The Morphosyntax of Verbs in Modern Greek

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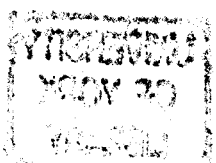

Abstract

The thesis examines the verbal morphosyntax of Modern Greek. The main claim is that verbs in Greek consist of a root, the theme vowel, which mainly represents aspect features, the morpheme in which voice is realised and the unit representing agreement and tense. The main hypothesis is that conjugational classes categorise Greek verbs and they are organised on the basis of abstract features. The thesis is written within the framework of Distributed Morphology (Halle and Marantz 1993) and hence pays particular attention to the interplay of syntax, morphology and phonology in word-formation.

More specifically, it is claimed that that each morphological unit represents a set of features (morphological or syntacticosemantic), primary and secondary ones. Consequently, an one–to–one relation between meaning and form does not hold. The overt or covert spell–out of each morpheme mainly depends on the marked or unmarked value of aspect (± perf).

Special attention is paid to the classification of verbs which depends on the abstract, morphological properties of the theme vowels. The role of conjugational classes is to categorise the pieces of inflection in the repository of grammar as well as to predict the morphological spell-out of the form selecting each theme vowel.

The analysis of the verbal morphology in Greek provides support for the claim that word formation cannot be solely seen as a syntactic or morphological process, as traditional

claims in the literature suggest (Chomsky (1970); Anderson (1992), respectively). Instead, it requires the interaction of syntax, morphology as well as phonology. It is claimed that syntax sets the structures which are further manipulated by morphology. Phonology can also impose the insertion of morphemes via the application of phonological rules triggered by the necessity to satisfy well-formedness conditions. The augment's insertion in simple and compound verbal forms provides evidence for this position.

The existence of morphological features in the system does not only account for the ways vocabulary items are organised in the repository but also for what triggers the application of processes in the morphological component which result at the formation of stems.

It is made clear that stems are not stored or formed under the application of strict morphological processes (e.g. readjustment rules) in the lexicon. Instead, I propose that the formation of stem can be only seen as the result of the creation of a local environment in the morphological component between the root and the aspectual projection subject to vocabulary insertion. On the other hand, suppletive stems are derived in the vocabulary via readjustment rules and then enter the enumeration.

Finally, it is proposed that allomorphic cases which are not phonologically conditioned, are accounted for in terms of the vocabulary's organisation. There is no need to assume that they are the product of phonological, syntactic or morpholexical rules. A consequence is that allomorphy is no longer considered to be a non-productive process.

Contents

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Sas agapo ke tus pente para poli!

This work is dedicated

to my mum,

for sharing my past,

my present and

my dreams...

Author's Declaration

This thesis has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree other than Doctor of Philosophy of the University of York. This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by explicit references.

I hereby give consent for my thesis, if accepted, to be made available for photocopying and for inter-library loan, and for the title and summary to be made available to outside organizations.

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Date 30/09/2005.....

In addition to presentation at a number of conferences, parts of the following parts of this thesis, or related pieces of work, have undergone previous dissemination:

Introduction

The present study explores word formation. It provides support for the claim that word formation cannot be seen as a purely morphological (cf. Anderson 1992) or a purely syntactic process (Pollock 1989), as has been previously suggested in the literature. The fundamental concepts –morphemes, lexemes– as well as the principles on which such theoretical models have been formulated are discussed in chapter 1. Empirical evidence which poses problems regarding these positions is drawn from the verbal morphological system in Modern Greek. Previous approaches to the system which either support the syntactic or the morphological models are presented in chapter 3, where the inadequacies raised are also discussed.

Furthermore, the present work tests the hypothesis that sees word formation to be completed at the interface of syntax–phonology, namely at the morphological component (Halle and Marantz 1993). It challenges this view based on empirical data which suggests that insertion of new morphological material may occur, once vocabulary insertion, the operation which supplies the phonological material to the terminal nodes, is complete. The principles of the model in its original formulation alongside the modifications which are put forward in this thesis are examined in chapter 2.

More specifically, this work addresses to answer the following questions:

(a) How much of word formation belongs to syntax?

(b) What determines the order of syntactic terminals?

(c) Can we maintain a universal hierarchy of functional projections?

(d) How much of word formation belongs to morphology?

(e) What triggers the application of morphological operations?

(f) What goes in the repository of grammar?

(g) How are the lexical entries arranged in the repository?

(h) Are there any consequences of the repository's arrangement?

(i) Do stems exist in morphological theories and if so, how are they derived?

(j) Is there a difference between suppletive and non-suppletive stems and if so, is it a consequence of the architecture of grammar or a morphological convention?

(k) Is there a difference between allomorphy and suppletion and if so, is it a consequence of the architecture of grammar?

(l) Is root suppletion only relevant for functional material?

(m) Does Greek have consonantal roots?

Evidence for these questions is brought forward from Modern Greek. The complexity of the verbal system and the challenges one needs to deal with are first presented in a theory-neutral way in chapter 3, whereas a revised approach is sketched in chapter 4. This is formulated in light of the principles of Distributed Morphology in chapters 5–7.

I propose that vocabulary items are defined as the smallest meaningful items which can be found within a verb. The term 'meaningful' is used in the following sense: items the morphosyntactic specification of which is clearly defined, meaning items in which one can clearly distinguish the properties which are represented. This, though, does not impose a restriction on the number of features which are represented in a single item. It does not have to be an one-to-one relation between meaning and form. This view sets the principles of what can be considered as a morphological unit in the examination of the morphology of verbs, for instance. This hypothesis is attested in the verbal morphology in Modern Greek (chapter 5).

Moreover, vocabulary entries are organised in hierarchical tree structures. It is shown that if one assumes the Subset Principle (Halle 1997), they cannot account satisfactorily for the existence of vocabulary items which represent exactly the same number of features in the vocabulary . In such cases, it is not clear which entry is the most specified one. Consequently, an alternative path is taken and it is claimed that the tree structures are organised on the basis of a feature markedness hierarchy. In Modern Greek, this derives from the representation and the morphological realisation of aspect. More work needs to be carried out in order to determine whether a universal feature hierarchy could be proposed (chapter 5).

A welcoming consequence of the organisation of the vocabulary relates to the allomorphic patterns which are morphologically conditioned. It is explained that such treatment sees this type of allomorphy as productive, as the allomorphs appear as separate entries in the repository and are not derived on the basis of abstract readjustment rules (chapter 5).

The interaction between syntax and morphology is discussed in chapter 6. It is argued that only the nodes which are relevant to syntactic constructions are present in the syntactic

component. Only syntactic processes which affect syntactic structures operate. Despite the fact that the inherent specification of roots is present in the syntactic component, this does not violate the Feature Disjointness Principle (Embick 2000). It is claimed, instead, that features that are not syntactic or morphological cannot be interpreted in any other component apart from syntax and morphology, respectively. This modifies the Principle (chapter 2).

When the structure, though, enters the morphological component, it is the presence of the morphological features in the given syntactic environment which triggers the application of morphological operations that further modify the syntactic output. The application of such processes result at the formation of (non-suppletive) stems. Consequently, stems neither exist in a strict morphological sense nor are a prerequisite of the model. They are formed/derived in the morphological component (depending on what processes they trigger). The way morphological features are interpreted in stems may further block or trigger the application of phonological rules which may modify the phonological spell-out of the units after vocabulary insertion (for instance, phonologically conditioned allomorphy or epenthesis), (chapter 6).

Finally, the interaction of morphology and phonology is explored in chapter 7, where the insertion of the augment in Modern Greek is examined. It is argued that new morphological material can be introduced to the structure once vocabulary insertion has been successfully completed. This necessarily means that if the morphological exponents are all introduced during vocabulary insertion, ungrammatical forms are derived in Modern Greek. Consequently, word formation is a complex process which requires the interaction of syntax, morphology as well as phonology.

Chapter 1

Inflectional Morphology: Issues, Models

1.1 Introduction

The study of morphology has occupied the literature for almost over seventy decades, starting, for instance, as early as Bloomfield (1933) up to present (cf. Spencer 2004; Baerman et al. 2005). Word formation has been the center of attention in different morphological theories which have been proposed. It has been examined in terms of inflectional morphological patterns (cf. Anderson 1982; Perlmutter 1988), derivational ones (cf. Beard 1981; Jackendoff 1975) or patterns in compounds (cf. Aronoff 1976; Williams 1981) both in verbal as well as nominal morphological systems.

The present work is concerned with the study of the verbal inflectional morphological system. So, from this point onwards, I will use the term 'word formation' to refer to inflectional morphology and in specific to its study within verbal systems.

In the literature, the main question concerning word formation relates to its nature. There have been theories which claim that the processes under which word forms are derived are purely syntactic (cf. Pollock 1989, Speas 1990). On the other hand, morphology is seen as a separate component from syntax by others (Di Sciullo and Williams 1987; Robins 1959). A third approach –Distributed Morphology (DM) (Halle and Marantz 1993)– considers word formation a process which involves the interaction of syntax as well as morphology. In the present chapter, I only discuss the first two views, whereas the principles of DM are not introduced until chapter 2.

One of the main challenges every theory of morphology faces is to determine the components of which words consist and their specification. There are cases where more than one feature is represented in a single morphological unit –and consequently there is not an one-to-one relation between the syntacticosemantic properties and their morphological spell-out– whereas others in which it turns out impossible to identify and distinguish individual morphological parts (suppletive patterns). In such instances, morphosyntactic features are represented in bigger chunks of morphology.

The differences between the morphological patterns different languages exhibit naturally led to the formulation of different approaches. There have been theories which are morpheme-based, as for instance those which take a syntactic view regarding word formation. Words consist of small morphological units which are the heads of the syntactic maximal projections. On the other hand and within the theories which consider word formation a morphological process, distinct trends have been identified. Some developed a lexicalist approach to inflection (Di Sciullo and Williams 1987) which is basically a morpheme-based model. Affixes are listed in the lexicon along with their specification (phonological, semantic, morphosyntactic information) and subcategorisation rules enable them to combine with stems to yield inflected verbal forms.

Nonetheless, there have been theories which are in favour of a lexeme/stem-based approach. Following the Word-and-Paradigm model (Robins 1959, Zwicky 1985), the inflectional markings are introduced and determined by rules. So, for instance, a rule states that stems which carry specific syntacticosemantic specification –call this 'X'– are matched to suffix 'Z' to yield an inflected form 'Y'. There are others, though, (Bybee 1988, Bochner 1993) for which words match a schema (phonological, syntactic, semantic information) and the schema subsumes these words.

Determining the components of which words consist and their specification is not the only challenge every morpheme-based morphological theory faces, though. Every approach needs to deal with the task of reriving the correct morpheme order. For example, it is not always straightforward how a well-formed inflected word is derived in a syntactic morpheme-based model –where each maximal projection, and consequently, each syntacticosemantic feature, is strictly arranged– in cases where suppletion occurs. The relevant discussion is presented in §1.4.

Depending on the views each theory takes on what is the minimal constituent of a word (e.g. morpheme versus stem), predictions are made with regards to the treatments they allow for allomorphy, suppletion or even prefixation and infixation of morphological units. It is interesting to note, as will be shown in following chapters, that the focus of the attention in the literature falls onto pieces of inflection and not constituents which necessarily appear in inflected forms but their status is phonological (see chapter 8 about the insertion of the augment in Modern Greek).

The purpose of the present chapter is to outline the approaches which have been formulated in and influenced the literature regarding inflectional morphology. It is interesting not only to explore the views under which word formation occurs in each one of them but also to offer

an insight on the consequences and predictions made as far as allomorphic and suppletive patterns are concerned. The discussion will lead us to the principles of the framework which is adopted in the present work –and has been greatly influenced by previous works– as well as its modifications which are explored in chapter 2.

The remaining of this chapter is organised as follows: in §1.2 I offer a short discussion on what could be treated as a constituent of a word. This serves as the basis of §1.3, where I provide the background information regarding the different theoretical models which have been formulated in the literature around inflectional morphology. §1.4 provides the basic principles surrounding the concept of allomorphy. I emerge into the discussion of the predictions each one of the afore-mentioned theories make as far as allomorphic and suppletive patterns are concerned in §1.5. In §1.6, I refer briefly to the status of the repository component, the lexicon, and its function within the morphological theories presented here. The present chapter concludes in §1.7.

1.2 Constituents of words

There are two trends in the literature as far as the internal constituent structure of words is concerned. Words constitute of morphemes or words are conceived as lexemes. I refer to each one of them in turn in what follows.

1.2.1 Morphemes

The first treatment–definition of morphemes can be attributed to Bloomfield (1933). Morphemes are seen as the smallest meaningful elements in the utterances of a language. As

has been further mentioned in the literature (Aronoff 1976), this treatment of morphemes would imply that words are formed compositionally. The term compositionally can be seen both in a semantic as well as a structural sense. In its semantic interpretation, morphemes are taken to have independent meaningful semantic meanings. Consequently, any given word is formed by adding on individual semantic interpretations. In the structural sense, words are seen to be formed as sentences do.

The most well-known problem and objection which has been raised in the literature and gave rise to the formulation of the second approach –namely, the one which sees words consisting of lexemes (see §1.2.2)– relates to the existence of meaningless morphemes, referred to as *cranberry morphemes* in the literature.

(1) a. blackberry
b. blueberry
c. cranberry

At first glance, it seems that the three nouns in (1) are formed compositionally. They all seem to consist of two parts, the second of which is *-berry*, whereas the first one seems to contribute some sort of meaning to the meaning of the whole. This is indeed the case in (1a-b); these compound forms consist of *black-*, *blue-* and *-berry*. The first part specifies the property of the *-berry*, black or blue. On the contrary in (1c), this does not fit the pattern. We cannot take *cran-* to have a specific meaning and consequently attribute any sort of feature meaning to the compound form. *Cran-* does not have any meaning or function.

In a similar fashion, the presence of an epenthetic vowel required for the formation of some Noun-Noun compound forms in German (Fabb 2001) creates problems for the treatment which sees morphemes as the smallest meaningful units in words.

(2) schwan - en - gesang

swan - en - song

'swan-song'[1]

In such cases, this infix --*en*-- does not have a meaning and only appears in the forms due to the fact that it bears some historical relation to previous forms. It is not completely clear what the historical relation is or to what this unit bears a relation. Fabb (pc.) mentioned that it is an example adapted from Kiparksy's lecture notes but he does not have more information about it.

Such problems motivated the second treatment of word constituents in the literature which is explored in the following section.

1.2.2 Lexemes

The second main treatment of the constituents of words is set upon a requirement on words: words are conceived as the smallest units which can exist on their own. This is generally called the minimal free form. Within this approach, a morpheme is not taken to be the basic unit. On the other hand, what is important in this approach, is that a lexeme is seen as a sign containing sufficient information for realising the syntactico-semantic categories morphophonologically but at the same time being underspecified for any specific syntactico-semantic variables (Matthews 1991). So, lexemes are first seen as abstract entities in a sense, as they are not inflected for any particular morphosyntactic properties and do not carry any phonological markers, such as prefixes and/or suffixes. They are represented in capital forms.

[1]The example is taken from Fabb (2001).

(3) AMO

a. amas
root.love.2SG.PR.A.
'You love'

b. amabas
root.love.IMP.2SG.A.

Lexeme forms which are inflected for syntacticosemantic features are derived by the application of rules (see §1.3.3). AMO is the lexeme stored in the lexicon. Rules will apply to it to derive (3-a) *-amas-* and (3-b), *amabas.*

As mentioned earlier, this treatment came about in an attempt to explain cases, such as the *cranberry morphemes.* Nevertheless, it operates on the opposite extreme. It does not allow a thorough and detailed look at the internal constituent structures of words in languages which exhibit rich morphological patterns, such as Latin, Modern Greek and the Romance languages. So, it oversimplifies the patterns, whether these are allomorphic, suppletive, prefixational or suffixational.

In (4), the formation of the past, perfective, active forms in Modern Greek differs between the two verbs. In the first case (*égrapsa* (4-a)), prefixation occurs, whereas in the second one (*kathárisa* (4-b)) it does not.

(4) a. é - grapsa
AUG - wash.PER.AC.1SG.PST
'I washed'

b. kathárisa
clean.PER.AC.1SG.PST
'I cleaned'

All that matters under the 'lexeme approach' is the initial lexeme and their derived forms bearing syntacticosemantic features. The exact positions, the feature specification of individual items as well as information about suffixational or prefixational patterns that a language may employ, are of no importance in this case. These will only be interpreted in morphological theories which are based on morphemes.

1.3 Theoretical approaches to inflection

In the previous section, I outlined the two fundamental treatments around the constituents of words. I will now move onto how these are incorporated in the formulation of theoretical models which investigate the formation of word forms.

1.3.1 The functional head approach to inflection

The functional head approach to inflection originates from the proposals of Pollock (1989). He assumes a version of the Principles and Parameters syntactic theory and argues that INFLP –tense, agreement and negation in English and French– should be broken down into three maximal categories. Each one of them heads its own maximal projection.

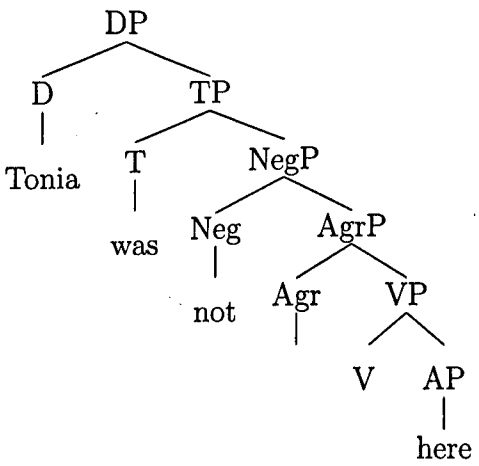
He further explains that this approach provides a unified treatment for syntactic differences, such as negation, verb fronting as well as the syntax of adverb replacement between English and French.

A crucial feature in this theory is head-movement; he assumes that verbs acquire each one of their inflectional features by moving from one head position to the next one until they reach TP.

So, for (5) *Tonia was not here*, the verb moves from the head of VP to the head of AgrP and, subsequently, to the heads of NegP and TP, as illustrated in (6).

(5) Tonia was not here

(6)



This assumption has been further developed in the literature (Speas 1990, Rivero 1990,[2] Mitchell 1991). It has been proposed that the order of the inflectional units in the verbal morphology arises from the movement from one functional head to the next. Consequently, the order in which inflectional markings appear in the verbal forms follows the order in which functional projections appear in the syntactic structures.

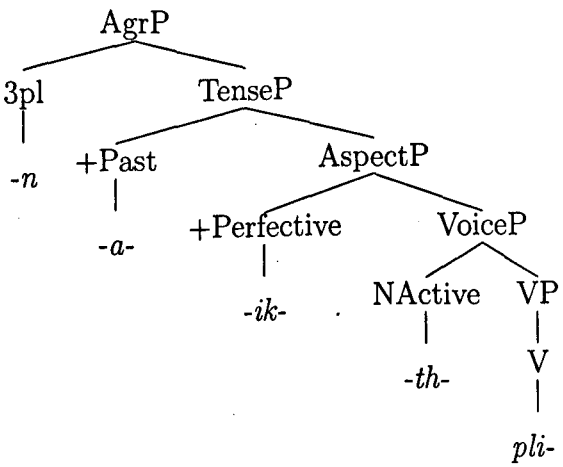
Following these assumptions, the verb in (7) in Modern Greek consists of the stem and four inflectional suffixes, the positions in which they are spelt-out are strictly ordered by the positions of the functional projections in the syntactic representation. In this particular case, the stem will move to the head of VoiceP and, subsequently, to AspectP, TenseP and,

[2]Rivero's account is discussed in detail in chapter 3.

finally, AgrP.[3]

(7) plí - th - ik - a - n
wash - PER - NA - PST - 3PL
'They were washed'

(8)



Under the light of the syntactic model, it is clear that inflection is syntactic in nature and not morphological. It is most certainly not in favour of the claim that morphology is an autonomous component of the architecture of grammar and words are not seen as the result of morphological operations.

Nevertheless, this treatment assumes an one-to-one relation between the morphological exponents and their specification. Despite this assumption, this is not always the case, as can be seen in the following example from Modern Greek and argued in chapter 4 in detail.

[3]The example is adapted from Rivero (1990).

(9) a. lé - o
say.AC.PR - 1SG.PST
'I say'

b. íp - a
say.PER.NA.PST - 1SG.PST
'I said'

In (9), the stem represents voice and tense in (9-a) *–lé-* as well as aspect in (9-b) *–íp-*. In addition, agreement and tense are cumulatively spelt-out in both cases. Consequently, it is unclear what will occupy the heads of VoiceP and TP for (9-a) or how the representation of voice and aspect can accounted for if the stem in (9-b) occupies the head of VP. On the basis of such arguments, birth was given to the lexicalist and the a-morphous approaches to inflection which are explored in the following sections.

1.3.2 The lexicalist approach to inflection

The lexicalist approach to inflection finds its origins in the work of Selkirk (1982) and has been further developed mainly by Di Sciullo and Williams (1987) and Lieber (1992).

For lexicalists, affixes are seen as morphemes –lexical entries– which combine the phonological form with meaning and function. The combination of different morphemes creates words which operate in syntax afterwards.

It is assumed, though, that an affix has almost the same status as a word. It is lexically listed and its phonological form, semantic information, morphosyntactic features and subcategorisation restrictions are all included in its listing.

Following, this view, the marker *-s* for the third person singular in English, is a lexical entry which is specified in the lexicon. The lexical listing of the suffix is given in (10)

below.

(10) a. Phonology: /z/

b. Semantics: –

c. Subcategorisation: [v V—]

d. Morphosyntax:

PER: 3

NUM: sg

TNS: pres

MD: indic

Its subcategorisation restriction (10) will only allow the suffix to combine with verbal stems and only in order to form the third person, singular, present indicative forms.

The view this theory takes on the status of morphology is completely different from the one portrayed by the functional head movement approach supporters. For lexicalists, morphology is an independent component of grammar. The combinations between the lexical items are not conditioned by syntactic structures or constraints. On the contrary, the specification of items alongside with their subcategorisation frames and through a feature percolation mechanism result in the derivation of well-formed words.

One of the main arguments against this theory to inflection relates to the phenomena of overlapping and extended exponence when considering the formulation of a structure-based percolation mechanism. Stump (1993b) discusses this problem in detail.

1.3.3 The Word-and-Paradigm approach to inflection

The Word-and-Paradigm approach (or the a-morphous morphology model) originates from the work of Robins (1959) and has been adopted and developed by Matthews (1972), Zwicky (1985), Aronoff (1976), Anderson (1992) and Beard (1995).

The inflectional markings which may appear in a word are determined by sets of inflectional rules. A rule which can be only applied to a stem is conditioned by the set of morphosyntactic features associated with that stem, its phonological form and its membership in a morphological class.

For example, the third person, singular, present tense marker *–-s–* in English is introduced by a rule, such as the one in (11). X is any verb the feature specification of which is third person, singular, present tense, indicative mood. When this rule applies to any stem, a third person, singular, present indicative form is formed.

(11) V
PER: 3
NUM: sg
TNS: pres
MD: indic
/X/ → /X-Z/

Inflectional rules are organised in blocks. Rules which belong to the same block are mutually exclusive.

Within this approach, inflection is treated as a set of morphosyntactic features dominating word stems. Affixes, on the other hand, are the products of word formation rules which

are relevant to the features associated with the stems, with the lexemes.

This model is in favour of a morphological approach to word formation, as the lexicalist treatment does. Consequently, it contradicts the syntactic model outlined in §1.3.1. There are subtle differences, though, between the lexicalist and a-morphous models; in the first instance, the model is based on morphemes, whereas in the second case, the morphological theory is based on the concept of lexeme and, consequently, does not recognise the listing of affixes in the lexicon.

The most obvious objection to this model –and as a consequence of the view adopted as far as the constituents of words are concerned– relates to the fact that it does not pay attention to the morphological richness in the patterns different languages exhibit.

Concerns have also been raised (cf. Stump 1993a) with regards to the ordering of the rules. Are they ordered in terms of universal principles or are they language specific? If the second case holds, are they further subject to the realisation of morphosyntactic features? Anderson (1992) suggests that they are language-specific.

1.3.4 The Affixless Approach

The affixless approach to morphology has been first introduced by Beard (1966) and further developed by Aronoff (1976, 1994), Anderson (1992) and Beard (1995).

The fundamental concept of this approach is that the stems of the grammatical categories are morphemes, meaning pieces which connect meaning with phonological form. Affixes, on the other hand, are the product of morphophonological rules –called word formation rules. The application of such rules is subject to the features of the lexical categories.

Moreover, it is supported that morphosyntactic features are represented on nodes which dominate word stems, whereas inflectional suffixes are the product of word formation rules which are applied to these stems. This position has been proposed in order to account for violations in cases where an one-to-one relation between meaning and phonological form cannot be retained.

Consequently, the supporters of this model in their attempt to explain the non-systematic representation of form and meaning are led to the extreme of eliminating all affixes from morphology. They subsequently eliminate the possibility to account for the diversity of the available morphological units in the inflectional system of a language in a detailed and coherent fashion.

Finally, it is worth mentioning that this model does not seem to make any claims regarding classification.

1.4 Allomorphy and Suppletion

'Two roots or morphological patterns are allomorphs (of the same abstract morphemes) if they express the same meaning and occur in complementary distribution' (Haspelmath 2002:265).

Different types of allomorphy are distinguished; phonological and suppletive (weak or strong). In the first case, allomorphy can be explained in terms of a phonological rule. In Russian, (12),[4] when a vowel initial suffix follows the stem, the final vowel of the stem (*-o-*, *-e-*) is dropped. *Zamok* (12-a) becomes *zamki* (12-b), whereas *kamen* (12-c) becomes *kamni*, (12-d).

[4]The example is adapted from Haspelmath (2002:27).

(12) a. zamok 'castle'
b. zamki 'castles'
c. kamen 'stone'
d. kamni 'stones'

In suppletive cases –such as the ones in (13)–, weak suppletion occurs in cases where allomorphs exhibit some similarities but these cannot be explained in terms of phonological rules. *Bought* (13-b) and *sold* (13-d) bear some similarities to *buy* (13-a) and *sell* (13-c) but these cannot be defined or attributed to a phonological pattern.

(13) a. buy
b. bought
c. sell
d. sold

On the other hand and when the allomorphs do not exhibit any morphological resemblance, one refers to them as cases showing strong suppletion, (14).

(14) a. good
b. better
c. bad
d. worst

The types of allomorphic patterns could be, consequently, phonologically conditioned, as it is the case in (13). They could also be morphologically or lexically conditioned. Morphologically conditioned allomorphy occurs when the choice of allomorphs depends on the

morphosyntactic context. For instance, in Latin verbs the first person singular has two allomorphic types, *-o, -i*, (15). The selection of one over the other depends on the temporal features; present tense (*laudo* (15-a)) versus perfect (*laudavi* (15-b)) (Haspelmath (2002:29)).

(15) a. laud-o
I praise

b. laudav-i
I praised

Finally, it might be the case that the choice of allomorphs cannot be conditioned in terms of phonological rules or morphosyntactic features but such patterns are properties of lexical items, as it is the case of the allomorphic suffixs *-en,-ed* in the past participles in English, *driven* (16-b) and *played* (16-d).

(16) a. drive

b. driven

c. play

d. played

1.5 Treatments of Allomorphy and Suppletion

Each one of the models outlined in the previous sections offers distinct explanations to allomorphic patterns. It is the aim of this section to provide a brief discussion about the predictions which are made and the explanatory devices under which allomorphy is derived following the principles of the models to inflectional morphology. It is interesting to note the extend to which these theories pay attention to detail and how each one of them inter-

prets the different types of allomorphic patterns. Interestingly, it will be concluded that allomorphic cases are explained only once the rest of the productive processes –resulting in word formation– have taken place. Consequently, allomorphy has no consequences on the grammar. The only exception to this pattern is the account developed by Lieber (1992). Due to the fact that this treatment stands out, it is also presented in §1.5.4 in what follows.

1.5.1 The functional head approach

In early syntactic theories (Chomsky 1957), allomorphy is interpreted by a movement rule, called Affix Hopping. According to this rule, affixes are generated at the appropriate auxiliary and moved to the verbs on which they occur in surface forms. For example, in the past tenses in English the affix moved by the syntactic rules is postulated to be abstract (*-ed*). A set of post-syntactic rules –often called morphophonemic or morphological readjustment rules– turn verbs such as *sing-ed* into *sang*.

Nonetheless, it seems that this approach provides neither a unified account nor it predicts the realisation of the allomorphs. There is a rule each time which alters each form, so that in the case of a verb like *buy* the past form will be *bought*, whereas in the case of *drive* will be *drove*. The question which still remains here is how we could predict these changes in each case.

It is important to note that under the light of the syntactic approach to inflection no attention is paid to detail. It makes no difference to the application of the rule or the environment in which it is applied, if it interprets phonological or suppletive patterns. As previously mentioned, it is not clear how a syntactic model deals with suppletive stems in general. So, one does not expect that it would provide a satisfactory and complete account of suppletive –allomorphic– patterns after all.

The type of conditioning is different in each case –for instance, the rule will make use of the set of phonological or morphosyntactic features which condition the different patterns– but the conditioning will not trigger the application of different operations to derive forms which exhibit phonologically conditioned allomorphy versus those which exhibit morphologically conditioned one.

Moreover, the application of the affix hoping rule is only triggered once all the syntactic operations have been completed. What this means is that allomorphy is not seen as a productive process which may influence the operations under which word formation occurs and consequently the grammar.

1.5.2 The lexicalist approach

An alternative approach to allomorphy is given in terms of the lexicalist approach to inflection which derives from the principles of the model.

Due to the fact that affixes are seen as separate lexical entries, it is entailed that there is a subtle difference between allomorphic versus suppletive cases of the morphological exponence. Consequently, it is assumed that the processes under which *sell* is formed in the past tense in English *sold* are different from the ones which derive forms such as *travel, travelled* –namely, substitution versus affixation.

On the other hand, phonologically conditioned allomorphy can be explained within the principles of Generative Phonology. Schane (1973) proposed the minor rule which is applied onto a limited and arbitrary set of lexical items. To illustrate the application of this rule, we adopt an example from Lieber (1982). Stem final consonants in English plural might be voiced, in cases such as *wife, wives*, contrary to the voiceless in *cliff, cliffs*. To account

for such cases, Schane proposes the following schema, (17).

(17)
$$[+\text{continuant}] \rightarrow [+\text{voiced}] \,/\, \underset{\substack{\text{Noun} \\ [+\text{plural}]}}{\_\_}$$

According to (17), each of the nouns to which this rule applies, has to be marked with a lexical feature [+continuant voicing].

Similar to such rules is the morphophonemic rules discussed in Hooper (1976) within the framework of Natural Generative Phonology. These rules alter the phonological features in cases such as *sell, sold, buy, bought.*

Following this approach, a distinction is made between phonologically conditioned allomorphy versus suppletive conditioned one. Nevertheless, it is not possible to predict or interpret in a distinct way –and consequently distinguish between– cases which exhibit weak versus strong suppletion.

1.5.3 The Word-and-Paradigm approach

The main difference between the lexicalist and the a-morphous approach to inflection lies on the fact that the first is based on the concept of morphemes being lexically listed, whereas in the second case words are derived on the basis of lexemes and rules which apply to the former. Consequently, one predicts that allomorphic cases –whether these are phonological or suppletive– will be also interpreted in terms of rules. This is fairly similar to the treatment of allomorphy within the syntactic model in terms of the application of rules.

Stem variation has been handled by Aronoff (1976) in terms of readjustment rules which operate on specified lexemes within other specified ones, once all the productive operations have been applied. There are two types of readjustment rules: truncation and allomorphy. Crucial in his analysis is that words are formed from other words and individual morphemes have no independent status in the lexicon. Consequently what he needs is some sort of rule which will delete elements of the base word (truncation), and in some cases another type of rule which will alter the phonological realisation of morphological units within the lexeme.

The difference, though, between this and the syntactic interpretation is that the former allows the application of two different rules; the rule of truncation will explain suppletive cases, whereas the rule of allomorphy phonological ones. This means that it parts with the lexicalist view that they both distinguish between phonological and suppletive allomorphic cases. As was the case earlier, no distinction is made for those instances where strong and weak suppletive patterns are observed.

Finally, it is similar to the syntactic treatment in that they both treat allomorphy as a non-productive process. The application of either the rule of truncation or the rule of allomorphy applies only once all the productive processes are complete.

