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Morphology in Greek Linguistics:

A State-of-the Art*

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In recent years, morphology has received an increasing attention within linguistic theory. It deals with word structure and attracts significant interest in languages that are morphologically rich, such as Modern Greek (hereafter Greek). In this paper, I present an overview of the main theoretical studies that focus on Greek morphology, in the last four decades, with a particular emphasis on those following the framework of generative grammar. Reasons of space prevent me from giving an exhaustive presentation of all the topics that have been examined from a synchronic point of view. Moreover, I do not take into consideration studies on historical and dialectal morphology, lexical borrowing, as well as works that cover areas where morphological issues interact with research in domains such as computational linguistics, psycholinguistics, and neurolinguistics.

Keywords: morphology, word structure, inflection, derivation, compounding, clitics.

1. Introduction: The Domain of Morphology

Basic questions such as ‘what is morphology’, ‘what is its goal’, ‘what is the relation between morphology and the other grammatical components’ have received a variety of answers, depending on the particular theoretical approach that is used for the analysis of morphological data. In fact, various linguistic schools have defined morphology as ‘the study of forms’, the ‘study of word structures’, or the ‘study of rules and principles governing word-internal structures’.

In Greek linguistics, morphological formations have been analyzed within the framework of several linguistic schools resulting into a considerable number of studies, both descriptive and explanatory. There are works that focus on the structural and semantic description of a specific wordform (e.g., adjectives in *-tos*, like *αγαπιτος* ‘loved’), works that provide an explanatory account of a particular morphological phenomenon (e.g., deverbal compounding), and works that, among other things, deal with more theoretical issues (e.g., the notion of allomorphy).

This state-of-the-art paper is a synthesis of the major points that can be found in the most important studies of the last forty years, beginning with the first systematic descriptions of Greek morphology that can be traced back to the early sixties. When needed, reference is made to older works, as well as to a number of traditional grammars. Word-formation processes, that is, inflection, derivation, and compounding, constitute the three principal sections of the study, followed by a shorter section containing some hints on the borderline case of clitics, the behavior of which fluctuates between morphology and syntax.

By including inflection in a paper on morphology, I take a rather strong lexicalist position, in that I consider inflected words to be produced by word-formation mechanisms. In this presentation, I do not take into consideration works that provide a syntactic configurational account of verbal inflectional information (i.e., morpho-syntactic categories) in terms of functional categories (see, for example, Rivero 1990, Philippaki-Warbuton 1990, etc.). In these studies, a verb form is syntactically analyzed as a tree representation, containing the morpho-syntactic categories as separate functional projections, each headed by its own functional category, where the verb root undergoes head-to-head movement to pick up its inflectional affixes. Joseph (1992) and Joseph & Smirniotopoulos (1993) have shown that such an analysis faces serious empirical problems in Greek. Joseph & Smirniotopoulos (1993) correctly point out that there are no bi-unique morpheme-meaning relations in the Greek verb, and there are problems related to the position that is assigned to a morpho-syntactic category in a syntactic tree-representation (see, for example, the representation of the functional category of voice, postulated by Rivero [1990]).¹ Moreover, as I demonstrate in Ralli (1998, 1999), functional heads do not mirror inflectional morphemes since there is no one-to-one correspondence between inflectional features and syntactic categories, and several inconsistencies arise from an effort to blend them together. For instance, there are inflectional features, such as inflection class, that do not affect syntax, and some overtly expressed morphological features cannot be explained by a syntactic approach (see instances of case mismatches in clitic-left dislocated constituents, as shown by Ralli & Espanol-Echevarria 1998, Espanol-Echevarria & Ralli 2000). Ralli (1999) argues that linguistic variation with respect to inflection is due to the specific ways in which inflectional features are organized in sets in the lexicon as well as in the way that features are handled and manipulated by the morphology of specific languages. For example, number is amalgamated with case in Greek, while it is an independent feature and derivational in nature in a language like Burushaski (spoken in Northern Pakistan, see Tiffou & Pesot 1989). Also, while past tense is overtly suffixed to Latin verb stems, it is realized as a prefix (augment) in Ancient Greek. Thus, I agree with Joseph (1992:33) that the best way of treating the morphosyntax of the Greek verb forms is as morphology, and not as syntax. In fact, Joseph (1992) and Joseph & Smirniotopoulos (1993) claim that within a framework, which considers morphology to have a place of its own in grammar, we could account not only for affixation (as syntax may account for), but also for various morpho-phonological processes affecting inflectional structures, something which cannot be achieved by syntactic rules such as head-to-head movement.

In recent years, within the generative grammar framework, several works advocate the crucial role of morphology in the language faculty. Some of them invoke morphology in order to interpret general syntactic phenomena. For instance, in Chomsky's (1995) minimalist program, strong morphological features determine whether there is overt movement in syntax. In other works, however, morphology is considered to be an autonomous morphological module (see, among others, Joseph 1988, 1990, 2002, Booij 1994, 1996, 1997), and there are proposals towards the elaboration of theoretical frameworks that govern this module (e.g., Lieber 1980, Selkirk 1982, Anderson 1992, Aronoff 1994, Di Sciullo 1996). It is generally assumed that morphology generates morphological expressions that are not visible to syntactic operations, but interacts with phonology and syntax in several aspects. On the one hand, interaction with phonology is best accounted for by frameworks such as lexical phonology (Kiparsky 1982, Mohanan 1986), which postulate a stratification for the

application of phonological rules to word-internal structures, or optimality theory (Prince & Smolensky 1993), according to which a set of ranked constraints interpret various morpho-phonological phenomena. On the other hand, the interplay between morphology and syntax has resulted into a number of works, which either support the autonomy of morphology (see, for example, Borer's (1988) parallel morphology model) or propose a general syntactic theory that accounts for both morphology and syntax (e.g., Lieber 1992).

The fundamental question of whether lexical items of common origin can be synchronically related by some sort of morphological configuration has been a hot topic in linguistic literature dealing with morphology (see Jackendoff 1975, and more recently Janda & Joseph 1992, 1999). In particular, Janda & Joseph (1999) examine the problem of the negative particle *me(n)* in Modern Greek which appears as an independent wordform or as a dependent morpheme, depending on the case, displays a form variation (with or without final /n/), and assumes different grammatical functions. For the authors, there are ten negative markers *me(n)* which involve "unity-in-diversity and diversity-in-unity" because "each shows enough similarity with the others to warrant one's wanting to unify them, but also shows enough differences from all the others to prevent their being collapsed easily into a single element" (Janda & Joseph 1999: 343). They propose to analyze these ten *me(n)* as being parts of a morphological configuration, a constellation in their own terms. In this proposal, a constellation is a group of elements, which share at least a basic property, but have also differences as far as their form, and function are concerned. All instances of a particular constellation are related to each other by a meta-redundancy statement (or a meta-template). A morphological constellation has the advantage of offering a significant generalization in grammar, since what is grammatically recognized is the overall complex of interrelated elements, than every single instance of them.

