C⟧D → A-BC-B~~C~~-D → A-BC-B-D
(Rightward Doubling (Copying): Delete after ⟨ in second copy.)
d. ABCD → A⟦B⟩⟨C⟧D → A-~~B~~C-B~~C~~-D → ACBD
(*Metathesis (Displacement)*: Delete the leftmost part of the first copy and the rightmost part of the second copy.)

Repair strategies in the Linear module are the result of constraints on the possible order of morphemes. The Cypriot Greek augment has to be word-initial, a result of what I propose here as the morphological T-Initiality constraint, defined below.

(43) *T-Initiality*
The terminal T has to be the leftmost within the verbal complex.

The two cases observed with the linear positioning of the augment[19] in verbal complexes are cases of Metathesis and Dislocation. In Doubling, the e_2- surfaces to the left of the verb stem and the e_1- surfaces to the left of the verb root.

(44) E_1- ksana- (e_2-) psi -s -a to.
PAST- again- PAST- cook -PERF -NONPAST.1SG it
'I cooked it again'.

The double appearance of *e*- is a result of doubling, a post-syntactic operation of copying. The rule for Doubling of the Cypriot Greek Past Tense augment in compounds is the following:

(45) a. Structural description: Y e_{past} X
b. Structural change:
i. Insert ⟦to the immediate left of Y, and ⟧ to the immediate right of e_{past}.
ii. Insert ⟩ to the immediate left of e_{past}.

In the application of this rule, the special symbols will mark the subsequences to be copied and then deleted to produce the surface linear order. The linear representation with the morphemes is given in (46), which corresponds to the exponents in (59).

(46) a. ADV +PAST $\sqrt{V}$ PRF +PAST AGR →
b. ⟦ADV +PAST⟧ $\sqrt{V}$ PRF +PAST AGR →
c. ⟦ADV ⟩ +PAST⟧ $\sqrt{V}$ PRF +PAST AGR →
d. ADV +PAST ADV +PAST $\sqrt{V}$ PRF +PAST AGR →
e. ~~ADV~~ +PAST ADV +PAST $\sqrt{V}$ PRF +PAST AGR →
f. +PAST ADV +PAST $\sqrt{V}$ PRF +PAST AGR

(47) $ksana_{ADV}$- e_{2PAST}- psi $-s_{+PERF}$ $-a_{+1SG}$ →
⟦$ksana_{ADV}$- e_{2PAST}-⟧ psi $-s_{+PERF}$ $-a_{+1SG}$ →
⟦$ksana_{ADV}$-⟩ e_{2PAST}- ⟧ psi $-s_{+PERF}$ $-a_{+1SG}$ →
$ksana_{ADV}$- e_{1PAST}- $ksana_{ADV}$- e_2- psi $-s_{+PERF}$ $-a_{+1SG}$ →
~~ksana-~~$_{ADV}$ e_{1PAST}- $ksana_{ADV}$- e_{2PAST}- psi $-s_{+PERF}$ $-a_{+1SG}$ →
e_{1PAST}- $ksana_{ADV}$ -e_{2PAST}- psi $-s_{+PERF}$ $-a_{+1SG}$ →
eksanaépsisa

The other case discussed here is when the augment closer to the root is omitted but the augment to the immediate left of the preverb is not. When the *e*- only appears to the left of the preverb, then it is a case of Metathesis (Displacement), following the rule defined below.

(48) a. Structural description: Y e_{past} X
b. Structural change:
i. Insert ⟦to the immediate left of Y, and ⟧ to the immediate right of e_{past}.
ii. Insert ⟩⟨ to the immediate left of e_{past}.

With the application of the rule, insertion of the appropriate symbols will mark the subsequence targeted for copying and deletion to produce the surface order of *eksanapsisa* 'I cooked again'.