1.5.4 Allomorphy: A productive process

Lieber (1982) proposes an alternative account which lies on totally different grounds. She assumes that all the allomorphs of morphemes should be listed in the lexicon. Important in this account is that allomorphs further contain information about the grammatical category, the phonological features, semantic representation, syntactic argument structure as well as lexical structure.

An interesting aspect of this proposal is that the allomorphs of a morpheme cannot be predicted upon any phonological or semantic grounds. Nonetheless, as Lieber (1982:30) points out, there are no means 'to predict from the present stem what the past stem will be'. An elegant theory, though, would allow a link between stems and the way these are realised. Lieber further suggests that the allomorphs are arranged in line with morpholexical rules which define allomorphy classes, in the cases where the stems are not specified for allomorphy. Nonetheless, they should not be seen either as productive or ordered. So, they are best seen as affixation rules.

1.6 The lexicon

The treatment one takes on the constituents of words further influences the view which surrounds the status of the repository component of the grammar, the lexicon. If one accepts that words consist of morphemes, the question as to which morphemes enter the lexicon is raised. Are all the morphemes listed as separated entries including morphemes exhibiting allomorphy? The ways morphemes are arranged also needs to be examined. The same questions need to be answered, if one assumes that words consist of lexemes, instead.

In the first instance, morphemes are organised by word formation rules which apply at the morphological component. These rules are formulated on the basis of the information drawn from the morphemes. So these rules pick out the relevant morphemes and combine them in order to form meaningful words. In this sense, the lexicon strictly serves as the repository of morphemes and rules. The same holds for the syntactic model to inflection.

An alternative approach to the lexicon entries is found within the theories favouring and

supporting the concept of lexeme. The lexicon in this instance will be the repository of the rules according to which words are derived. Crucially, no operations apply. Consequently, the repository nature of the lexicon is adopted in all three models to inflectional morphology.

There is always the question of the number of lexical entries. One needs to make a distinction between potential and actual words –potential versus permanent lexicon. The permanent lexicon consists of words which have been used –attested– by speakers. On the other hand, the potential lexicon is made up by a list of possible words to be constructed. Interestingly, regular compounds have to be omitted from the permanent lexicon, as they can be predicted by some sort of rule. They are concatenations of a lexeme formed by a rule. Nonetheless, this treatment mainly depends upon productivity. In most cases though, it is hard to distinguish whether, which and how productive forms are.

Despite the fact that the status and the organisation of the repository would have been expected to have been discussed extensively within the models of inflectional morphology, this is not the case. The focus of the theories largely lies on the constituents of words and the processes under which words are derived. By no means, though, I claim that the lexicon has not been discussed in the literature in relation to the number of lexical entries, compounding or productivity (cf. Zwicky 1989, Baayen 1992).

1.7 Conclusion

In this chapter, I presented the background information regarding three theoretical models to inflectional morphology. I provided the main principles of each one of them as far as the processes under which word formation occurs are concerned as well as the predictions

which are made regarding allomorphic patterns and the assumptions made in relation to the status of the lexicon. The main problems each theory faces were also highlighted in each case. The discussion in this chapter leads nicely to the next one, where I explore in detail the principles of a fourth model to inflectional morphology, the one I adopt in the present work. Chapter 1 is crucial for the understanding of the fourth model which is built up on the principles of the theoretical frameworks outlined in this chapter.

Chapter 2

The Architecture of Grammar

2.1 Introduction

The purpose of this chapter is to outline the relevant theoretical concepts that will be in use throughout this work, and offer an insight on the consequences brought forward by the principles of the framework of Distributed Morphology (DM) as far as word formation is concerned.[1]

In §2.2, I look into the main principles of DM with regards to the architecture of grammar, the status of its repository and the questions which are not touched upon, as the literature currently stands to the best of my knowledge. In §2.3, I sketch the modifications which are proposed in this work and argued for in detail in chapter 5 onwards. So, the full argumentation for each position I take will be provided in later chapters. The discussion is rounded off in §2.4.

[1]This chapter mainly sets the theoretical assumptions that will be used in this study rather than justifies them.

2.2 Distributed Morphology

This section is concerned with the principles of DM, as these currently stand in the literature. The discussion departs with the 'biographical' information of the theoretical model in §2.2.1 and carries onto its principles. The issues on which light is not shed are given in §2.2.3.

2.2.1 Background

The fundamental principles of DM are based on Bonet's (1991) proposals. The framework, though, came about in 1993 when Halle and Marantz (1993) first introduced the architecture of grammar and its main principles. Since then, it has been extensively discussed by Embick (1998a, 1998c), Marantz (1992, 1994, 1995, 1999), McGinnis (1996, 1997, 1998, 1999).

In the present work, though, emphasis is placed on the principles of DM, as these are mainly outlined in Halle and Marantz (1993).

DM is a framework which combines principles from all three approaches sketched in chapter 1, namely the functional head approach, the lexicalist approach and the a-morphous approach to inflection.

It is a post-syntactic framework assuming that the assignment of the phonological features to the morphosyntactic features takes place after the syntax. At the same time it does not create new entries neither determines the terminal nodes which are manipulated by the syntax. This deviates significantly from both the a-morphous and the lexicalist models: affixes are determined by the syntax and not by morpholexical rules, as in Lieber (1980).

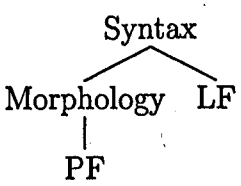
On the other hand, vocabulary insertion does not supply the morphosyntactic features in the syntax. This also contradicts Lieber's proposals on the specification of affixes which must have enough features to generate the appropriate feature structures for both the syntax and LF.

Finally, it assumes that word formation requires the interaction of the syntactic as well as the morphological component. The main syntactic operation is head-movement. The output of the syntactic component is then treated as the input of the morphological component.

2.2.2 General Principles

A set of rules generate the syntactic structures which are further modified at the interfaces of PF and LF. Essentially, the architecture of the grammar could be schematically represented in the following way (1):

(1)



The application of operations such as *Merge* and *Move* result in the derivation of words. Head-movement operates in syntax. It seems that the same principles operate between the two components, the morphological and the syntactic one. So, morphology operates on the principles set in syntax.

Syntactic terminal nodes are complexes of syntacticosemantic features that are called 'morphemes'. Crucially, they lack any phonological specification. Vocabulary insertion is the operation which supplies morphemes with the phonological features and is subject to the Subset Principle (Halle 1997):

(2) 'The phonological exponent of a vocabulary item is inserted in to a morpheme in the terminal string if the item matches all or a subset of the grammatical features of the grammatical features specified in the terminal morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the terminal must be chosen.'

Although it is not straightforwardly suggested, this principle could be used as means of organising the entries in the vocabulary.

Moreover, Embick (2000:188) proposes the Feature Disjointness Principle:

(3) 'Features that are phonological, or purely morphological, or arbitrary properties of VIs, are not present in the syntax; syntacticosemantic features are not inserted in the morphology.'

Finally, Distributed Morphology allows two types of allomorphy:

(4) (a)suppletive and

(b)morphophonological

In the first case, allomorphy occurs in those instances where different vocabulary items compete for insertion in to f-morphemes. F-morphemes are the ones where there is no choice as to vocabulary insertion.

On the other hand, morphophonological allomorphy occurs in those cases where a single vocabulary item has various phonologically similar underlined forms, but phonology cannot be hold directly responsible for this variation. In order to explain such cases, only one allomorph is stored in the vocabulary and the remaining are derived via a readjustment rule.

2.2.3 Questions

As the theory currently stands, some questions are raised. Each point is presented in turn.

It is not clear what the sets of rules according to which the syntactic structures are set. Are there any universal principles which condition the material which appears in the syntactic structures? Are features drawn from a universal inventory which further restricts their ordering in syntax? Or do language-specific principles set the syntactic input? In both cases, how are the terminal nodes ordered?

Much attention has been paid onto the manipulation of the syntactic output in morphology. Embick (2000) discusses to some extend whether voice head its own maximal projection in Modern Greek. Nevertheless, no work has been devoted on the ordering of the syntactic terminal nodes at the early stages of the syntactic derivation.

Despite the fact that vocabulary entries and vocabulary insertion have been extensively discussed in the literature, what licenses as a vocabulary item has not been fully justified. What can be considered a vocabulary item? This could play an important role in the

treatment one proposes for suppletion, allomorphy or could even guide the morphological analysis of a morphological system.

An issue related to vocabulary items and the vocabulary concerns their organisation. If one assumes the Subset Principle, it is unclear what happens in cases where two or more vocabulary item bear exactly the same number of features. On the other hand, in what terms items are more specified than others? Is the specification of items universally motivated?

Additionally, what happens in languages in which conjugational classes exist? Verb classes should be accounted for in the repository of grammar, in principle. Distributed Morphology does not make any claims regarding this issue, as the theory currently stands, despite the fact that the verbal system in Latin has been discussed and reference to the morphological features has been made. If information concerning conjugations was encoded in the system, it is possible to predict the morphophonological spell-out of the forms.

Finally, there are cases –as shown in the following chapters– where morphological material is further added to the forms, only once vocabulary insertion is complete and phonological operations apply. In such instances, and if only Vocabulary Insertion introduces morphological material, the model does not provide a solution and needs to be modified.

2.3 Distributed Morphology: Modifications

In this section, I refer to the modifications that are proposed in the present work and I sketch the architecture of grammar which is assumed for the formulation of the treatment of the verbal morphology in Modern Greek.

2.3.1 The model of Grammar

I follow Distributed Morphology on the syntactic component feeding the morphological one and consequently support the position that sees word formation as a post syntactic process. I further conform to the model's principles according to which syntactic terminal nodes lack any phonological specification.

Nevertheless, I propose that only syntactic terminal nodes which are relevant to syntactic structures can appear in the syntactic component. For instance, if a syntacticosemantic feature does not have any syntactic effects, if it does not influence the syntactic structures, its presence is blocked in the syntactic component. Consequently, syntacticosemantic features which are not relevant to syntax are not introduced in that component. This is the case of voice in Modern Greek.

I assume that the ordering of the maximal projections derives from a feature inventory. In the present work, I propose that the inventory is language-specific, as I have investigated the verbal system in Modern Greek. I do not exclude, though, that the ordering could be based on a universal inventory, the existence of which is welcomed (similarly to Cinque (1997), perhaps).

In fact, the ordering of the maximal projections I derive are based on the morphological behaviour of the inflectional units and, in specific, on the order in which they appear in the forms, once one looks at the entire verbal paradigms of morphologically complex verbs. This seems to comply to the universal hierarchy proposed in the literature. Consequently, I suggest that the ordering of the functional projections is derived based on the ordering of the inflectional suffixes as well as syntactic evidence which further agree with it. So, even this further suggests that word formation cannot be seen as solely morphological or syntactic.

I deviate slightly from Distributed Morphology on the issue of the components which are responsible for the introduction of new morphological material. I make rather explicit that new material –crucial for the derivation of well-formed words– may be also introduced once vocabulary insertion has been completed. This implies that word formation cannot be seen as a complete process unless the structure enters the syntactic, the morphological as well as the phonological components. It is not only the case that phonological operations may modify the morphophonological exponence of the vocabulary items which won the competition of vocabulary insertion and were inserted in the terminal nodes.

The application of distinct processes in the three components of grammar result in the formation of stems. It is consequently claimed that not all stems are formed under a single process. I do not also accept the view that stems are stored in the lexicon. Even in the case of suppletive stems, the readjustment rules which are responsible for their formation are inserted in to the computational system and manipulated in the morphological component. Suppletion is not the result of the rules which have been applied to the lexicon.

It is important to note that nothing in the architecture of grammar imposes restrictions or requirements on what a stem should be or how long or what the phonological status of roots could be in any language. Instead, I propose that the categorial status of the root is determined by the maximal projection which follows it. Roots carry no inflectional features. The items in any language that match this criterion qualify in principle for insertion in the RootP.

Overall, the ordering of the morphological pieces in addition to the universal hierarchy of features and relevant syntactic principles of the language in question set the maximal projections in syntax. These may well be further manipulated once they enter the morphological and/or the phonological components.

2.3.2 The Principles

I revisit the Feature Disjointness Principle (chapter 6).

(5) (a)Features that are phonological or purely morphological or arbitrary properties of the VIs, are not visible in the syntax.

(b)Syntacticosemantic features are not inserted in the morphology.

(c)Syntactic features which are not relevant to syntax are not inserted in the syntactic component.

The Subset Principle only conditions vocabulary insertion. The way vocabulary items are arranged in the vocabulary are presented in the following section.

2.3.3 The Vocabulary

A Vocabulary item is defined as the smallest meaningful item which can be identified in the forms and one can clearly distinguish the features which are represented in it.

I propose that vocabulary items are organised in tree structures. These structures are hierarchically organised in terms of the marked or unmarked value of syntacticosemantic features (mainly aspect) in addition to the overt or covert spell-out of the morpheme that follows the root, namely the theme vowel (the one representing aspect).

This algorithmic system of values –based on the interaction of features and their spell-out– makes a welcoming prediction regarding the number of conjugational classes in the morphological system in Modern Greek.

In specific, the tree structuring obeys the pattern portrayed by the representation of aspect and its morphological spell-out (overt, marked versus covert, unmarked). This hierarchy resembles the conjugational classes which are encountered in languages. Marked values precede unmarked ones and the deepest embedded entries further signal the complex morphological behaviour verbs to which these features are represented in.

This view not only contributes to predicting the morphological behaviour of verbs belonging to different classes but further makes predictions as far as allomorphy is concerned; phonologically conditioned allomorphs are not listed in the vocabulary. They are derived by phonological rules. On other hand, morphologically conditioned allomorphs, are listed as separate lexical entries. Finally, the third type of allomorphy, suppletive, is explained in terms of readjustment rules, the application of which is triggered during vocabulary insertion.

2.4 Conclusion

In this chapter, I summarised the main principles of the model I assume and identified what I considered to be its omissions or the technical difficulties it imposes. Finally, the modifications which I argue for in detail in chapters 5–7, have been sketched. In the following chapter, I present the empirical data –drawn from Modern Greek– any model of inflectional morphology should account for.

Chapter 3

Verb morphology in Modern Greek so far

3.1 Introduction

In this chapter, I aim to present the morphological patterns one encounters when considering the verbal morphology in Modern Greek and, subsequently, the ones every theoretical approach to inflectional morphology needs to account for. In doing so, I introduce the data from which evidence is drawn for the principles of DM. Chapter 3 further opens the discussion of the previous works around the verbal morphology in Modern Greek in the literature which are discussed in the second part of this chapter.

In §3.2, I focus on the diversity of patterns available in the language. It has to be made clear, though, that I do not intend to provide any morphological analysis of them. The data are presented in a theory-neutral way. When reference is made to the pieces of inflection, it solely aims to highlight the difficulties surrounding the analysis of the system.

I only present the forms as a whole and provide the morphosyntactic features which are represented in them. The data are theoretically accounted for under the principles of DM in detail in chapter 4 onwards, though. Next in §3.3, I outline the theoretical issues to which these patterns relate and the questions examined in detail in chapters 4–7. In §3.4, I move on to the literature review and present the ways previous treatments attempt to approach the data. Finally, the discussion concludes in §3.5.

3.2 The patterns in Modern Greek

The verbal system in Modern Greek exhibits rich morphological patterns, as exemplified in what follows. The features of aspect, voice, agreement and tense are all represented within the verbal forms. It is expected, naturally, that distinct patterns will occur depending on the combinations of these features in the forms.

The forms in (1) make use of distinct suffixes in most of the cases; *pézi* (1-a) versus *épeze* (1-d). Suffixation seems to be the main operation under which the forms are derived. Nevertheless, in (1-b)–(1-c) (*épeze* – *épekse*), a prefix has been inserted into the forms (*e-*). It also seems to be the case that phonological rules also apply to the forms, (*pézi* →) *épekse* in (1-c) and *péhtike* in (1-f).

(1) a. pézi
play.3SG.PR.AC
'(S)he/it plays'

b. épeze
play.3SG.PST.AC.IMP
'(S)he/it was playing'

c. épekse
play.3SG.PST.AC.PER
'(S)he/it played'

d. pézete
play.3SG.PR.NAC
'(S)he/it is played'

e. pezótan
play.3SG.PST.NAC.IMP
'(S)he/it was played'

f. péhtike
play.3SG.PST.NAC.PER
'(S)he/it has been played'

Despite the fact that one expects the same processes to apply for the derivation of all verbal forms in Modern Greek, this is not the case, as shown in (2). Prefixation still occurs in *éhtize* (2-b) and *éhtise* (2-c) and suffixation also still seems to be the main operation for word formation. Nonetheless, the phonological pattern which is noticed in cases such as (2-b) and (2-f) (*éhtize*, *htístike*), is distinct from the one in (1-c) and (1-f) (*épekse*, *péhtike*), respectively, although the phonological status of the last two letters, at least, is the same between the two cases (*-zi*). This might suggest that it is the property of the cluster which appears before the final vowel in the (a) cases (*-ezi* versus *-izi*) that might influence the phonological rules which need to apply.

(2) a. htízi
build.3SG.PR.AC
'(S)he is building '

b. éhtize
build.3SG.PST.AC.IMP
'(S)he was building'

c. éhtise
build.3SG.PST.AC.PER
'(S)he built'

d. htízete
build.3SG.PR.NAC
'It is built'

e. htizótan
build.3SG.PST.NAC.IMP
'It was built'

f. htístike
build.3SG.PST.NAC.PER
'It has been built'

In both cases, different stress patterns are also noticed. The stress is raised one syllable in the (b-c) cases (*éhtize, éhtise*), whereas it falls one syllable down in the (e) examples, *htizótan.*

Let us now consider cases which do not bear a resemblance to the above forms, at least in terms of the last two or three letters. The same stress pattern is noticed here too; It raises in (3-b)–(26-c) (*tíflone, tíflose*) but falls down in (3-e), *tiflóthike.* On the other hand and as far as the phonological changes which previously occurred in (1) and (2) (in the stems) are concerned, they do not apply here. In (26-c) (*tíflose*) and (3-f) (*tiflóthike*), deletion of the last consonant seems to have taken place, instead.

(3) a. tiflóni
blind.3SG.PR.AC
'(S)he blinds'

b. tíflone
blind.3SG.PST.AC.IMP
'(S)he was blinding'

c. tíflose
blind.3SG.PST.AC.PER
'(S)he blinded'

d. tiflónete
blind.3SG.PR.NAC
'(S)he is going blind'

e. tiflonótan
blind.3SG.PST.NAC.IMP
'(S)he was going blind'

f. tiflóthike
blind.3SG.PST.NAC.PER
'(S)he went blind'

What is interesting now is to test whether this type of phonological deletion operates in forms which bear the same phonological status, for example verbs which also end in *-ern*. The prefixation of the morpheme *e-* in (4-b)–(4-c), (*éplene, épline*), also occurs here. Nevertheless and despite the fact that the verb in (4) also ends in *-ni* –as the one in (3), *tiflóni–*, phonological deletion does not take place both in *épline* (4-c) as well as *plíthike* (4-f), contrary to (3-c) *tíflose* and (3-f), *tiflóthike*. It only occurs in (4-f), *plíthike*. On the other hand, the form in (4-c) appears rather modified; *éplene* (4-b) has been altered to *épline*, (4-c). If one suggests that a phonological rule needs to apply due to the fact that phonology in Modern Greek does not permit the phonological cluster *-ens-* (the example in (3) for instance), this cannot be the generalised case as this pattern is attested in *pénsa* (screwdriver).

(4) a. pléni
wash.3SG.PR.AC
'(S)he washes'

b. éplene
wash.3SG.PST.AC.IMP
'(S)he was washing'

c. épline
wash.3SG.PST.AC.PER
'(S)he washed'

d. plénete
wash.3SG.PR.NAC
'(S)he washes her/himself'

e. plenótan
wash.3SG.PST.NAC.IMP
'(S)he was washing her/himself'

f. plíthike
wash.3SG.PST.NAC.PER
'(S)he washed her/himself'

One may suggest, though, that the application of distinct morphological rules is triggered by the phonological cluster which appears before the ending, *-on-* (3) versus *-en-* (4). Consequently, it is even more challenging now to test the morphological pattern followed in other cases where verbal forms end in *-en-*. If all forms should perform accordingly, no different patterns should occur. Nevertheless, this is not the case, as shown in (5) below.

(5) a. treléni
derange.3SG.PR.AC
'(S)he deranges'

b. trélene
derange.3SG.PST.AC.IMP
'(S)he was deranging'

c. trélane
derange.3SG.PST.AC.PER
'(S)he deranged'

d. trelénete
derange.3SG.PR.NAC
'(S)he is being deranged'

e. trelenótan
derange.3SG.PST.NAC.IMP
'(S)he was being deranged'

f. treláthike
derange.3SG.PST.NAC.PER
'(S)he was deranged'

Throughout these examples, the same stress pattern is observed. Interestingly, the deletion of the *-n-* occurs in (5), too, both in (5-c) (*trélane*) and (5-f), *treláthike*. Contrary to (4), though, the phonological alternation of one part of the form (*éplene* (4-b) to *épline* (4-c)) is not identical in terms of the allomorphs, *trélene* (5-b) versus *treláthike* (5-f); *-en* to *-in* and *-en-* to *-an-*. Again, if one attempts to explain this pattern phonologically and based on the value of the consonant that precedes the endings, no solid conclusions can be reached. Cases like these show that there is something beyond the principles of phonology –and syntax, as a matter of fact– that may alter the morphophonological spell-out of the verbal forms in Modern Greek.

This conclusion is further supported if one considers (6).

(6) a. apoliméni
disinfect.3SG.PR.AC
'(S)he disinfects'

b. apolímene
disinfect.3SG.PST.AC.IMP
'(S)he was disinfecting'

c. apolímane
disinfect.3SG.PST.AC.PER
'(S)he disinfected'

d. apoliménete
disinfect.3SG.PR.NAC
'(S)he is being disinfected'

e. apolimenótan
disinfect.3SG.PST.NAC.IMP
'(S)he was being disinfected'

f. apolimánthike
disinfect.3SG.PST.NAC.PER
'(S)he was being disinfected'

Contra to any predictions one could attempt to make based on the phonological and syntacticosemantic information drawn from the forms in (6), this verb follows a different pattern. Despite the fact that it does end in *-eni* and consequently bears the same phonological status as the other two verbs in (4) and (5), it follows a different pattern as far as the spell-out of the morphological units in (6-c) and (6-f) are concerned; *apolímane* and *apolimánthike*, no deletion of the *-n-*. Nevertheless, it follows the same stress pattern of the afore-mentioned verbs.

In order to support further the assumption that there is more to the forms than phonological and syntacticosemantic features that force or trigger distinct morphological patterns in the verbal forms in Modern Greek, let us know consider cases which also bear the same phonological status as the ones above, namely ending in *-ni*.

(7) a. gdérni
skin.3SG.PR.AC
'(S)he skins'

b. égderne
skin.3SG.PST.AC.IMP
'(S)he was skinning'

c. égdare
skin.3SG.PST.AC.PER
'(S)he skinned'

d. gdérnete
skin.3SG.PR.NAC
'(S)he is being skinned'

e. gdernótan
skin.s3SG.PST.NAC.IMP
'(S)he was being skinned'

f. gdárthike
skin.3SG.PST.NAC.PER
'(S)he was skinned'

The stress pattern does not change even in this case. Prefixation of the morpheme *e-*, though, occurs in *égderne* (7-b) and *égdare* (7-c). Nonetheless and contrary to (4)–(6) but similarly to (5), deletion of *-n-* occurs both in the active and the non-active forms (*égdare, gdárthike*). Moreover, this verb presents the pattern noticed in (4)–(6) as far as the allomorphic pattern is concerned; *gdérni* versus *égdare.*

The position which states that the phonological and syntacticosemantic information could not condition satisfactorily the morphological behaviour of all verbal forms in Modern Greek finds further support in the light of the following cases.

(8) a. agapái
loves.3SG.PR.AC
'(S)he loves'

b. agápage
love.3SG.PST.AC.IMP
'(S)he used to love'

c. agápise
love.3SG.PST.AC.PER
'(S)he loved'

d. agapiéte
love.3SG.PR.NAC
'(S)he is being loved'

e. agapiótan
love.3SG.PST.NAC.IMP
'(S)he was being loved'

f. agapíthike
love.3SG.PST.NAC.PER
'(S)he was loved'

In cases such as (8), one notices a different morphological pattern. The morphological spell-out of the units which appear between the root and the ending is completely different from the one in the afore-mentioned cases (1–7). Looking at the imperfective forms in the active versus the non-active, it is easily spotted that the two vary significantly, *agápage* (8c) versus *agapiéte* (8d). This, though, was not the case up to this point; for instance, *apolímene* (6c) versus *apoliménete* (6d), or any other from in the current data (1–7). This suggests that it is probably the syntacticosemantic features in combination with some properties of the root that trigger such patterns.

In order to test whether this pattern is not specific to this verb only, now consider (9). In this case, all forms except from (9-c) (*theórise*) and (9-f) (*theoríthike*) do not show any resemblance to any of the patterns previously noticed. The morphophonological spell-out is completely different in this case. Even the stress pattern noticed in (9-b) (*theorúse*) is unique to forms such as this one, as it falls down one syllable.

(9) a. theorí
believe.3SG.PR.AC
'(S)he believes'

b. theorúse
believe.3SG.PST.AC.IMP
'(S)he used to believe'

c. theórise
believe.3SG.PST.AC.PER
'(S)he believed'

d. theoríte
believe.3SG.PR.NAC
'It is believed'

e. theorútan
believe.3SG.PST.NAC.IMP
'It was believed'

f. theoríthike
believe.3SG.PST.NAC.PER
'It was being believed'

So, up to this point, one has to face the diversity of the morphological spell-out of units of different sets of verbs and condition their insertion in each case. The wide range of morphological patterns can be further supported from cases which exhibit suppletion, as illustrated in (10). Forms (32-a) (*léi*) – (32-b) (*élege*) and (32-c) (*légete*) – (32-d) (*legótan*) exhibit weak suppletion, whereas (46-a) (*ípe*) and (46-b) (*ipóthike*) strong suppletion.

(10) a. léi
say.AC.PR.3SG.PST
'He says'

b. élege
say.AC.PST.IMP.3SG
'He was saying'

c. ípe
say.PER.NA.PST.3SG.PST
'He said'

d. légete
say.NA.PR.IMP.3SG
'It is said'

e. legótan
say.NA.PST.IMP.3SG
'It was being said'

f. ipóthike
say.NA.PST.PER.3SG
'It was said'

Finally, I would now like to draw attention to the prefixation of the morpheme *e-* in some

cases in the past active forms. Its insertion first seems to be conditioned upon voice (active) and tense (past) (although this position will be revisited in the following chapters) as well as phonology (when the verb has two syllables). It is only inserted in *égderne* (11-d) but not in *apolímene* (11-b).

(11) a. apoliméni
disinfect.3SG.PR.AC
'(S)he disinfects'

b. apolímene
disinfect.3SG.PST.AC.IMP
'(S)he was disinfecting'

c. gdérni
skin.3SG.PR.AC
'(S)he skins'

d. égderne
skin.3SG.PST.AC.IMP
'(S)he was skinning'

Despite this trend, this morpheme appears to be inserted in compound forms such as (12) below, where the verb (12-b) *ipégrafe* has more than one syllables.

(12) a. ipográfi
sign.3SG.PR.AC
'(S)he signs'

b. ipégrafe
sign.3SG.PST.AC.IMP
'(S)he was signing'

If one assumes that this is a property of compounds, the second part of which is a verb, the data below do not provide evidence for this position.

(13) a. kalófage instead of **kaléfage*
well eat.3SG.PST.AC
'(S)he ate well'

b. anavósvise instead of **anavésvise*
turn on–turn off.3SG.PST.AC.IMP
'(S)he was turning on and off'

c. hartópeze instead of **hartépeze*
cards-play.3G.PST.AC.IMP
'(S)he was playing cards'

Nonetheless, if one suggests that the infixation of this morpheme in compounds is restricted to those cases where the first part of the compound is a preposition, it is interesting to note that same verb –(12b) *ipégrafe–* also appears without the presence of this morpheme, (14b), *ipógrafe.*

(14) a. ipográfi
sign.3SG.PR.AC
'(S)he signs'

b. ipégrafe
sign.3SG.PST.AC.IMP
'(S)he was signing'

3.3 The challenges

Based on the patterns presented in the previous section, verbal forms in Modern Greek exhibit a wide diversity of morphological patterns. There are instances where these could be explained in terms of phonological requirements forced by the language and others where they are subject to the realisation of syntacticosemantic features. Nevertheless, there is a great deal of cases which exhibit allomorphic patterns which are not conditioned

either phonologically or syntactically. There are also instances in which strong and weak suppletion may also be noticed even within forms of the same root.

Consequently, any morphological theory should account for the following issues with regards to the verbal morphology in Modern Greek.

(15) (a)Phonologically conditioned allomorphy

(b)Allomorphy of the inflectional pieces which seems to be a property of roots

(c)Weak suppletion

(d)Strong suppletion

(e)Stress pattern

(f)Prefixation of the morpheme *e-* in the past tenses

(g)Infixation of the morpheme *e-* in compound forms

(h)Omission of the morpheme *e-* in compound forms

Up to this point, no mention has been made to the constituents of the verbal forms in Modern Greek. Bearing in mind the allomorphic patterns and the morphological spell-out of the syntacticosemantic features, it seems hard to distinguish which features are represented in which morphemes exactly. Consider (16) below.

(16) a. pézete
play.3SG.PR.NAC
'(S)he/it is played'

b. pezótan
play.3SG.PST.NAC.IMP
'(S)he/it was played'

It could be suggested that the forms consist of a root *–pez-* to which the inflectional suffixes

are further added. It looks as if it is impossible to determine exactly in which units aspect, voice, tense and agreement are represented. Consequently and based on these forms, the syntacticosemantic features appear to be represented cumulatively.

A second problem any theory should overcome relates to the fact that it needs to determine the order in which syntacticosemantic features are realised in the forms. Looking at cases such as (17) below, this may not seem feasible. In (17-a) *éhtize* and (17-b) *éhtise*, no safe conclusions can be reached due to the fact that the forms have undergone phonological changes. On the other hand, in (17-c) *agápage* and (17-d) *agápise* the morphological spell-out of the inflectional morphemes exhibit cumulative exponence and consequently the one-to-one relation between meaning and form cannot be achieved, either.

(17) a. éhtize
build.3SG.PST.AC.IMP
'(S)he was building'

b. éhtise
build.3SG.PST.AC.PER
'(S)he built'

c. agápage
love.3SG.PST.AC.IMP
'(S)he used to love'

d. agápise
love.3SG.PST.AC.PER
'(S)he loved'

Even if one compares the active (*agápage*) versus its non-active counterpart (*agapíotan*) in cases such as (18), it is not clear how one could determnie the morpheme in which voice is represented.

(18) a. agápage
love.3SG.PST.AC.IMP
'(S)he used to love'

b. agapiótan
love.3SG.PST.NAC.IMP
'(S)he was being loved'

On the other hand, if one compares (19-a) *agápise* versus *agapíthike* (19-b), it could be concluded that *-i-* represents the aspectual features and the inflectional piece that follows it voice (*-s-* versus *-ithik-*).

(19) a. agápise
love.3SG.PST.AC.PER
'(S)he loved'

b. agapíthike
love.3SG.PST.NAC.PER
'(S)he was loved'

Nevertheless, if one pursues this route, the presence of *-i-* in forms which represent the perfective aspect would yield the wrong conclusions, such as in (20) below.

(20) a. agapiéte
love.3SG.PR.NAC
'(S)he is being loved'

b. agapiótan
love.3SG.PST.NAC.IMP
'(S)he was being loved'

These problems, though, –as for instance the morphological spell-out of aspect and voice– do not arise if one considers (21).

(21) a. gdérni
skin.3SG.PR.AC
'(S)he skins'

b. égderne
skin.3SG.PST.AC.IMP
'(S)he was skinning'

c. égdare
skin.3SG.PST.AC.PER
'(S)he skinned'

d. gdérnete
skin.3SG.PR.NAC
'(S)he is being skinned'

e. gdernótan
skin.s3SG.PST.NAC.IMP
'(S)he was being skinned'

f. gdárthike
skin.3SG.PST.NAC.PER
'(S)he was skinned'

It could be suggested that the root (*gd-*) is followed by *-ern-* in the forms which represent the imperfective aspect (*égderne* in (21-b), *gdérnete* in (21-d) and *gdernótan* in (21-e)), contra *-ar-* which appears in the perfective ones, *égdare* (21-c) and *gdárthike* (21-f). In such cases, the representation of voice in the morpheme that follows the aspectual one, is distinct from the pattern observed in (18), repeated here as (44).