The paper is articulated as follows: the major works on Greek inflection, derivation and compounding are presented in sections two to four. Issues that have attracted attention on several occasions, such as the verbal augment, allomorphy, passive participles, deverbal derivatives, theta-role saturation in deverbal compounds, the linking vowel, and multi-word compounds, are dealt in particular subsections. A brief presentation of proposals about cliticization as a morphological phenomenon follows in the fifth section. The paper ends with some conclusive remarks.

2. Inflection

2.1 Verbal inflection

Since the early sixties, inflection, particularly verb inflection, has been a favorite subject of discussion within the framework of various theoretical approaches. In accordance with the item and arrangement model, Hamp (1961) proposes that each verbal word-form is a sequence of five morphemes, which are concatenated according to a particular order, that is, stem, aspect, tense, person/number and voice. A less analytical pattern of verb forms, as a combination of three slots, is proposed by Koutsoudas (1962), where the aspect/voice morpheme, and the tense/person/number ending follow the stem. For instance, a verb form like *γρapsame* 'we wrote' is analyzed as *γraf-s-a-me-** by Hamp, and as *γraf-s-ame* by Koutsoudas. Following the German structuralist tradition (e.g., Seiler 1958), Babiniotis (1972) argues that a synchronic morphological analysis should take into consideration the latent forces of

the language, which may trigger a restructuring of the paradigm. He distinguishes a tense morpheme between the aspectual marker and the person/number ending, but, contrary to Hamp who relates it to the thematic vowel, Babiniotis assumes tense to be a separate constituent. In his work, *γrapsame*, is analysed as *γraf-s-a-me*.

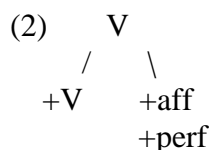
Although the three analyses have the descriptive adequacy of structuralism, they make an extensive use of zero morphemes, every time that a slot is not filled by overt lexical material. For instance, Koutsoudas accepts a zero suffix for the voice/aspect marker in a form like *γrafume* ‘we write’ while, for the same form, Babiniotis adopts two zero suffixes:

(1)a. Koutsoudas (1962)			
Stem	Aspect	Tense/Person/Number	
γraf	✱	ume	
b. Babiniotis (1972)			
Stem	Aspect	Tense	Person/Number
γraf	✱	✱	ume

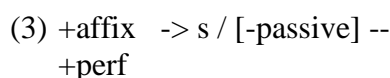
The so-called ‘word and paradigm’ approach avoids the zero-morpheme postulation. Within this framework, Matthews (1967) argues that each verb form is not a sequence of morphemes, but a lexeme, which is an abstract entity and bears a number of morpho-syntactic properties. The lexeme is firstly lexically realized as the root of the word and acquires its final form by a series of operations, each operation adding a formative to the root. The choice of formatives depends on the morpho-syntactic properties of the lexeme and its morphological class (i.e., its conjugation). In case that a feature does not correspond to overtly realized material, a vacuous operation occurs, but no zero formative is added. According to this approach, a form like *γrafume* is derived on the basis of a lexeme GRAFO, which contains the properties of [finite, imperfective, active, present, first person, plural]. Firstly, a single root *γraf-* is assigned to GRAFO. Then, a first operation produces the primary stem *γraf-* without the addition of a particular formative (vacuous operation). Three subsequent vacuous operations built a secondary stem *γraf-*, bearing the features of imperfective, active, present, and a fifth non-vacuous operation adds the formative – *me* expressing the first person plural. It should be noticed that, in this analysis, although the morpho-syntactic properties are unordered, there is an implicit order of rules. Moreover, as Philippaki-Warburton (1973) has correctly observed, in spite of the fact that the Word and Paradigm model allows us to avoid the use of zero morphemes, it does not prevent us from using a series of zero operations.

Within the early generative grammar tradition (Chomsky 1965), Philippaki-Warburton (1970, 1973) offers two analyses of the verbal system. While in 1970 she adopts a transformational model, in her subsequent analysis of 1973, she proposes a compromise between a generative approach and a word and paradigm model. Rejecting the notion of the morpheme, she considers the word as the basis of all inflectional forms. The word is specified by several morpho-syntactic properties, the particular form of which (i.e., the affixes) being introduced by several spelling rules, whose specific number depends on the number of the different morpho-syntactic properties. Following the generative spirit of the late sixties where syntax is seen as the predominant component of grammar, Philippaki-Warburton claims that all inflectional forms can be analyzed with the use of transformations, and that all string modifications take place at the interface with phonology. To illustrate this idea, a

verbal form marked as [+perfective] (e.g., *γρapsame*) is subject to the following transformation, which segments the form into a number of features (1973: 218-219):



A spelling rule applies to this feature-based structure, according to which, the features of +affix and +perfective are spelled out as *-s-* in the context of *-passive* (*-s-* is the marker of +perfective only in non-passive forms):



In linguistic literature, heavy criticism to a syntactic approach in morphological analyses, and a return to morphology, mark the period of late seventies and early eighties. It is during this period that the so-called ‘lexical morphology model’ is proposed, mainly by Lieber (1980), Selkirk (1982), Kiparsky (1982), and Mohanan (1986). According to this model, Ralli (1983, 1986, 1988) analyzes the Greek verbal system, following the idea that all morphological combinations occur within the Lexicon, which is not perceived as a simple depository of information, but as a “dynamic” component with word-formation rules, and lexical phonological rules responsible for word-internal phonological changes. Ralli adopts Lieber’s (1980) division of the lexicon into a static component (permanent lexicon), where morpheme-based lemmas and unpredictable information of phonological, morphological, syntactic and semantic nature are stored, and a procedural component (lexical structure) where all word formation occurs. Moreover, following Kiparsky (1982) and Mohanan (1986), she proposes that the lexical structure contains a section of morphology and a section of word-internal phonology, and is stratified into three levels, the distribution of which depends on the morphological productivity and the phonological regularity of morphological combinations. The first level is responsible for less productive formations (e.g., derivation of deverbal nouns and adjectives, denominal verbs and adjectives, and deadjectival nouns), the second level includes more productive formations (e.g., diminutives, participles in *-menos*, and most compounds), while the third level is the domain of inflection and the most productive prefixation and compounding (e.g., the *para* prefixation and the *ksana* compounds). Word formation is achieved by the operation of word-formation rules, which are binary (of the form $X \rightarrow Y Z$), context-free, and combine word constituents that are stems, uninflected words, and affixes. According to Ralli, the rule of inflection has the basic form of $\text{Word} \rightarrow \text{Stem Infl}$ and is responsible for the analysis of all verbal forms into two components, a stem and an inflectional ending. Both the stem and the inflectional ending may be simple, or morphologically complex. A morphologically complex stem may be derived (e.g., *zoyraf-iz(o)* ‘to paint’) or compound (e.g., *ksana-trex(o)* ‘to re-run’), while the ending may contain up to three components, depending on the case. For instance, the ending *-ume* of the form *trexume* ‘we run-PRES’ contains only the person/number mark, the ending *-ame* of the form *trexame* ‘we were running’ has the marks of tense (*-a*) and that of person/number (*-me*), while a form like *treksame* ‘we run-PAST’ contains three marks in its ending, an aspectual mark (*-s-*), a tense mark (*-a-*), and a person/number one (*-me*). Ralli’s analysis of the

verbal ending into three components is reminiscent of the analysis proposed by Babiniotis (1972). However, she avoids the problem of postulating an extensive number of zero morphemes, since she assumes that the slots for the aspectual and tense values are realized only if there is an overtly expressed mark. Verbal forms that do not have these slots (e.g., *trex-ume*) acquire the missing information of aspect and tense by some readjustment rules operating like default feature-filling rules.