(49) a. ADV +PAST $\sqrt{V}$ PRF +PAST AGR →
b. ⟦ADV⟩⟨+PAST⟧ $\sqrt{V}$ PRF +PAST AGR →
c. +PAST ADV $\sqrt{V}$ PRF +PAST AGR

(50) $ksana_{ADV}$- $\underline{e_2}_{+PAST}$- psi -s_{+PERF} -a_{+1SG} →
⟦$ksana_{ADV}$- $\underline{e_2}_{+PAST}$-⟧- psi -s_{+PERF} -a_{+1SG} →
⟦$ksana_{ADV}$-⟩⟨$\underline{e_2}_{+PAST}$-⟧- psi -s_{+PERF} -a_{+1SG} →
$ksana_{ADV}$- e_{1+PAST}- $ksana_{ADV}$- $\underline{e_2}_{PAST}$- psi -s_{+PERF} -a_{+1SG} →
~~ksana~~$_{ADV}$- e_{1+PAST}- $ksana_{ADV}$- $\underline{e_2}_{+PAST}$- psi -s_{+PERF} -a_{+1SG} →
e_{1+PAST}- $ksana_{ADV}$- psi -s_{+PERF} -a_{+1SG} →
eksanapsisa

Doubling and Metathesis phenomena reorder particular subsequences that result from Linearization before Vocabulary Insertion. It is therefore predicted that any VI rules that are subject to a particular phonological context will not be affected by these ordering changes. This is exactly the case with the irregular augment *i-*, which appears with certain verbs in the position where *e-* would normally appear. The author of Merchant (2015) notes that these verbs in Standard Modern Greek conditioned by aspect show the irregular form. Some of these verbs are θ*elo* > *i-*θ*ela* 'want', *ksero*>*i-ksera* 'to know', *pino*>*i-pja* 'to drink', *vlepo*>*i-*ð*a* 'see', *leo*>*i-pa* 'say' (Merchant 2015, p. 277). Verbs that show the irregular *i-* instead of *e-* in Cypriot Greek are given in Table 6.

Table 6. Verbs with the irregular augment *i-*.

NON-PAST, PERF	PAST, PERF	PAST, PERF, (+ irreg.)	Meaning
θor-	-	í-ð-a	'to see'
pín-	-	í-pkj-a	'to drink'
lal-	-	í-p-a	'to say'
érk-	-	í-rt-a	'to come'
θél-	é-θel-a	í-θel-a	'to want'
ksér-	é-kser-a	í-kser-a	'to know'

The verbs θ*el-* 'want' and *kser-* 'know' surface with either *e-* or *i-*. For these specific verbs, when the irregular *i-* does not surface, then the Elsewhere condition inserts *e-* as the default. The irregular augment is only conditioned by the root, and not the suffixes that follow.

(51) [+PAST]→i/__ð-, pkj-,*p-*,*rt-*,θ*el-*, *kser-*

As predicted, when the verbs with the irregular *i-* appear in compounds similar to those discussed before, the irregular augment only appears to the immediate left of the root, but not the immediate left of the preverb.

(52) a. E- psil- o- (i-) pkj -a to.
PAST- little- CM- PAST- drink -PAST it
'I drank some of it'.

b. E- mis- o- (i-) pkj -a to.
PAST- half- CM- PAST- drink -PAST it
'I drank half of it'.

c. E- ksana- (i-) pkj -a to.
PAST- again- PAST- drink -PAST it
'I drank it again'.

For verbs that show the regular e_2 and the irregular *i-*, both options are available.

(53) a. E_1- psil- o- ({e_2,i_2}-) θel -a to.
PAST- little- CM- PAST- want -PAST it
'I wanted it a bit'.

b. E_1- poll- o- ({e_2,i_2}-) θel -a to.
PAST- much- CM- PAST- want -PAST it
'I wanted it a lot'.

c. E_1- ksana- ({e_2,i_2}-) θel- -a to.
PAST- again- PAST- want- -PAST it
'I wanted it again'.

The full list[20] is given below (see Table 7) with *ksana* 'again' (with the exception of 'to know', where *psilo-* is used instead), along with verbal complexes formed with nouns and verbs.

Table 7. Verbal complexes with irregular *i-*.