(22) a. agápage
love.3SG.PST.AC.IMP
'(S)he used to love'

b. agapiótan
love.3SG.PST.NAC.IMP
'(S)he was being loved'

Any theoretical treatment, though, should not only account for the segmentation in the

verbal forms. It is the call of every theory to propose a mechanism which will correctly predict and match the roots or stems to the different sets of inflectional endings, so ungrammatical cases will be ruled out. A theory should only result in the derivation of *theórise* (23-b) but not the ungrammatical form **theórare* (23-a).

(23) a. *theórare
believe.3SG.PST.AC.PER
'(S)he believed'

b. theórise
believe.3SG.PST.AC.PER
'(S)he believed'

In doing so, what could be considered as a stem or under which processes stems are formed need to be clearly defined in any given theory.

In what follows, I explore the previous accounts of the verbal morphology in Modern Greek which have been formulated in the literature.

3.4 Previous Accounts in the literature

The issue of what syntacticosemantic features are represented in each morphological piece in the verbal forms in Greek has been a matter of controversy in the literature (i.e. Koutsoudas 1962; Philippaki-Warburton 1973; Ralli 1983; Rivero 1990; Joseph and Smirniotopoulos 1993). Moreover, the processes under which verb formation is achieved has also been debated. It has been claimed that verb formation is a syntactic process (i.e. Rivero 1990), whereas the majority of the theories support the view that it is a morphological process. For some, verb morphology in Greek is morpheme-based and stems are

formed in the lexicon (cf. Ralli 1983), whereas for others the morphology is stem-based with stems not formed but rather stored in the lexicon (i.e. Joseph and Smirniotopoulos 1993).

The main debate emerging from these accounts revolves around the feature segmentation of stems, independently of whether verb formation is syntactic or morphological or whether stems are formed or stored. In the literature, stems are taken to represent aspect or aspect and voice features. The particular view taken on the features represented in the stems further influences any claims as far as the morphosyntactic status of the inflectional units following the stems are concerned. For instance, if one assumes that stems represent aspect, what follows the stems would subsequently represent voice, agreement and tense.

On the other hand and if stems inflect for voice alongside aspect, the unit adjoined to the stems is predicted to represent agreement and tense only. Despite the fact that evidence regarding the latter view is brought forward from some verbal forms (i.e. the active, perfective), it does not find support in others, such as the non-active, imperfective ones. This led researchers to the assumption that, in such cases, the suffix that follows the stems inflects for voice, agreement as well as tense features –so voice is represented in two separate morphemes– a position which is also revisited in the following chapters.

Overall, it seems that there is neither a unified treatment under which verb formation is accounted for, nor one which explains systematically the feature representation of affixes in Greek. Even at this early stage, it seems that there is a need to clearly define what a stem and its feature representation are in the language.

So, the aim of the remaining section is: from a language-specific perspective, I intend to summarise some of the dominating accounts in the literature regarding verb morphology in Greek in order to discuss their inadequacies and highlight the need for an alternative

theory. The value and merit of these works are based on the fact that they have been formulated under the principles of distinct morphological models, in contrast to work that remain theory neutral or is purely descriptive (claims in pedagogical grammars). I present five analyses of the verb morphology in Greek which are all formulated within different theoretical frameworks: Item-and-Arrangement (i.e. Hockett (1958); Koutsoudas (1962) for Greek), Generative Phonology (i.e. Chomsky and Morris 1968; Philippaki-Warburton (1973) for Greek), Lexicalism (i.e. Selkirk (1982), Ralli (1989b) for Greek), word formation in syntax as the result of head-movement (i.e. Pollock (1989); Rivero (1990) for Greek) and A-morphous morphology (Anderson (1992); Joseph and Smirniotopoulos (1993)). I pay attention not only to their claims around the pattern of segmentation but also to the positions, if any, they take regarding verb classification. In each case, I attempt to provide a couple of arguments against the claims or the analyses put forward and any omissions as I see them, positions I fully explain and argue in favour of in chapter 4.

3.4.1 Koutsoudas (1962)

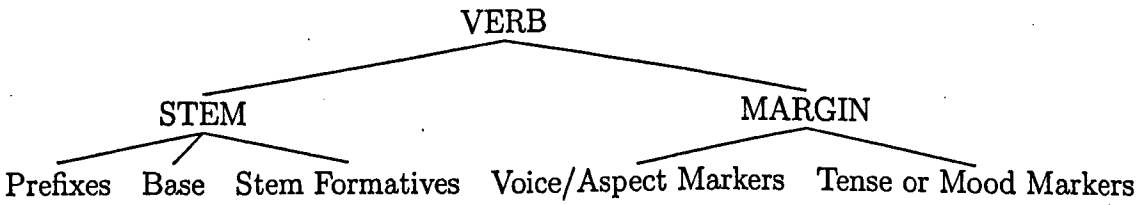
Koutsoudas (1962) offers a treatment of the verb morphology in Greek along the lines of the Item-and-Arrangement model (i.e. Hockett 1958). His account is based on the hypothesis that one can associate phonological material with one or a set of no more than two morphosyntactic properties.[1]

He defines a verb as a sequence of specific morphemes which have a fixed position. He

[1]Hamp (1961) has previously outlined a treatment in line with the principles of the Item-and-Arrangement model. His approach differs from Koutsoudas's in what he claims about the morpheme that follows the stem; this morpheme which in most cases is covertly realised, represents aspectual features . What follows this morpheme is the unit representing tense. He calls it theme vowel. Agreement is represented in the next morpheme, whereas the realisation of voice follows it. In most cases, voice is spelt-out as null. One of the disadvantages of this account is that it allows the existence of more than necessary null elements due to the fact that it is superficial as far as the specification of each unit is concerned.

suggests that any given verbal form in Greek may be formed by a number of optional affixes surrounding the base or the root in addition to the voice and aspect as well as the tense or mood markers. This can be schematically represented as in (24) below:[2]

(24)



For Koutsoudas, the prefix position can be occupied by elements –such as prepositions– which semantically modify the base. Stem formatives such as *-az-* in (25) below, which are optional and have no semantic content, follow the base (*etim*-prepare) and are used in cases where the verbal forms derive from adjectives or nouns (*étimos*).

(25) a. etim - áz - o
root.prepare - stem formative - PR.IND
'I prepare'

b. étim - os
root.prepare - NOM.SG.MAS.
'I am prepared, ready'

For Koutsoudas, stems do not inflect for any features. This position completely contradicts claims which have been made in the remaining accounts, as discussed in the subsequent sections.

[2]In the examples which refer to Koutsoudas's claims I adopt his pattern of segmentation as well as give the features represented in each morphological unit as proposed by him. For instance, I do not give the agreement features.

Moreover, the margin consists of morphemes which cumulatively represent voice and aspect. Finally, the markers of tense or mood are further suffixed to the form.

(26) a. agáp - is - a
root.love - PER.AC - PST.IND
'I loved'

b. agap - íthik - a
root.love - PER.NA - PST.IND
'I was loved'

c. agap - ié - me
root.love - IMP.NA - PR.IND
'I am being loved'

An important omission in Koutsoudas's account relates to the absence as far as the representation of agreement features are concerned in what he calls the tense or mood marker, as exemplified in (27); the inflectional unit representing the first singular in the past is spelt-out as *-a* (27a), whereas the second singular as *-es* (27b).

(27) a. agáp - is - a
root.love - PER.AC - PST.IND
'I loved'

b. agap - íthik - es
root.love - PER.NA - PST.IND
'I was loved'

Moreover, Koutsoudas's tense or mood morpheme does not only represent agreement and tense but it could be argued that voice features may also play a role (I use brackets to refer to these features in the example below). Otherwise, it would have been incorrectly predicted that the morpheme used in the first singular present forms would have been either *-o* or *-me*. The exact ways of this representation are discussed in chapter 4, though.

(28) a. agap - ó
root.love - PRS.IND(ac)
'I love'

b. agap - ié - me
root.love - IMP.NA - PR.IND(nac)
'I am being loved'

As far as the representation of mood is concerned, it is highly debatable that this could serve as a unified account of mood. This becomes clear, if one considers cases in which the subjunctive mood is not marked on the verbal form itself but on the subjunctive particle, as shown in (29b), for which Koutsoudas does not make reference to.

(29) a. gráf - ete
write - 2PL.PR.AC

b. na gráf - ete
particle.subjunctive write - 2PL.PR.AC.

Furthermore, Koutsoudas's analysis fails to account for the prefix *e-* which is present in the form given in (30).

(30) é - gd - ar - a
AUG - root.skin - PER.AC - PST.IND
'I skinned'

As the theory currently stands, the function and the properties of this morpheme, the augment, are not analysed. An interesting point he raises, though, relates to the stress pattern in Greek and the predictions one makes. Koutsoudas (1962:30) claims that the stress is 'an integral component of the aspect-and-voice suffixes' which 'means that no other morpheme in the verb construction has stressed allomorphs'.[3]

[3]This position also makes wrong predictions as far as the specification of the root/stem and tense and

Following this claim, one is led to predict that the augment, which carries the stress, is an allomorph of voice and aspect and should represent these features. This position, though, could not be valid, as it is widely acceptable in the literature (cf. Triantafillides 1941; Householder et al. 1964; Joseph and Philippaki-Warburton 1987; Clairis and Babiniotis 1999; Galani 2004c) that the augment is only inserted in some verbal forms to occupy the stress in the past tenses, when the stress moves to the antepenultimate, and there is not any other available position.

Even if Koutsoudas was right, the prefixation of this unit would have further caused problems to the morpheme order. A point which is linked to the morpheme order he proposes and the function of each unit relates to his claim that what proceeds the base are elements which semantically modify that base. Again, this is not the case with the augment. Consequently, it seems that this account does not provide a straightforward treatment regarding the presence of this prefix.

Before moving on to his view on verb classes, let me further note that the system he proposes with regards to the correct matching between the stem and the margin is rather descriptive. He divides the inflectional markers into groups and assigns numbers to them. He then formulates 'rules' according to which the matching between members of the stem and the margin could be joined.

The last point of Koutsoudas's treatment which deserves attention is his attempt to account for verb classification. The division of verbs into different classes is established on the basis of stems which have a similar selection of allomorphs of aspectual suffixes. Accordingly, Class I consists of verbs which take an null allomorph to form the imperfective form (31a-b) and the allomorph *-s-* (31c) to form the perfective one. He further notes that the majority

mood markers are concerned but I do not wish to expand on these problems here.

of verbs in Greek belong in to this category.

(31) a. gráf - ∅ - o
write - IMP.AC - PR.IND
'I write'

b. é - graf - ∅ - a
augment - write - IMP.AC - PST.IND
'I was writing'

c. é - graf - *s* - a
augment - write - PER.AC - PST.IND
'I wrote'

Class II stems take the allomorphs *-o-* in the present active forms, *-us-* (32a) in the imperfective ones and *-is-* is in the perfective ones. This is the second largest in number class of verbs in Greek.

(32) a. agap - *ó*
love - PR.AC.IMP.IND
'I love'

b. agap - *ús* - a
love - IMP.AC - PST.INC
'I was loving'

c. agáp - *is* - a
love - PER.AC - PST.IND
'I loved'

In Class III verbs –a rather small class with less than hundred verbs– the stem takes the stressed allomorph *-á-* (*-o-* in the imperfect). This class consists of verbs which are morphologically formed in line with the non-active voice but they are active in meaning.

(33) a. kim - *á* - me
sleep - IMP.AC - PR.IND
'I am sleeping'

b. kim - *ó* - moun
sleep - IMP.IND - PST.IND
'I was sleeping'

Finally, in Class IV verbs –the smallest one in number with only three verbs– the stem is combined with the imperfective allomorph of Class III verbs to form the imperfective active forms, whereas with certain allomorphs of Class I perfective suffixes for the perfective, active ones.

(34) a. káth - *o* - me
sit - IMP.NAC - PR.IND
'I am sitting'

b. kath - *ó* - moun
sit - IMP.NAC - PST.IND
'I was sitting'

c. é - kat - *s* - a
augment - sit - PER.AC - PST.IND
'I sat'

As far as Koutsoudas's classes are concerned and in order to highlight the problems of this treatment, what is not clear is the way he accounts for verbs such as the one in (35).

(35) a. gdérno
skin.1SG.PR.AC
'I skin'

b. égderna
skin.1SG.PST.AC.IMP
'I was skinning'

c. égdara
skin.1SG.PST.AC.PER
'I skinned'

What is evident from (35) is that this verb could not be classified in any of Koutsoudas' groups, as the selection of allomorphs he proposes as conjugational classifiers is not present in any of the forms in (35). Nevertheless, the classification of verbs based on the aspectual markers has not been previously supported in the literature, to the best of my knowlegde. It is widely accepted that verb classification in Greek is achieved via the selection of theme vowels, as Spencer (1991) notes. Generally, what Koutsoudas's verb classes do not allow is the subcategorisation of verbs which would further predict the morphological pattern of the markers of the margin.

In conclusion, it seems that Koutsoudas makes some interesting assumptions regarding the representation of the syntacticosemantic features. He assumes that verbs in Modern Greek are formed compositionally. He divides the verbal forms in two parts: the stem which does not represent any syntacticosemantic features and the inflectional part which consists in turn of the unit represent aspect and voice and the one representing tense and mood. Nevertheless, his attempt to link the phonological realisation to specific items of inflection is not always attainable. This results in wrong predictions as far as the augment is concerned and some unwelcoming over-generalisations.

3.4.2 Philippaki-Warburton (1973)

Philippaki-Warburton (1973) proposes an account of the verbal morphology in Greek mainly based on the inadequacies two previous accounts raise. Her treatment derives from claims made in the Item-and-Arrangement model (Hockett (1958) and Koutsoudas

(1962) for Greek) as well as the Word-and-Paradigm (Robins (1959) and Matthews (1967, 1972, 1991) for Greek).[4] Her account is based on the Generative Phonology model (cf. Chomsky and Halle 1968). She suggests that syntactic features as well as lexical features are marked in the lexicon. For example, some verbs are marked with some sort of feature which restricts them from taking the non-active endings showing that they can only occur in the active voice.

Moreover, she claims that a word is a complex symbol, comprised of grammatical categories –represented as syntactic features– which are separated into single constituents after the introduction of transformational rules. She suggests that voice [+passive], aspect [+perfective], tense [+past], number [+plural] and person are the relevant features for the inflection of the verb paradigm -*gráfo* (write)- in Greek. The syntactic features are represented in the inflectional endings.

As far as voice is concerned, she supports the claim that the [+passive] is the marked value of the voice features which are segmentalised within the thematic vowel in the imperfective forms (1973:207) contrary to the active voice which is unmarked. So in marked environments ([+passive]), one expects the overt morphological realisation of these morphemes (36a). On the other hand and in unmarked environments, the voice morphemes are not overtly realised (36b).

(36) a. gráf - o - me
root.write - NA - 1SG.PR
'I was written'

b. é - graf - ∅ - a
AUG - root.write - AC - 1SG.PST
'I was writing'

[4]The interested reader is referred to Philippaki-Warburton (1973) for an evaluation of Matthews's account.

She further suggests that [+perfective] is the marked value for aspect resulting in *-s-* for the [+perfective]. For the unmarked value of aspect, *-th-* is the morphological spell-out. The difference between them lies on the representation of voice, [-passive] in the first case, [+passive] in the latter. The combination between the marked values ([+passive], [+perfective]) seems to suggest that *-th-* (37b) represents both aspect and voice, whereas *-s-* (37a) only the perfective aspect.

(37) a. é - graf - s - a (after phonology: *égrapsa*)
AUG - root.write - PER - 1SG.PST
'I wrote'

b. graf - th - ó
root.write - PER.NA - 1SG
'To be written'

Moreover, the marked value for tense is [+past] and is taken to be represented either in the 'quality of the thematic vowel' in the active voice (38a) and the perfective aspect (38b) or by suffixation in the imperfective passive (38c).

(38) a. é - graf - a
AUG - root.write - 1SG.PST
'I was writing'

b. gráf - tik - a
root.write - PER.NA - 1SG.PST
'I was written'

c. graf - ó - mun
root.write - IMP.NA - PST.1SG
'I was being written'

Finally, she proposes a phonological rule according to which the augment is inserted. What is important here is her assumption that the augment is present in all forms in the past

tenses but is deleted from those, when it remains unstressed.

Let me now briefly identify some of the key problems regarding this analysis. If *-s-*, *égrapsa* (37a), is the aspectual morpheme of the marked value of [+perfective], whereas *-th-*, *grafthó* (37b), the aspect and voice morpheme of the marked value [+perfective, +passive], one expects the same pattern to apply to (39).

(39) a. *agáp - s - a (agápisa)
root.love - AC - 1SG.PST
'I loved'

b. *agap - th - ó (agapithó)
root.love - PER.NA - 1SG.PST
'to be loved'

Nevertheless in such cases, it seems that this algorithm of values does not predict the presence of *-i-* in (39b). Instead, its presence could motivate an analysis according to which it is suggested that *-i-* is the morpheme representing the perfective aspect, as it appears both in (39a-b), whereas *-s-* and *-th-* represent voice features, active versus non-active, respectively, as illustrated in the (40) below.

(40) a. agáp - i - s - a
root.love - PER - AC - 1SG.PST
'I loved'

b. agap - í - thik - a
root.love - PER - NA - 1SG.PST
'I was loved'

This could also work for cases such as (37), if one assumes that the imperfective aspect is covertly realised. This would necessarily require, of course, the algorithm of values to be revisited. Here, it is also interesting to note that one cannot account satisfactorily

for feature representation in the verbal morphological system in Greek in its whole based on what has been traditionally considered to be the verb paradigm (for example, verbs following the morphological pattern of *gráfo*, where the stem undergoes such phonological changes), as this would not allow us to capture the great diversity.

Additionally, another problem of the account relates to the association of a morphosyntactic property to a single morphological exponent. This view fails to account for the fact that *-thik-* in (41a) is only spelt-out in the perfective, past forms. Consequently, its presence is not only conditioned upon aspect but also tense. This is clear, if one considers (41). I use lower case to illustrate this conditioning.

(41) a. agap - í - thik - a
root.love - PER - NA(per.pst) - 1SG.PST
'I was loved'

b. agap - i - th - ó
root.love - PER - NA(per.pr) - 1SG.PR
'to be loved'

Finally and apart from the inadequacies highlighted with regards to the segmentation, this treatment lacks an account of verb classes. There are problems as far as the terminology of thematic vowel is concerned; here thematic vowel is used to denote the inflectional suffixes (recall (36a-b)) whereas these vowels are generally taken to be meaningless markers of the conjugational classes (cf. Spencer 1991) and normally appear between the root and the inflectional suffixes. No mention is made on how to explain allomorphic cases –although this could presumably be achieved by the stipulation of rules– and there are no positions taken on whether Greek verb morphology employs the formation –or even the existence– of stems.

3.4.3 Ralli (1989b)

Ralli (1989b) develops a morphological approach to the verb morphology in Greek following the principles of lexicalism (Lieber 1980, Selkirk 1982). She claims that there is not an absolute match between morphosyntactic features and their morphological realisation. In Greek, verbs consist of two parts: the first one is the stem which might represent aspect and the second one mainly represents agreement and tense. For Ralli, the verbal morphology can be schematised, as follows:

(42) [[[Stem] Inflectional Suffix] Inflectional Suffix]

She further claims that other morphosyntactic categories may be represented in each part. Voice, for instance, may be represented in the stem or the inflectional suffix.[5]

(43) a. gráftik - a
stem.PER.NA - 1SG.PST
'I was written'

b. graf - ómoun
stem.IMP - 1SG.PST.NA
'I was being written'

There is one constraint which restricts the representation of the same morphosyntactic feature twice in the form. Consequently, if the stem inflects for voice, then this feature cannot be represented in the inflectional suffix too. This blocks the formation of ungrammatical forms, such as (44) below, where the non-active voice is represented both in both parts.

[5]Ralli (1989b) proposes that the morphemes representing agreement are distinct from the ones representing the temporal features. This position, though, is revisited in Ralli (2005), where she claims that agreement and tense morphemes are amalgamated.

(44) *graftik - ómun
stem.PER.NA - 1SG.PST.NA

Moreover, she proposes that theme vowels in Modern Greek are no longer productive. They are only part of the stems and are derived by the application of morpholexical rules explaining allomorphic patterns.

(45) a. agapá - o
stem.IMP - 1SG.PR
'I love'

b. agapí - s - o
stem - PER.AC - 1SG.PR
'to love'

The systematic allomorphy such verbs exhibit classify verbs in to conjugations. Any verb with the allomorphy type *Xa - Xn* would belong to the second class. All remaining verbs would belong to the first conjugational class.

(46) a. gráf - o
stem.IMP - 1SG.PR

b. gráf - s - o (*grápso*, after phonological changes)
stem - PER.AC - 1SG.PR
'to write'

Finally, the application of redudancy rules in the lexicon would explain the partial allomorphy verbs may exhibit. Both forms are stored in the lexicon and are available to further processes.

(47) a. févg - o
stem.IMP - 1SG.PR
'I leave'

b. é - fig - a
AUG - stem.PER - 1SG.PST
'I left'

Ralli claims that a strict morpheme order cannot be maintained and one feature can only be represented once in the verbal forms. It would be interesting to see, however, what forces the amalgamation of voice morphemes in the unit representing aspect contrary to the pattern where voice is represented within the inflectional suffix of agreement and tense. As the theory currently stands, nothing conditions this selection.

Furthermore, if all suffixes are stored in the lexicon, it is vital they carry their full specification. If one looks at the specification of *-omun* (1ST.PST), this piece can only appear in the forms in the first person singular of the present tense in the non-active voice (cf. Tsangalidis 1993). Consequently, it is not possible to disregard the representation of the voice features in this unit by suggesting that voice is represented in the stem alongside aspect. If one does so, though, this would result in the existence of two items with identical specification in the lexicon which would, nonetheless, be incomplete. For instance, *-a* (1G.PST) versus *-ome* (1SG.PST). This further imposes the question, as to what conditions the selection of one of the items over the other to avoid mismatches.

Finally, the allomorphic pattern which categorises verbs in to classes, does not allow us to make any predictions regarding the diversity of morphological patterns verbs of the same conjugation may present. Consider the following examples:

(48) a. gdín - o
stem.IMP - 1SG.PR
'I undress'

b. é - gdis - a
AUG - stem.PER.AC - 1SG.PST
'I undressed'

c. gdíthik - a
stem.PEF.NA - 1SG.PST
'I was undressed'

As these two verbs do not show the allomorphic pattern *Xa - Xn* (replacing the last vowel of the stem *-a-* with any of its possible allomorphs *-n-*) –due to the fact that the stems are not comprised for the theme vowel *-a–* they are considered as Class I verbs.

(49) a. molín - o
stem.IMP - 1SG.PR
'I infect'

b. mólin - a
stem.PER.AC - 1SG.PST
'I infected'

c. molín - thik - a
stem.PEF - NA - 1SG.PST
'I was infected'

Nevertheless, how would one predict that these two verbs do not exhibit such a distinct morphological pattern between them? It is also interesting to note that the afore-mentioned verbs further share the same phonological status as far as the last letter of the stem is concerned. Consequently, it cannot be argued that this is phonologically conditioned allomorphy. So, there must be a feature which conditions this diversity. In Ralli's account, this would be accounted for in terms of stipulative morpholexical rules which will apply to the stems, a treatment that lacks the power of prediction over morphological patterns.

3.4.4 Rivero (1990)

Pollock's (1989) main proposal –that the order of the inflectional pieces in any given verbal form is achieved by movement through functional heads and a mapping between the order of the inflectional morphemes and the functional categories is identical– has been further supported by Rivero (1990) for the Greek verb morphology.

Rivero (1990) suggests that voice, aspect, agreement and tense all head their own maximal projections (cf. Pollock 1989; Chomsky 1988). She claims that the non-active voice in Greek and Albanian[6] –affixes heading their own maximal projections– is adjacent to VP, which has an argument structure.

Rivero suggests that aspect, which is morphologically expressed in Greek, is an affix in the simple tenses. By applying the Verb-raising rule, the verb moves to amalgamate with voice, aspect, tense – all word internal elements– and agreement –word external– a way by which the correct morpheme order is also achieved.

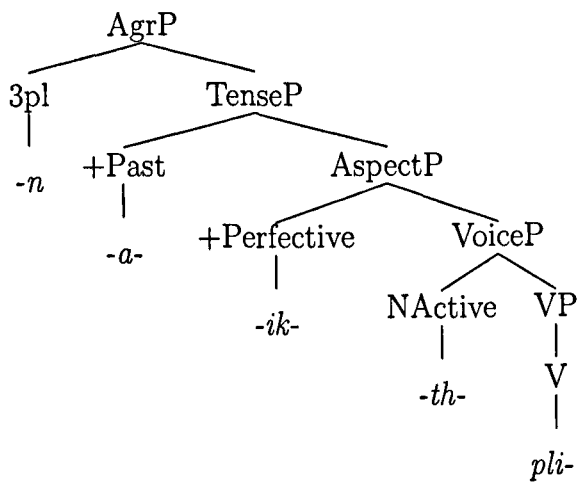
According to her claims and taking the verb *plíthikan* (they were washed)[7] as an example, the form is analysed as follows:

(50) plí - th - ik - a - n
wash - PER - NA - PST - 3PL
'they were washed'

[6]I will be only looking at the claims she makes about Greek. Although Rivero expands her treatment to complex tenses, such as the perfects in Greek, the discussion will be omitted in what follows, as I am solely interested in the simple verbal forms.

[7]This is the example Rivero uses to illustrate her points.

(51)



Following such an analysis serious problems arise. I will start with the agreement morphemes. If one accepts that they can be separated from the temporal ones, we are forced to assume that they must remain the same throughout the tenses for the given person and number (e.g. 3/plural). In line with this position, we are forced to predict that the third person plural of the present tense should not have been *plénonte* 'they are washed' but a form ending in *-*n*.

Moreover and if one looks at forms such as (52) below, it is clear that agreement and tense are cumulatively spelt out.

(52) a. plí - th - ik - a
wash - PER - NA - 1SG.PST
'I was washed'

b. plí - th - ik - e
wash - PER - NA - 3SG.PST
'It was washed'

Moving onto the segmentation of voice and aspect, it has been previously noted that aspect

is marked closer to the root than voice. Consider (53).

(53) a. agáp - i - s - a
root.love - PER - AC - PST
'I loved'

b. agap - í - thik - a
root.love - PER - NA - PST
'I was loved'

This would necessarily influence the view one takes on the status of *-ik-* in the verbal forms. As has been previously noted, this unit is only attached to the morpheme of voice in the non-active, perfective, past forms. Otherwise its presence is banded, as illustrated in the example that follows.

(54) a. agap - ì - thik - a
root.love - PER - NA - 1SG.PST
'I was loved'

b. agap - i - th - ó
root.love - PER - NA.per.pst - 1SG.PR
'To be loved'

This smoothly leads us to the status and the problems of what appears to be the stem in Rivero's account. The biggest problem is her choice of the verbal form. If one looks at the paradigm of *pléno* 'wash' below, it is could be suggested that the stem *pli-* represents voice and aspect features, as this stem is only spelt-out in forms which represent the perfective aspect and non-active voice. Additionally, it only appears when this form is in the past tense. The pattern of segmentation, (55), neither follows Rivero's, nor it is meant to be suggestive of an analysis. It is only used for expository purposes and in order to exemplify the point regarding the availability of stems for the given verbal form.

(55) a. plén - ome
wash.IMP - 1SG.PR.NA

b. é - plen - a
AUG - wash.IMP - 1SG.PST.AC
'I was washing'

c. é - plin - a
AUG - wash.PER.AC - 1SG.PST
'I washed'

d. plí - thik - a
wash.PER.NA.PST - NA.PER.PST - 1SG.PST
'I was washed'

What this syntactic approach fails to account for is the system in Greek, where there is not one-to-one relationship between meaning and form. It suggests, instead, that the presence of one feature in an inflectional unit might be conditioned upon the presence of another syntacticosemantic feature in a distinct morphological piece.

Finally, Rivero's account does not make any claims regarding allomorphic or suppletive cases, verb classes and the insertion of material which are phonologically related, such as the presence of the augment. In general, Rivero's attempt to provide a cross-linguistic evidence for the Functional Head approach to inflection demolishes the applicability of the framework. It is clearly shown that this framework can by no means provide a satisfactory account of a language exhibiting a rich inflectional system. Additionally, it is shown that a strict syntactic approach to the inflectional system cannot be achieved, as direct correlations between the inflectional affixes and their specification cannot be maintained. Furthermore, it is shown that an attempt to organise the morphological affixes representing the semantic features cannot be achieved on the basis of the syntactic behaviour of such features. Consequently, a direct relation and organisation of morphology and syntax are proven to be completely unsatisfactory.

3.4.5 Joseph and Smirnitopoulos (1993)

Joseph and Smirniotopoulos (1993) are in favour of the theory motivated by the proposals made in Anderson (1992). This treatment is strongly against Rivero's analysis. Their main argument against her treatment treatment derives from the necessity to explain the stem allomorphy in verbs, such as *pléno* (wash), and in specific the allomorphic pattern in the perfective, non-active form (*éplinan* 'they washed' versus *plíthikan* 'they were washed'). In order to support this position, they further note that what the deletion of the nasal in the afore-mentioned form is not the result of the application of a phonological well-formedness rule in Modern Greek, as the cluster *-nthik-* is available in the verbal environment.

(56) a. esthán - ome
stem.IMP - 1SG.PR
'I feel'

b. esthánthik - an
stem.PER - 3PL.PST
'I felt'

Consequently, as these patterns cannot be predicted along the lines of phonology, they can only be accounted for within a purely morphological account.

They suggest that stems are produced from roots based on lexical rules and stored in the lexicon. They are then available to inflectional and derivation rules.[8] They propose that three stems are needed for the formation of the verbal forms in Modern Greek: stem 1 representing the imperfective aspect, stem 2 representing the perfective aspect and stem 3 appearing in the non-active perfective verbal forms. As they clearly mention, stem 3 is 'generally followed by *-th-* as well as *-ik-* in the past tense' (pp. 395). They further suggest

[8]See Smirniotopoulos (1992) for the application of the rules.

that what follows each one of these three stems is a set of endings representing person, number and tense features.[9] They attempt to illustrate the applicability of their account by the use of the following two examples (Joseph and Smirniotopoulos 1993:397).

The process under which (57a) *plíno* (+active, +perfective, -past, 1sg) is formed is as follows: stem 2 will be first selected from the lexicon, as it represents the [+perfective, +active] features. The system will then look in to the lexicon again and select the suffix from that set of suffixes which represent [+perfective, -past]; they call this set, set 1. From set 1, the suffix representing the [1sg] will be further selected and added to the stem.

(57) a. plíno
[+active, +perfective, -past, 1sg]
'To wash'

b. [+perfective, +active] → Stem 2 (*plin-* from the lexicon)

c. [+perfective, -past] → Select ending set 1

d. [1sg] → *-o*

Similarly, the process under which (58a) *plenósastan* (-perfective, -active, +past, 2pl) is formed will first select stem 1 from the lexicon. The stem represents the [-perfective] aspect. Prior to the selection of the ending set, *-o-* will be added to the stem. Ending set 4 will be selected on the basis of the feature specification [-active, -perfective, +past] and from this set the unit which corresponds to the [2pl] *--sastan–* will be added to the stem to form (58a), *plenósastan.*

(58) a. plenósastan
'You were being washed'

[9]This is the traditional –descriptive– approach of the verbal forms in Modern Greek (Triantafillides (1941), Householder, Kazazis, and Koutsoudas (1964), Joseph and Philippaki-Warburton (1987), Holton, Mackridge, and Warburton (1997), Clairis and Babiniotis (1999), Alexiadou and Anagnostopoulou (2001)).

b. [-perfective] → Stem 1 (*plen-*) from the lexicon

c. [-active, -perfective, +past] → Suffix *-o-* and select ending set 4

d. [2pl] → *-sastan*

Despite the fact that such an approach would account for the availability of stems, it is does not explain the infixation of *-o-* in forms such as (58a). The existence of three separate stems and the incorporation of morphological units which represent clearly defined syntacticosemantic features within these, postulate a treatment according to which the specification of these morphemes is ignored. For instance, one can easily identify the morpheme *-thik-* as the inflectional unit which is suffixed to a root/stem and represents the non-active voice in a perfective, past environment. Nevertheless, this path is not pursued here, as the mechanisms of the model would have either complicated the system or proven incapable of accounting for the diversity of patterns.