In more recent years, Janda & Joseph (1992) have proposed an analysis of Greek verbal forms in terms of morphological constellations of words and redundancy statements, such as meta-templates (see section 1 above). This analysis has the advantage of avoiding excessive segmentation of these forms and problems related to morpheme identification. The basic reasoning for such a proposal is that significant formal and functional properties across words can be captured and better expressed if hypersegmentation into morphemes is replaced by meta-templates. Meta-templates constitute a non-morphemic mechanism that relates wordforms participating in a morphological constellation, the members of which share systematic similarities that cannot be easily accounted for by distinct morphemes and word-formation rules. According to this approach, the systematic vowel a/e alternation that characterizes the paradigm of the active imperfect forms (*eyrafa*, *eyrafes*, *eyrafe*, *yrafame*, *yrafate*, *eyrafan* ‘to write’) can be accounted for by the two general meta-templates: a) /a.../ [[+1, +pl], +past, {+actv., -ipfv}], and b) /...e.../ [[-1, +pl], +past, {+actv., -ipfv}] .

2.1.1 *The augment*

An interesting issue in Greek verbal inflection is the status of the augment, which is traditionally considered to be the mark of past (see, among others, Mirambel 1959). As such, it is often assigned a prefixal status. A slightly different view is found in Hamp (1961) who suggests that the augment is the first part of a discontinuous morpheme, the second member of which being the ending. However, a different view is expressed by Babiniotis (1972), and is later adopted by Kaisse (1982) and Ralli (1988), according to which, the augment is nothing but a formative, whose only function is to receive stress when the antepenultimate-syllable stress law causes a left-hand stress shift outside the confines of the word (e.g., *li + s + e + s* -> *'lises* -> *èlises* ‘you solved’).ⁱⁱ In Babiniotis (1972) and Ralli (1988), the past morpheme is situated in the ending (see previous paragraph), where it occupies the second position, between the aspectual marker and the person/number one. Within a generative morphological framework, it is assumed by Ralli (1988) that *e-* is inserted by a string-dependent rule (see Lieber 1980), which is nothing but a transformation, readjusting the word string in a specific morpho-phonological environment, that is, under stress in past forms. Nevertheless, as Joseph & Janda (1988: 201) observe, a strictly phonological status for the augment cannot work since there are verbs which carry an unstressed *e-* in the past tense (e.g., *eprokito* ‘it was a question of’), or display a word-internal augment (e.g., *metefrase* ‘(s)he translated’). Thus, even though some aspects of the distribution of the augment are somewhat phonological in nature (e.g., a preference for appearing under stress), for Joseph & Janda, the augment still keeps its morphological status, and has not been fully phonologized. A purely phonological solution for the Greek augmentation has also been challenged by Malikouti-Drachman & Drachman (1992, 1993), Drachman & Malikouti-Drachman (1994), who argue that *e-* is a morphological element, and as such, it is the morpheme representing past tense in Modern Greek. They propose that this element is a tense morpheme, the form of which is an unspecified vowel /V/ (1992: 88), which becomes /e/ under stress. In

subsequent work, however, the authors recognize the need to distinguish between the semantics of past and its corresponding morphology, thus implying the non-clearcut affixal status of the augment (Drachman & Malikouti-Drachman 2000). In fact, they focus on its prosodic role, showing its degrammaticalization and its interaction with stress and word length. Interestingly, by extending the notion of concord to morphology, they propose that the augment was the dominant morphological exponent (the one with maximum uniqueness) of past in Ancient Greek while the inflectional endings had the role of the concordant.ⁱⁱⁱ In contrast, the augment in Modern Greek is only one of the potential past tense exponents, stress shift and ending being the others. Drachman and Malikouti-Drachman claim that the expression of past lies dominantly in the stress alternation (*lino* ‘I untie’ vs. *eAlisa* ‘I untied’). Elaborating on this proposal, Drachman (to appear) contrasts the augment, a bi-uniquely past prefix in Ancient Greek, with the endings, which expressed not only tense, but also person and number. He suggests that, during the history of Greek, the augment suffered phonological instability, and is now reduced to zero in a [-stress] context, because stress alternation became the dominant exponent for past. As opposed to the deletable character of the augment, the endings could not be deleted because they carry additional information and a possible deletion would violate information recoverability. It is worth adding that, with respect to augment, Drachman & Malikouti-Drachman (2001) provide a cross-dialect typology. They suggest that it may belong to derivation when its presence is obligatory (Pontic, Chios) whereas, as an optional element, it should be analyzed under inflection (Standard Greek and other dialects).

2.2 Nominal inflection

In linguistic literature, nominal inflection has been a favorite topic for investigation since the beginning of the twentieth century (see, for instance, Hatzidakis 1905). Most of the studies focus on the distribution of nouns in inflection classes. Gender values and parisyllabicity vs. imparisyllabicity between inflected forms have been used as the basic criteria for such a distribution.^{iv} For example, Triantaphyllides (1991) and Sotiropoulos (1972) refer to gender as the determining factor for distinguishing three nominal inflection classes (declensions), while Tsopanakis (1948) proposes a division into nouns which have the same number of syllables in both singular and plural (parisyllabic), and nouns which display a different number of syllables depending on the features of number and case (imparisyllabic). A different criterion, based on case syncretism, is adopted by Kourmoulis (1964), and is further refined by Babiniotis & Kontos (1967), Babiniotis (1982) and Clairis & Babiniotis (1996). According to this criterion, Greek nouns are distributed into three classes. Class I nouns display a contrast between nominative and genitive cases (e.g., *pateras* vs. *patera* ‘father’), Class II nouns have three different forms in the three cases of nominative, accusative and genitive (e.g., *tixos*, *tixu*, *tixo* ‘wall’), and, finally, Class III nouns are of a mixed type (e.g., *polis* ‘town’).