NON-PAST, PERF	PAST, PERF	PAST, PERF, (+ irreg.)	Meaning
ksana-θor-ó	-	e-ksana-(i-)ð-a	'to see again'
ksana-pín-o	-	e-ksana-(i-)pkj-a	'to drink again'
ksana-lal-ó	-	e-ksana-(i-)p-a	'to say again'
ksana-(é)rk-ume	-	e-ksana-(i-)rt-a	'to come again'
ksana-θél-o	e-ksana-(e-)θel-a	e-ksana-(i-)θel-a	'to want again'
psilo-ksér-o	e-psilo-(e-)kser-a	e-psilo-(i-)kser-a	'to know a little'
kuts-o-pín-o	-	e_1-kuts-o-$í_2$-pkj-a	'to drink very little'
kras-o-pín-o	-	e_1-kras-o-$í_2$-pkj-a	'to drink wine'
ɣlik-o-θor-ó	-	e_1- ɣlik-o-$í_2$-ð-a	'to have a sweet gaze'
kamm-o-θor-ó	-	e_1-kamm-o-$í_2$-ð-a	'not to be able to see well'

Given the table above, it is not surprising that the irregular *i-* does not appear to the immediate left of the adverb.

(54) a. * I_1- ksana- ({e_2,i_2}-) θel -a to.
PAST- again- PAST- want -PAST it
'I wanted it again'.

b. * I_1- ksana- (i_2-) pkj -a to.
PAST- again- PAST- drink -PAST it
'I drank it again'.

c. * I_1- psilo- (i_2-) kser -a to.
PAST- little- PAST- know -PAST it
'I knew it a little'.

As expected by the theory adopted here and the irregular augment VI rule, copying of the augment that marks the past takes place before VI. As a result, the augment is copied in the first position, before (51) applies.

Following the same reasoning, copying of the augment takes place before any specific rules that disallow the appearance of the augment, as in the case of vowel-initial roots.

(55) e- ksana- (*e)- aɣapi -s -e -s.
PAST- again- PAST- love -ASP -PAST -AGR
'I loved again'.

The appearance of the augment in the first position, even if its appearance adjacent to the root is not allowed, points exactly to the fact that copying takes place before VI. When VI takes place, *e-* appears in the first position as expected, but the VI rule repeated in (56) will only insert a null exponent when there is no consonant-initial root, such as in *aɣap-*.

(56) a. T[+PAST] →e/___C
b. T→∅

More than one exponent of the rules given above can be presented in languages that allow them. The author of Arregi (2015) argues that Metathesis (Displacement) and Doubling (Copying) apply cyclically to account for the following cases of the *-n* exponence. Spanish allows *-n* to surface in all the different combinations presented below, pointing out the fact that these rules can apply more than once in a cyclic fashion.

(57) a. vénda-me-n-lo
b. vénda-me -lo-n
c. vénda-me-n-lo-n
d. vénda-n-me-n-lo
e. vénda-n-me -lo-n
f. vénda-n-me-n-lo-n

In a similar manner, the following examples from Cypriot Greek show multiple exponents of the augment *e-*, suggesting successive cyclic application of displacement and copying, although further research is needed to discuss if these examples are subject to the T-initiality constraint.

(58) a. **e-** ksana- para- psi -s -e -s to.
PAST- again- over- cook -PERF -PAST -AGR it.
'You overcooked it again'. [Displacement, Displacement]

b. **e-** ksana- **e-** para- psi -s -e -s to.
PAST- again- PAST- over- cook -PERF -PAST -AGR it.
[Copying, Displacement]

c. **e-** ksana- para- **e-** psi -s -e -s to.
PAST- again- over- PAST- cook -PERF -PAST -AGR it.
[Displacement, Copying]

d. **e-** ksana- **e-** para- **e-** psi -s -e -s to.
PAST- again- PAST- over- PAST- cook -PERF -PAST -AGR it.
[Copying, Copying]

e. * ksana- **e-** para- **e-** psi -s -e -s to.
again- PAST- over- PAST- cook -PERF -PAST -AGR it.