Moreover, the simplified treatment one takes solely based on the existence of stems such as *plithikan* versus *esthantikan* –as stems stored in the lexicon– does not comply to the statement the authors make in relation to the number of verbs (250) which follow each pattern in Modern Greek, as put forward in Eleftheriades (1985). Consequently, the question one needs to ask now is the following: If there is such a great number of verbs exhibiting these patterns, wouldn't this mean that they are systematic? Consequently, it might be the case that the deletion or not of the nasal, signals two different models under which stem formation occurs in Greek. Additionally, if numbers are so significant, the two patterns could not be reduced down to one which can be only explained in terms of stipulative rules.

Finally, the authors do not touch upon the insertion of the augment or verb classification. The latter is relevant both to the overall morphological behaviour of the individual verbs as well as the insertion of the augment. Consequently, it seems that this account adopts

the treatment put forward in pedagogical grammars and formulates it within the principles of a theoretical framework.

3.5 Conclusion

In the present chapter, I presented the facts, the diversity of morphological patterns and the difficulties any theoretical treatment should account for and face in Modern Greek. I also presented the main approaches around the verbal morphological system in Greek which have been formulated within the principles of a variety of theoretical models; a syntactic, a lexicalist, an a-morphous model. It was shown that all accounts deal with the feature specification of the morphological units from which verbal forms in Modern Greek consist. Nevertheless, little attention has been paid to the insertion of the augment –which does not represent syntacticosemantic features– and verb classification. The deficiencies which have been identified in the afore-mentioned works motivate the formulation of an alternative treatment of the verbal morphology in Modern Greek which is outlined in the following chapter.

Chapter 4

Verbal morphology in Modern Greek revisited

4.1 Introduction

In this chapter, I aim to revisit the account of the verbal morphology in Modern Greek and offer an alternative treatment which will be formulated theoretically within DM in chapters 5–7 in detail. The analysis outilned here assumes that verbs in Modern Greek are formed compositionally. Attention is paid to the presence of theme vowels and their morphosyntactic status. Their role in word formation is also highlighted. It is shown that based on the specification of these morphological units, the theme vowels, one is in a sufficient position to provide a fully-fledged analysis of allomorphy and verb classification.

The remaining of this section is organised as follows: in §4.2 I explain the parts of which verbal forms in Modern Greek consist, whereas I show how stem formation is achieved in §4.3. The consequences this approach has for allomorphy and conjugational classes are

explored in §4.4. Following, in §4.5, I summarise the questions which are addressed in the subsequent chapters and derive from the system I am proposing. The discussion is rounded off in §4.6.

4.2 Constituents of words: Morphological decomposition

Verbs in Modern Greek are compositionally formed. The two main parts they consist of can be identified, if one looks at the entire verb paradigm of a lexical entry and not just the active or the non-active forms only, as has been done in the literature in some cases. In order to determine, the order in which syntacticosemantic features are represented in the verbal forms, it is necessary to look at data in which there are no null elements. Consequently, I do not treat verbs such as *htízo* (I build) or *gráfo* (I write), as the default verb paradigms in Greek. Bearing this in mind and as my starting point, I first show the two main parts of a verb in Modern Greek.

(1) a. apolim - éni
disinfect - 3SG.PR.AC
'(S)he disinfects'

b. apolím - ene
disinfect - 3SG.PST.AC.IMP
'(S)he was disinfecting'

c. apolím - ane
disinfect - 3SG.PST.AC.PER
'(S)he disinfected'

d. apolim - énete
disinfect - 3SG.PR.NAC
'(S)he is being disinfected'

e. apolim - enótan
disinfect - 3SG.PST.NAC.IMP
'(S)he was being disinfected'

f. apolim - ánthike
disinfect - 3SG.PST.NAC.PER
'(S)he was being disinfected'

The part which remains the same and provides the lexical meaning of the form is the root *gd-*, whereas the one which is altered depending on the representation of the syntacticosemantic features is the inflectional unit and follows the root. Consequently, verbs initially consist of a root and the inflectional suffix.

This pattern is also attested in (2) below.

(2) a. agap - ái
loves - 3SG.PR.AC
'(S)he loves'

b. agáp - age
love - 3SG.PST.AC.IMP
'(S)he used to love'

c. agáp - ise
love - 3SG.PST.AC.PER
'(S)he loved'

d. agap - iéte
love - 3SG.PR.NAC
'(S)he is being loved'

e. agap - iótan
love - 3SG.PST.NAC.IMP
'(S)he was being loved'

f. agap - íthike
love - 3SG.PST.NAC.PER
'(S)he was loved'

Inflectional suffixes which represent distinct syntacticosemantic features (for instance, -*age*.3SG.PST.AC.IMP (2-b) versus *ise*.3SG.PAST.AC.PER (2-c)) are suffixed to the root *agap-* which remains morphophonologically solid throughout.

Furthermore, the inflectional suffix can be further divided into smaller morphological chunks. In the following lines, I propose a featural decomposition of these morphological clusters and tackle the issue of what (and how many) features exactly are represented in each one of them, if and when this decomposition is permitted.

Schematically, the morphological decomposition of verbs in Modern Greek could be given in the following way: root – aspect (theme vowel) – Voice (aspect, tense) and agreement-tense (voice). Consequently, each morphological unit consists of two sets of features; the primary and the secondary ones, the latter are given in brackets above and in small case in the remaining of this discussion. Evidence for these positions as well as the ways according to which the morphological spell-out of each form is predicted are given in what follows.

Let us first begin with the unit that follows the root. It first seems to represent the aspectual features.

(3) a. gd - érn - i
skin - IMP - 3SG.PR.AC
'(S)he skins'

b. égd - ern - e
skin - IMP - 3SG.PST.AC
'(S)he was skinning'

c. égd - ar - e
skin - PER - SG.PST.AC
'(S)he skinned'

d. gd - ern - éte
skin - IMP - 3SG.PR.NAC
'(S)he is being skinned'

e. gd - ern - ótan
skin - IMP - 3SG.PST.NAC
'(S)he was being skinned'

f. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

The forms which represent the imperfective aspect select the morpheme *-ern-* (3-a–b and 3-d–e), whereas the ones inflected for the perfective features select *-ar-* (3c, f).

It becomes apparent that the inflectional units in which aspect is realised, do not always have the same morphophonological form across the verbal forms (*-en-*, *-an-* in (4-a–b) versus *-ern-*, *-ar-* in (4-c–d), respectively).

(4) a. apolím - ene
disinfect - 3SG.PST.AC.IMP
'(S)he was disinfecting'

b. apolím - ane
disinfect - 3SG.PST.AC.PER
'(S)he disinfected'

c. égd - ern - e
skin - IMP - 3SG.PST.AC
'(S)he was skinning'

d. égd - ar - e
skin - PER - SG.PST.AC
'(S)he skinned'

This allomorphic pattern which is not phonologically conditioned (as both forms end in a nasal *-n-*), suggests that the morphemes representing aspect also behave as conjugational markers. So, the root is followed by the theme vowels which represent aspect and encode information regarding the morphological classes. Here, I follow the traditional view on

theme vowels (Spencer 1991) –they are suffixed to the root and represent morphological features, information about the conjugational classes to which verbs belong) but deviate from the literature as far as the syntacticosemantic specification of them is concerned.

Nevertheless, and if one looks at forms such as (5), it could be argued that what follows the theme vowel is a morpheme representing voice, aspect, and tense.

(5) a. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

b. theor - í - thik - e
believe - PEF - NAC.PER.PST - 3SG.PST
'It was being believed'

This pattern could be further supported by evidence brought forward from forms such as (6).

(6) a. gd - ar - th - ó
skin - PER - NAC.PER.PR - 3SG.PST
'(S)he was skinned'

b. theor - i - th - ó
believe - PEF - NAC.PER.PR - 3SG.PST
'It was being believed'

The morpheme following the theme vowel is spelt-out as *-th-* this time, something which suggests that it represents voice, aspect and tense. This means that aspect and tense are represented twice in the forms.

In order to retain the original proposal about the morphological decomposition in Modern Greek (root – aspect (theme vowel) – voice (aspect and tense) – agreement/tense (voice)–, what is necessary to be established is whether aspect and tense in these morphological

units are truly one of the main features or secondary ones. Consider again the forms in (3), repeated here as (7).

(7) a. gd - érn - i
skin - IMP - 3SG.PR.AC
'(S)he skins'

b. égd - ern - e
skin - IMP - 3SG.PST.AC
'(S)he was skinning'

c. égd - ar - e
skin - PER - SG.PST.AC
'(S)he skinned'

d. gd - ern - éte
skin - IMP - 3SG.PR.NAC
'(S)he is being skinned'

e. gd - ern - ótan
skin - IMP - 3SG.PST.NAC
'(S)he was being skinned'

f. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

If one looks in detail, the distribution of the morphemes representing aspect, voice and tense in forms such as (7), it seems that aspect is represented in the theme vowel, as has been established previously. In addition, the temporal features are represented in the final morphological cluster. Consequently, the inflectional piece which intervenes between the theme vowel and the temporal suffix acts as a matching item. Its main features are voice and the secondary ones (aspect and tense) need to be matched with the main feature of the preceding unit and the one that follows. If one makes this assumption, it is no longer necessary to assume that the voice morpheme represents all three features, as the main ones.

Nevertheless, there are cases where this decomposition is harder to be seen due to the fact that there are null elements intervening between the root and the temporal suffix. So, instances like these seem harder to be accounted for at first. Researchers who based their theories on verbal forms such as the following ones where led to assume that the system I am putting forward here cannot be established.

(8) a. agap - ái
loves - 3SG.PR.AC
'(S)he loves'

b. agáp - age
love - 3SG.PST.AC.IMP
'(S)he used to love'

c. agáp - ise
love - 3SG.PST.AC.PER
'(S)he loved'

d. agap - iéte
love - 3SG.PR.NAC
'(S)he is being loved'

e. agap - iótan
love - 3SG.PST.NAC.IMP
'(S)he was being loved'

f. agap - íthike
love - 3SG.PST.NAC.PER
'(S)he was loved'

Here, I am suggesting that this decomposition can be maintained even in those instances. I am also showing in the following lines that it is possible not only to maintain this treatment but also predict the morphological spell-out and behaviour (overt or covert) of each of the morphological pieces based on an algorithmic system which takes in to account the value of aspect (perfective or imperfective) in addition to information carried over by the inherent specification of the roots.

In specific, there are cases –the inherent morphological specification of the root will determine this– where the covert voice marker in the active voice in combination with the covert realisation of the aspectual morpheme in the imperfective, non-active forms (9-a) trigger the overt spell-out of voice in the non-active perfective (9-b).[1]

(9) a. agap - ái
loves - 3SG.PR.AC
'(S)he loves'

b. agap - íthike
love - 3SG.PST.NAC.PER
'(S)he was loved'

This would comply with the claim that the representation of aspect in the voice morpheme is not a main feature but a secondary one. It acts as a requirement on the feature matching between the morphological units of which each verbal form consist. For instance, is the perfective aspect is represented in the theme vowel, the secondary feature of the voice morpheme should also be perfective. Otherwise, there is a mismatch and the derivation crashes. Additionally, the morphophonological spell-out of the theme vowel (overt or covert) would also determine the morphological behaviour of the unit mainly representing voice to a great extend. The other factor which will condition its behaviour is the syntacticosemantic features.

On the other hand and in cases where aspect is spelt-out in a distinct morpheme both in the active and the non-active forms (10), it is clear that aspect in the voice morpheme is a secondary feature, conditioning again the featural matching of the two units.

[1]The presence of *-i-* in forms such as (8-c) versus (8-d–f) serves two different purposes. In the latter case, its presence could be reduced upon historic reasons (cf. Giannakis 1997, Babiniotis 2000, Oikonomou 2002) and consequently it is not a marker of aspect as in the former case. Nevertheless, this is an issue I do not wish to touch upon, as this discussion would have been beyond the scope of the present work which solely aims to provide a purely synchronic account of the verbal morphology in Greek.

(10) a. égd - ar - e
skin - PER - SG.PST.AC
'(S)he skinned'

b. gd - ern - éte
skin - IMP - 3SG.PR.NAC
'(S)he is being skinned'

c. gd - ern - ótan
skin - IMP - 3SG.PST.NAC
'(S)he was being skinned'

d. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

In the remaining of this section, I pay particular attention to cases which exhibit a covert morphological realisation of aspect and voice in the imperfective forms to illustrate further the applicability of my treatment and exemplify the function of the morphological features in the theme vowels.

As have been mentioned above, the picture regarding the morphological decomposition of verbal forms in Modern Greek is not always as clear as in (3) – (5) as far as the inflectional suffixes which follow the root in forms such as (11) below are concerned. It is not possible to distinguish which features exactly are represented in the morphological pieces or whether these units could be divided any further due to the fact that there is a covert spell-out of the morphemes of aspect and voice (imperfective both in the active and the non-active forms).

(11) a. htíz - i
build - 3SG.PR.AC
'(S)he is building '

b. éhtiz - e
build - 3SG.PST.AC.IMP
'(S)he was building'

c. éhti - s - e
build - AC.PER - 3SG.PST
'(S)he built'

d. htíz - ete
build - 3SG.PR.NAC
'It is built'

e. htiz - ótan
build - 3SG.PST.NAC.IMP
'It was built'

It is indeed the case that, if one look at instances such as this one and takes these forms as the default verb paradigm in Modern Greek, we are naturally led to assume that there is only one morphological cluster which follows the room which cannot be divided any further and consequently represents cumulatively aspect, voice, agreement and tense. This claim has to be supported by theoretical claims which do not allow the presence of null elements in the system.

Despite such assumptions and in order to maintain an analysis along the lines sketched in the afore-mentioned paragraphs –claiming the compositional nature of the system– I move on to my proposals which are relevant to the predictions of the spell-out of the inflectional pieces and the features represented in them.

In such cases, the morphological behaviour of the inflectional suffix is conditioned upon the morphological features inherited by the root. This necessarily means that the morphological features of the theme vowel are distinct from the ones in the afore-mentioned forms. The realisation of the marker of the conjugational classes and subsequently the morphological pattern under which forms are derived depend upon the inherent specifica-

tion morphological specification of the root in each case. This will be further copied to the theme vowel in addition to the information they carry regarding the aspectual features. Consequently, the morphological features of the theme vowels become relevant to the system only when it calls for the satisfaction of any morphological requirements, e.g. they are not relevant for the syntax.

The morphological behaviour of the pieces of the inflection comply to the following conditions: When the aspectual features are imperfective, it forces the representation of voice in the agreement/tense suffix.

(12) a. htíz - i
build - 3SG.PR.AC
'(S)he is building '

b. éhtiz - e
build - 3SG.PST.AC.IMP
'(S)he was building'

c. htíz - ete
build - 3SG.PR.NAC
'It is built'

d. htiz - ótan
build - 3SG.PST.NAC.IMP
'It was built'

On the contrary and when the aspectual features are perfective, this blocks the representation of aspect in the agreement/tense suffix.

(13) a. éhti - s - e
build - AC.PER - 3SG.PST
'(S)he built'

Moreover, if both aspect and voice are overtly realised in the forms, this forces the representation of the voice morpheme to be specified not only for voice but also aspect and tense.

(14) a. htí - s - tik - e
build - PER - NA.PER.PST - 3SG.PST
'(S)he built'

Finally, there are cases where the many (features)-to-one (form) pattern is further exemplified. These are the suppletive stems in Modern Greek. In such cases the root is homophonous to the stem representing the imperfective aspect. What I am suggesting here is that suppletive stems are formed by the application of readjustment rules which apply to stems and not roots. The rule will say 'take stem X and apply rule Z for the formation of the formation of the form specified for Z features (e.g. the perfective, non-active)'.

(15) a. érh - ome
root.come - 1SG.PR
'I am coming'

b. ír - th - a
say - PER - 1SG.PST
'I came'

Before moving on to the nature of the morphological features, there is one more thing that needs to be clarified as far the syntacticosemantic features and their representation are concerned. It has been previously mentioned that morphological pieces in Modern Greek consist of primary and secondary features. Nevertheless and up to this point, I have taken that all features represented in the voice morpheme are primary. I review this position here.

I suggest that roots carry –inherently– morphological features. Theme vowels, on the other hand, represent aspectual features and morphological ones which have been copied from the root. I return to this coping mechanism in the following section. The presence of the morphological features, though, does not serve as a primary ones. These appear in addition to the syntacticosemantic ones. Their presence is required for the matching of the roots to the correct set of suffixes. Their role can be seen in terms of conditioning the presence of other pieces of inflection. In other terms, they could be also seen as satisfying well-formedness conditions on the selection of the items. Otherwise, the derivation of grammatical forms would have been crashed.

In an analogous way, the specification of the morpheme that follows the theme vowel is complex. It represents primary as well as secondary features. The main one are the voice specification of the item, whereas aspect and tense only serve as features that condition its insertion in specific forms. Consequently, if theme vowel represents the perfective aspect, the secondary feature of the voice morpheme should also be perfective. Similarly, if the primary feature of the last suffix is past, the secondary feature of tense represented in the voice morpheme should also be past. Otherwise, the selection criteria are violated and the derivation crashes. In other words, the primary features of one item could be seen as probes which trigger goals, these being the secondary features in the morphological clusters that follow.

Now, I would like to discuss the nature of the morphological features which are represented in the root and the theme vowels. The morphological features in the system proposed here are abstract and binary. They are specified for marked and unmarked values. These derive from the morphological behaviour of the theme vowel conditioned by the root. When the root orders the overt realisation of the marker of the verb classes, its specification is marked. So, this means that when the morphological features of one item are marked, the

morpheme they correspond to is realised overtly. This counts as the primary features in what is discussed below. Depending on the effects it triggers as far as the behaviour of the morpheme representing voice is concerned, theme vowels are further specified for marked or unmarked value. Morphological features are represented by Greek characters. They are purely seen as diacritics. So, the morphological features of a theme vowel could be both marked and unmarked. They normally appear in pairs of features.

(16) a. apolim - án - thik - a
root.disinfect[+α] - TV[+α,-γ].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

Theme vowels only need to appear in the theme vowels and are not required in the remaining units. This position is put forward by claims that only theme vowels act as the markers of the conjugational classes. Empirically this is supported by the positioning of these items. They intervene between the root and the inflectional suffix. In this sense, they act as the mechanism which links the root to the suffixes. There is no reason to assume that the morphological features need to appear in the specification of the inflectional units of voice and agreement/tense in order for the features to be checked. I return to this in 4.3.

Basically, the marked or unmarked value of the first feature–diacritic in the featural specification of the theme vowel relates to the overt realisation of the aspectual morpheme. So, the system predicts [+overt, IMP], [+overt, PER], [-overt, IMP], [-overt,PER]. Depending on these, the second diacritic in this pair of features represented in the theme vowels corresponds, to the spell-out of voice.

So, overall the system will give:

(17) a. [+overt, IMP.AC],

b. [+overt, PER.AC],

c. [-overt, IMP.AC],

d. [-overt,PER.AC]

(18) a. [+overt, IMP.NAC],

b. [+overt, PER.NAC],

c. [-overt, IMP.NAC],

d. [-overt,PER.NAC]

This should correspond to the number of the possible conjugational classes of the verbal system in Modern Greek. In the following chapter, it is shown that the number increases by two, as a further distinction needs to be made based on the stress pattern different verbal forms in Modern Greek bear.

Consequently, it has been suggested that the order in which the main syntacticosemantic features in the verbal forms in Modern Greek appear is the following: aspect, voice, tense/agreement. It was also shown that the feature specification of the morphological pieces is binary; this is seen in the presence of the secondary features in the forms. The secondary features of the aspectual morpheme is the morphological features. The secondary

features of the voice morpheme is the aspectual and the temporal ones. Finally, voice and aspect are the secondary features appearing in the specification of the agreement/tense morpheme. Unless the secondary features match the primary ones, the derivation crashes.

As shown in detail in subsequent chapters, the nature of this analysis first seems to allow the correspondence of the morphological units to syntactic representations. Nevertheless, it should be taken in to serious account that I am not claiming an one-to-one relation between morphology and syntax, as have been previously suggested in Rivero (1990). I am suggesting that the primary features of each morphological units and the way these are order are set in syntax. These obey to the universal hiearchy of features. The structures, though, are further manipulated in the morphological component and verbal forms are derived only once morphological processes which result in the formation of stems have been applied.

4.3 Formation of stems

Up to this point, attention has been paid to the morphological units of which verbs consist as well as the features and the way these are represented in the verbal forms in Modern Greek. In what follows, I explore the mechanism by which these morphological units are matched in each case and how stem formation occurs.

Let me first explain that due to the fact that the morphological units –which I call theme vowels– represent aspect as their primary features, the morphological ones become apparent –they are switched on in a sense, become visible– only when the process of verb formation call for them. Up to that point, they represent syntacticosemantic features. So, the specification of such items are first relevant to syntax only, whereas they become visible in

the morphological component once the process of stem formation begins.

The matching of the secondary features to the primary ones clearly conditions the matching of the pieces of inflection which appear in the forms and are allowed to combine. If it were not for the inherent specification of the roots –the morphological features– the grammar could not account for the matching of the correct set of suffixes with roots.

(19) a. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

b. theor - í - thik - e
believe - PEF - NAC.PER.PST - 3SG.PST
'It was being believed'

It is not clear how the root *gd-* could be matched correctly to *-ar-* (*gdar-*) but not **-i-* (**gdi-*) for the formation of the perfective, non-active, past form.

There is a mechanism according to which the morphological and the syntacticosemantic, the primary and the secondary features are checked; As long as the primary features are checked in the secondary features of the theme vowels, the secondary ones of the voice morphemes will be checked in the primary features of the theme vowel. Similarly, the secondary features of the agreement/tense will be checked in the primary features of the voice morpheme.

(20) a. apolim - án - thik - a
root.disinfect[+α] - TV[+α,-γ].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. theor - í - thik - e
believe[+α] - [+α,-γ].PEF - NAC.PER.PST - 3SG.PST
'It was being believed'

This means that the features of the root match the secondary features of the theme vowel. This ensure that only *-an-* can be selected to follow the root in (20-a). The secondary features of the voice morpheme are checked with the primary features of the theme vowels and the requirement on the [+perfective] feature match is satisfied. The secondary specification of the temporal features which appears in the voice morpheme is satisfied by the primary features in the agreement/tense morpheme.

The feature checking ensures that the correct items are selected. Nevertheless, stem formation is subject to further operations. Depending on the specification of the theme vowels, different processes which result in the formation of stems in Modern Greek operate. What I am suggesting here is that not all stems are formed under the same processes or even at the same component. As is apparent, here I do not discuss suppletive stems. I refer to them in the following section.

Cases such as *apoliméno* qualify for the formation of the stem; the theme vowel is suffixed to the root and create a local environment, the internal structure of which cannot be seen. This means that phonology cannot look inside.

(21) apolim - án - thik - a
root.disinfect[+α] - TV[+α,-γ].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

This will prevent the application of phonological rules which in other cases force the deletion of *-n-*, as in *treláthika.*

(22) a. *trel - án - thik - a
root.derange - TV+PER - +NA.+per.+pst - 1SG.+PST
'I was deragned'

b. trel - á - thik - a
root.derange - TV+PER - +NA.+per.+pst - 1SG.+PST
'I was deragned'

The stem environment which is created in verbs belonging to the same verb class and its non-accessibility to phonology, is further maintained from evidence brought from the nominal system.

(23) a. apolím - an - si
disinfect - TV - NOM.SG.FEM
'disinfection"

This would predict that aspect is represented in the nominals, a consequence that does not seem to cause any undesirable effects. Nordlinger and Sadler (2002) explore the presence of tense in nominals. So, it seems that the same stem participate in the formation of both verbs and nouns. The suffixation of the morphemes representing voice or case will determine the categorial specification of the forms. Consequently, the proposal put forward here is that verbs are formed compositionally. This has two interpretations. Morphological units are suffixed to a root form. Forms are not specified for the category noun or verb by rules, as in the lexicalist or the a-morphous approaches. The categorial specification is solely based on syntactic structures.

Schematically, the different stages at which the process which merges root to the theme vowels in the afore-mentioned forms can be represented as follows:

(24) a. [root.apolim-] + [-an-] + [-thik-] + [-a]
→
'morphological process which merges root to theme vowel applies'

b. [[root.apolim-] + [-an-]] + [-thik-] + [-a]
→
'stem is formed and phonology has no access'

Nonetheless, not all verbs follow the afore-mentioned pattern of stem formation. It is not the case that when the theme vowel is suffixed to the root, the local environment of stem to which phonology has no access is obtained. In cases such as (25), the morphological features block the merging of root with aspectual marker. This, though, does not block the application of phonology.

(25) a. *trel - án - thik - e
derange - PER - NAC.per.pst - 3SG.PST
'(S)he was deranged'

b. trel - á - thik - e
derange - PER - NAC.per.pst - 3SG.PST
'(S)he was deranged'

Schematically,

(26) a. [root.trel-] + [-an-] + [-thik-] + [-a]
→
'morphological process which merges root to theme vowel applies'

b. [root.trel-] + [-an-] + [-thik-] + [-a]
→
'stem is not formed yet and phonology has access'

c. [root.trel-] + [-a-] + [-thik-] + [-a]
→
'stem is not formed yet and phonology alters the spell-out of the theme vowel'

The stems available in nominals do not always make use of the morpheme representing the perfective aspect. (27) shows that nouns can make use only of the root to which the nominal suffixes are further added. The specification of the root will condition the insertion of suffixes. Nevertheless, nominal formation lies beyond the scope of the thesis. I will leave the issue open for future research.

(27) a. trél - a
derange - NOM.SG.FEM.
'derange'

This is the main idea behind which stem formation occurs. Any other cases (suppletive stems in chapter 5 or completion of stem formation in the phonological component in chapter 7) and, consequently, deviations, are discussed in detail in subsequent chapters.

Up to this point, suffixation has been discussed. Nonetheless, there are cases, though, where the derivation of a grammatical form can only be achieved once prefixation occurs. The discussion that revolves around the prefix –called augment– and the characteristics of its behaviour are sketched in the following lines.

Finally, prefixation also occurs in Modern Greek in the past tenses when the stress moves to the antepenultimate and there is not an available syllable to occupy it, (28-a).

(28) a. é - gd - ar - e
AUG - skin - PER - SG.PST.AC
'(S)he skinned'

b. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

It is expected, consequently, that when there is an available position to occupy it, the

insertion of the augment is blocked, (28-b), (29).

(29) a. kal - ó - fage
well - epenthetic vowel - eat.NA.PST.3SG
'He ate well'

b. anav - ó - svise
turn on - epenthetic vowel - turn off.AC.PST.3SG
'He turned it on and off'

c. hart- ó- peze
cards - epenthetic vowel - play.IMP.AC.13SG
'He was playing cards'

d. ipó - graf - s - a
preposition - write - 1SG.PER.A.PST

The only exception to this pattern, though, is compound verbs with prepositions, (30), which may appear both augmented and non-augmented in Modern Greek.

(30) a. ip - é - graf - sa
preposition - augment - write - 1SG.PER.AC.PST
'I signed'

The infixation of the augment bears historical reasons. It further triggers a different pattern of stem formation. This is discussed in detail in chapter 7.

4.4 Allomorphy and classification

Crucial for the analysis of the verbal morphology in Modern Greek is the presence of the morphological features. Up to this point, it has been shown that they condition the suffixation of the correct sets of the pieces of inflection to the roots. In this section, I look further at the consequences they have on allomorphic patterns and verb classification.

The morphological features represented in the theme vowels predict that these will be listed as separate entries in the repository of grammar. The type of allomorphy they exhibit, though, is not phonologically conditioned contra to the one the morphological units representing voice do.

(31) a. apolim - án - thik - a
root.disinfect - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. zograf - ís - tik - a
root.drawn - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was being drawn'

It is, consequently, predicted that phonologically conditioned allomorphs are not listed lexical entries. They will be the product of phonological rules. So, this account distinguishes phonological and morphological allomorphs.

It further distinguishes between these allomorphic patterns and suppletive ones. It further identifies two types of suppletion. (32) exemplifies cases of weak suppletion.

(32) a. léi
say.AC.PR.3SG.PST
'He says'

b. élege
say.AC.PST.IMP.3SG
'He was saying'

c. légete
say.NA.PR.IMP.3SG
'It is said'

d. legótan
say.NA.PST.IMP.3SG
'It was being said'

In (33), strong suppletion is shown.

(33) a. ípe
say.PER.NA.PST.3SG.PST
'He said'

b. ipóthike
say.NA.PST.PER.3SG
'It was said'

I would now like to turn on verb classes. The purpose of conjugational classes is to predict the morphological behaviour of the items that belong to them. In Modern Greek and in light of the proposed treatment which acknowledges the presence of theme vowels, classification is made on the basis of the morphological features of these units.

I propose that the verb classes are organised in terms of the value marked in the theme vowels. Marked values will precede unmarked. The marked values largely corresponds to the overt morphological realisation of the theme vowels, whereas the unmarked to the covert.

This contradicts previous treatments (Clairis and Babiniotis 1999) according to which verb classes are determined by the phonological value of the last letter appearing in the stem.

(34) a. treléno
derange
'(S)he was deranged'

b. apoliméno
disinfect
'I was disinfected'

This would not predict the distinct morphological behaviour of the forms in (35).

(35) a. trel - á - thik - e
derange - PER - NAC.per.pst - 3SG.PST
'(S)he was deranged'

b. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

On the contrary, the system proposed here treats the two verbs as belonging to different classes and it is, consequently, predicted that they exhibit distinct morphological patterns. As has been previously mentioned and discussed in detail in the following chapter, the morphological features represented in the theme vowels as Greek letters serve only as diacritics in the repository of the system. When these, though, are relevant to the morphological component, the marked or unmarked values are matched to the aspectual features.

Nevertheless, finding a way to divide verbal forms in to conjugational classes is not the only aim that needs to be accomplished within an analysis and the morphological system. What is necessary for a theory which examines a morphological system that involves the presence of conjugational classes is to provide an account regarding the way conjugational classes are stored and in particular how they are organised, in the lexicon presumably. As shown in the following chapter, such claims have not been made in the literature –to the best of my knowledge.

The proposal I put forward here suggests that conjugational classes are organised in hierarchical tree structures, in a similar fashion to the ones in syntactic trees. The tree nodes are arranged on the basis of marked and unmarked value. The starting point stems from the stress pattern. Verbs that are stressed on the stem are specified for a marked value, whereas the ones which are stressed on the agreement/tense suffixed are specified for an unmarked value.

(36) a. gdérno
skin
'I skin'

b. agapó
love
'I love'

Recall what has been previously said. *-ern-* is a theme vowel which represents the imperfective aspect. Consequently, its morphological feature should be marked due to the overt morphological spell-out. On the other hand, the theme vowel is not overtly realised in cases such as (36-b) and consequently the value of the feature should be unmarked.

Taking in to account the stress pattern (not on the agreement/tense morpheme) and despite the fact that in cases such as (37), the theme vowel is not overtly realised, verbs which follow this pattern do not belong to *agapó* class.

(37) a. gráfo
write
'I write'

Consequently, what is suggested here is that a verb belongs to the first conjugation if it has a(n) (overt) stressed theme vowel. Alternatively, it belongs to the second conjugation.

Now, each of the two main conjugational classes are further divided in to subclasses depending on the overt (marked) versus the covert (unmarked) spell out of the theme vowel (aspect).

(38) a. [+overt, IMP.AC],

b. [+overt, PER.AC],

c. [-overt, IMP.AC],

d. [-overt,PER.AC]

(39) a. [+overt, IMP.NAC],

b. [+overt, PER.NAC],

c. [-overt, IMP.NAC],

d. [-overt,PER.NAC]

This hierarchical organisation of the theme vowels also allows to make prediction with regards to how complex the morphological behaviour of verbs will be. I proposed that the more embedded an item is, the more complex its morphophonological spell-out and the processes under which the forms are derived will be.

(40) which belongs higher up in the hierarchy, as shown in detail in chapter 5, is less complex morphophonologically than (41). Notice the allomorphic patterns in the latter case.