Ralli (1992b, 1994, 1999, 2002a) has proposed a different division of nouns into eight inflection classes (declensions). Following a generative approach, enriched by insights from feature theory and unification grammar, Ralli rejects the traditional gender-based classification. Her main argument is that nouns of the same gender value may inflect according to different paradigms (e.g., the neuter *pedi* ‘child’, *vuno* ‘mountain’, *kratos* ‘state’, *soma* ‘body’), and nouns of the same inflectional paradigm

may belong to different gender values (compare the masculine *δromos* ‘road’ and the feminine *προδος* ‘progress’). She claims that a division in inflection classes should rely on two criteria: a) the presence of a systematic allomorphic variation of the stem, and b) the form of the whole set of inflectional endings that are combined with the stems, not only the nominative singular form that is usually used in traditional analyses. For instance, while nouns in *-os* (*δromos* / *προδος*) have no allomorphic variation, and are inflected according to the same paradigm (Class I), nouns in *-is* (*μαθιτις* ‘student’) or *-as* (*ταμιας* ‘cashier’) are considered to have two systematic stem allomorphs: the basic stem form that appears in plural (*μαθιτι-*, *ταμι-*), and the allomorphic one ending by a vowel, /i/ (*μαθιτι-*) or /a/ (*ταμια-*), depending on the case, which is in complementary distribution with the first, the latter belong to Class II nouns.^v In Ralli’s work, feminine nouns displaying a final vowel in the nominative singular form, that is /a/, /i/, /e/, and /u/, as for example, *χαρα* ‘joy’, *αβλι* ‘yard’, *νενη* ‘grandmother’ and *αλεπου* ‘fox’, are also considered to have an allomorphic variation of the stem (Class III). Class IV contains the [+learned] feminine nouns, like *πολι* ‘town’, while the other four classes include the neuter nouns in *-o* (*βουνο* ‘mountain’), *-i* (*κουτι* ‘box’), *-ma* (*σωμα* ‘body’) and *-os* (*κρατος* ‘state’) respectively.^{vi} Note that from all noun-final vowels in the nominative singular, only /o/ (*δromos* ‘road’, *βουνο* ‘mountain’, *κρατος* ‘state’) is listed as part of the ending, since it is not constantly present in all forms of the singular paradigm (e.g., *δromu* ‘road-GEN’, *βunu* ‘mountain-GEN’, *kratus* ‘state-GEN’). This analysis differs from Sotiropoulos (1972) who assigns all vowels to the stem and classifies the nouns into three basic classes, according to their gender value, and eight subclasses according to the form of the inflectional endings.

Noun-final vowels are also focused in Thomadaki’s work (1994, 1997), within a lexical-morphology perspective. A crucial point in Thomadaki’s analysis is the hypothesis that these vowels constitute a ‘synchronic’ version of the historical thematic vowels. Their presence is lexically determined since, in synchronic terms, there is no way to predict by rule the type of the vowel that a particular noun should take. Therefore, Thomadaki presumes that a diacritic feature, referring to the appropriate thematic vowel, inherently characterizes the lexical entries of the noun stems, as follows (1994: 162):

(4) /X-/ [+ψ/], e.g., /pater-/ [+a/]

Diacritic features constitute only indications of the presence of the thematic vowels, the overt realization of which occurs by a lexical phonological rule, whose domain of application is the third level of the stratified lexical structure (see 2.1 above). This rule is constrained by the particular morphological context (the vowels appear only in singular), and takes place after the application of the inflection rule. According to Thomadaki, the domain of application restricts the thematic-vowel insertion only to inflected forms, and accounts for the non-appearance of this vowel in stems that are built from a derivational or a compounding process (**μαθιτιακος*, **μαθιτικοζμος*, etc.), the last two being formed in the levels preceding the level of inflection.

Finally, it should be added that in early seventies, following Chomsky’s (1965) early conception of generative grammar, Malikouti (1970) had offered an account of nominal inflection in both Demotiki and Katharevousa, suggesting that nouns from the two types of language belong to the same abstract linguistic level (deep structure) and their surface differentiation is due to some idiosyncratic features

[+/-demotic, +/-katharevousa], as well as to the application of rules that are transformational, or phonological, depending on the case. For instance, she considers that a transformation is responsible for the formation of a [+katharevousa] type, like *pedio* ‘child’, with the introduction of an *-o-* to the basic string *pedi*. On the other hand, the semi-vowel /j/ in the plural form of the [+demotic] *pedja* ‘children’ is due to a phonological rule applying to an underlying form *pedia*.

2.3 Allomorphy related to inflection

Drachman (2000, 2001) gives an interesting theoretical account of why and how allomorphy is developed in a particular language. In his paper of 2000, he argues that the choice of less complex allomorphy balances morphological complexity. For instance, the present stems in Ancient Greek show maximal allomorphic variety (*la-m-b-an-o*: ‘to take’, *deik-ny-mi* ‘to show’) while, in other tenses, a repair strategy triggers less allomorphic stem variety (*e-lab-on* ‘I took’, *e-deik-sa* ‘I showed’). Against the simplistic traditional view according to which allomorphy reflects the “damage” done by phonological properties (see Bauer 1988), Drachman (2001) claims that allomorphy constitutes a normal stage of morphology, which supplies alternative forms optimally satisfying various contextual constraints. Following an optimality theory framework, he argues that it is created from the interplay of two basic constraints, markedness (e.g., ease of pronunciation) and faithfulness (e.g., information preservation). First, allomorphy results from the sacrifice of paradigm-faith in order to honor some other, more important, constraint for the concerned language. Second, the different realizations of a given morpheme favor the simplest (least marked) allomorph available (Drachman 2001: 113). Among the examples that Drachman (2001) gives to illustrate his proposal is the formation of the *-des* plural (*kafedes*, *papudes*) of nouns such as *kafes* ‘coffee’ and *papus* ‘grandfather’. He proposes that this formation is an optimal solution honoring two kinds of faithfulness: the cross-paradigm regularization to the common *-es*, and the preservation of the stem-final stressed vowel. Another illustration for Drachman’s analysis is given by Ralli, Melissaropoulou & Tsiamas (forthcoming) from the examination of nominal inflection in the Asia-Minor dialect of Moschonisi and Aivali. In this dialect, stem allomorphy occurs as a repair strategy for the elimination of inflectional complexity, targeting the cross-paradigm regularization. For instance, neuter nouns in *-os* (*xreos* ‘duty’) develop a stem allomorph *xreit-* in plural in order to adopt the most common plural ending *-a* (*xreita* instead of the Modern Greek form *xrei* ‘duties’).

Generally in Greek, there are nouns and verbs that show a form variation in their inflectional paradigms. For instance, in some verbs, there is a form difference between the stem that is used in the [–perfective] context, and the stem used in the [+perfective] one. To illustrate this phenomenon, consider a verb like *fevvo* ‘to leave’, where *fevγ-* is in a complementary distribution with *fiγ-* (*efiya* ‘I left’). The first appears in the context of the [–perfective] aspectual value, while the second is used in a context marked by [+perfective]. It should be noticed that *fiγ-* does not result from the application of a rule, since it constitutes a different case from the variation displayed by verbal types like *γraf-* vs. *γraps-* (e.g., *grafō* ‘I write-IMPERF’ vs. *grapso* ‘I write-PERF’), where the difference in the stem final consonant is conditioned by the morpho-phonological context: the [+continuous] /f/ becomes [–continuous] /p/ in front of another [+continuous] /s/. That is why Ralli (1988) treats this form variation as lexical, and postulates the existence of different allomorphs

within the lexical entries of the particular stems. In accordance with Lieber (1980, 1982), she considers that allomorphs of the same lexical entry are related to a morpholexical rule. The latter is a redundancy rule, and operates in the permanent lexicon since it does not have the status of a word-formation rule:

(5) fevγ ~ fiγ

For Ralli, stem allomorphic variation is considered to be a determining factor for the division of verbs into two inflection classes (conjugations). Crucially, the presence or absence of a systematic allomorphic variation split verbs into those which lack systematic allomorphy (X), and those which rely on the variation (Y~Yi). In the first inflection class, there are verbs like *γraf(o)* ‘to write’, while in the second inflection class, there are verbs like *mil(o)* ‘to speak’ whose stem ends in /i/ in the aspectual context of [+perfective]:

(6) mil ~ mili

Allomorphy also affects the stems of nouns. For instance, *psomas* ‘baker’, *kreas* ‘meat’, and *soma* ‘body’ display forms in –δ- and –t- respectively, in plural (e.g., *psomadēs* ‘bakers’, *somata* ‘bodies’), or in genitive singular (only for neuter nouns like *soma* -> *somatos*). These are the cases that are traditionally called ‘imparisyllabic’ nouns, as opposed to ‘parisyllabic’ ones that do not display a stem variation (e.g., *anθropos* ‘human being’).

(7)a. soma ~ somat
b. psoma ~ psomaδ

However, as reported in 2.2, this is not the only allomorphic variation in nouns since, according to Ralli, the majority of masculine and feminine nouns show a stem form ending by a a/i vowel in singular, and an allomorphic variation without this stem-final vowel in plural (see also Ralli forthcoming):

(8)a. maθiti ~ maθit
b. tamia ~ tami
c. xara ~ xar
etc.

It should be noticed that in early approaches (Hatzidakis 1905, Tsopanakis 1948, Seiler 1958, Mirambel 1959), the vowel that appears only in singular (8), or the /δ/ that appears in plural (7b), have been considered to be part of the inflectional endings. If we accept this analysis, it would lead us to the undesirable solution to be forced to accept different paradigms for nouns that are basically inflected in the same way (e.g., *psaras* ‘fisherman’, *maθitis* ‘student’, *tamias* ‘cashier’, *kafes* ‘coffee’, *papus* ‘grandfather’). This is why more linguistically-sound analyses have been proposed since then. With respect to nouns displaying a /δ/, Ruge (1969), Sotiropoulos (1972), Malikouti-Drachman (1970), and McKridge (1987) argue that the latter is phonologically inserted. More specifically, Malikouti (1970) proposes that /δ/ is inserted by a morpho-phonological rule whose application is determined by stress and the preceding vowel. Although obligatory for a considerable number of nouns (*psomas* ‘baker’), this rule does not apply to certain nouns, like *naftis* ‘sailor’

(*naftes* / **naftiðes* ‘fishermen’), or is optional to others (*pateres* / *pateraðes* ‘grandfathers’). For the latter, Malikouti supposes that the /ð/ insertion must be lexically specified (1970:46). The difference in treatment between nouns with obligatory and those with optional /ð/, or the older, less elegant, analysis of different inflectional endings, are correctly observed by Thomadaki (1994: 175), who adopts a more unified approach, along the lines of Ralli (1988, 1994), by postulating that different allomorphs (X and Xð), within the same lexical entry, accept the same set of inflectional endings. This solution offers the additional advantage of taking into consideration cases other than inflection, that is, words where a stem in –ð- appears in derived nouns (*psomað-iko* ‘bakery’). A lexically specified allomorphic variation is also adopted by Thomadaki for neuter nouns displaying a /t/ in genitive singular and in plural forms (*soma* ‘body’/ *somatos* ‘body-GEN’ / *somata* ‘bodies’). Contrastingly, in accordance with the trends of early generative grammar, Malikouti-Drachman (1970: 56) had proposed an analysis that is based on diachronic considerations. In her study, /t/ is part of the stem. It shows before the vowel of the inflectional ending, but is deleted when it is followed by a pause. A similar analysis was also adopted by Adams (1971) for the imparisyllabic masculine nouns with –ð- (*psomaðes* ‘bakers’ see above), who treats this –ð- as stem-final. According to Adams, in cases where the –ð- is not present, for example, in the nominative singular (*psomas*), an underlying form **psomað-s* undergoes a rule of cluster reduction.

3. Derivation

Derivation is generally considered as the core of word formation. Traditional grammars (e.g., Triantaphyllides 1991), as well as descriptive linguistic works (e.g., Sakellariades 1997) provide lists of derivational affixes. Within the structuralist tradition, there are attempts to deal with derivation (see, for instance, Sotiropoulos 1972), which however, do not cross the limits of a simple description.

More theoretical analyses appear in the mid-eighties. In particular, within a lexical-morphology framework, Ralli (1984, 1986, 1988) analyzes derivative formations in terms of morphological categories, that is, with the use of categories such as stem, derivational affix and inflectional affix.^{vii} She considers them to be the product of a word-formation rule (rule of derivation), which combines a stem and a derivational affix [Stem -> Stem + D(erivational) Af(fix)], and operates primarily at the first level of the lexical structure, and secondarily at the second level, as far as productive affixes are concerned (e.g., the passive participle affix –*men(os)*). The output of this rule is submitted to the application of another word-formation rule (Word -> Stem Infl, see section 2.1), which is responsible for building inflected words at the third level of the lexical structure. The rule of derivation produces a morphologically complex stem that receives its grammatical category and morpho-syntactic features (e.g., gender), via a percolation principle, which gives priority to information carried by the head (see Lieber 1980, Selkirk 1982).^{viii} In accordance with the right-hand head rule, postulated by Williams (1981), Ralli proposes that a derivational suffix assumes the function of a head, as opposed to prefixes, which are usually neutral with respect to headedness. However, following Joseph & Wallace (1984) who challenge the application of the right-hand head rule, Ralli denies the right-hand headedness as far as inflection is concerned, since in an inflectional structure, it is the stem that is responsible for the category, and not the inflectional part of the structure.^{ix} She establishes this claim on the observation that, in nominal

inflection, the same inflectional affixes may combine with words of a different category, e.g., *kozmos-NOUN* ‘world’ vs. *kalos-ADJ* ‘good’. It is important to note that this analysis relies on a morpheme-based conception of morphology, where all morphemes are listed in a depository of basic forms (lemmas or lexical entries), the so-called ‘permanent lexicon’ (see section 2.1).

While a lexical-morphology approach focuses on the interaction of morphology and lexical phonology, in other approaches, priority is given to the conjunction of morphology and semantics, as for example, in a model developed by Corbin (1987, 1991), for derivational morphology. Corbin considers derivation to be an autonomous grammatical component, perceived as a set of four subcomponents, hierarchically stratified. These are: a list of entries (the base), which are lexically specified for a number of characteristics, the derivational component containing word-formation rules, the post-derivational component, which is responsible for adjusting deep forms into surface ones (e.g., form adjusting by truncation as in the adjective *animerotos* < *anenimerotos* ‘uninformed’), and the so-called ‘conventional component’ whose task is to interpret unpredictable meanings of words on the basis of extra-linguistic reality. Word-formation rules are operations that simultaneously construct binary structures and assign a predictable meaning to the constructed words, which derives from the meaning of the constituent parts.