As an example, (d) would involve two Copying processes as follows:

(59) $\text{ksana}_{\text{ADV}}$- para_{PV}- e_{PAST}- psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
ksana- ⟦para_{PV}- e_{PAST}-⟧ psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
ksana- ⟦para_{PV}-⟩ e_{PAST}- ⟧ psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
ksana- para_{PV}- $\text{e}_{1\text{PAST}}$- para_{PV}- $\underline{\text{e}_2}$- psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
ksana- ~~para-~~$_{\text{PV}}$ $\text{e}_{1\text{PAST}}$- para_{ADV}- $\text{e}_{2\text{PAST}}$- psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
⟦$\text{ksana}_{\text{ADV}}$- $\text{e}_{2\text{PAST}}$-⟧ para_{ADV} e_2- psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
⟦$\text{ksana}_{\text{ADV}}$-⟩ $\text{e}_{2\text{PAST}}$- ⟧ para_{ADV} e_2 psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →
~~ksana-~~$_{\text{ADV}}$ $\text{e}_{1\text{PAST}}$- $\text{ksana}_{\text{ADV}}$- $\text{e}_{2\text{PAST}}$- para_{ADV} e_3 psi -$\text{s}_{+\text{PERF}}$ -$\text{a}_{+1\text{SG}}$ →

$e_{1\,PAST}$- ksana- e_2 $para_{PV}$ $e_{3\,PAST}$- psi -s_{+PERF} -a_{+1SG} →
eksanaeparaépsisa

The application of Displacement and Copying are repair strategies that can apply cyclically to satisfy the requirement of the augment to appear in the first position in a verbal complex. In this sense, the augment in Cypriot Greek appears as a category, with a leftmost-edge-related constraint of the word's internal domain, suggesting that other morphological phenomena could potentially show a similar constraint. These post-syntactic changes follow an *Initiality* constraint on the morphotactics of the augment distribution in Cypriot Greek.

Standard Modern Greek

The main advantages of using the Generalized Reduplication formalism for Doubling and Metathesis as discussed in Arregi and Nevins (2012) are that, first, it provides a unified way to explain the variation in the linear order of verbal complexes, as discussed here; and second, it shows the dialectal variation as observed between two proximal varieties, Cypriot Greek and Standard Modern Greek. In this framework, variation in the grammatical model is identified at a particular stage of the derivation and more specifically one that does not simply correspond to the surface form, but rather the underlying structure of it.

When compared to the Cypriot Greek data presented here, Standard Modern Greek does not show Doubling or Metathesis. It only allows the augment to the immediate left of the two-syllable stems and to the left of the root in a verbal complex for the purpose of holding the stress[21].

(60) a. To (*e-) psil- o- (é-) psi -s -a.
it PAST- little- CM- PAST- cook -PERF -PAST.1SG
'I barely cooked it'.

b. To (*e-) para- (é-) psi -s -a.
it PAST- over- PAST- cook -PERF -PAST.1SG
'I overcooked it'.

c. To (*e-) ksana- (é-) psi -s -a.
it PAST- again- PAST- cook- -PERF -PAST.1SG
'I cooked it again'. [Standard Modern Greek]

The same applies for verbal complexes with nouns and verbs, and those with the irregular augment, which also surfaces to the immediate left of the root.

(61) a. Anavó- (e)- svi -s -e.
turn.on- PAST- turn.off -PERF -PAST.1SG
'It flickered'.

b. kraso- í- pkj -a.
wine- PAST drink -PAST.1SG
'I drank wine'. (Standard Modern Greek)

As predicted by the Trisyllabic stress rule that restricts the stress from shifting, and the fact that the Standard Modern Greek augment only surfaces to hold the stress, it is not surprising that the augment does not appear with the three-syllable verb stems below.

(62) a. ɣlik- o- (*e-) kítak -s -a.
sweet- CM- PAST- look PERF- PAST.1SG
'I had a sweet gaze'.

b. strif- o- (*e-) ɣíri -s -a.
twirl- CM- PAST- turn -PERF -PAST.1SG
'I twirled'.

c. kont- o- (*e-) stá -θ -ik -a.
close- CM- PAST- stand -NONACT -PERF -PAST.1SG
'I took a pause from walking'.

Standard Modern Greek and Cypriot Greek are similar to a great extent in the structure of the verb's morphology, but the morphological operations of Doubling and Metathesis appear only in the latter. To the extent that the post-syntactic mechanism adopted here is morphological and not syntactic, it provides a locus of variation in the grammatical model that informs our understanding of these phenomena.

5. Conclusions

Augments are prefixes that do not form a uniform category in terms of their properties, and very little is generally known about them. Even so, differences in their distribution in different languages provide interesting additions to previously known characteristics and support alternative analyses. This paper provides an in-depth analysis of the augment in Cypriot Greek, identifying a repair strategy based on an Initiality constraint in the language that requires the augments to always surface word-initially (see also discussion in Appendix A).