(40) a. agapái
loves.3SG.PR.AC
'(S)he loves'

b. agápage
love.3SG.PST.AC.IMP
'(S)he used to love'

c. agápise
love.3SG.PST.AC.PER
'(S)he loved'

d. agapiéte
love.3SG.PR.NAC
'(S)he is being loved'

e. agapiótan
love.3SG.PST.NAC.IMP
'(S)he was being loved'

f. agapíthike
love.3SG.PST.NAC.PER
'(S)he was loved'

According to this, it is expected that forms which belong to the class of (40) will be morphologically less complex than (41).

(41) a. pléni
wash.3SG.PR.AC
'(S)he washes'

b. éplene
wash.3SG.PST.AC.IMP
'(S)he was washing'

c. épline
wash.3SG.PST.AC.PER
'(S)he washed'

d. plénete
wash.3SG.PR.NAC
'(S)he washes her/himself'

e. plenótan
wash.3SG.PST.NAC.IMP
'(S)he was washing her/himself'

f. plíthike
wash.3SG.PST.NAC.PER
'(S)he washed her/himself'

The exact way the hierarchy is organised, is presented in chapter 5.

4.5 Questions addressed

The idea that Greek has instances of consonantal roots –in a fairly similar fashion to Hebrew verbal forms– is new in the literature.

According to Glinert (2004:458), Hebrew verbs 'consist of (a) some vowel pattern or prefix + vowel pattern, slotted into (b) a skeleton of consonants (the root)'. 'Most roots have three or four, a few two or even five consonants' (p.459).

(42) a. m.s.r + -a - a - → masar
root + vowel pattern →
'Hand'

In the example below, what is treated as the root, is a two-consonant cluster. The difference with Hebrew in this case is that vowels are not slotted in to the root. They are suffixed, instead.

(43) a. gd - érn - i
skin - IMP - 3SG.PR.AC
'(S)he skins'

b. égd - ern - e
skin - IMP - 3SG.PST.AC
'(S)he was skinning'

c. égd - ar - e
skin - PER - SG.PST.AC
'(S)he skinned'

d. gd - ern - éte
skin - IMP - 3SG.PR.NAC
'(S)he is being skinned'

e. gd - ern - ótan
skin - IMP - 3SG.PST.NAC
'(S)he was being skinned'

f. gd - ár - thik - e
skin - PER - NAC.PER.PST - 3SG.PST
'(S)he was skinned'

(43) is not the only instance which supports the claim that consonantal roots in Modern Greek are present. Similarly, the two-consonant root in (44) is accompanied by the inflectional suffix with which it forms a stem.

(44) a. pléni
wash.3SG.PR.AC
'(S)he washes'

b. éplene
wash.3SG.PST.AC.IMP
'(S)he was washing'

c. épline
wash.3SG.PST.AC.PER
'(S)he washed'

d. plénete
wash.3SG.PR.NAC
'(S)he washes her/himself'

e. plenótan
wash.3SG.PST.NAC.IMP
'(S)he was washing her/himself'

f. plíthike
wash.3SG.PST.NAC.PER
'(S)he washed her/himself'

Nevertheless, it is not only the case that Modern Greek exhibits the pattern of consonantal root and inflectional suffix attached. There are cases which show more similarities with the Hebrew pattern. Consider (45)–(46).

(45) a. díno
give.PR.AC.IMP.1SG
'I give'

b. édosa
give.PST.AC.PER.1SG
'I gave'

c. déno
tie.PR.AC.IMP.1SG
'I tie'

d. édesa
tied.PST.AC.PER.1SG
'I tied'

The vowels *-i-, -e-* respectively are slotted in to the roots *d.n.* These add the semantic interpretation to the forms. The selection of the different sets of vowels and the different morphological patterns which are triggered *–édosa, édesa,* respectively– can be also matched to the system proposed here. These make predictions regarding the spell-out of forms and also represent aspectual features. So, in such cases, these vowels can be also treated as theme vowels and consequently they will also carry the morphological information as far as conjugational classes are concerned. This will add an extra category to ones already proposed in the previous section.

Nevertheless, one should ask the question as to what permit the presence of consonantal roots. It should not be seen as an assumption made but rather as a consequence of the morphological system proposed. Nothing excludes the presence of roots which only consists of consonants and specific vowels are slotted in to them, if one assumes that roots are seen

as the units which do not bear any syntacticosemantic features.

Moreover, in the literature as discussed in what follows, root suppletion is only relevant for functional material. If roots are stored in the repository of the grammar, it is questioned whether such an assumption can be maintained. If one looks at suppletive cases (within the root/stem), such as the ones below, these suppletive forms (they are not treated as roots anymore but rather stems), represent aspect and voice. Consequently, this complies to the existing claims in the literature.

(46) a. ípe
say.PER.NA.PST.3SG.PST
'He said'

b. ipóthike
say.NA.PST.PER.3SG
'It was said'

Finally, this relates to the issue of what determines the order of the syntactic terminal nodes. In chapter 6, I follow the Mirror Principle Baker (1985) and propose that the nodes in syntax –as far as verbs in Modern Greek are concerned– obey to the universal hierarchy of features, as seen in the works of Bybee (1985), Cinque (1997) and Julien (2002).

4.6 Conclusion

In the present chapter, I revisited the treatment around the verbal morphosyntax in Modern Greek. I proposed that verbs are formed compositionally mainly through suffixation. They consist of the root, the theme vowel, the morpheme representing voice and agreement/tense. Each inflectional unit is specified for primary and secondary features which must be matched so that the derivation does not crash. The morphological specification of

the theme vowels which has been claimed posed restrictions on the matching of the units to the roots. It further had consequences on verb classification and the treatment of allomorphy. This account is formulated in line with the principles of Distributed Morphology in chapters 5–7.

Chapter 5

The Vocabulary: Classes, Allomorphy, Suppletion

5.1 Introduction

The status of the repository of features and word units–forms in the grammar has been widely discussed in a variety of studies in the literature (cf. Lieber 1982; Aronoff 1994). Such works have questioned the status of a morphological unit –for instance how small or large it could be– what features are represented in it and in what way as well as how these units and their specification are stored in the lexicon.

Undoubtedly, the views taken on the above issues have further influenced the architecture of grammar and provided support for treating morphology as an independent component of grammar. For some theories, word formation is stem-based (Lieber 1992), whereas for others lexeme-based (Anderson 1992). Accordingly, word forms consist either of different stems which are all stored in the lexicon or of lexemes in which a specific set of features is

represented and the available forms are derived by the application of rules.

As becomes clear in the following sections, it is not always straightforward what counts as a stem or what forces the distinction between different stems in languages, more importantly, even based on the theories which support the existence of stems. It is not clear what the universal definition of stem is. Additionally, the conditions that trigger the distinction or the formation of stems are language-specific or stems obey a universal specification? Even at this stage, it is logical to believe that defining stems universally would not account for the individual language patterns.

Moreover, it is interesting to note that, despite the fact that languages in which the verbal forms fall under conjugational classes –according to which the morphological behaviour of these forms is predicted– have been widely discussed in the literature (cf. Harris 1997, Embick 2000), the theoretical models have little to say as far as a formal account of verb classification is concerned.

Consequently, the aim of this chapter is to address the following questions: what goes in the repository of grammar? What is the status of these items? Do stems exist in the repository? How conjugational classes are accounted for in a formal theory of morphology?

This chapter is organised as follows: in §5.2, I present the facts from Modern Greek in relation to the morphological units which can be identified in the verbal forms, the features represented in each one of them as well as the necessity of accounting for conjugational classes. Finally, I propose the necessary modifications that need to apply to the framework of DM in order to account for the data in §5.3. The consequences of this view for allomorphy and suppletion are explored in §5.4. The chapter concludes in §5.5.

5.2 The Data: Modern Greek

5.2.1 The Problems

One of the questions which has been previously raised in chapters 3–5 in relation to the status of the stems in Modern Greek revolves around the difficulty in distinguishing them in addition to defining their morpholosyntactic specification. It is not clear, for instance, if and why the stem in (1) is either *graf-* or *graftik-*. On what basis stems are distinguished and what purposes they serve? Is it possible for stems to show syncretism?

(1) a. gráf - tik - a
write - PER.NA.PST - 1SG.PR.ac
'I was written'

b. é - graf - a
augment - write.IMP - 1SG.PST.AC
'I was writing'

c. gráftik - a
write.PER.NA - 1SG.PST.ac
'I was written'

The difficulty on what should be treated as a stem can be further seen in (2) and (3). Should the stem of this verb in the imperfective forms be identical to its root (*apolimen-*)? Or should the root be followed by a morpheme which clearly represents the features of aspect (*apolim-en-* versus *apolim-an*)?

(2) a. apolimén - o
disinfect.IMP - 1SG.PR.ac
'I disinfect'

b. apolímen - a
disinfect.IMP - 1SG.PR.ac
'I was disinfecting'

c. apolíman - a
disinfect.PER - 1SG.PST
'I disinfected'

d. apolimán(-thik) - a
disinfect.PER.NA - 1SG.PST
'I was disinfected'

Do the perfective stems exhibit an allomorphic pattern (*apolimen-* versus *apoliman-*)? Or is it the case that allomorphy is only shown in the morpheme carrying the aspectual specification, *-en-* versus *-an-*?

(3) a. apolim - én - o
root.disinfect - TV.IMP - 1SG.PR.ac
'I disinfect'

b. apolím - en - a
root.disinfect - TV.IMP - 1SG.PR.ac
'I was disinfecting'

c. apolím - an - a
root.disinfect - TV.PER - 1SG.PST
'I disinfected'

d. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

Moreover and as above, should one distinguish a third stem in the case of the perfective, non-active cases, (3-d)? Should this pattern be based on cases such as (4-d) (*plithik-*)? Or is it necessary to take in to account properties of (4-a) which are not shared by (4-b); *pl-en-* versus *plin-* and *plithik-*?

(4) a. pl - én - o
root.wash - TV.IMP - 1SG.PR.ac
'I wash'

b. é - pl - en - a
AUG - root.wash - TV.IMP - 1SG.PR.ac
'I was washing'

c. é - pl - in - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

d. pl - ín - thik - a (plíthika, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

Finally, the treatment one follows on what counts as a stem further influences any positions on the feature representation of the pieces of inflection. An account which accepts that verb morphology in Greek is stem-based faces the difficulty to explain why voice is not represented in the inflectional suffix in (5-a), whereas it does in (5-b).

(5) a. é - graf - a
AUG - root.write - 1SG.PR.ac
'I was writing'

b. graf - ómun
root.write - 1SG.PST.NA
'I was being written'

Or even clearer, why voice is represented in (6-a) but it does not in (6-b).

(6) a. gráftik - a
write.PER.NA - 1SG.PST
'I was written'

b. graf - ómun
root.write - 1SG.PST.NA
'I was being written'

To sum up, if one accepts the existence of stems in the morphological system of Greek, it is not clear what could be licensed as a stem, a morphological unit that could hold throughout the verbal forms. This also influences an account of the features specification of the items consisting the forms. In general, there is not a systematic pattern which can be applied throughout.

5.2.2 Accounting for the data

I take it that the fundamental principle in distinguishing and identifying morphological pieces in any given verbal form is achieved by looking at its entire paradigm. One expects that the item which is not altered morphologically when its specification is inherently different, should be treated as the root form.

Moreover, the items the morphological behaviour of which is altered depending on syntacticosemantic features are treated as inflectional pieces which are further attached to the root. One must make a further distinction between these items, so that verbs in Modern Greek consist of a root and the inflectional suffix.

On the contrary, it is possible to separate further the inflectional suffix in to constituents. This is achieved again on the basis of the morphological behaviour of the individual items.

Here, it is important to make clear that the distinction between the inflectional units does not directly suggest that there should be an one-to-one relationship between form and meaning. Instead, I suggest that syntacticosemantic features in Modern Greek appear in bundles. It seems to be the case that the specification of a morphological unit might affect the ways and the environment the remaining features are realised.

Looking at how verbs in (1)–(6) above behave morphologically, it seems to be the case that

aspect is represented in the item which appears closer to the roots. *Apolim-* is followed by *-en-* in the forms representing the imperfective aspect (7-a), whereas by *-an-* in the perfective ones (7-b–c).

(7) a. apolím - en - a
root.disinfect - TV.IMP - 1SG.PR.ac
'I was disinfecting'

b. apolím - an - a
root.disinfect - TV.PER - 1SG.PST
'I disinfected'

c. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

Similarly, *pl-* is followed by *-en-* in the imperfective forms (8-a). Nevertheless, *-in* is suffixed to the root in the perfective ones (8-b–c).

(8) a. é - pl - en - a
AUG - root.wash - TV.IMP - 1SG.PR.ac
'I was washing'

b. é - pl - in - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

c. pl - ín - thik - a (*plíthika*, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

When the aspectual features represented are the imperfective ones, this forces the representation of voice in the agreement/tense suffix.

(9) a. apolim - én - o
root.disinfect - TV.IMP - 1SG.PR.ac
'I disinfect'

b. apolím - en - a
root.disinfect - TV.IMP - 1SG.PR.ac
'I was being disinfected'

So, it is expected that the morphological spell-out of the suffix which will appear in the non-active forms will be distinct from the one in (9), as it is the case, indeed, in (10).

(10) a. apolim - én - ome
root.disinfect - TV.IMP - 1SG.PR.n-ac
'I disinfect'

b. apolim - en - ómun
root.disinfect - TV.IMP - 1SG.PR.N-ac
'I was disinfecting'

On the contrary and when the aspectual features are perfective, this blocks the representation of aspect in the agreement/tense suffix.

(11) a. é - graps - a
AUG - write.PER.ac - 1SG.PST
'I wrote'

b. gráftik - a
write.PER.NA - 1SG.PST
'I was written'

Moreover, if both aspect and voice are overtly realised in the forms, this forces the representation of the voice morpheme to be specified not only for voice but also aspect and tense.

(12) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

So, it seems that the morphological behaviour of voice and tense in the pieces of inflection is conditioned upon the spell-out of aspect (overt or covert) and its features (imperfective or perfective). Contra to this pattern, though, the behaviour of aspect in the forms seems to be conditioned upon the morphological specification roots carry. Consequently, it could be suggested that aspect is a main feature in the morpheme which is suffixed to the root. Nevertheless, when the aspectual features condition the morphophonological behaviour of other items, they serve as secondary feature marking on them. It goes without saying that the combinations of features (main and secondary) between the morphological units should match. Otherwise ungrammaticality results.

(13) a. *apolim - n - ómun
root.disinfect - TV.PER - NA.imp.PST.1SG

The distribution of voice across the morphemes representing aspect and agreement/tense features has been seen in terms of morphological concord in the work by Drachman (2001) who explains that voice is not only represented in the morpheme following the aspectual one but also in the inflectional endings which constitute the concordant set. He further notes that the concord set has been neutralised in combination with changes as far as the representation of the features in the augment and voice.

So, let us see how this system works. I take in to account the imperfective (present and past) forms as well as the perfective (active versus non-active) ones. If there is a form which is not altered by the syntacticosemantic features, this will be the root of the verb.[1]

[1]The views outlined in this section are the result of the work that has been carried out in Galani (2003a, 2005, 2004d, 2004a, 2004f, 2004e, 2004b).

In (14), the part of the verbal form which remains invariable to any features is *apolim-*. So, this is taken to be the root of the verb. One further expects that the unit which is systematically altered on the basis of the representation of a feature will represent this feature. This is the case with the morpheme which immediately follows the root. It represents the aspectual features.

(14) a. apolim - én - o
root.disinfect - TV.IMP - 1SG.PR.ac
'I disinfect'

b. apolím - en - a
root.disinfect - TV.IMP - 1SG.PR
'I was disinfecting'

c. apolím - an - a
root.disinfect - TV.PER - 1SG.PST
'I disinfected'

d. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

Based on what has been previously said, when the aspectual feature represented is the imperfective, one expects that the specification of the morpheme following the aspectual one will consist of the features of agreement and [+past]tense –as its main specification– alongside the representation of the secondary features, these of voice, (14-a), contra (14-b). This condition is not met in (14-c), as it is violated by the representation of the perfective aspect. Finally, in the case where the both the perfective aspect and [+past] tense are represented in the form and when the non-active voice is also overtly realised, the specification of the voice morpheme is forced to be complex. Apart from the voice features which represents, its secondary specification is that of aspect and tense, features which match the main specification of the aspectual and agreement/tense morphemes.

The same pattern as far as the morpheme order is concerned, is further noticed in (15).

(15) a. gd - érn - o
root.skin - TV.IMP - 1SG.PR.ac
'I skin'

b. é - gd - ern - a
AUG - root.skin - TV.IMP - 1SG.PST
'I was skinning'

c. é - gd - ar - a
AUG - root.skin - TV.PER. - 1SG.PST
'I skinned'

d. gd - ár - thik - a
root.skin - TV.PER - NA.per.pst - 1SG.PST
'I was skinned'

The only difference between (14) and (15) lies on the morphological spell-out of the aspectual morpheme. This suggests that there must be a property of the root which conditions the selection of one allomorph over the other. This, in traditional terms (Spencer 1991), has been seen as the function of the theme vowel, the marker of the conjugational classes. Consequently, the approach to verbal morphology outlined here, supports the existence of theme vowels in Greek. It further supports the view that theme vowels immediately follow the roots. Nevertheless, it departs from the traditional claims in the following point. Theme vowels in the account outlined in the present work also represent aspectual features. So, if the roots in (14) and (15) select different theme vowels, it is then expected that they belong to different (sub)classes. This would also explain the distinct morphological spell-out of the theme vowel.

Here, it should be noted that the concept corresponding to the 'theme vowel' does not strictly refer to a vowel or a vowel sound in the form. The term 'theme vowel' rather refers to a theme vowel cluster with the specification of morphological features and aspect. The

idea is not new in the literature. Spencer (1991) accepts this treatment for Russian as far as the phonological exponent of theme vowels are concerned (but not their specification).[2]

(16) a. del - Aj - u
do - TV - pres.act.1sg
'I do'

b. del - Aj - et
do - TV - pres.act.3sg
'he did'

Let us further explore whether the spell-out of the theme vowel could further suggest that verbs may belong to different classes which would also make predictions about the distinct pattern of formation such forms may follow. I omit the discussion of the feature specification of he inflectional units, as (17) complies to the afore-mentioned pattern.

(17) a. trel - én - o
root.derange - TV.IMP - 1SG.PR.ac
'I derange'

b. trél - en - a
root.derange - TV.IMP - 1SG.PR
'I was deranging'

c. trél - an - a
root.disinfect - TV.PER - 1SG.PST
'I deranged'

d. trel - án - thik - a (*treláthika*, after phonol.)
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

Despite the fact that the verbs in (17) as well as the one in (14) are both specified for the theme vowel which is spelt-out as *-en-* and one would consequently predict that the

[2](16) is adapted from Spencer (1991:11).

morphological behaviour of these two verbs would have been identical, this is not the case with (17-d). This clearly suggests that conjugational patterns even within the same class are defined by the morphological specification of the root and the relation that holds between roots and the theme vowels. In cases such as (17), it seems as if the root forms an outer shell with the theme vowel which is transparent to phonological rules. On the contrary, this is not the case with (14).

(18) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

b. trel - án - thik - a (*treláthika*, after phonol.)
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

Moreover, in order to provide further support for this interaction, let us turn to (19).

(19) a. pl - én - o
root.wash - TV.IMP - 1SG.PR.ac
'I wash'

b. é - pl - en - a
AUG - root.wash - TV.IMP - 1SG.PR
'I was washing'

c. é - pl - in - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

d. pl - ín - thik - a (*pláthika*, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

The sequence of morphemes in this case too is that of the root, theme vowel, morpheme mainly representing aspect and finally the morpheme of agreement and tense. Based on the

selection of theme vowel, one expects either phonology to apply or not in the perfective, non-active form. Features roots carry will be copied to the specification of the theme vowel. These will either trigger the application of phonological rules –according to which deletion of the *-n-* in the perfective, non-active forms, for instance, may occur– or block their insertion –as is the case in (14-d), *apolimánthika* and not **apolimáthika.*

So, the categorisation of forms in subclasses is based on the behaviour of the theme vowel in the perfective, non-active forms. This in combination with the specification of the root (in this case the root forms a shell with the theme vowel), does not block the application of phonological rules which affect the spell-out of the theme vowel. Nevertheless, (19) and (17) constitute different subclasses of the same class due to the selection of the theme vowel in the perfective, non-active.

(20) a. trel - án - thik - a (*treláthika*, after phonol.)
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

b. pl - ín - thik - a (*plíthika*, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

Additionally, let us draw attention to the last set of data according to which it is further shown that verb classification is based on the properties of roots in combination with the spell-out of the theme vowel. The root of (21) is not followed by the overt realisation of the theme vowels. According to the theory outlined in the previous lines, one expects that the covert realisation of the theme vowel in the perfective forms will trigger the overt spell-out of the morphemes representing aspect. This prediction is borne-out in (21-b) and (21-c). Moreover, the lack of an overt theme vowel makes the root transparent to phonological rules which are not blocked in (21-b) and (21-c). Consequently, this verb should belong to

a different subclass than the others in (14)–(15) and (17)–(19).

(21) a. dén - o
root.tie - 1SG.PR
'I tie'

b. é - den - s - a (édesa, after phonological rules)
AUG - root.tie - NA.per - 1SG.PST
'I tied'

c. dén - thik - a (déthika, after phonological rules)
root.tie - NA.per.pst - 1SG.PST
'I was tied'

Finally, there is another set of forms which exhibit an allomorphic pattern as far as the morpheme representing voice is concerned, (22) contra (23).

(22) a. agap - ió - mun
root.disinfect - NA - 1SG.PST.na
'I was being loved'

b. kal - ú - mun
root.invite - NA - 1SG.PST.na
'I was being invited'

It is assumed that verb classification into two main classes in Greek is determined on the morphological specification of the root in combination with the spell-out of the theme vowel in the perfective, non-active forms as well as the allomorphic pattern of the voice morpheme in the imperfective, non-active forms. Any subdivisions between the verbs of each class is determined by the root and the theme vowel specification only.

(23) a. apolim - en - ó - mun
root.disinfect - TV.IMP - NA - 1SG.PST.na
'I was being disinfected'

b. gd - ern - ó - mun
root.skin - TV.IMP - NA - 1SG.PST.na
'I was being skinned'

c. trel - en - ó - mun
root.derange - TV.IMP - NA - 1SG.PST.na
'I was being deranged'

d. pl - en - ó - mun
root.wash - TV.IMP - NA - 1SG.PST.na
'I was being washed'

e. den - ó - mun
root.tie - NA - 1SG.PST.na
'I was being tied'

Crucial about this treatment is that it does not make any suggestion on which one is the default verb class in Greek. In fact, I do not believe that one can talk about a default conjugational class in the language. There is such a great diversity in the morphological patterns that makes it almost impossible to decide on what grounds a default class could be decided upon. Moreover, the system I propose which suggests that conjugational classes are based on the behaviour of the theme vowels finds further support in the following claim.[3]

Booij (2005) states that the default conjugation in a language is the inflectional class taken by new verbs entering the language. In what follows, I will present the [+/-perfective, +/-past] of verbs which have entered the Greek language. I will then try to identify what similarities they bear with the ones taken from Greek.

(24) a. snob - ár - o
root.snob - formative - 1SG.PR
'I snob'

[3]Carstairs (1987) also claims that the paradigm of a given inflectional class can be determined in terms of the set of inflectional realisations appropriate to a given inflectional class.

b. snob - ár - iz - a
snob - formative - IMP - 1SG.PST
'I used to snob'

c. snób - ar - a
snob - formative - 1SG.PST
'I snob'

d. snob - ár - i - s - a
snob - formative - PER - NA - 1SG.PST
'I snobed'

e. snob - ar- ís - tik - a
snob - formative - PER - NA.per.pst - 1SG.PST
'I was snobbed'

This paradigm of this form does not comply to a single conjugational class. (24-a) follows the pattern of Class I verbs.

(25) a. pl - én - o
root.wash - TV.IMP - 1SG.PR.ac
'I wash'

For the [-perfective, -past] form (both in the active and the non-active), it requires the suffixation of the theme vowel present in forms such as (26) below.

(26) a. zograf - íz - o
root.draw - TV.IMP - 1SG.PR.ac
'I draw'

b. zograf - íz - tik - a (zografístika, after phonology)
root.draw - TV.IMP - 1SG.PR.ac
'I was drawn'

It further has double forms in the [+perfective, +past (+active)]. One is taken from Class II verbs (27), the other one follows a completely productive pattern where [+past] is marked

on the agreement/tense marker and the movement of the stem to the antepenultimate (a pattern which is only noticed in Class I verbs only).

(27) a. agáp - i - s - a
root.love - TV.PER - NA - 1SG.PR.ac
'I love'

These patterns show that it is necessary to divide the main classes in Greek in to subclasses and account for verb classification in terms of the selection of the theme vowels.

5.3 The analysis in terms of the DM principles

5.3.1 Vocabulary Items

The first step one needs to take in order to account for the vocabulary in Distributed Morphology is to decide what goes in the repository of the grammar. It is necessary to determine what counts as a vocabulary item. In other words, how big or small the items could be. This would further support the view I take on the status of the morphological pieces of which verbal forms in Greek consist.

In particular, I suggest that the vocabulary item is defined in terms of Bloomfield's (1933) definition of morphemes. A vocabulary item is seen as the smallest meaningful item identified in the forms. When I use the term 'meaningful', I refer to the specification of the item. When it is such that enables it to have distinguishable features, this licenses it to count as a vocabulary item. Halle and Marantz (1993) further claim that a vocabulary item adds the phonological material to the abstract morphemes (the syntactic nodes which are only specified for the syntacticosemantic features and lack any phonological form). So, in this

sense the Vocabulary is the mapping of the syntacticosemantic features on to phonological ones.

Consequently, there is no need in Greek to assume that the pieces representing the aspectual features in (28) below should be treated as part of the root or the stem, as other theories see it (cf. Joseph and Smirniotopoulos 1993; Ralli 1993). All morphemes representing the aspectual features are stored in the vocabulary, as their morphological specification is distinct, as discussed in detail in what follows. So, these items are not treated as allomorphs of a default morpheme.

(28) a. apolim - en - ó - mun
root.disinfect - TV.IMP - NA - 1SG.PST.na
'I was being disinfected'

b. gd - ern - ó - mun
root.skin - TV.IMP - NA - 1SG.PST.na
'I was being skinned'

c. trel - en - ó - mun
root.derange - TV.IMP - NA - 1SG.PST.na
'I was being deranged'

d. pl - en - ó - mun
root.wash - TV.IMP - NA - 1SG.PST.na
'I was being washed'

Following this claim, it is a borne-out prediction that whatever remains once the inflectional suffix is removed from the verbal form, it is the root. Nothing in this prediction can possibly restrict or exclude the presence of consonantal roots. This is a welcoming claim for Modern Greek based on the theory. As explained in 4, there are cases in Modern Greek where the (theme) vowels slotted in the roots –in the fashion similar to Hebrew– and cases where no vowels are inserted within the consonantal roots but these are suffixed to them.

On the contrary and as far as the morphological units representing voice are concerned, an allomorphic pattern which is strictly conditioned phonologically is noticed. In such cases, there is only one lexical entry of the item representing voice and the allomorphs are produced by phonological rules which do not require reference to the morphosyntactic categories.

(29) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV.PER - NA.per.pst - 1SG.PST
'I was skinned'

c. trel - án - thik - a (treláthika, after phonology)
root.derange - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

d. pl - ín - thik - a (plíthika, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

e. dén - thik - a (déthika, after phonological rules)
root.tie - NA.per.pst - 1SG.PST
'I was tied'

f. gráf - tik - a
root.write - NA.per.pst - 1SG.PST
'I was written'

In a similar fashion, it is predicted that roots will also count as vocabulary items which I propose are stored in the lexicon but they do not compete for Vocabulary Insertion. What is important in the account I outline is that roots in Distributed Morphology are not specified for the grammatical category. Roots have an underlying phonological form and are only specified for the morphological features. Sapir (1922) and Pesetsky (1995) also support the

view that roots are category-neutral. This contradicts what has been previously suggested in the literature. Embick and Halle (2005) follow Embick and Noyer (2005) and claim that features are specified for the grammatical categories. For Alexiadou and Muller (2004), they further assume that inflectional suffixes are specified for the categorial feature [+N] which ensures that they are only matched to a [+N] stem. In the approach I put forward the grammatical category of the root is defined by its syntactic environment (see chapter 6 for details). So, roots are seen as underspecified entries in Greek contra Ralli (1993) who suggests that stems are underspecified in the system.

Moreover, I agree with Embick and Halle (2005) on the existence of readjustment rules which are stored in the vocabulary. When the structure enters the morphological component and during Vocabulary Insertion, the system selects the item the specification of which matches the features represented in the structure. If a readjustment rules accompanies the item, this is also selected and applied in the morphological component.

These rules are morphophonological in nature and require reference to morphosyntactic features and the specification of roots. The morphological behaviour of verbs which have been previously treated as suppletive in Greek, is explained in terms of the readjustment rules. For instance, a rule that makes reference to the morphosyntactic feature of [+past] and properties of the root *lé-* (say) gives rise to the form *ípa* (I said). This pattern is explained in detail in 5.4, though.

(30) a. lé - o
root.say - 1SG.PR
'I say'

b. íp - a
say - 1SG.PST
'I said'

This treatment contradicts Joseph and Smirniotopoulos (1993) who claim that both stems should be stored in the lexicon. One might further support this view by bringing evidence from psycholinguistic and neurolinguistic work that shows that irregular forms behave in a different fashion from regular ones and consequently irregular forms should be stored as a whole unit. Embick and Marantz (2000) offer some comments on the issue but I leave it open for future research.

According to Ralli (1983), conversion rules should be stored in the lexicon. These will convert a verbal stem or root to a nominal in Greek and vise versa. Assuming, though, that roots are not specified for the grammatical category in the repository but it is the syntactic environment which determines it, there is no need for such rules. Similarly, since stems are not also stored or formed in the vocabulary, these rules are proven to be pleonastic. This approach consequently results in the simplification of the processes under which forms are derived as well as the economy of the vocabulary storage.

5.3.2 Feature Specification

In this section, I explore the ways the matching of the syntacticosemantic features on to phonological ones is achieved in Distributed Morphology. I am particularly interested in determining what the value of the syntacticosemantic features represented in the vocabulary items available in the verbal forms in Modern Greek is and what relations hold between these and the morphological ones.

As has been previously shown and discussed in detail in §5.2.2, aspect, voice, agreement and tense features are the feature specification of the morphological items of which verbal forms consist in Modern Greek. Recall example (29), repeated here as (31).

(31) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV.PER - NA.per.pst - 1SG.PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.derange - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

d. pl - ín - thik - a (plíthika)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

e. dén - thik - a (déthika)
root.tie - NA.per.pst - 1SG.PST
'I was tied'

f. gráf - tik - a
root.write - NA.per.pst - 1SG.PST
'I was written'

It has been further noted in §5.2.2 that the features of aspect condition not only the morphological realisation of the remaining suffixes in the verbal forms but also their exact specification. In specific, it is the representation of the perfective aspect which triggers the patterns; it may block or trigger them. Consequently, I propose that the value of aspect in Greek is [+/- perfective]. Philippaki-Warburton (1973) also reaches this conclusion.

Stephany (1995) has shown that in fusional languages in which grammatical categories are inflectionally expressed, inflectional patterns begin to emerge by the age of 1;10. In the work of Katis (1984) on the acquisition of verb inflection with special attention to the imperfective and perfective forms as well as Stephany (1995), it has been shown that children make this distinction since the early stages and further note that aspect is a more fundamental category than tense in child Greek. Voice, on the other hand, is acquired at

later stages.

The way aspectual features interact with the non-active voice may also further affect the feature representation of the agreement/tense morphemes. Subsequently, I claim that [+/- non-active] is the marked values for voice in the forms.

Similarly, it is the past temporal features which interact with aspect and voice and determine the feature specification of voice. In a similar fashion to aspect and voice, [+/- past] is the marked value of tense in the verbal forms in Modern Greek.

So, the revised feature representation of (31) is presented in (32). The features represented in capitals are the primary features of the item.