Corbin’s model has been applied to Greek derivational morphology, mainly by Anastassiadi-Symeonidi, in several of her papers. The author has dealt primarily with adjectival derivation, namely, with the derived adjectives in *-iatikos* (1994, 1998), *-tos* (1995), *-inos* (1998, 1999), *-istikos* (1998), *-iaris* (1998)^x, and *-odis* (2001). Accordingly, there also analyses for derived nouns, namely those in *-adiko* (Anastassiadi-Symeonidi 1997), *-ismos* (Anastassiadi-Symeonidi & Galani 1995), *-ada* and *-ia* (Efthymiou 1999a, 1999b, 1999c), and *-onas* (Fyntanis 2003). Since the meaning plays a major role in Corbin’s approach, in all these papers, there is a detailed and thorough description of the semantic properties of words that are assigned from the particular suffixes.

Among the major points of Corbin’s model, it is worth noting the concept of class marker. It refers to a meaningless suffix-like ending whose function is to give the word a suitable form, as far as its grammatical category and reference class are concerned. For instance, it has been argued by Anastassiadi-Symeonidi (1995) that *-tos*, in an adjective like *aspastos* ‘unbroken’, is not a real suffix, since *aspastos* does not derive on the basis of *spastos* (the two words have different meanings), or from a non-existing verb like **aspazo*. In the generative literature, forms like *aspastos* could be characterized as bracketing paradoxes, in that, in some morphologically-complex words, there is no one-to-one correspondence between the structure and the meaning (see Pesetsky 1985, Scalise, 1984, Di Sciullo & Williams 1987, Ralli 1988, etc.). Among the different solutions that have been proposed in order to account for this mismatch, Ralli (1988) has adopted Scalise’s proposal about the use of the concept of possible word for the Greek formations in *-tos*. She has assumed that *aspastos* derives from the prefixation of the privative prefix *a-* to a possible adjectival formation *spastos*, the latter being built on the combination of the verbal stem *spas-* and the suffix *-tos*. It should be pointed out, however, that in Corbin’s model, the status of a class marker is not attributed only to segments that participate in cases of bracketing paradoxes, but also to those which appear in morphologically-complex words whose form and meaning are not predictable. Thus, the segment *-ia* in a non-derived noun like *bunia* ‘fist, punch’ has been characterized by Efthymiou (1999abc) as a class marker. In the same way, Anastassiadi-Symeonidi (1998) argues that *-iaris*, in words

like *kseδontiaris* ‘toothless’, facilitates their listing in the referential class of adjectives which permanently assign a negative feature to the noun base, this feature being directly perceptible by the senses. However, both *-ia* and *-iaris* can function as suffixes in other contexts, that is, in words like *tiyania* ‘panful’ (< *tiyani* ‘frying pan’) or *karvuniaris* ‘charcoal dealer’ (< *karvuno* ‘charcoal’), where both the meaning and the structure are fully predictable.

Although the origin of several derivational affixes does not concern us here, it is worth noticing that it has been a favorite subject of investigation in a number of works. Among these studies, I should mention Petrunias (1988, 1991) who examines nouns in *-ia* (*filosofia* ‘philosophy’) and *-aria* (*alitaria* ‘group of bums’). According to his analysis, nouns in *-ia* come from Ancient Greek, in their vast majority, while those in *-aria* have a suffix of Venetian origin, which has recently entered Modern Greek, through the Ionian dialect. Thus, *-aria* should not be decomposed in *-ar* (< *-aris*) and *-ia*. Moreover, Symeonidis (1987) deals with nouns in *-itsi* (*koritsi* ‘girl’), claiming that most of them are based on the older hypocoristic forms in *-iskion* (*koriskion*), and Pantelidis (1998) shows the historical continuity of adjectives in *-otos* (*θolotos* ‘vaulted, arched’).

In the following lines, I focus on some specific derived formations that can be described within a generative approach.

3.1 Deverbal abstracts

It has been frequently suggested that deverbal nouns ending in *-si* (*sizitisi* ‘discussion’), *-sja* (*pidiksja* ‘jump’) and *-simo* (*treksimo* ‘run’) are derived on the basis of the aorist stem ending in *-s*, that is on the stem which contains the perfective marker *-s-* (see, for example, Hatzidakis 1907). Elaborating this hypothesis, Alexiadou & Stavrou (1998) have proposed that there is a formal and semantic link between the presence of *-s-* in deverbal nominals and the notion of perfectivity. On the contrary, Horrocks and Stavrou (2000) show that no such link exists and these nouns are derived on the basis of a stem ending in *-s* (e.g., *sizitis-*, *pidiks-*, *treks-* for the examples above), which, however, lacks any fixed morpho-syntactic and semantic properties. According to their analysis, this stem is the product of a remorphologization process, according to which the verb root and the initial segment *-s-* of a number of ancient derivational suffixes (e.g., *-sis* as in *taksis* ‘order’) came to be reanalyzed as a single entity. In addition, Horrocks and Stavrou claim that the etymologically distinct *-s-*, a perfective-value marker of the paradigms of the aorist and the future (e.g., *elu-s-a* ‘I set free’, *lu-s-o*: ‘I shall set free’), has lost its independent character and is now confused as part of the verb stem. Furthermore, it is predicted that only verbs with a *s-* stem can form novel deverbals in Modern Greek, (e.g., *rufo* ‘to sip/suck up’ vs. *rufiksja*). However, as a large number of counter-examples from the set of commonly produced verbs in *-evo* (*mazevo* ‘to collect’ vs. *mazema* ‘collection’, *amazeftos* ‘uncollected’, *mazemenos* ‘collected’, *xorevo* ‘to dance’ vs. *xoreftis* ‘dancer’) and *-o* (*parato* ‘to stop/give up’ vs. *paratimos/paratima* ‘giving up’, *paratimenos* ‘given up’) reveals, this is a strong prediction. While it applies with no exception to nouns in *-si*, *-simo*, *-sja*, it does not cover the whole range of productive result (or sometimes action) nouns in *-ma* and *-mos*, agentive nouns in *-tis*, adjectives in *-tos* and passive participles in *-menos*.^{xi} It should be noticed that, in some cases, even these derivatives contain an *-s-* (e.g., *perno* ‘to pass’ vs. *perazma/perazmenos*, *xamojelo* ‘to smile’ vs. *xamojelastos*). That is why,