The paper identifies and analyzes the variation of the Past Tense augment as observed between the two closely related varieties of Cypriot Greek and Standard Modern Greek and contributes to the study of the augment as a morphological, rather than morpho-phonological, phenomenon for languages that make use of it by supporting a derivational approach to morphology. The standard analysis of the Greek augment relates its use to prosodic information of the verb structure. The Cypriot Greek augment differs in this respect, and this paper presents its distribution in detail to show that it is part of the morphological structure of the verb. Independent of the syllable count and the stress shift in the Past Tense, the Cypriot Greek augment *e-* is an exponent of the PAST that obligatorily appears as part of the verb's morphology.

In support of this view of the augment, I analyze examples of verbal complexes with multiple exponence of *e-* as cases of post-syntactic copying and displacement, which are operations related to the morphological component (post-syntax) that take place after Linearization and before Vocabulary Insertion. These repairs follow an *Initiality* constraint in verbal complexes, where the augment always surfaces word-initially. The post-syntactic mechanism of Generalized Reduplication (Arregi and Nevins 2018) can be extended to the placement of augments, and gives an analysis characterized by grammatical constraints rather than mere optionality.

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Appendix A. Kinande

The *Initiality* constraint identified here for the Cypriot Greek augment also appears to be of relevance for the Kinande augment. Kinande shows reduplication in nouns that consist of an augment, a prefix and a stem. The augment, known in Bantu languages as the 'initial vowel' or the 'preprefix', occurs with all common nouns except class 20. Nouns from some classes are given in the table below.

Table A1. Common nouns in Kinande (Mutaka and Hyman 1990, p. 75).

1	o-	mu-	o.mú-kalì	'woman'
2	a-	ba-	a.bá-kálì	'women
3	o-	mu-	o.mú.tì	'tree'
4	e-	mi-	e.mí-tì	'trees'
5	e-	ri-	e.rí-bugù	'banana'
6	a-	ma-	a.má-bugù	'bananas'
7	e-	ki-	ki-rii	'potato'
8	e-	bi-	e.bi-rii	'potatoes'
9	e-	N-, ∅-	é.n-gokò	'chicken'
10	esyo-	N-, ∅	esyó.n-go.kò	'chickens'

Nouns with bisyllabic stems show reduplication, with the reduplicated noun in the righthand column acquiring the meaning 'a real X' with a positive connotation.

Table A2. Common nouns in Kinande (Mutaka and Hyman 1990, p. 76).

1	o.ku-gulu	'leg'	o.ku-gulu.gulu
2	o.mu-góngò	'back'	o.mu-góngo.góngò
3	o.kú-boko	'arm'	o.kú-bokó.boko
4	a.ká-húkà	'insect'	a.ká-húká.húkà
5	o.mú-kalì	'woman'	o.mú.kali.kalì
6	o.mu-longò	'village'	o.mu-longo.longò
7	o.mu-síkaa	'girl'	o.mu-síka.síkaa

The augment falls outside the scope of reduplication. Reduplication for Mutaka and Hyman (1990) takes place at a stage in the grammar where the augment has not yet been added.

(63) a. e-swa.swa.swa
b. *e.swa.e.swa.e.swa (Mutaka and Hyman 1990, p. 82)

(Mutaka and Hyman 1990, p. 82) explain that even if the augment cannot be reduplicated, it must be present in order for a noun to undergo reduplication.

(64) a. ngánangásunga o.mú-kali.kalì
'If I could find the real woman'
b. * ngánangásunga mú-kali.kalì
c. ngánangásunga o.mú-kalì
'If I could find the woman'
d. ngánangásunga mú-kalì
'If I could find a woman' (Mutaka and Hyman 1990, p. 82)

This suggest that reduplication does not only target the actual reduplicated part of the word but a sequence of linear elements, including the augment. This puzzle can possibly be explained with the formalism adopted here. Reduplication actually targets the entire subsequence of morphemes identified here, but it actually is partial reduplcation, characterized by deletion of subparts of the copy.