(32) a. apolim - án - thik - a
root.disinfect - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.derange - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

d. pl - ín - thik - a (plíthika)
root.wash - TV.+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

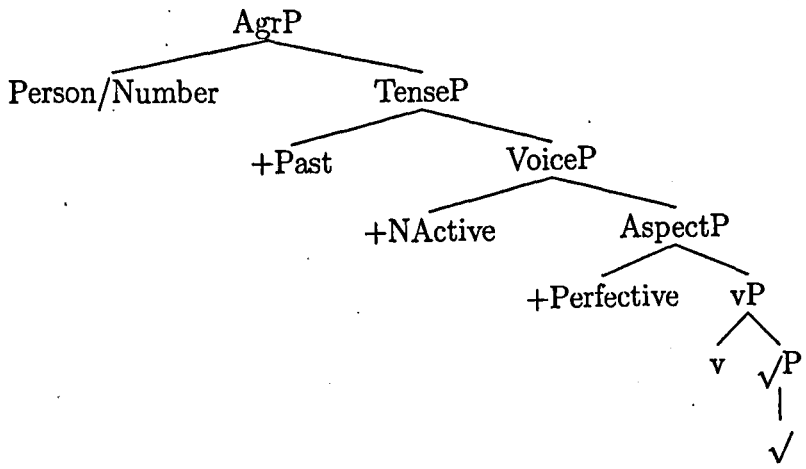
e. dén - thik - a (déthika)
root.tie - +NA.+per.+pst - 1SG.+PST
'I was tied'

f. gráf - tik - a
root.write - +NA.+per.+pst - 1SG.+PST
'I was written'

In chapter 6 we will see that this is the specification of the nodes for which the items

compete for insertion.

(33)



Deviating from the usual assumptions in DM, the secondary features, on the other hand, need to be satisfied by the primary features of the next morphological piece in the verbal form. In the syntax-morphology interface and during vocabulary insertion, the secondary features of an item should be checked against the features of the next available node. The existence and role of primary and secondary features have been introduced in this treatment of Greek by Galani (2004f). Embick (1998a) refers to them as intrinsic versus extrinsic.[4]

An interesting consequence of this treatment of primary and secondary features is the avoidance of the operation of fission –proposed by Noyer (1997) to account for cases in which a single morpheme may correspond to more than one vocabulary item.

[4]The presence of the secondary features in the vocabulary items should not be seen as a representation of one feature twice, as Jackendoff (1997) allows.

Up to this point, I have suggested that theme vowels represent morphological features but I have not looked at the exact specification. The remaining of this section examines the specification of these items.

I propose that morphological features represented class are best seen as abstract, binary ones.[5] I suggest that there is an analogy between morphological and aspectual features in Greek. In particular, I claim that the marked or unmarked value of the perfective aspect is analogical to the abstract morphological features. When the value of aspect is, for instance, [+perfective], this is analogical to the value of class, [+α].[6] Since there is an analogy of features between these two units, there is no need to assume that morphological features should consist part of the representation of the pieces of inflection. In essence, this account tells us that what is interpreted as a syntacticosemantic feature in syntax, is a morphological feature in the morphological component. This view is important for the syntax–morphology interface, explored in the following chapter.

One of the advantages of this algorithm is that it predicts the morphological spell-out of the unit representing aspect, initially. If the value of the morphological features is marked, it is also assumed that the features of aspect will be marked too.[7] Following what has been previously said on the ways the spell-out of voice affects the overt or covert realisation of voice, this treatment further enables us to predict the morphological behaviour of voice. So, one needs only one feature to predict the behaviour of the units of which verbal forms consist.

It goes without saying that the matching of the roots to the correct set of inflectional suffixes

[5]See also Alexiadou and Muller (2004) for similar claims on class features in nominals.

[6]Class features are represented with –small case– letters of the Greek alphabet, whereas classes and subclasses with capitalised ones.

[7]Recall what has been previously said; marked is the value of a feature the morphological spell-out of which is overt.

is achieved via the matching of the morphological and the syntacticosemantic features. Any violations will result in ungrammaticality. Consequently, roots acts as probes with inflectional suffixes as goals, following Alexiadou and Muller (2004).

Let us now see how this system of features works. In (34), the value of perfective aspect is marked. This necessarily means that the value of the class features will be also marked, [+α]. Consequently, all verbal forms will belong to the same class.

(34) a. apolim - án - thik - a
root.disinfect - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.derange - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

d. pl - ín - thik - a (plíthika)
root.wash - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

On the contrary, the value of the perfective aspect is unmarked in (35) which also means that the class specification of this form will be unmarked, [-α]. The difference between the morphological features will further tell us that cases such as (35) belong to a different conjugational class from (34). This would predict the distinct pattern they follow as far as the spell-out of the morpheme representing the aspectual features is concerned.

(35) a. dén - ∅ - thik - a (déthika)
root.tie - [+α] - +NA.+per.+pst - 1SG.+PST
'I was tied'

b. gráf - ∅ - tik - a
root.write - [+α] - +NA.+per.+pst - 1SG.+PST
'I was written'

Now, I would like to put (34)–(35) in the wider picture of conjugational classes in Greek and revise the proposal that the previous cases belong to two different classes. Instead, as becomes clear, they belong to different subclasses.

We have already seen that roots in Greek are classified on the basis of the selection of the morphemes representing the aspectual features. These morphemes interact closely with roots. I subsequently claim that the primary features of roots are morphological. The primary features of the units following the roots in the forms are these of aspect, whereas the secondary ones are the morphological. Due to the analogy between the morphological and the syntacticosemantic features and for reasons of economy, it is assumed that the specification of the morpheme following the root is only primary. The incorporation of the morphological features in the specification of this morpheme is identical to the role and the function of the theme vowel. Nonetheless, it is not claimed that the root and the theme vowel form a stem here. The representation of the aspectual features gives some sort of independency in the function of this unit.

As has been previously claimed in the literature (cf. Spencer 1991), theme vowels are the markers of classes. In order to determine how verbs are classified in to conjugational classes in Greek, it is necessary to examine how theme vowels behave morphologically in the verb paradigm. I propose that there are two main conjugational classes in Modern Greek. This distinction is based on the difference between sets of verbs as far as the choice of the theme vowel in the perfective, non-active forms is concerned.

(36) a. gd - érn - o
root.skin - PER - 1SG.PR.ac
'I skin'

b. gd - érn - o - me
root.skin - -PER - +NA - 1SG.PST
'I am being skinned'

c. gd - ern - ó - mun
root.skin - -PER - +NA - 1SG.PST.na
'I was being skinned'

d. gd - ár - thik - a
root.skin - +PER - NA.per.pst - 1SG.PST
'I was skinned'

In (36) the theme vowel is overtly realised, a pattern which contradicts (37), where the theme vowel is null. Consequently, verbs in which the value of the theme vowel is marked, belong to Class I, whereas in the opposite cases in Class II.

(37) a. agap - ó
root.love - -PER - 1SG.PR.ac
'I love'

b. agap - ié - me
root.skin - -PER - +NA 1SG.PST
'I am being loved'

c. agap - ió - mun
root.love - NA - 1SG.PST.na
'I was being loved'

d. agap - í - thik - a
root.love - +PER - NA.per.pst - 1SG.PST
'I was loved'

Instead of assuming that conjugational classes are determined on the stress pattern –as in previous accounts in the literature (cf. Joseph and Philippaki-Warburton 1987)– this account enables us to predict that verbs which belong in the two classes will follow different

patterns, either morphological or phonological. The presence of a(n) (overt) stressed theme vowel gives and sets the marked versus unmarked value to the two main conjugational classes in Modern Greek.

At this stage, let me note that although different values may be marked on the theme vowel, it is not the case that theme vowels represent distinct syntacticosemantic features. Drachman (2001), claims that the theme vowel in Greek is present in the forms and represents the temporal features. It is also present in participles where no features are represented. In line with my theory, the specification of the theme vowels in Greek is consistent throughout.

(38) a. anagráf - e - te
inscribe - TV.PR - 2PL
'You inscribe'

b. anagraf - a - te
inscribe - TV.PST - 2PL
'You were inscribing'

c. anagraf - o - menos
inscribe - TV - MAS.SG.NOM
'Inscribed'

It is now time to examine whether the main classes are further divided in to subclasses. Based on the covert realisation of the theme vowel, the verbs in (39) belong to Class I.

(39) a. apolim - en - ó - mun
root.disinfect - TV.IMP - NA - 1SG.PST.na
'I was being disinfected'

b. gd - ern - ó - mun
root.skin - TV.IMP - NA - 1SG.PST.na
'I was being skinned'

c. trel - en - ó - mun
root.derange - TV.IMP - NA - 1SG.PST.na
'I was being deranged'

d. pl - en - ó - mun
root.wash - TV.IMP - NA - 1SG.PST.na
'I was being washed'

It was previously noted that (34) versus (35) –repeated here as (40)-(41)– belong in different classes based on the distribution of the theme vowel. Based on the overt realisation of the theme vowels in (40), it is assumed that these verbs consist a subclass of Class I.

(40) a. apolim - án - thik - a
root.disinfect - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.derange - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

d. pl - ín - thik - a (plíthika)
root.wash - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

Verbs such as (41) in which the theme vowel is not overtly realised, would subsequently belong to a separate subclass of Class I.

(41) a. dén - ∅ - thik - a (déthika)
root.tie - [+α] - +NA.+per.+pst - 1SG.+PST
'I was tied'

b. gráf - ∅ - tik - a
root.write - [+α] - +NA.+per.+pst - 1SG.+PST
'I was written'

Moreover, looking at the different phonological processes which seem to take place in the

formation of verbs such as (40), one is lead to assume that the way the roots in (42) interact with the theme vowels should be different than the one which holds for (43).

(42) a. apolim - án - thik - a
root.disinfect - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

It seems to be the case that the theme vowels in (42) do not form a cluster with the root at any point of the derivation.[8] Consequently, they do not allow phonological changes to affect the spell-out of the theme vowels. This is not the case, though, with (43).

(43) a. trel - án - thik - a (treláthika)
root.derange - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

b. pl - ín - thik - a (plíthika)
root.wash - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

This clearly shows that the root in the first instance bears different features from the ones the roots in (43) do. This further divides the forms in to further subclasses.

The way I view classes enables us to suggest that it is not impossible to establish the exponents of the grammatical categories, contra Tsangalidis (1993). Cases such as (44), only show that verbs in Greek belong to different classes and subclasses which can be established on the morphological features of the roots and their interaction with the theme

[8]This point is crucial for the view I am taking on the existence of stems in Distributed Morphology. See chapters 6 and 7.

vowels.

(44) a. mil - ás
talk - 2SG.PR.AC
'You talk'

b. parakoluth - ís
watch - 2SG.PR.AC
'You watch'

Any double forms which are found in Greek such as (45)[9] are explained in terms of analogical change (Haspelmath 2002).

(45) a. mil - ó
talk - 1SG.PR.AC
'I talk'

b. mil - áo
talk - 1SG.PR.AC
'I talk'

So, it has been claimed that natural class features are abstract ([+/- α]) contrary to inflectional class features which are concrete ([+/- perfective]). The way features appear in the vocabulary entries in Distributed Morphology fall under a feature hierarchy where the morphological features take precedence over aspect, voice, tense (and agreement).[10]

(46) Feature Hierarchy in Greek:

Class > Aspect > Voice > Tense (Agreement)

[9]See Tsolakis and Tsolaki (1999) for a complete list of the morphological realisation of inflectional suffixes in Greek based on dialectal and non-dialectal usage.

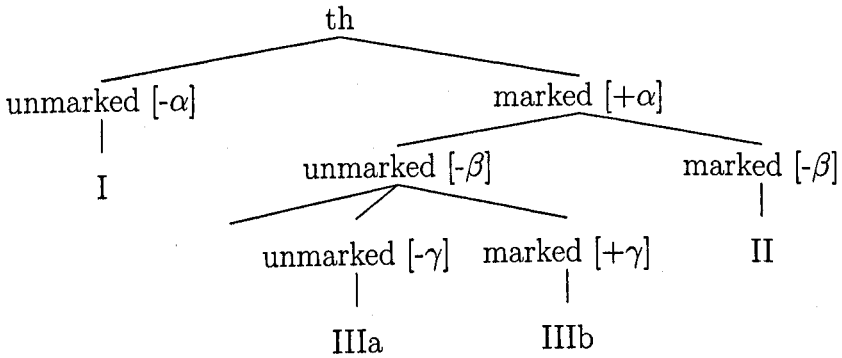
[10]One could draw similarities with the work by Bybee (1985) and Cinque (1997).

This hierarchy is proven useful during vocabulary insertion and especially for purposes of economy of the grammar.

Before moving on to the organisation of the items stored in the repository, I would like to compare my account as far as the claims I make regarding conjugational classes are concerned, to the treatment proposed in Oltra-Massuet (1999) which examines the verbal morphology in Catalan.

She proposes that the verbal system in Catalan is organised internally based on markedness (pp.10-11). The conjugations are bundles of binary features which are hierarchically related according to the degree of markedness. This hierarchy is based on the theme vowel and arranged in the following way.

(47)



The degree of markedness is determined by the tense morpheme (the tense node features). The interaction between the markedness hierarchy and the temporal features depends on a set of rules (feature-filling rules which add features to the units and impoverishment rules which delete features from the morphemes).

In her system, theme vowels depending on their morphological spell-out combine morpho-

logical features –the ones shown in the hierarchy above– and syntacticosemantic features, based on the forms in which they appear.

Despite the fact that the account I am putting forward here bears some similarities, it is less complicated. Both treatments make use of the concept of the markedness hierarchy. As far as my proposal is concerned, though, the specification of the theme vowels is based on the overt versus the covert realisation of this unit in conjunction with the imperfective versus the perfective aspect represented in the forms. There is no need for additional rules which add or delete features. On the other hand, in both cases reference is made to syntacticosemantic features. For the Modern Greek system, theme vowels represent and depend on aspectual features, whereas in the Catalan case on the temporal ones.

5.3.3 Vocabulary Entries's Organisation

In this section, I revise the standard treatment of Distributed Morphology in relation to the ways vocabulary items are organised. Recall what has been previously said regarding the features of the units present in the verbal forms.

(48) a. apolim - án - thik - a
root.disinfect - TV[+α, III].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α, IV].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

(49) a. trel - án - thik - a (treláthika)
root.derange - TV[+α, I].+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

b. pl - ín - thik - a (plíthika)
root.wash - TV[+α, II].+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

(50) a. dén - ∅ - thik - a (déthika)
root.tie - [+α,VII] - +NA.+per.+pst - 1SG.+PST
'I was tied'

b. gráf - ∅ - tik - a
root.write - [+α,V] - +NA.+per.+pst - 1SG.+PST
'I was written'

If one follows Halle (1997) on the Subset Principle –the most specified entry precedes less specified ones– the items corresponding to the theme vowels in Greek will all bear the same number of features. This causes problems as to which item will precede and which will follow. The items which correspond to the theme vowels in (48)–(50), they all carry the same number of features. Consequently, the are all equally specified. Consequently, it is not possible to retain this principle for the organisation of the vocabulary entries. The current view does not also enables us to account for the existence of classes in the vocabulary.

Instead I propose that vocabulary entries are organised in terms of a markedness hierarchy in tree structures.[11] The way vocabulary entries are organised brings resemblance to the structure of the syntactic component and indirectly supports the view that morphology manipulates syntactic structures and is not an independent component which could by itself result in the formation of words.

This tree structuring further shows that the more embedded an item is, the more marked and consequently the more complex the morphological behaviour of the form to which it

[11]The idea of the markedness hierarchy is attributed to claims made in Oltra-Massuet (1999).

belongs to will be.[12] Additionally, it could be also compared to the tree structures assumed in constructional grammar (Koenig 1999). A crucial difference is that no processes operate within the branches in Distributed Morphology.

The tree structure are organised on the basis of the marked versus the unmarked values of the morphological features. Marked features appear to the left of the tree, always precede the unmarked ones.

[+/-1] is the feature/diacritic used to represent the presence or the absence of a(n) (overt) theme vowel.

(51) a. gdérno
skin
'I skin'

b. agapó
love
'I love'

In the case of the marked value, this conjugational class is further divided in to two subclasses based on the presence (marked) versus the absence (unmarked) of an overt exponent of aspect.

(52) a. treléno
derange
'I derange'

[12]Drachman (2000) also accepts that some stems are more marked than others in Modern Greek. For him, the markedness of a form might contribute to an explanation of allomorphic pattern in terms of Optimality Theory.

b. gráfo
write
'I write'

Finally, each of the two subclasses of the first conjugation can be further divided on the basis of the overt or covert spell out of voice. Cases which resemble similarities in terms of their morphophonological behaviour consist a subclass of the same main subclass.

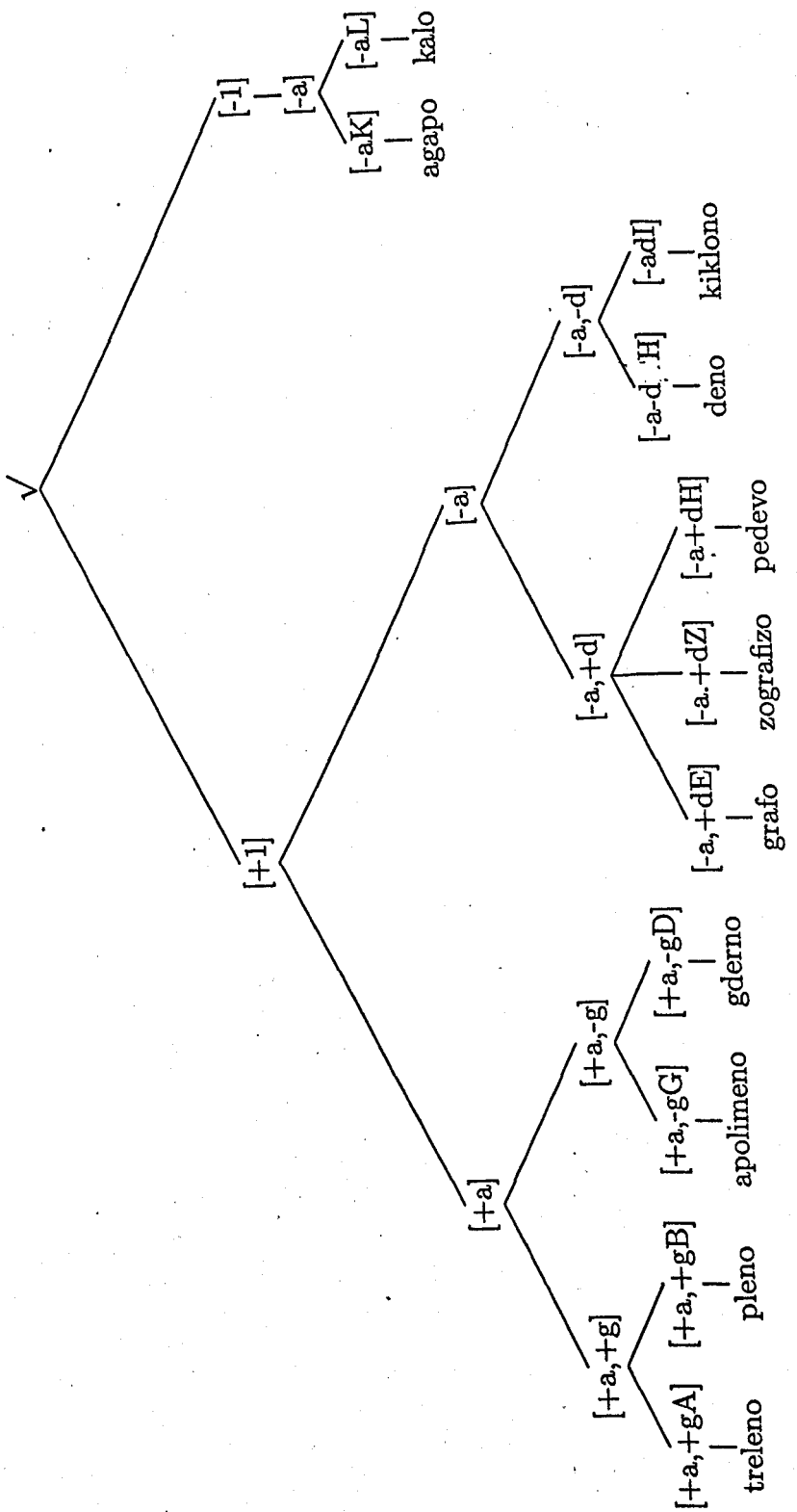
(53) a. treléno
derange
'I derange'

b. pléno
wash
'I wash'

Here it should be made clear that what I call morphological features have no functional role. They are only diacritics which only serve as means of arranging the Vocabulary items in the repository of the grammar. Their relation to the features of aspect becomes only visible in the morphological component.

The way vocabulary items –corresponding to the morphemes in Modern Greek– are organised in the vocabulary is exemplified in (54).

(54)


√
[-l]
[-a]
[-aK]
agapo
[-aL]
kalo
[+l]
[-a]
[-a,-d]
[-a-d,H]
deno
[-adI]
kiklono
[-a,+d]
[-a,+dE]
grafo
[-a.+dZ]
zografizo
[-a+dH]
pedevo
[+a]
[+a,-g]
[+a,-gG]
apolimeno
[+a,-gD]
gderno
[+a,+g]
[+a,+gA]
treleno
[+a,+gB]
pleno

The positions which have been supported in this chapter have important consequences for the architecture of grammar sketched in the following chapters. It has been claimed that roots do not compete for insertion. It is only vocabulary items with bear syntacticosemantic information that compete during vocabulary insertion. The fact that readjustment rules are triggered in the morphological component only when in the appropriate syntacticosemantic environment shows that not all verbal forms are the product of a single process. The exact ways by which vocabulary insertion or readjustment rules are triggered, forces a unique treatment of allomorphy and suppletion in the light of this framework. Finally, a crucial difference between the account I outline versus the work that has been previously done in the literature (chapter 2) as far as the verbal morphology in Modern Greek is concerned, as well as the architecture of grammar versus any other approaches to word formation, relates to existence or not of stems.

5.4 Accounting for allomorphy and suppletion

In this section, I aim to examine the allomorphic and suppletive patterns which occur in the verbal morphology in Modern Greek. I am particularly interested in the allomorphy theme vowels exhibit which is not phonologically or syntactically conditioned and how this is interpreted.

Furthermore, I intend to distinguish these from cases which exhibit phonologically conditioned allomorphy.

Finally, I examine the relation these bear to strong and weak suppletive patterns. I explain that morphologically conditioned allomorphy and suppletion are types of allomorphy which participate in the process of word formation and are, consequently, considered productive

(as Lieber (1992) also does), contra the standard view in the literature (Anderson 1992).

On the other hand, phonologically conditioned type of allomorphy is seen as an unproductive process and the result of the application of phonological rules.

5.4.1 Distributed Morphology on allomorphy

Distributed Morphology recognises two types of allomorphy; suppletive and morphophonological. In the first case, allomorphy occurs in those instances where different vocabulary items compete for insertion in to f-morphemes. F-morphemes are the ones where there is no choice as to vocabulary insertion.

On the other hand, morphophonological allomorphy occurs in those cases where a single vocabulary item has various similary underlined forms, phonologically, but phonology cannot be hold directly responsible for this variation. In order to explain such cases, only one allomorph is stored in the vocabulary and the remaining are derived via a readjustment rule.

In what follows, I show what patterns Modern Greek exhibit and how they are accounted for.

5.4.2 Phonologically conditioned allomorphy

As has been previously shown, the morphological units representing voice in Greek may show an allomorphic pattern. Consider (55). This pattern, though, (*-tik-* versus *-thik-*) is phonologically conditioned by the phonological status of the preceding unit (See Setatos (1973) for the details).

(55) a. gráf - tik - a
write - PER.NA.PST - 1SG.PR
'I was written'

b. apolimán(-thik) - a
disinfect.PER.NA - 1SG.PST
'I was disinfected'

Such cases would not fall under either suppletive or morphophonological allomorphy. In the first case, it is not possible to have two different items, as their selection is not partly phonological and partly idiosyncratic. On the other hand, it is not also the case of morphophonological allomorphy, as the similarity between the two exponents can be directly attributed to phonology. Consequently, it is important to see how such cases are explained.

Contra the standard Distributed Morphology view, though, I recognise a third type of allomorphy; when the exponents of a features can be directly attributed to phonology and the language-specific phonological rules and no reference to morphological features is required, then these constitute the type of phonological allomorphy and are derived via the application of readjustment rules. Consequently, only one item is stored in tis default form. When vocabulary insertion occurs, the grammar will derive the correct allomorph.

5.4.3 Morphologically conditioned allomorphy

Now, I would like to move on to the allomorphic pattern theme vowels in Greek represent. Recall (29), repeated here as (56).

(56) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV.PER - NA.per.pst - 1SG.PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.derange - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

d. pl - ín - thik - a (plíthika)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

e. dén - thik - a (déthika)
root.tie - NA.per.pst - 1SG.PST
'I was tied'

f. gráf - tik - a
root.write - NA.per.pst - 1SG.PST
'I was written'

Theme vowels represent distinct morphological features depending on the class to which they belong. This would be suggestive of the allomorphic pattern they show, as clearly seen in the example above. The fact that they exhibit a unique morphological behaviour which is varied depending on the conjugational classes predicts that theme vowels will be listed as separate entries in the vocabulary.

The advantage of this treatment is that it does not presuppose any stipulations as to what should be treated as allomorphic or not. It does not impose any restrictions on allomorphic patterns. Instead, it is assumed that allomorphy is explained in terms of the vocabulary's organisation in Distributed Morphology.

Following this treatment, allomorphy is not taken to be the result of phonological rules, as in Hooper (1976), or syntactic ones (Chomsky 1957) or even morpholexical ones (Aronoff 1976). What these approaches have in common is that allomorphy is accounted for only once all productive processes –phonological, syntactic or word formation ones– are com-

plete. This gives a non-productive nature to allomorphy.

Nevertheless, allomorphy is not seen as an unproductive process under the light of my analysis.[13] It is actually part of the process according to which the mapping of the morphemes to the phonological specification is achieved. Consequently, it plays an active role in word formation.

The last point I would like to raise concerns the sensitivity vocabulary items in Modern Greek show with respect to allomorphy. I propose that items which appear closer to the root exhibit an allomorphic pattern which is not phonologically conditioned.

(57) a. gráf - tik - a
write - PER.NA.PST - 1SG.PR
'I was written'

b. ápolimán(-thik) - a
disinfect.PER.NA - 1SG.PST
'I was disinfected'

So, these items are sensitive inwards, following Bobaljik (2000) terminology. The further the item from the root is, the less likely it is to show non-phonologically conditioned allomorphy. This is attested if one considers the distribution of theme vowels and voice morphemes, as in the cases above.

5.4.4 Suppletion

There are cases, though, such as (58), which do not show either a phonological or morphological type of allomorphy but a suppletive one instead. There could only be one vocabulary

[13]Lieber (1992) also reaches the same conclusion based on different grounds, though.

item which competes for insertion in the terminal nodes in each case.

(58) a. lé - o
root.say - 1SG.PR
'I say'

b. íp - a
say - 1SG.PST
'I said'

Bearing in my mind the position I took earlier on what licenses as a vocabulary item, it is predicted that the morphosyntactic specification of the forms in is clearly defined. What is shown in (59) is the existence of stems, *le-* and *ip-* in each case. It happens to be the case that the imperfective, active stem is homophonous to the root of the verb, *léo*.

(59) a. lé - o
stem.say.IMP.ac - 1SG.PR
'I say'

b. íp - a
stem.say.NAC.per - 1SG.PST
'I said'

Such suppletive stems are formed in the vocabulary of Distributed Morphology by the application of readjustment rules which are triggered by the morphosyntactic where the forms appear. When vocabulary insertion looks into the vocabulary, the application of the rules is triggered and, consequently, the suppletive stems are formed. If the rules are not triggered, the stems will not be formed. Following this treatment, the formation of suppletive stems is seen as a productive process in word formation.

This view is in agreement with Distributed Morphology that roots do not undergo suppletion due to the fact that roots are subject to Late Insertion. The evidence brought

forward from Modern Greek shows that what undergoes suppletion is not the root but its homophonous stem.

This treatment contradicts Joseph and Smirniotopoulos (1993) who claim that both stems should be stored in the lexicon. One might further support this view by bringing evidence from psycholinguistic and neurolinguistic works that have been conducted according to which it is shown that irregular forms behave in a different fashion from regular ones and consequently irregular forms should be stored as a whole unit. Embick and Marantz (2000) offer some comments on the issue but I leave it open for future research.

Additionally, the view I am taking on the application of readjustment rules for cases such as (58) is also different from what Embick and Halle (2005) suggest. They propose that suppletive stems are small in number in any languages and they should be treated as light-verbs (see Marantz (1997) for the relevant discussion).

The way such cases are dealt with shows that Distributed Morphology does not make a sharp distinction between allomorphic and suppletive patterns of the stems.

Another consequence of the architecture of grammar is that stems do not exist in the vocabulary. They are not listed/stored as part of the roots' instantiation –as Joseph and Smirniotopoulos (1993) claim. They are not formed by means of word formation rules (cf. Matthews 1972) or formed by morphological processes (Philippaki-Warburton 1970; Ralli 1989a, 1998). As far as Modern Greek is concerned, this view gives a solution to what should be treated as a stem and what is the function of a stem.

Finally, it is also the case in Greek that if suppletive stems were accounted as distinct entries, the size of the vocabulary would have been enlarged, as it would have been necessary to account for the forms used in the subjunctives, as (60).

(60) a. lé - o
root.say - 1SG.PR
'I say'

b. íp - a
say - 1SG.PST
'I said'

c. thelo na p - ó
I want to say - 1SG.PR
'I want to say'

5.5 Conclusion

In this chapter, I argued in favour of an approach which sees the vocabulary as the repository of the mapping between morphosyntactic and phonological features. I claimed that roots are not specified for any grammatical category. Instead, the categorisation is achieved only by the syntactic environment which surrounds the root, a position which is explored in chapters 6 and 7. I further showed that it is necessary to define what a vocabulary item is considered to be. This had significant consequences for the distinction between the items of which verbal forms in Modern Greek consist. So, I proposed that distinguishing the morphological pieces in the verbal forms in Greek derives from the architecture of grammar and is not language-specific driven.

Furthermore, I proposed that the morphosyntactic features of the vocabulary items are arranged in terms of a markedness hierarchy which is based on the [+/-] marked value of the feature represented closer to the root, this is the feature of aspect in Modern Greek. As far as the organisation of the vocabulary entries is concerned, I claimed that items are organised in tree structures. The base of this structurelies on the markedness hierarchy according to which marked items precede unmarked ones. It is also predicted that the

most embedded an item is, the more complex the morphological behaviour of the form it belongs to will be.

Finally, I argued that three types of allomorphy can be distinguished; phonological, morphological and suppletive. The former is the only type of allomorphy which is not productive, whereas the two latter participate in the derivation of the verbal forms.

Importantly, this view on the vocabulary strictly suggests that stems are not available in this specific part of the grammar. Stems are neither stored or formed in the vocabulary contra the lexicalist or the affixless approaches. As shown in the subsequent chapters, this view has important consequences for the processes under which stem formation occurs (chapters 6 and 7).

Chapter 6

Syntax–Morphology Interaction: Stem formation

6.1 Introduction

A long-debated issue in the literature relates to whether word formation is a syntactic or a morphological process. This, of course, triggered different approaches; it has been claimed that word formation can be seen either in terms of syntactic operations applying to the terminal nodes (Pollock 1989) or as a purely morphological process (Di Sciullo and Williams 1987).

In the present work, I defend a third approach along the lines of Distributed Morphology (Halle and Marantz 1993) claiming that word formation cannot be seen as either a purely morphological or a purely syntactic process. Instead, it should be seen as a complex process involving the interaction of syntax, morphology as well as phonology. In particular, it is claimed that syntax provides the structures which are further manipulated by morphology.

The present chapter aims to bring evidence from the verbal morphology in Modern Greek in order to provide further support for Distributed Morphology. I aim to determine how much syntax may influence morphology, what belongs to syntax and what to morphology. From a language-specific point to view, I intend to show how verbs are formed in Greek and whether all verbs should be seen as the result of the application of the same processes.

This chapter is organised as follows: in §6.2, I look at the facts one is called to account for. In §6.3, I explore the ways syntactic terminal nodes are organised. In §6.4, I examine the ways syntactic structures are manipulated by morphology. The matching of the morphemes to their phonological features as well as the formation of stems in Greek are further discussed in this section.