following a lexical-morphology framework, Ralli (1988) had already suggested the existence of a s-stem, as an allomorphic variation of the basic verb stem, which is deprived of any perfective value, and applies only to those verbs whose deverbal derivatives contain a /s/, in spite of the fact that their suffixes do not begin by /s/. In other words, in Ralli's analysis, this s-stem allomorph is combined only with the suffixes *-ma*, *-mos*, *-tis*, *-tos*, and *-menos*, and not with *-si*, *-sja* and *-simo*, which, according to Ralli, are lexically listed as having an initial /s/. As opposed to this, Horrocks and Stavrou seem to suggest that the latter are rather *-i*, *-ia* and *-imo*, the /s/ being a meaningless final segment of the stem. Their postulation of the s-stem is theoretically justified by Aronoff's (1994) separationist conception of morphology, namely by the approach that the inflectional paradigms of verbs are organized around 'meaningless', purely morphological, stem types. Notice now that although both Ralli and Horrocks & Stavrou invoke the absence of a perfective value of the s-stem, they differ in the postulation of a s-suffix of perfectiveness. For Horrocks & Stavrou the aspectual opposition \pm perfective is a matter of choice between a pair of stems, whether they are morphologically related or simply suppletive. For Ralli, there is an aspectual marker *-s-* which gives the perfective value to forms like *elisa*, but there are also allomorphic variation of stems that are inherently marked as perfective (e.g., *fiγ-* in *efiγa* 'I left', see (5) above). In the inflected forms of the aorist and future, this inherent markedness blocks the combination with the *-s-* marker (**efiγsa*). As for the s-stem, which appears to a certain number of verbs, it is assumed to be a synchronic allomorphic variation of the basic stem, which is used for derivational purposes. For example, in Ralli's analysis, a verb like *perno* 'to pass' has the following allomorphs, which are in a complementary distribution: *pern* (in the inflectional context of imperfective, e.g., *perno* 'I pass', *pernusa* 'I was passing'), *pera* (in the inflectional context of perfective, e.g., *peraso*, *perasa*), and *peras-* for the production of deverbal nouns whose suffix does not start by s- (*aperastos* 'non-passable').

The deverbal action suffixes *-ma* and *-simo* have also been investigated under an optimality-theory framework by Malikouti-Drachman & Drachman (1995). In a previous analysis (1989), the authors had proposed that *-ma* and *-simo* are allomorphic realizations of the same deverbal suffix, the distribution of which is determined by the number of syllables of the verb stem in the perfective context: *-simo* selects monosyllabic stems, while *-ma* is attached to stems of more than one syllables (compare *klepsimo* 'robbery' with *aniγma* 'openness'). In (1995), they try to explain why there is such a distribution, by referring to the prosodic constituents of subminimal [σ] and minimal [σ σ] metrical feet, as well as to the highly ranked faithfulness constraint which preserves the prosodic constituents. Thus, the distribution of the two suffixes is given as [σ]+simo and [σ σ] + ma, respectively. The same analysis is further extended to the distribution of *-tis* and *tís* suffixes, in the agentive deverbal nouns, as well as to the andronymic *-ena* and *-ína*, where the first attaches to the subminimal foot, and the second to the minimal one (Malikouti-Drachman & Drachman 1995:191-194):

- (9)a. [σ] + tis : [klev]-tis 'thief'
- b. [σ σ] + tís : ka[θaris]-tís 'cleaner'
- c. [σ] + ena : [kónd]-ena 'proper name'
- d. [σ σ] + ína : papa[dopul]-ína 'proper name'

However, since the allomorphic variation in the last case is realized as a stress difference (*-tis/-tís*), or as form and stress difference (*-ena/-ína*), the suffixal allomorphs should be lexically marked for their stress properties.^{xiii}

The same topic of form variation of almost synonymous nominal derivational affixes is further investigated by Drachman, Kager & Malikouti-Drachman (1997) and by Anttila & Revithiadou (2000). Their analysis is based on the previously explained idea that prosody conditions allomorph selection, and that different affixal forms corresponding to a more or less single meaning/function constitute allomorphs of the same entry. For Drachman, Kager and Malikouti-Drachman (1997), the lexicon provides two allomorphs of a particular affix, which are evaluated as a set of candidate outputs. The selection of a particular allomorph is due to the prosodic structure of the stem base, and the [stem affix] concatenation allows for the minimal violation of constraints. More recently, Anttila & Revithiadou (2000) have added that form variation is caused by the desire to create words of a perfect prosodic structure and of perfect rhythm. Their proposal is illustrated with examples from adjectival formation in *-inos* and *-enjós* (compare *koralinos* vs. *koralenjós* ‘of coral’ < *koralí* ‘coral’).

3.2 Passive Participles in *-menos*

According to a study of Greek passive forms by Lascaratou and Philippaki-Warburton (1983), passive participles in *-men(os)* are lexically derived adjectives, while passive verbs are syntactically derived.^{xiii} They argue that forms in *-men(os)* are not verbs, do not derive from verbs, and occur in positions typical of adjectives. For instance, in compounding, they can be preceded by an agentive noun, while verbs cannot. Compare the acceptable *iljokamenos* ‘sun burnt’ with the unacceptable *iljokeyome* ‘to be burnt by the sun’. Moreover, as opposed to verbs, the *-men(os)* participles occur in prenominal position as modifiers of nouns, and conjoin freely with adjectives. As Smirniotopoulos (1992) argues, although Lascaratou and Philippaki-Warburton are right to claim that passive participles are produced by lexical rules, they have neither demonstrated that the forms in *-men(os)* derive from passive verbs, nor that these verbs are formed in syntax. Smirniotopoulos illustrates that the derivation of passive verbs cannot be a syntactic phenomenon, since it is subject to a considerable number of exceptions. For instance, in a sample of 366 transitive active-form verbs, 120 have no passive correspondent forms (1992:98). In addition, some passive verbs display an idiosyncratic meaning. Consider, for example, a verb like *ksepetyome* ‘to grow too fast’, as compared to *ksepeto* ‘to finish in a hurry’. Smirniotopoulos concludes that passive verbs are also lexically derived. The fact that a verb like *iljokeyome* does not exist is not a problem since lexical rules have gaps. Moreover, there are compound verbs like *thalasodernome* with their correspondent participles (e.g., *thalasodarmenos* ‘sea bitten’), which bring support to the claim that both passive participles and verbs are derived by lexical rules. According to Smirniotopoulos, the rules responsible for producing passive verbs are zero-derivation rules, which apply to underspecified basic stems^{xiv}, in order to assign the verbal category, the inflectional class, but no phonological material. Although passive participles are derived by the application of derivation rules, applying to particular forms of stems, they can or cannot be specified for passive (e.g., the non-passive *kimizmenos* ‘slept’ derived on the basis of the stem form *kimis*). Thus, the no one-to-one match between passive verbs and passive participles can be accounted for.

By postulating different forms for stems on the basis of deriving Greek word forms, Smirniotopoulos agrees with Ralli (1988) on two basic points. First, that Greek word formation is stem based, and second, that different allomorphs are involved in the production of word forms. Yet, the major difference of the two analyses lies on the fact that while inflection is considered to be a non-word formation process for Smirniotopoulos, Ralli includes inflection in the lexicon, following the strong lexicalist hypothesis.