(65) o- mú- kali→
⟦o- mú- kali⟧ →
o- mú- kali- o- mú- kali→
o- mú- kali- ~~o- mú-~~ kali→
o- mú.kali.kali

Setting aside tone reduplication, the augmented noun is marked for rightward reduplication, and the first two morphemes are marked for deletion in the second copy. The result is partial

reduplication of the entire noun and not just of the stem *kali*. The same *Initiality* constraint can be assumed; what is deleted is what is not an initial position, since Kinenda requires the augment to always be word-initially in these cases. Reduplication cannot take place without the augment because it would assume deletion in both copies, which violates the *Initiality* constraint. While the discussion on this is only limited to the observations presented in Mutaka and Hyman (1990), more data on the distribution of the augment in Kinande can confirm whether this is precisely the case, as well as similar cases from other languages that make use of this special prefix.

Notes

1 All the data reported here are based on judgments by native speakers, including the author's own judgments. Any inter-speaker or regional variation is not documented.

2 The underscore in the table marks the syllables that can be stressed.

3 Highlighted parts indicate the position of the augment in the verbal paradigm.

4 This matter has been the focus of previous work, as in Joseph and Smirniotopoulos (1993), who follow an approach that does not treat Greek morphology with the assumption of an underlying syntactic structure provided the complexity of a one-to-one matching of the morphemes with morphosyntactic features. In the derivational framework of Distributed Morphology presented here, terminal nodes are projections of morphosyntactic features in an underlying syntactic structure that are realized as exponents after Vocabulary Insertion (Arregi and Nevins 2012, 2018; Embick and Noyer 2007; Halle and Marantz 1993).

5 This analysis supports a separate T exponent for the data presented here and attempts to explain the alternation between the exponents in Table 1 (namely, /-a/, /-e/, /-u/). The claim is that, given the systematicity of the exponents, -e realizes the second person singular and plural and third person singular, all of which bear a [-author] feature. The puzzle arises with 3PL, where, instead of -e, the exponent is -a. The analysis is that with the deletion of the [-author] feature, -e can no longer be realized, and, in this case, -a appears, explaining the unpredicted distribution of -a in these cases. This explanation disallows the appearance of 3PL forms *epsisen, *epsinen, *epli*θ*iken, *epliniskendan.

6 Accounting for the Voice and Tense setting, the context could be done through spanning (Merchant 2015), targeting consecutive nodes for Vocabulary Insertion.

7 While a different account on the status of T-Agr is presented here, previous analyses could also approach the topic of the CG augment with a fused morpheme, as an anonymous reviewer points out. On the basis of the consistent pattern of the exponents, this paper supports the separated morphemes approach as a more economical solution to the derivation of the verbal morphemes.

8 This is a marked option for Standard Modern Greek only for certain verbs that also show an unstressed past *e-* similar to Cypriot Greek, such as *e-*θe*á*θ*-i* 'was seen', *e-vré*θ*-i* 'was found', *e-*ɣ*enní*θ*-i* 'was born', *e-kláp-i* 'was stolen', *i-kús-*θ*-i* 'was heard', *e-lé*x*-*θ*-i* 'was said', etc. (Holton et al. 1997).

9 Following Merchant (2015) a null version of θ- with a diacritic on the stem can be assumed for *athetic* verbs.

10 The stress in (13b) can surface either on the augment or the aspectual morpheme.

11 These rules are, of course, language-specific with respect to the distribution of the augment in Cypriot Greek. Ofitika Pontic, for example, does not have a more specified rule for consonant-initial verbs where epenthesis of the augment seems to result in coalescence of a front vowel with /-e/ (Revithiadou and Spyropoulos 2012).

(66) a. aɣapúme > **e-** ɣapésame 'we loved'

b. akúame > **e-** kúame 'we heard'

12 For a more recent account on the T node in Greek dialects, see (Giannoula 2021a, 2021b).

13 When referring to the *e-* on the immediate left of the first member of the compound, it is indicated with e_1, while e_2 refers to the augment to the immediate left of the root. The underscore signifies the possible positions of the stress based on which one of the two positions acts as the antepenult.