6.2 Reminder of the morphological patterns

The verbal inflectional system in Modern Greek does not represent a systematic pattern as far as the representation of syntacticosemantic features in strictly ordered morphological units is concerned. The overt or covert realisation of the pieces of inflection is subject to morphological features (class) and/or syntacticosemantic features; the morphological spell out of aspect is subject to the morphological features set by roots.

On the other hand, voice is conditioned upon the representation of aspect. The combinations between the spell-out and the features of both aspect as well as voice, play a role in the feature specification of the agreement/tense morpheme. The roots and the unit in which aspect is realised, are also specified for the morphological features.

There are cases in which aspect and voice are covertly realised in the forms, as in (1) below.

(1) a. apolim - án - thik - a
root.disinfect - TV[+α].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

This is not the case, though, throughout the verbal paradigm.

(2) a. apolim - én - o
disinfect - IMP - 1SG.PR.ac
'I disinfect'

b. apolím - en - a
disinfect - IMP - 1SG.PR.ac
'I was disinfecting'

c. apolím - an - a
disinfect - PER - 1SG.PST
'I disinfected'

Furthermore, there are cases which exhibit a strong suppletive pattern. In such cases, it is unclear how features are represented in the forms.

(3) a. lé - o
root.say - 1SG.PR
'I say'

b. íp - a
say - 1SG.PST
'I said'

It is also the case that such suppletive forms should be the result of the application of different operations. The claim put forward here is that not all verbal stems are derived under the same processes.

The theory in which the treatment of the verbal morphology in Modern Greek is formulated, necessarily needs to account for the existence of different stems of the same root.

(4) a. pl - én - o
root.wash - TV.IMP - 1SG.PR.ac
'I wash'

b. é - pl - en - a
AUG - root.wash - TV.IMP - 1SG.PR.ac
'I was washing'

c. é - pl - in - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

d. pl - ín - thik - a (plíthika, after phonology)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

It also needs to account for the ways by which the roots are matched to the correct sets of inflectional suffixes, so that the derivation of ungrammatical forms is blocked.

(5) a. *apolím - in - a
disinfect - PER - 1SG.PST
'I disinfected'

b. *é - pl - an - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

The theory should also support the view that stems are not stored in the repository of grammar. Instead, they are formed compositionally.

6.3 The syntactic component

Distributed Morphology accepts the view of Baker (1985) as far as the arrangement of the terminal nodes is concerned; in line with the Mirror Principle the order the functional

projections are positioned reflects the morpheme order in which the syntacticosemantic features are represented.

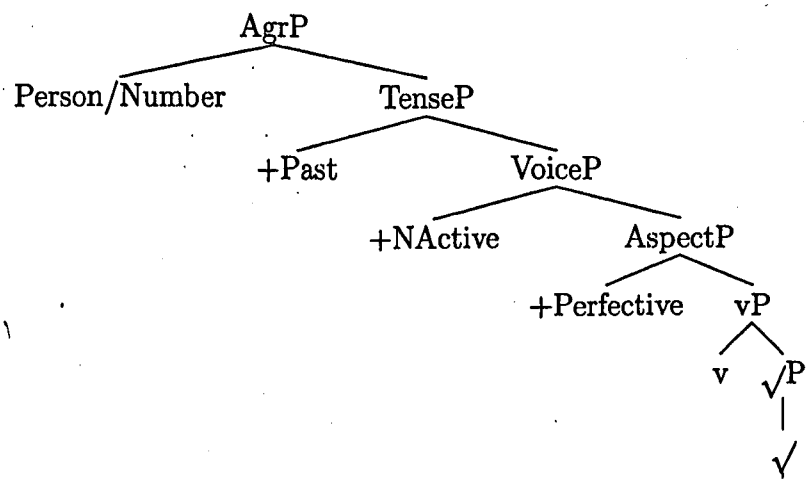
Recalling what has been previously suggested in chapter (13) for the Feature Hierarchy in Greek –given here in (6))–, one expects RootP, AspectP, VoiceP, Tense(Agreement)P to be the terminal nodes available for Greek. One could still maintain a universal hierarchy of functional projections complying to the proposals made in Bybee (1985), Cinque (1997) and Julien (2002).

(6) Feature Hierarchy in Greek:
Class > Aspect > Voice > Tense (Agreement)

Here, I would like to clarify, the use of the term 'morpheme' from this point onwards should not be mistaken for that traditionally attributed to any morphological piece identified in words in terms of Bloomfield (1933).

Following this hierarchy, one further assumes (7) to be the syntactic input to which head-movement applies. Julien (2002) conducts a typological investigation of languages which require head-movement to provide support for the view that word formation is achieved via this operation. This requirement is set upon syntactic patterns which are encountered in the language. Modern Greek satisfies it.

(7)



RootP is headed by the root of a verb, whereas the head of AspectP corresponds to the theme vowel appearing in the form. I return and revisit this structure –regarding the syntactic role of voice, claiming it is not functional– in what follows. Similarly, it is argued that TP and AgrP do not appear as two separate functional projections but as a fused one. The ordering of AspectP over VoiceP is explained in detail in what follows (based on the morphological distribution of the morphological units representing aspect as well as evidence which is brought from the syntactic behaviour of adverbials).

In Galani (2002) and subsequent work, it is assumed that (7) is the syntactic input. This position is based on the fact that verbal forms in Modern Greek represent the following features; agreement, tense, voice and aspect. Nevertheless this is revised in what follows.

(8) a. apolim - án - thik - es
disinfect - PER - NA.per.pst - PRES.2SG
'You have been disinfected'

On the other hand, in Galani (2005) it was proposed that syntactic fusion operates in syntax and fuses AgrT and TP. This claim was put forward on the basis of the morphological evidence drawn from the forms. Agreement and tense are cumulative expressed in Greek in the vast majority of the cases.

(9) a. apolim - án - thik - e
disinfect - PER - NA.per.pst - PRES.3SG
'You have been disinfected'

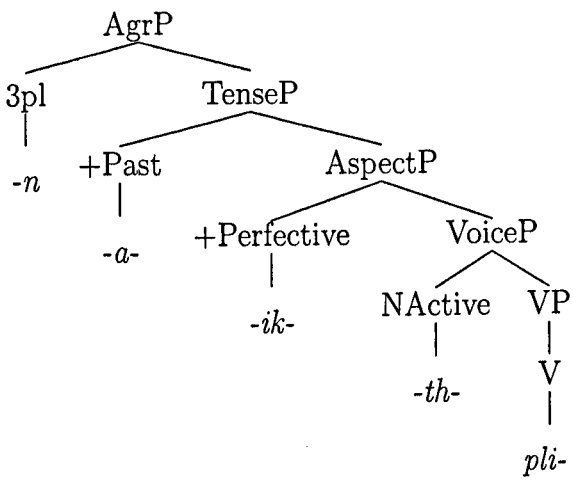
The only instances where it could be suggested that agreement and tense are represented in distinct morphological units are the second singular and plural forms in the active voice only (and in the perfective, non-active because the same set of inflectional suffixes are selected).

(10) a. apolim - án - thik - e - s
disinfect - PER - NA.per.pst - PRES - 2SG
'You have been disinfected'

This is no longer supported here, though.

Note the similarities with the account developed by Rivero (1990) in §3.4.4 following Pollock (1989), as far as the ordering of the syntactic projections is concerned.

(11)



The only difference is the ordering of AspP and VoiceP. Nevertheless, VoiceP in Rivero's account is functional. In my theory, VoiceP is only inserted in the morphological component.

On the other hand, Tsimpli (1990) argues that Tense precedes Agreement. She suggests that tense markers do not appear in the verbal suffixes but only the preverbal clitic *tha* can function as the tense marker. Consequently, according to this piece of evidence, the morpheme order is Tense, Agreement, Verb.

(12) a. tha telió - s - o
future particle finish - PER.AC - 1SG.PRES
'I will finish'

This contradicts the morphological evidence which suggests that in the past forms, tense is marked in the morpheme representing agreement and tense.

(13) a. apolim - án - thik - e
disinfect - PER - NA.per.pst - PRES.3SG
'You have been disinfected'

On the other hand, further distributional evidence involving object clitics show that clitics intervene between the tense marker (furture) and the inflected verb, a pattern which shows that Agreement should be closer to the verb than tense.

(14) a. tha to telió - s - o
future particle - it - finish - PER.AC - 1SG.PRES
'I will finish it'

Contra Tsimpli, Julien (2002), on the other hand, states that the morpheme order in Greek is verb–tense–agreement. Nevertheless, she does not justify this pattern which is given in a table only.

As has been pointed out up to this point in the preceding chapters, agreement features are incorporated in the morphological unit representing tense, as illustrated in (15). If ones accepts that agreement and tense are both marked in separate inflectional units, we are lead to assume that agreement is covertly realised in the first and third singular. In (15)-(16), I disregard the representation of aspect and voice, whereas in (18) I simplify the representation for purposes of exposition.

(15) a. gdérn - o
skin - 1SG.PR
'I skin'

b. gdérn - is
skin - 2SG.PR
'You skin'

c. gdérn - i
skin - 3SG.PR
'He skins'

d. gdérn - ume
skin - 1PL.PR
'We skin'

e. gdérn - ete
skin - 2PL.PR
'You skin'

f. gdérn - un
skin - 3PL.PR
'They skin'

Moreover, if one looks at the past (imperfective) forms, it would have to be assumed that agreement of the first and third singular person is null. Several objections have been raised in the literature in relation to the postulation of several zero affixes in a morphological theory. Matthews (1972) in his attempt to argue against the lexicalist approach to inflection, bases his arguments on the fact that this approach allows several zero morphemes to appear in the forms. A theory which is not subject to similar arguments is desirable.

Additionally, the spell-out of the agreement features is subject to tense, as shown in (16).

(16) a. égdern - a
skin - 1SG.PST
'I was skinning'

b. égdern - es
skin - 2SG.PST
'You were skinning'

c. égdern - a
skin - 3SG.PST
'He was skinning'

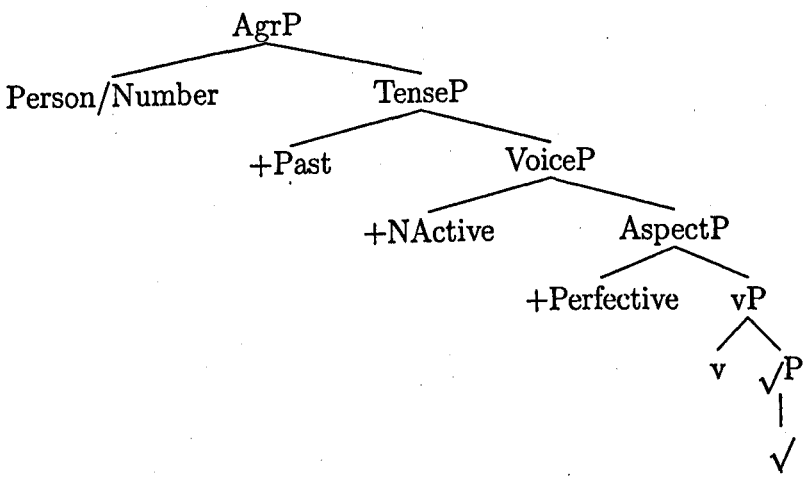
d. gdérn - ame
skin - 1PL.PST
'We were skinning'

e. gdérn - ate
skin - 2PL.PST
'You were skinning'

f. égdern - a
skin - 3PL.PST
'They were skinning'

Although an explanation could have been given along the lines of the primary and secondary specification (recall the claim made in chapter 5), a treatment which leads to the split INFL hypothesis is not well-supported in Greek based on morphological evidence. Nonetheless, if it were possible to determine the ordering of tense and agreement based on the third singular or the plural forms, it seems to be the case that agreement precedes tense.

(17)



The non-active forms clearly show that it is not economical to talk about two separate

units for agreement and tense, respectively, in Greek in an attempt to provide a unified treatment.

Consider (18). In this case, it becomes clear that distinguishing what properties are represented in which unit and in what order is a difficult task. This pattern also condemns an approach suggesting that the split INFL pattern is available in Greek.

(18) a. gdérn - ome
skin - 1SG.PR.na
'I am skinned'

b. gdérn - ese
skin - 2SG.PR.na
'You are skinned'

c. gdérn - ete
skin - 3SG.PR.na
'He is skinned'

d. gdern - ómaste
skin - 1PL.PR.na
'We are skinned'

e. gdern ósaste
skin - 2PL.PR.na
'You are skinned'

f. gdérn - onte
skin - 3PL.PR.na
'They are skinned'

Finally, the same results are drawn if one looks at the the non-active, past forms.

(19) a. gdern - ómun
skin - 1SG.PST.na
'I was skinned'

b. gdern - ósun
skin - 2SG.PST.na
'You were skinned'

c. gdern - ótan
skin - 3SG.PST.na
'He was skinned'

d. gdern - ómastan
skin - 1PL.PST.na
'We were skinned'

e. gdern - ósastan
skin - 2PL.PST.na
'You were skinned'

f. gdern - ótan
skin - 3PL.PST.na
'They were skinned'

Consequently, the morphological evidence suggests that agreement should not head its own maximal projection in syntax. Cumulative exponence of the agreement/tense unit has been further supported by Tsangalidis (1993), Joseph and Smirniotopoulos (1993) contra Hamp (1961), Babiniotis (1972).

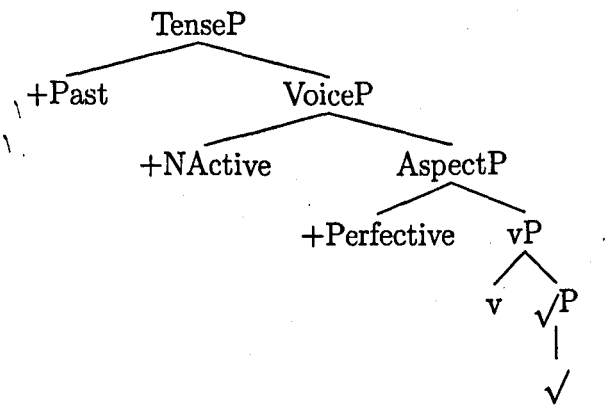
If the morphological evidence is not strong, though, a great number of works in the literature has questioned the existence of the Agreement projection in syntax based on distributional evidence and concluded that AgrP is not a functional projection.

Claims against the Split INFL hypothesis (Pollock (1989)) have been made by Ouhalla (1991), Booij (1993), Mitchell (1994), Booij (1995), Bobaljik and Thrainsson (1998), Ippolito (1999). For Modern Greek, Philippaki-Warburton (1987), Iatridou (1990), Philippaki-Warburton (1998), and Spyropoulos (1999) have all supported that there is no AgrP in syntax. Only one vocabulary item is specified for agreement, the one in which tense is also represented. For Pintzuk et al. (2000:3) the way 'we encode information about

agreement and tense in the lexicon is fundamental'.

Consequently, the structure in (7) needs to be revised, as in (20).

(20)



In the previous chapter, I have shown that the representation of voice in the forms is not influential in a morphological sense. It was suggested that its representation is conditioned by aspect and tense and in the majority of the cases, voice is represented as a secondary feature in the specification of other items. The representation of [+perfective] blocks the representation of voice in the agreement/tense morpheme (21).

(21) a. apolím - an - a
root.disinfect - TV.PER - 1SG.PST
'I disinfected'

b. é - gd - ar - a
AUG - root.skin - TV.PER. - 1SG.PST
'I skinned'

c. trél - an - a
root.disinfect - TV.PER - 1SG.PST
'I deranged'

d. é - pl - in - a
AUG - root.wash - TV.PER - 1SG.PST
'I washed'

This could be used as an indication –based on purely morphological facts– that voice might not play a crucial role in the derivation of words which might even suggest that voice is not necessarily an inflectional category, present in syntax.

Lascaratou and Philippaki-Warburton (1984), Tsangalidis (1993), Embick (1998b, 1998c) examine passive, reciprocal and reflexive readings of the non-active in Modern Greek and conclude that voice is not an inflectional category. Instead, it is a derivational category which is marked in the lexicon. Tsangalidis (1993) presents the following arguments in favour of the position that voice is not an inflectional category.

Voice may receive a passive, reciprocal reading, as in the example below which is based on Rivero's (1990:136).

(22) a. I Tonia ke i Nítsa pléonte
article Tonia and article Nitsa wash.NAC.PRES.3PL
'Tonia and Nitsa are (being) washed

or

Tonia and Nitsa (are) wash(ing) themselves

or

Tonia and Nitsa (are) wash(ing) each other'

As Tsangalidis explains, this contradicts Ouhallas's (1991:101) analysis;

(23) 'The PASS morpheme is essentially a functional category which does not bear a thematic relation to the verb ... The effect that its presence has on a given structure is that it prevents the thematic subject from becoming the grammatical subject. This is basically the core property of passives.'

This position, though, does not find support in Modern Greek, as the thematic and grammatical arguments coincide. This would further require the presence of two underlying forms of the voice morpheme representing passive, something which is not supported empirically in the language.

Embick, in addition, claims that the voice node is inserted at the morphological component in Distributed Morphology. This is the view I also adopt in the present work.

This leaves us with the question of whether aspect is an inflectional category. The data presented above showed that there is morphological evidence according to which aspect is represented overtly in the majority of the cases in the verbal morphology in Modern Greek.

Consider (24). The importance of the existence of primary and secondary features in a system is further highlighted for the effects it has and the connections it allows us to make on their syntactic representation.

(24) a. apolim - án - thik - a
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV.PER - NA.per.pst - 1SG.PST
'I was skinned'

c. trel - án - thik - a (treláthika)
root.disinfect - TV.PER - NA.per.pst - 1SG.PST
'I was deranged'

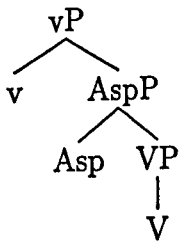
d. pl - ín - thik - a (plíthika)
root.wash - TV.PER - NA.per.pst - 1SG.PST
'I was washed'

e. dén - thik - a (déthika)
root.tie - NA.per.pst - 1SG.PST
'I was tied'

f. gráf - tik - a
root.write - NA.per.pst - 1SG.PST
'I was written'

In addition to the morphological evidence, there have been claims in the literature that AspP could be headed by adverbs in Greek. Adger and Tsoulas (2004) follow Johnson (1991) and Lasnik (1995) and claim that AspP is necessary for the analysis of circumstantial adverbs in Greek.[1]

(25)



Moreover, Xydopoulos (1999) analyses manner adverbs in Greek and claims that they head AspP too. The presence of AspP has been further supported in Tsangalidis (1993) for Greek –based on morphological evidence drawn from the verb morphology.

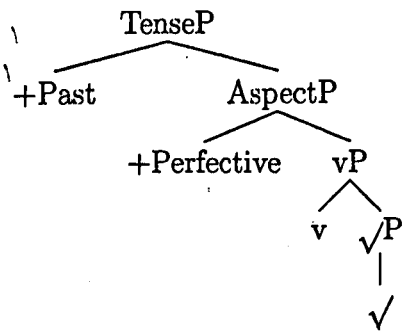
Cinque (1997) and Julien (2002) argue for AspP in syntax by bringing evidence from a

[1](25) from Adger and Tsoulas (2004:54).

variety of syntactic environments in different languages and language families.

So, structure (26) serves as the syntactic input which will be further manipulated by morphology for the derivation of verbs in Greek.

(26)



If early insertion applies to the roots, this inevitably means that the morphological specification of the root is also present in the syntax. Although this would cause a problem as far as the Feature Disjointness Principle is concerned ('features that are phonological, or purely morphological, or arbitrary properties of VIs, are not present in the syntax; syntacticosemantic features are not inserted in the morphology'), a way out is to propose that syntax does not have the machinery to interpret features which are not syntactic or semantic. Consequently, the morphological features of the roots are invisible in syntax.

Their presence in the syntactic component, though, is compulsory. First of all and from a technical perspective, if these features were not present in the syntactic component, they would only become available to the structure after Vocabulary Insertion. This would necessarily mean that the features are stored in the vocabulary and their interpretation

would come too late. Any item could be inserted in any given node, as long as it matches the syntacticosemantic features of the node. According to this view, the matching of the appropriate suffixes is subject to features stored in the vocabulary. Crucially, this means that the morphological component is only the part of grammar where syntacticosemantic features are matched to their phonological realisations but no productive and morphological processes that would affect word formation, actually apply. This certainly affects the nature of word formation. What is needed for the structure to know once it enters the morphological component is which operations to apply. The invisible features of roots in syntax can be now seen at the morphology. The application of any morphological operation is triggered/restricted by the specification of the root. This plays a vital role for the formation of non-suppletive versus suppletive stems.

On the other hand and if roots follow the principle of late insertion, this creates the following problem. It is not clear how the application of the morphological operations will be triggered. When the structure enters the morphological component and prior to vocabulary insertion, operations that will result in the formation of stems could not apply, as they are triggered by the morphological features.

The invisibility of morphological features in syntax is introduced in Galani (2004d). Alexiadou and Muller (2004) who examine the nominal systems in Russian, German and Greek also suggest that class features are of no use in the syntactic component.

Consequently, the Feature Disjointness principle is revisited;

(27) Features that are phonological or purely morphological or arbitrary properties of the VIs, are not visible in the syntax. Syntacticosemantic features are not inserted in the morphology. Syntactic features which are not relevant to syntax are not

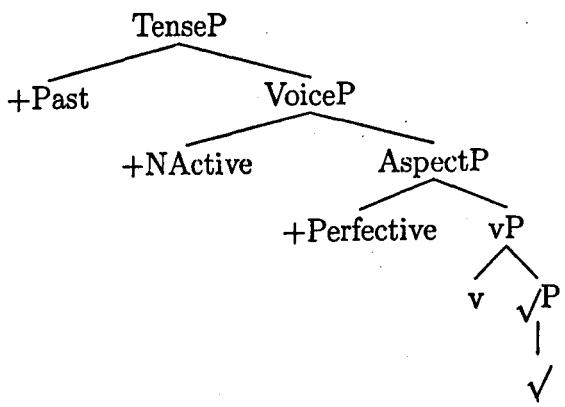
inserted in the syntactic component.

6.4 The morphological component

So far, we have seen that independent syntax generates structures which will be further manipulated by morphology. Cummins and Roberge (1994) also defends this idea based on evidence drawn from the morphology of Romance languages.

The first operation which takes place in the morphological component is the insertion of the VoiceP in the syntactic output.

(28)

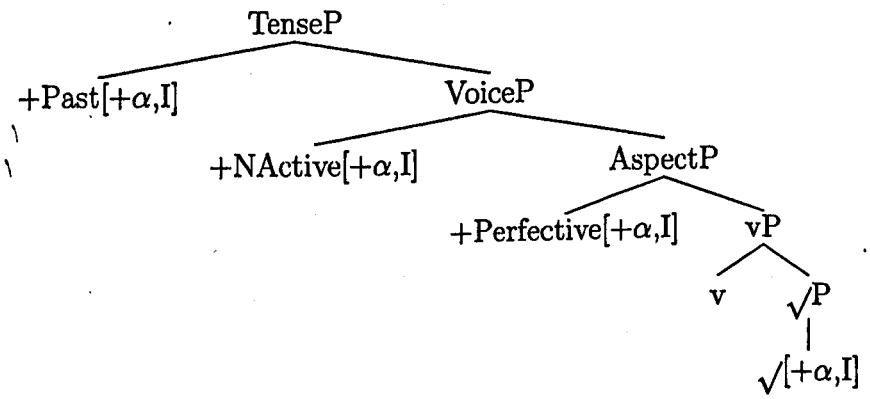


What is not clear in Distributed Morphology is what triggers the application of the morphological processes. In the account I develop, I propose that any operations are triggered by the presence of specific morphological features in certain syntacticosemantic environments.

The first morphological operation that takes place is a mechanism which copies the spec-

ification of the roots to the remaining terminal nodes. Recall that when head movement applied in syntax, the specification of the roots remained invisible.

(29)



Let us now see how morphology manipulates the syntactic structures. Consider (30).

(30) a. trel - án - thik - a (treláthika)
root.derange - TV[+α, I].+PER - +NA.+per.+pst - 1SG.+PST
'I was deranged'

b. pl - ín - thik - a (plíthika)
root.wash - TV[+α, II].+PER - +NA.+per.+pst - 1SG.+PST
'I was washed'

The presence of [+α, I/II] features in the correct syntactic environment –for instance, the [+perfective, +non-active]– triggers the application of Local Dislocation (Embick and Noyer (1999) further develop morphological merger first proposed in Marantz (1988)).

According to Local Dislocation, the relation between two heads, X and Y, can be replaced by suffixation of the head Z to the head Y through Lowering Merger (Bobaljik 1994)

which can be only applied only once all syntactic operations are complete and crucially before vocabulary insertion. Local Dislocation applies under adjacency and involves specific vocabulary items and not morphemes. Distributed Morphology is not the only framework in which Local Dislocation received attention. See Sadock (1991) for the operation in Autolexical syntax.

The consequences the application of this operation has, relate to the treatment of stems I propose within Distributed Morphology. It further answers the question on when roots become verbalised. These are explored in what follows.

The resulting structure after the application of Local Dislocation creates a local environment of the root. In cases such as (30) above, the roots form a cluster with Aspect. So, this could be seen in terms of stem formation.

This, though, I do not believe contradicts Embick and Halle (2005) as it does not suggest that stems are formed or stored in the grammar. It is an indirect implementation that even this approach accepts the existence of stems in a rather abstract sense but it does not require them. Voice which belongs in the external environment of the root verbalises the stem. Consequently, it is suggested that the categorial specification is determined by the local environment of the root/stem.

The morphological formation of these clusters will allow phonological rules to look in to the stem environment. The same applies to cases such as (31). So, cases where the theme vowel is covertly or overtly realised do not affect the formation of these clusters.

(31) a. dén - ∅ - thik - a (déthika)
root.tie - [+α, VII] - +NA.+per.+pst - 1SG.+PST
'I was tied'

b. gráf - ∅ - tik - a
root.write - [+α, V] - +NA.+per.+pst - 1SG.+PST
'I was written'

On the other hand, this is not always the case. When the morphological specification of the roots is such that blocks the application of Local Dislocation, as in (32) below, the roots do not form a cluster with the vocabulary item which wins the competition for insertion in the head of AspP.

(32) a. apolim - án - thik - a
root.disinfect - TV[+α, III].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α, IV].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

So far, we have seen that the role of the morphological features in the morphological component is to trigger the application of –distinct, in some cases– processes under which verbal forms are derived in Greek. This role of the features is further supported, if one considers cases which have been traditionally treated as suppletive.

(33) a. lé - o
root.say[X] - 1SG.PR
'I say'

b. íp - a
say[X] - 1SG.PST
'I said'

The presence of feature [X], let's say, blocks the application of Local Dislocation. Instead it triggers morphological fusion of RootP and AspP.

There is no reason here to assume that fusion occurs in syntax. The are syntactic reasons for which it is blocked. As argued by Adger and Tsoulas (2004), the head of aspectual adverbs occupy the head of AspP.

Similarly, fusion cannot operate in syntax as aspect needs to head its own maximal projection in order to account for the distribution of manner adverbs in Modern Greek, following Xydopoulos (1999).

Julien (2002) also suggests that fusion may apply in syntax. She brings evidence from Barbara. Syntactic fusion has been further supported in Galani (2005) for AgrP and TP. This position, though, no longer finds support in the present work.

On the other hand, the fusion of AspectP and vP is morphologically motivated in these cases. There are no syntactic constructions –contrary to the ones which motivate two separate projections– which force the application of syntactic fusion. Nonetheless and based on morphological evidence, if the two maximal projections do not fuse, grammatical forms is almost impossible to be derived. Unless AspectP and vP are fused, vocabulary insertion is unsuccessful in cases of suppletive stems, as the items do not fulfill the requirements.

In addition, in cases where the application of phonological rules which do not alter the spell-out of certain theme vowels (35), will not be blocked.

(34) a. dén - ∅ - thik - a (déthika)
root.tie - [+α, VII] - +NA.+per.+pst - 1SG.+PST
'I was tied'

b. gráf - ∅ - tik - a
root.write - [+α, V] - +NA.+per.+pst - 1SG.+PST
'I was written'

(35) a. apolim - án - thik - a
root.disinfect - TV[+α, III].+PER - +NA.+per.+pst - 1SG.+PST
'I was disinfected'

b. gd - ár - thik - a
root.skin - TV[+α, IV].+PER - +NA.+per.+pst - 1SG.+PST
'I was skinned'

It is now time to look at the ways vocabulary insertion occurs. Once all morphological processes are complete, vocabulary insertion applies. For reasons of economy and due to the hierarchical organisation of the vocabulary, Galani (2004f) proposed the Feature Checking Order mechanism. This is based on the Feature hierarchy. So, when the grammar looks in to the vocabulary, the first set of features to be matched will need to be the morphological ones and then the syntacticosemantic ones. In terms of economy, it will only have to look at certain nodes and not throughout the repository.

A clear distinction should be made, though. Vocabulary insertion does not occur or is rather blocked when the morphological features are such that require the application of readjustment rules. In cases such as (33), when the grammar attempts to map the morphemes to their phonological realisation, the presence of feature [X], will block vocabulary insertion. Instead, when it looks in the vocabulary, feature [X] will trigger the application of readjustment rules.

Consequently, Distributed Morphology makes a sharp distinction between the processes under which verbs are formed. It does not acknowledge the presence of suppletive stems, as these have been seen in the literature. Due to the fact that roots do not compete for insertion, suppletion of roots cannot occur.

6.5 Conclusion

In this chapter, I provided support for the framework of Distributed Morphology. I showed that word formation should be seen as a complex process involving the interaction of syntax as well as morphology. I argued that stems are best seen as formed at the interface of syntax–morphology. This view contradicted traditional claims that stems are formed or stored in the lexicon. It was shown that the stem cluster is a structure resulting from the operation of Local Dislocation which is triggered by specific set of morphological features. It was noted, nonetheless, that not all stems in Modern Greek are formed in a similar fashion. In the present chapter, I further explored the way readjustment rules operate in Distributed Morphology. Since roots do not compete for insertion, suppletion does not occur in the grammar. Cases in Greek which have been previously treated as suppletive in the literature are now considered to be derived by readjustment rules. This distinguishes the two processes: formation of stems during vocabulary insertion versus readjustment rules. In the following chapter, I explore the consequence this treatment has for the morphology–phonology interaction and the presence of the augment in simple and verb compounds Modern Greek.

Chapter 7

Morphology–Phonology Interaction: Augment

7.1 Introduction

The identification of the constituents of words as well as their syntacticosemantic representations have been at the centre of attention of any theoretical model of inflectional morphology. The processes by which the forms are derived –whether these are seen as suffixational, prefixational or suppletive– have also received a tremendous amount of the attention in the literature, as has been discussed in the previous chapters.

Nevertheless and to the best of my knowledge, no attention has been paid on morphemes which are present in the morphological forms, despite the fact that they do not represent any syntacticosemantic features and their omission would result in the derivation of ungrammatical forms.

The principles under which verb formation occurs in Distributed Morphology seems to be complete when vocabulary insertion is complete. As is shown in the following sections, though, this position could not be maintained, if one looks at the presence of the augment in Modern Greek.

In this chapter, I examine how phonology further manipulates the morphological output. I am interested in determining how new morphological pieces can be inserted in the phonological component, as such cases have not been investigated in the literature to the best of my knowledge.

I claim that the augment in Modern Greek is inserted in the phonological component and after vocabulary insertion has taken place in order to satisfy a well-formedness requirement. I examine the augment in a variety of environments –varying from Ancient to Modern Greek as well as from simple to compound verbs and finally dialectal and non-dialectal use– to determine its role in Modern Greek, in §7.2. The analysis of the augment in Distributed Morphology is discussed in §7.3. Its treatment is compared to previous ones in the literature in §7.4. The chapter concludes in §7.5.

7.2 The augment

In this section I discuss the augment in Ancient and Modern Greek. This diachronic as well as synchronic discussion turns out to be necessary in order not only to explain the choice of this morpheme for insertion in the past tenses in simple and augmented Preposition-Verb compounds but also to provide extra support for the position that diachronic information is encoded in morphology which further enables irregular patterns causing morphology to be non-homogenic. I first refer to the status of the augment in Ancient Greek and then to

its status in Modern Greek. This chapter concludes with a discussion around the usage of the augment in Greek dialects.

7.2.1 The augment in Ancient Greek

There are two types of augment in Ancient Greek: the syllabic and the vocalic. The material used in this section is based on Smyth (1956) and Jay (1958).

7.2.1.1 The syllabic augment

The syllabic augment was inserted in the indicative mood of the past tenses (imperfect, aorist and pluperfect in order to express the past time. It was inserted in the indicative mood only, as it is the only mood, which expresses 'whatever a particular verb means as a statement or question of fact' (Householder, Kazazis, Koutsoudas (1964:103)).

In what follows after the discussion of each part I refer back to Modern Greek in order to see whether it is possible to make any correlations between the previous and the present stage of the language.

The syllabic augment was prefixed in the verbal forms of which the stems began with a consonant both in the singular and the plural (in all six persons). No restrictions on the number of the verb's syllables were applied. It was always inserted. It was called syllabic, as its prefixation caused an increase to the number of the verbal forms's syllables.

(1) a. e - li - ómen
AUG - loosen - 1PL.PR(IMP)
'We were loosening'

b. e - lí - samen
AUG - loosen - 1PL.PST(PER)
'We loosen'

Comparing the past tenses to the way they are formed in Modern Greek, for the same verb *lino* we notice that the past tenses are not formed in an analogous way. This is –empirically– due to the fact that the number of syllables is adequate to occupy the stress on the antepenultitmate.

(2) a. líname
loosen.1PL.PST(IMP)
'We were loosening'

b. é - lisa
AUG - loosen.1SG.PST(Aorist)
'I loosen'

Moreover I would like to move onto the formation of the non-active past tenses in Ancient Greek, where the augment is used in the imperfect, the aorist as well as the pluperfect.

(3) a. e-liómin
loosen-1SG, PST (Imperfect), NAC
'I was loosen'

b. e-lisámin
loosen-1SG, PST (Aorist) , NAC
'I was loosen'

Finally I would like to briefly relate the formation of the non-active tenses in Modern Greek.

(4) a. linómoun
loose-1SG, PST (Imperfect), NAC
'I was being lose'

b. líthika
loose-1SG, PST (Aorist), NAC
'I was lose'

It is noticed that the augment is not used because the phonological requirement is met. There are no similarities between the endings but the present and the imperfect still share the aspectual/voice morpheme. Finally the aspectual/voice morpheme is also overly realised in the aorist.

To summarise the syllabic augment was inserted only in the indicative mood of the past tenses of all verbs beginning with consonants in Ancient Greek and it was a [+past] temporal marker. On the contrary in Modern Greek the augment is only inserted in these forms, where the number of syllables is not adequate to occupy the stress in the antepenultimate.

7.2.1.2 The vocalic augment

The vocalic augment was more complicated. As I do not intend to get into great details of the phonological changes caused, the interested reader is referred to Smyth (1956) and Jay (1958). It occurred in these verbs, of which the stems began with vowels. In these cases the initial short vowel was lengthened. In the following examples I present the augmentation of an active as well as a non-active verb.

(5) a. akúo
hear-1SG, PRES
'I hear'

b. í-kusa
hear-1SG, PST (Aorist)
'I hear'

(6) a. esthánome
feel-1SG, PRES
'I feel'

b. i-sthanómin
feel-1SG, PST (Imperfect)
'I used to feel'

Nonetheless, the use of the vocalic augment is limited in Modern Greek tending to disappear. This change is related to the phonological changes, which have occurred in the status of the vowels in Modern Greek. For details the interested reader is referred to Babiniotis (1985) on the phonology of Ancient Greek and Setatos (1973) on the phonology of Modern Greek.

The vocalic augment is still in use in the verbs *eho*, (have), *ime* (be), *elpizo* (hope), *elegho* (check) and *ago* (conduct) in Modern Greek, cases which nevertheless still have to conform to the phonological requirement set.

(7) a. ágo
conduct-1SG, PRES, AC
'I conduct'

b. í-gon
conduct-1SG, PST, AC
'I used to conduct'

(8) a. ého
have-1SG, PRES, AC
'I have'

b. í-ha
have-1SG, PST, AC
'I had'

(9) a. íme
be-1SG, PST, AC
'I am'

b. í-moun
be-1SG, PST, AC
'I was'

Moreover in Ancient and New Testament Greek compound verbs were formed by prepositions which altered the meaning of the compounds, followed by verbs. The prepositions which were always prefixed to the verbs's stems, are: *amfi, ana, anti, apo, dia, is, ek, en, epi, kata, meta, para, peri, pro, pros, sin, iper, ipo.*

The past tenses (imperfect, aorist and pluperfect) of these compounds were augmented. The augment was inserted according to the pattern of augmentation of the verbs in their non-compound forms; in verbs beginning with consonants the syllabic augment was inserted.

(10) a. sinvállo
sin + é-valon
'I put together-1sg, Past (Aorist)'

On the other hand, in verbs beginning with vowels the vocalic augment was used. As far as its position is concerned, it was placed after the prepositions and before the verbs in all cases. Its prefixation did not cause any morphophonological changes in the cases, where the preposition ended in a consonant regardless of the verb's initial morpheme.

(11) a. iságo
is + í-gon
'I import'

b. iságo
is + í-gagon
'bring in-1sg, Past (Aorist)'

Nonetheless when the preposition ended in vowel and the verb was consonant initial, the final vowel of the preposition was omitted and the verb was regularly augmented.

(12) a. apovállo
ap + é-vallon
'abort-1sg, Past (Imperfect)'

b. apovállo
ap + é-valon
'abort-1sg, Past (Aorist)'

In addition when the preposition ended in vowel and the verb began with vowel, the preposition's final vowel was also omitted.

(13) a. apágo
ap + í-gon
'drive away-1sg, Past (Imperfect)'

Prepositions *peri, pro* retain their final vowel, even in the past tenses.

(14) a. proágo
pro + í-gon
'advance-1sg, Past (Imperfect)'

I discuss P-V compounds in Modern Greek in the following section.

In conclusion, the augment –being a temporal marker– is inserted throughout all the verbal forms –non-compounds and compounds– in Ancient Greek.

7.2.2 The augment in Modern Greek

Up to this point, we have seen that the augment is prefixes in the past tenses in the active voice.

(15) a. é - graps - a
AUG - write.PER.NA - 1SG.PST
'I wrote'

b. é - graf - a
AUG - write.IMP - 1SG.PST
'I was writing'

The suffixation of the inflectional suffixes in this case does not increase the number of syllables. When phonological rules apply, these only affect the phonological status of the final consonant of the root when it is adjoined to the inflectional morpheme to form a stem. In such cases, the formation of the stem occurs in the phonological component. Otherwise, ungrammatical forms would be derived. In terms of the augment's presence, when the stem is formed in the morphological component, its insertion is blocked.

I would like to note that the exact phonological changes which occur during stem formation in the phonological component and do not concern the spell-out of the augment remain out of the scope of the present work. The interested reader is referred to Setatos (1973), for instance.

Nevertheless, it is only inserted in forms which have less than three syllables. So, its prefixation is blocked in cases such as (16), below.

(16) a. magírev - a
cook.AC - 1SG.PST
'I was cooking'

b. tragúd - ag - a
sing - IMP.AC - 1SG.PST
'I was singing'

In cases such as (16), the formation of the stem took place in the morphological component. It is, consequently, predicted that the augment's insertion should be blocked, a hypothesis which is attested.

The insertion of the augment, though, occurs in compounds the first part of which is a preposition.

(17) a. ip - é - graf - e
under - AUG - write.IMP - 3SG.PST
'He was signing'

b. sin - é - val - e
joint - AUG - put.PER - 3SG.PST
'He contributed'

c. is - é - pnefs - e
in - AUG - breathe.PER - 3SG.PST
'He breathed in'

d. pro - í - gkil - e
before - AUG - announce.PER - 3SG.PST
'He announced'

Its infixation nonetheless, does not take place in all types of compounds of which the second part is a verb.

(18) a. kal - ó - fage
well - epenthetic vowel - eat.NA.PST.3SG
'He ate well'

b. anav - ó - svise
turn on - epenthetic vowel - turn off.AC.PST.3SG
'He turned it on and off'

c. hart- ó- peze
cards - epenthetic vowel - play.IMP.AC.13SG
'He was playing cards'

Nevertheless, the non-augmented form of a P-V compound is also attested in the language.

(19) a. ipó - graf - e
under - write.IMP - 3SG.PST
'He was signing'

b. sín - val - e (símvale after phonology)
joint - put.PER - 3SG.PST
'He contributed'

c. ís - pnefs - e
in - breathe.PER - 3SG.PST
'He breathed in'

d. pro - á - gkil - e
before - announce.PER - 3SG.PST
'He announced'

As was previously suggested, the augment satisfies a phonological well-formedness requirement set by the morphology. It can be seen as the last resort for the stress. Unless this requirement is satisfied, where necessary, the formed verbs are ungrammatical. Another way to look at the augment is in terms of epenthesis. A correlation can be made between the epenthetic vowels inserted in A-V compounds, for example, and the augment.

(20) a. 'e - graf - a
augment - root.write - 1SG.PST.AC

b. kal - 'o - fag - a
good - epenthetic vowel - eat.root - 1SG.PST.PER.AC

Nonetheless the lexical specification of the augment places it only as a prefix in verbs. The augment is inserted as a phonological well-formedness requirement on the stress rule which requires a position for the stress on the antepenultimate.[1]

(21) Stress antepenultimate in the past.
In the past tense, move the stress to the antepenultimate.
Do not stress a vowel further to the left than antepenult.

Here, it should be noted that it is difficult to formulate a strictly non-descriptive rule of the stress pattern in Modern Greek. (21) explains the stress pattern in cases such as (22).

(22) a. gráf - o
write - 1SG.PRES.AC
'I write'

b. é - graf - a
AUG - write - 1SG.PST
'I wrote'

The rule needs to be modified, though, when the features represented are the imperfective, non-active ones. In such cases, the stress has to move to the penultimate.

(23) a. theorúmun
consider - 1SG.PST.NAC
'I was being considered'

b. grafómun
write - 1SG.PST.IMP.NAC
'I was being written'

[1]It is adapted from Galani (2004c).

So when the stress, for example in a verb like *gr'afo*, moves from the penultimate to the antepenultimate, there is not an available position in *graf-sa* to occupy it. This triggers the application of a phonological well-formedness rule which inserts the augment in the structure.

In what follows, I aim to further support the position I took on the augment as being the last resort for the stress by making a brief reference to compound verbs. It is necessary to offer some introductory remarks on compounding in Modern Greek.

7.3 The analysis of the augment in Distributed Morphology

Compound verbal forms exhibit an interesting pattern as far as their formation and the presence of the augment are concerned.

In line with the treatment we propose on compound verbs in Modern Greek, I suggest that when a verb combines with an adverb, noun, another verb or preposition, it forms an incorporated compound (Fabb 2001). This form has an internal structure which can be seen in syntax. There are several reasons for this position. Such forms affect the syntactic structures in which they occur. The product of compounding may serve a dual role in the clause: it can be both the verb and one of the arguments of the verb.

(24) a. Ta pediá épezan hartiá
The children were playing cards
'The children were playing cards'

b. Ta pediá hart-ó-pezan
The children cards - were playing
'The children were playing cards'

Moreover they are also subject to constraints on the semantic classes with which they can incorporate. For example, Rivero (1992) shows that not all adverbs can freely combine with verbs: manner adverbs can but aspect and temporal cannot. Nonetheless if we assumed that verb formation is a purely morphological process, we could not be able to draw this line.

(25) a. I María zografízi tóra
article Maria draws now
'Maria is drawing now'

b. *I María tóra-zografízi
article Maria now-draws
'Maria is now drawing'

Here I will be using forms for which compounding is allowed. In line with the model we propose, at S-Structure I assume that AP, NP, VP or even PP may be adjacent to VP. AP, NP, VP, or PP are morphologically merged (Local Dislocation) with VP forming a VPin(corporated).

This contradicts Rivero (1992) who claims that incorporation in Modern Greek is only a syntactic process. If this were true, we would expect in cases where a VP is incorporated into another VP, the incorporated VP to retain its internal syntactic structure. Nonetheless only the second part of the compound is inflected for the semantic features appearing in Modern Greek (aspect, voice, agreement and tense).

(26) a. Ta pediá anávun ke svínun to fos
article children turn on and turn off the light
'The children turn on and off the light'

b. Ta pediá anavosvínun to fos
article children turn on and off the light
'The children turn on and off the light'

An important aspect of this operation relates to the claim in the literature that in incorporated compounds only stems and not words are incorporated (Gerdts 2001). This shows that the syntax sets the restrictions on whether the syntactic terminal nodes can merge but it is the morphology which determines the morphological units which are merged. Throughout this work I further suggest that it is the roots of the verbs which incorporate in compounding and not the stem.

Once the MS processes are complete, the structure moves on to PF in order for the well-formedness requirements (phonological changes and the stress rule) to be satisfied. These processes can be roughly summarised in the following schema:

(27)

SS	⟶	MS	⟶	PF
↓		↓		↓
head movement		Operations - Compounding		Phonological Operations
		Vocabulary Insertion		Stress Rule

I now move onto the formation of the past tenses of incorporated compounds aiming to show that the augment is only the last resort for the stress. Following our position on its insertion, as long as the features of [+active, +past] are represented, it could be inserted if the number of syllables is not enough to occupy the stress in the antepenultimate. Nonetheless since compounds are the products of the compounding of two stems, we expect

the number of syllables to be greater than two. So the augment's insertion would not be necessary. The stress, on the other hand, would be occupied in the antepenultimate, as it is the case (*hartópeza*).

(28) a. [hartó][pez - (∅) - a]
[card][play - (Imperfective, Active) - 1, sg, Past]

MS is mapped to PF. Any phonological changes first take place: the well-formedness condition of the incorporated stems are first satisfied: the epenthetic vowel *-o-* is inserted between the stem of the noun and the stem of the verb (*hartopez-*). The Stress Rule further applies to the incorporated form and the stress is marked on the antepenultimate (*hart'opeza*). At this stage I would like to stress what would have have happened, if I had assumed that the stress rule first applies and any phonological changes follow. When the MS structure moves to PF, the stress would have been marked on the antepenultimate: *h'artpeza.* Due to the phonological principles, the cluster *-rtp-* is not allowed and so the epenthetic vowel would have been inserted (*h'artopeza*). This would have resulted, however, in the violation of the stress rule in the past tenses. According to Kiparsky (1982), the derivational processes precede the inflectional ones in a regular pattern of morphology. This necessarily means that the incorporation of prepositions/adverbs/nouns takes place first and the inflectional processes then follow.

Nonetheless as I previously mentioned, compounds with prepositions may also appear augmented. This could be explained in line with the pattern such verbs followed in Ancient Greek.

As Fabb (2001) suggests, in some languages a morpheme which has no specific and independent meaning but bears a historical relation to some prefix, may be inserted in compounds. What is crucial about these morphemes is that they are clearly distinguished from the cran-

berries morphemes. Although they are both meaningless, the different between them lies on the fact that morphemes such the augment in P-P compounds bears a historical relation to some prefixes in a previous stage of the language.[2] The German morphemes *-s-* or *-en-* and the augment in Modern Greek are instances of this occasion.

(29) a. schwan - en - gesang
swan - en - song

b. ip - è - grafa
under - augment - write
'I was signing'

As there is not enough information available –regarding the function of *-en-* in German, the discussion is restricted to its presence as a morpheme which bears a historic relation with its ancestor. This is similar to the presence of the augment in the augmented forms in Modern Greek. Nevertheless, I extend its function here; the augment in such forms may bear a historic relation to its presence in the verbal forms in Ancient Greek but even nowadays serves as a morpheme which occupies the stress.

In such cases, the formation of the augmented compounds seems to be achieved in two phases, working on Kiparky's proposals that in irregular morphology the inflectional processes precede the derivational ones. In the first phase, the main verb is inflected and consequently the augment is inserted in the cases, where the phonological well-formedness requirement needs to be satisfied. In the second phase, incorporation occurs.

Moreover Bybee and Jean (1995:634) suggest that 'regular processes are defined as the productive ones, that is, the morphological processes that are the most easily extended to

[2]The only reference in the literature I found is traced back to Fabb (2001). As he suggested (p.c.), he might have taken this example from Kiparksy's notes. As I have not been in position to find further reference, I only refer to Fabb.

new items'. Non-augmented compound verbs with prepositions are formed according to the highly productive compounds with adverbs, verbs and nouns in Modern Greek which show a regular pattern of inflection. This pattern is indeed more productive and accessible. Additionally, the non-augmented P-V compounds also considered predominant in Modern Greek due to speaker preferences. This can be illustrated in a very simple and superficial way by the following test.

We take a small set of data of augmented P-V compounds (Joseph and Philippaki-Warburton 1987) and we further compare it to the forms found in Stavropoulos (1996) and the non-biased responses of participants. The results are given in table (30).

(30)

Compounds Without The Augment	Stavropoulos	Data
antigrapsa	NO	YES
antistrepsa		
apofevga	YES	YES
diatheta		
ispnefsa	NO	YES
egrina	NO	YES
epikiriksa	YES	YES
katastrepsa	YES	YES
metatrepsa	YES	YES
paradina	YES	YES
prostaksa	YES	YES
iperixa		
ipodiksa	YES	YES

According to this small set of data we notice that seven out of the thirteen cases can occur without the augment based on the forms, which appear in Stavropoulos (1996), and ten out of thirteen cases based on the random data. *Ipereho* could be excluded, as the verb *eho* is an auxiliary, which due to its frequent use survives morphological vitiations. This further shows that such forms are not frozen, as it has been previously suggested in the literature. They are not only fully inflected in line with the inflectional processes in Modern Greek but also appear to undergo further changes and adapted to the Modern Greek inflectional and phonological system.

In conclusion, incorporated compounds show that the augment –the last resort for the stress– is not inserted, as there are enough syllables to occupy the stress. As a final remark, the insertion of the epenthetic vowel in incorporated compounds shows two aspects of verb formation in Modern Greek: the phonological changes occur before the stress assignment in Modern Greek. Such forms would not have been well-formed only at the syntactic or the morphological level. Moreover they show that the output of the syntax is the input of the morphology and the output of morphology the input of phonology. Verb formation is finally the output of the phonological component.

7.4 The augment in previous accounts

In what follows I refer to some of the accounts around the augment in the literature. Scholars propose that the augment in Modern Greek is a prefix inserted to occupy the stress, when the stress moves from the penultimate or the last syllable in the present tense to the antepenultimate in the past tenses (Triantafillides (1941)). This position is further adopted by Joseph and Philippaki-Warburton (1987), Holton, Mackridge, and Warburton (1997) as well as Clairis and Babiniotis (1999). Householder, Kazazis, and

Koutsoudas (1964) and Alexiadou and Anagnostopoulou (2001) formulate more articulated phonological requirements which attempt to explain the augment's insertion.

I would like now to turn to compound verbs. The stress moves from the penultimate in (31-a) to the antepenultimate in (31). In line with the position on the stress pattern, the augment is required. The form in (31) indeed conforms to this proposal and the augment appears between the preposition and the main verb. This is identical to the patten in Ancient Greek. Nevertheless the past form of (31-a) may also appear non-augmented as in (31) contrary to our expectations and the form in (31). Following Clairis and Babiniotis (1999), though, the non-augmented forms are highly preferable in Modern Greek.

(31) a. ipo - gráf - o
preposition-under - write - 1SG.PR.A

b. ip - é - graf - sa
preposition - augment - write - 1SG.PER.A.PST

c. ipó - graf - s - a
preposition - write - 1SG.PER.A.PST

Moreover the data in (31) not only contradicts the position on the stress pattern but also –partially– exemplifies a different morphological pattern from the one in compounds in (33). Although the stress moves from the penultimate in (32-a) to the antepenultimate in (32-b), the augment is not inserted. We notice that the pattern in (32-b) is identical to the one in) with respect to the augment. Nonetheless there is not an equivalent form of in (33) (**hart-é-peza*).

(32) a. [harto][péz - o]
[card][play - 1SG.PR.A]

b. [hartó][pez - a]
[card][play - 1SG.IMP.A.PST]

Finally it seems that the importance of this requirement lies on the position of the stress. On the other hand the requirement on the representation of the [+past] features has not received any particular attention. We need to make explicit, however, that the augment can never be combined with the non-past endings, as it results to ungrammatical forms (33).

(33) *é - graf - o
augment - write - 1SG.PR.A

Nonetheless we should not overestimate the relation of the augment to the features of [+past] and we should not be carried away by its status in Ancient Greek. Although its insertion is subject to the realisation of tense, it does not mean that it still carries [+past] features. This would lead us to the claim made in Xydopoulos (1996): 'the past tense appears as a prefix which might be substituted or accompanied by an infix.'

Nevertheless if the augment still carries the temporal specifications in Modern Greek, we would expect the morphological realisation of this morpheme to be more frequent and not subject to the features of voice and the types of verbs. The limited use of the augment's overt realisation can be summarised in the following table. I am taking into consideration verbs which appear to be similar in the present tense (both bi-syllabic), the voice in which verbs appear and the past tenses or the tenses in which reference to the past is made (conditionals). The pluperfect and the future perfect are excluded from the following table, as the augment is always inserted in the auxiliary.

(34)

		gráfo	*timó*
Active Voice	Imperfect	YES	NO
	Aorist	YES	NO
	Future in Past	YES	NO
Non-Active Voice	Imperfect	NO	NO
	Aorist	NO	NO
	Future in Past	NO	NO

In line with the findings in the above table, in only three out to the twelve cases the augment is required. Consequently if it had temporal specifications, we would expect it to be realised more frequently. Finally if the augment was indeed determined by the temporal features, we would also expect the vocalic augment to be realised. Nonetheless only the syllabic augment occurs in Modern Greek.

On the other hand, if we follow Alexiadou and Anagnostopoulou (2001) on the proposal that the augment is inserted in bi-syllabic verbs, we predict that it should be prefixed both in (35-c) and (35-e).

(35) a. gráf - o
write - 1SG.PR.A

b. é - graf - sa
augment - write - 1SG.PER.A.PST

c. (*e) - gráf - tika
(augment) - write - 1SG.PER.NA.PST

d. tim - ó
honour - 1SG.PR.A

e. (*e) - tím - isa
(augment) - honour - 1SG.PER.A.PST

Philippaki-Warburton (1970) suggests that the antepenult rule was an important one in the phonology in Ancient Greek, according to which a word can not be accented any further to the left of the antepenultimate. Philippaki-Warburton presents the following schema for the formulation of the antepenult rule, where V is any vowel, C any consonant, (C) optional consonant and =word boundary.[3]

(36)

$$\text{Rule A} \quad \text{V-[+accent]/} \quad \begin{matrix} & & [\text{V}] & & & \\ \text{XC-C} & & [\text{-accent}] & & (\text{C})= & \\ & & [\text{+long}] & & & \end{matrix}$$

$$\begin{matrix} & [\text{V}] & & [\text{V}] & \\ \text{X-C} & [\text{-accent}] & \text{C} & [\text{-accent}] & (\text{C})= \\ & & & [\text{-long}] & \end{matrix}$$

She further suggests that the formulation of this rule has three main advantages: it is applied to words rather than stems, all verbs take the stress in one of the last three syllables and the pattern of accentuation may be predictable (Philippaki-Warburton (1970:109-110)). This rule makes use of the vowel length occured in Ancient Greek.

On the other hand in Modern Greek, where the vowel length does not occur, Philippaki-Warburton suggests that accentual changes are attributed to the suffixes in the verbal forms, which are interpreted as [+long]. Apart from these cases this feature is not realised elsewhere and, as she suggests, it is not really a vowel feature but one of these morphemes. Consequently the augment is epenthesied, when the antepenultimate is not present once

[3]Philippaki-Warburton uses the opposition symbol.

stress shift occured.

Kaisse (1982) also presents a similar account. She suggests that the augment in Modern Greek is inserted due to two main phonological changes. The first one is related to the loss of the length distinctions between the vowels, which enabled the prediction of the stress assignment. The second main change is 'the loss of initial unstressed vowel' (Kaisse (1982:77)), where the stress in Modern Greek appears in the same position as in Ancient Greek. She further suggests that the past tenses in Modern Greek are marked for floating stress contrary to Ancient Greek, where the stress was recessive. Nevertheless there are also cases in Modern Greek, where the stress is still recessive in the past only and not in the present or the future tenses.

It would have been extremely hard to suggest a similar treatment to the one Oltra-Massuet (1999) proposes on stress assignment which is based on Halle and Idsardi (1995) claims. Each vowel projects an abstract mark. The T node projects a right boundary to its left, whereas the left most element of the constituent on line 0 projects an abstract mark on line 1.

(37)

Line 0:
a. Each vowel (the syllable head) projects an abstract mark
b. The T node projects a right boundary to its left (the left of the phonological exponent realising T(/Agr)).
c. The rightmost element of each constituent on line 0 projects an abstract mark onto line 1

Although this stress rule would predict and explain the position of the stress in some cases, it would not explain the position of the stress in the perfective active as well as non-active. The stress rule in Modern Greek is not predictable. The reasons for this have

been previously discussed.

Finally, if we temporarily accept the standard view, according to which the augment is inserted in order to occupy the stress, we come across another exceptional pattern in addition to the cases of compounds verbs with prepositions. Although this may not be a solid argument against the previous accounts, it shows at least that there is more to the position that sees the augment as a morpheme occupying the stress.

There are speakers from different regions of Greece who use the augment in cases, where it would not be needed according to the phonological requirement; the first and second person plural in the imperfect and the aorist not only of bi-syllabic verbs but also of tri-syllabic Category A and Category B verbs. These speakers mainly come from the Greek islands (Eptanisa in the lonian Sea, Dodekanese, Kiklades in Aegean Sea, as well as Crete) and also from the mainland (Epirus and Viotia). In the following examples verbs.[4] I first present the forms in line with the dialectal use, whereas the standard forms of the same verbs are given in brackets.

(38) a. *e*-tréhate (tr'ehate)
run-2pl, Past (Imperfect), Active
'You were running'

b. *e*-tr'eksate (tr'eksate)
run-2pl, Past (Aorist), Active
'You ran'

c. *e*-f'agame (f'agame)
eat-1pl, Past (Aorist)
'We ate'

Nevertheless such forms are mainly used by middle-aged and elderly speakers. Children

[4]These examples are taken from speakers from Crete.

tend not to use them, whereas teenagers only use them in specific contexts, as for example in conversation with their parents or by speakers, with whom they share this pattern. This suggests that, even in its dialectal use the augment tends to disappear regardless of the fact that speakers from such areas tend to avoid radical chagnes.

This implies that the form of the augment was gradually simplified and at the present stage it is restricted to these cases, where the phonological requirement needs to be met in standard Greek and undergoes further changes in the dialectal use.

We have not yet looked at is the reasons for which the features of the augment were altered since Ancient Greek; a [+past] temporal marker in Ancient Greek versus a lexical morpheme with phonological specification in Modern Greek. In line with claims in the literature, this shift can be explained in terms of the process of demorphologisation (Joseph and Janda 1988).

(39) Demorphologisation is the transition from a state in which a generalisation is morphological in nature to the state in which the corresponding generalisation is phonological in nature.

Nonetheless as Joseph and Janda (1988) suggest, it is not possible to argue for a strict case of demorphologisation in Modern Greek, as the there are cases, where the augment appears without bearing the stress or it is inserted in verbs, where there is already an available position to occupy the stress (what we called augmented compound verbs with prepositions in the previous discussion).

As for the verb *eprókito* (it is about) Joseph and Janda (1988) propose as evidence that the augment can not been entirely seen as a phonological product, it can be easily seen that this verb bears non-Modern Greek endings and can be treated as 'frozen'. This form

derives from Kathareuousa, it is not frequent in use and speakers do not show a particular preference.

Consequently the augment can not be strictly related to phonology. There is no need to refer to the cases of augmented P-V compounds, as this part of the analysis has already been completed. In what follows I would like to present some further arguments based on works made on the phonological changes of the Greek language and in particular those which are related to the stress pattern. This will provide extra support for the claim that the augment has become phonologised in present day Modern Greek, contrary to Joseph and Janda's position.

To conclude, the augment's omission in Modern Greek can be attributed to four main reasons:

(40) (a)younger speakers tend to omit the augment when forming compound verbs with prepositions (based on the random-data).

(b)the data found in the *Oxford Greek-English Dictionary* (1996). For forms such as *metafrasa* (translate), Mackridge (1985) who discusses the sociolinguistic factors, which influence the speaker's choice on the augmented versus the non-augmented compounds with prepositions, suggest that speakers favour the augmented form. Nevertheless the same verb only appear as non-augmented in the *Oxford Greek-English Dictionary*, a pattern, which is also shared by the random data. Due to the fact that Mackridge's results are based on a rather old set of data, I follow more recent claims. I do not exclude the possibility of comparing the results found in Mackridge with a new set of data.

(c)compound with prepositions conform to the Modern Greek pattern of verbal compounding formation

(d)this pattern is in line with the general claims in the literature, where it is suggested that the augment is prefixed in the past tenses in Modern Greek in order to occupy the stress. So, as there is an available position for the stress, the augment is not inserted.

7.5 Conclusion

In this chapter, I explained that new morphological material can be inserted in the phonological component. The satisfaction of the well-formedness condition by the augment showed that phonology plays a clausal roles in word-formation, contra claims made in Pullum and Zwicky (1988). Finally, I claimed that the augment is the last resort for the stress in Greek and I explored the ways by which its insertion is achieved in compound and non-compound verbs.

Chapter 8

Concluding Remarks

The present work investigated word formation in inflectional morphology. Under the hypothesis that word formation is a process which operates in syntactic structures further manipulated in morphology, it was shown that there exist constructions that question this approach (Halle and Marantz 1993). The principles of Distributed Morphology in its original formulation were shown to systematically pose problems regarding the processes under which conjugational classes, the insertion of units the specification of which is not morphosyntactic, the conditions under which operations which may apply in the syntactic or the morphological components, occur. Evidence that manifested this were drawn from the verbal system in Modern Greek (chapter 3–4).

It was further claimed that the verbal morphosyntax in Modern Greek is a rich morphological system. The great variety of patterns and the empirical facts one encounters as well as the difficulties it raises for any theoretical approach to word formation were extensively discussed in chapter 3. It was shown that forms exhibit rich allomorphic patterns; phonological, morphological and (weak as well as strong) suppletive patterns are identified. The

language does not follow a systematic way according to which verbs are formed. It is not also the case that each syntacticosemantic feature is always represented in the same piece of inflection.

The degree of difficulty the verbal system exhibits –not only in order to account for word formation theoretically but also to provide an analysis from a language-specific perspective– can be identified in the attempts which have been made in the literature in the light of different theoretical approaches. Chapter 3 also presents the arguments against those theories which claim that word formation is purely a syntactic or morphological process. It was clearly shown that an one-to-one relation between meaning and form cannot be maintained. On the other hand, it was stressed that an approach which derives forms based on readjustment rules does not and cannot account for the complexity of the system and consequently oversimplifies it.

The inadequacies which have been raised in the previous attempts to the verbal morphology in Modern Greek, motivated the formulation of an alternative approach. The claims which were made and the details of the derivation of verbal forms in Modern Greek were explored in chapter 4 which set the basis for the discussion in the remaining chapters.

In chapter 5, I investigated the organisation of the repository of the grammar. I explained that vocabulary items are hierarchically organised in tree structures based on the degree of markedness theme vowels exhibit. The tree structuring not only organises the items in such a way that is economical to vocabulary insertion but also accounts for verb classification in Modern Greek. It was further claimed that forms which exhibit strong suppletion are derived in this component. This contradicts previous approaches in the literature which argue for stems stored in the lexicon.

The interaction of syntax and morphology and the consequences for stem formation were

examined in chapter 6. Attention was paid on the terminal nodes which appear in syntax and serve as the morphological input. It was argued that any operations which may apply in morphology are not justified or fully motivated, as the theory currently stands. I proposed that morphological operations are triggered by morphological features. I explained that stem formation may occur once vocabulary insertion is compete or may be continued after it.

This led to the discussion in the final chapter which looked into the interaction between the morphology–phonology interface. It was shown that unless phonological mechanism further apply to the structures, ungrammaticality results. There is still material that needs to be inserted in the phonological component. The affixation of the augment provided the empirical evidence for this positions. Its presence, though, in compound forms with prepositions provided further support that word formation is a complex process which necessarily requires the interaction of syntax, morphology and phonology. In such cases it was shown that compounding occurs in two stages; during the first one, the inflected verbal form is formed, whereas during the second one the form enters the enumeration again in order to be incorporated with the preposition. Consequently, vocabulary insertion occurs twice.

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