14 *-o-* is glossed as a *compound marker*, which is a linking vowel commonly found in compounds (Ralli and Karasimos 2009). The compound marker is inserted as *-o-* in most cases, as in *nix-o-kóptis* 'nail cutter' and *paj-ó-tsanda* 'old/useless bag'. When 'old' acts as an adjective to the noun, then the feminine suffix appears on both the adjective and the noun *paja tsanda* 'old bag'. Cases like these have been argued to be adverb-incorporation cases in the VP (Rivero 1994). For English, see Bochnak 2013 for scalarity of 'half' in the VP.

15 In Modern Greek, these V–V combinations are phonologically and morphologically true compounds since they have a single stress and a single inflection site on the right edge of the second member. Further, the appearance of the linking vowel *-o* is exactly what is found in other modern compounds (Nicholas and Joseph 2009).

16 A different case is *ksi-*, where fusion of the *e-* past tense prefix and the *-i* in *ksi-* is seen:

(67) a. E_1- ksí- (*e_2-) va -ps -a to. > eksevapsa
PAST- de- PAST- color- -PERF -PAST it
'I decolored it'.

b. E_1- ksí- (*e_2-) θa -ps -a ton. > eksethapsa
PAST- un- PAST- bury- -PERF -PAST him
'I unburied him'.
(A possible exception here is *e_1-ksi-(e$_2$)-kam-a* 'undo'.)

[17] The meaning of *po* can vary and it is therefore glossed as *po*. A mere speculation would be a case of borrowing from the Standard Modern Greek *apo*, even though it is not found with these examples. A brief list shows that it can mark the end of an action, as in *po-θelo* 'stop wanting', *po-θerizo* 'stop mowing', *po-θimeno* 'stop being angry', *po-lalo* 'stop talking', *po-nistazo* 'stop being sleepy', *po-galefko* 'stop milking the cow', *po-muthkjazo* 'stop the numbness', *po-sarandono* 'complete 40 days'. It can also mark change of state, as in *po-θijazume* 'loose the noose', *po-krianisko* 'become cold', *po-ginome* 'get destroyed', *po-kliono* 'unlock', *po-laxanjazo* 'become green as a vegetable', *po-lefteronume* 'give birth', *po-methkjo* 'get sober'. Other uses are *po-varo* 'put my weight on one side', *po-dakkano* 'bite my lips to show regret', *po-kumbizo* 'find protection in someone', *po-lipo* 'being missed', *po-plinisko* 'rinse' (see also Yagoulis 1994).

[18] Müller (2002) provides many examples where the separation of the particle from the verb does not appear to be a matter of syntax as different semantic specifications also play a role.

[19] An anonymous reviewer suggests that the T exponent in non-past forms is null on the basis of this constraint.

[20] In some cases, the Standard Modern Greek verb is used for certain compounds instead of the Cypriot Greek verb, although this does not appear to be a case of code-switching since the Cypriot Greek verb is not an option at all: *para-vlép-o> e-para-(e-)vle-ps-a* 'to overlook' (instead of **para-θor-ó> para-i-ð-a* (int.'to overlook')), *para-lé-o > para-i-p-a* 'to exaggerate' (instead of **para-lal-ó>para-ip-a*). In addition, some verbal complexes with suppletive verbs do not use the suppletive or irregular stems (Merchant 2015): *θkja-lé-o > e-θkjá-le-ks-a* 'to choose' (instead of **e-θkja-i-p-a*) , *ek-lé-ɣ-o > ék-(*e)-le-ks-a* 'to elect' (instead of **ek-i-p-a*). Others show the e_2- as in *epi-lé-ɣ-o > ep-é-le-ks-a* 'to choose' (instead of **epi-i-p-a*), *epi-vlé-p-o > ep-é-vle-ps-a* 'to supervise' (instead of **epi-i-ð-a*), *pro-vlé-p-o > e-pro-(e)-vle-ps-a* 'to predict' (instead of **pro-i-ð-a*). This is also the case in English where irregular past tenses are blocked in compounds, *e.g.*, grandstand > grandstanded, *grandstood.

[21] In van Oostendorp (2012), there are examples that show the augment appearing before the first compound, which is judged as ungrammatical by speakers I have consulted. I do not discuss those as I consider them to be possibly acceptable in some dialect of Standard Modern Greek that is not discussed here.

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