3.3 Prefixes

Prefixation constitutes one of the most productive word-formation processes of the language. Prefixes belong to two categories: bound morphemes and free morphemes. Among the latter, most linguistic analyses include the set of Ancient Greek prepositions (see, among others, Philippaki-Warburton 1970, Sotiropoulos 1972, Malikouti-Drachman & Drachman 1989, Ralli 1992, Drachman & Malikouti-Drachman 1994, Xydopoulos 1996, Smirniotopoulos & Joseph 1998, Efthymiou 2001ab, 2002, to appear). As stated by Smirniotopoulos (1992), the basic criteria for assigning the prefixal status to these elements are the fixed form, the closed-class membership, and the idiosyncratic meaning that is developed when they combine with a base. It should be pointed out that in most traditional grammars, the combination between an Ancient Greek preposition and a base is interpreted as part of the compounding process (cf. Triantaphyllides 1991).^{xv} In fact, the distinction between compounding and prefixation with respect to these elements is not very clear. For instance, while combinations with the adverbial *ksana* (e.g., *ksanayrafo* ‘to re-write’) are treated as compounds by Ralli (1988, 2002bc), Malikouti-Drachman & Drachman (1989), Rivero (1992), and D. Holton et al. (1997), there are also analyses which refer to it as a prefix, focusing on the similar behavior between *ksana* and a prefix like *para* (*parafuskono* ‘to over-inflate’), as for example, in Philippaki-Warburton (1970), Malikouti-Drachman (1996), and Smirniotopoulos (1992).^{xvi}

According to Malikouti-Drachman & Drachman (1989), prefixes are phonologically distinguished into cyclic and post-cyclic. Cyclic prefixes attach to stems and form one prosodic unit/component with it, while post-cyclic prefixes are prosodic units on their own, and attach to words. Two of the diagnostic tests for this classification are the difference in stress and the distinct derivational suffixes that are combined with the two categories. For instance, the imperative form of a verb like *katavrexo* ‘to sprinkle’ is stressed on the antepenultimate syllable (*katávrexe*), while the correspondent form of a verb like *ksanavrexo* ‘to re-damp, to re-drench’ preserves the stress of the verb base (*ksanavre ʒxe*). In addition, while the noun derivative of *katavrexo* is *katavreyma* (with the addition of the derivational suffix *-ma*), the deverbal noun of *ksanavrexo* is formed with the derivational affix *-simo* (*ksanavreksimo*). Malikouti-Drachman & Drachman (1995), and Malikouti-Drachman (1996) have recently reinterpreted the distinction into cyclic and post-cyclic prefixes in terms of the constraint-based framework of optimality theory. They suggest that there is a close relation between prosody and morphological structure by pointing out that prosody guides the well-formedness of a morphological formation. Therefore, in combinations involving non-cyclic prefixes (e.g., *para* in *paravrexo* ‘to over-damp’), there is satisfaction of an alignment constraint, according to which non-cyclic morphemes participating in [stem word] structures, are recursively aligned with the prosodic constituent Pwd, and the stress of the prosodic constituent is preserved. On

the contrary, the morpheme boundary between a cyclic prefix (e.g., *kata* in *katavrexo*) and its base in [stem stem] structures is not kept, resulting into the non-satisfaction of the alignment constraint. Thus, the prosodic structure overrides the morphological structure and stress falls on a different syllable from the one of the base.

With respect to stress, Revithiadou (1996) distinguishes three types of prefixed structures: a. [[prefix stem] ending] with antepenultimate stress rule (*análadōs* ‘unoiled’), b. [prefix [stem ending]] with stress preservation (*imifortiyó* ‘van’), and c. [prefix [stem ending]] with antepenultimate stress rule (*karamónaxos* ‘all alone’). The key issue for this distinction is that morphological headedness may determine the stress properties of word structures, an idea that has been put forward by Ralli (1988).^{xvii} According to this, the ending is the head of the first structure, the constituents of which are parsed into one prosodic word (PrWd), while in the second structure, stress follows the requirements of the head, which is the whole constituent [stem ending]. However, as opposed to Malikouti-Drachman & Drachman (1989, 1995), Drachman & Malikouti-Drachman (1994), and Nespor and Ralli (1994, 1996) who make a distinction only in stem-based and word-based structures with respect to stress, Revithiadou distinguishes an intermediate category (see c. above) which has word-based morphological structure but its stress conforms to the stem-based one. She argues that the stress of the latter type is not due to the morphological structure, but to an identical prosodic domain where all elements are parsed into one PrWd.

The morphological category (i.e., stem or word), which undergoes prefixation, plays a major role in Ralli’s analysis (2002bc) of Greek prefixes. Ralli argues that a classification into prefixes attaching to stems and those attaching to words is of particular significance not only to prefixation, but to morphological theory in general. On the basis of evidence taken from verb formations with the prefixes *kse* (*kseyrafo* ‘to erase’) and *para* (*paravlepo* ‘to ignore’, *parakano* ‘to overdo’), as well as from compounds with *ksana* (*ksanayrafo* ‘to re-write’), she shows that this classification accounts for several differences and similarities not only among prefixes, but also between prefixation and compounding. For instance, while *para* is a prefix, in some cases, it displays properties that are found in adverbial words like *ksana*. In its excessive meaning (*parakano*), *para* does not develop an idiosyncratic meaning, and has a loose relation with the base. On the contrary, under a meaning that denotes a parallelism^{xviii} to the meaning of the base (*paravlepo*), *para* displays a particular closeness to the base, in that it may develop a non-compositional meaning, and be subject to some phonological changes, as is the case of vowel deletion in a verb like *parexo* ‘to provide’ (*para* + *exo* ‘to have’). In the second case, it is assumed that *para* is similar to a prefix like *kse*, and is attached to stems, while in the first case, *para* attaches to words, in the same way as *ksana* also combines with words.

The meaning of some of the Greek prefixes has been particularly examined by Efthymiou (2001ab, 2002ab, to appear ab), namely the prefixes *a-*, *mi-*, *kse-*, *ek-*, *pro-* and *apo-*, following Corbin’s model.

4. Compounding

In normative and reference grammars, compounding is generally the least described word-formation process.^{xix} There is a first attempt to present Greek one-word compounds by Papageorgiou (1975), which, however, does not cross the limits of a traditional descriptive approach.^{xx} In Greek linguistic literature, the majority of works deal with the structure of compounds. As far as the semantics of these constructions

are concerned, Giannouloupoulou (2001) argues that they frequently develop a non-compositional meaning, which does not follow from the structural relation of their members. As an explanation for the non-compositional meaning, she invokes a lexicalization procedure within the framework of grammaticalization theory (Hopper & Traugott Closs 1993).

Generally, all linguists studying compounding agree that it is one of the richest sources of word-formation today in everyday language, as well as in scientific terminology, depending on the particular type of compounds we deal with (see, for instance, Anastassiadi-Simeonidi 1996).

4.1 One-word compounds

According to Ralli (1988, 1992), one-word compounds are the product of morphology. Within a lexical-morphology framework, she proposes that the basic rule for their formation is Stem → Stem Stem, mainly operating at the second level of a stratified word-formation component. This rule is responsible for producing a compound stem, which accepts an inflectional ending at the third level of the component after being submitted to the rule Word → Stem Infl (see also section 2.1 above).

Relating stress (prosody) to morphological structure, Malikouti-Drachman & Drachman (1989), Drachman & Malikouti-Drachman (1994), and Malikouti-Drachman (1997) have proposed that one-word compounds can be distinguished into the following categories: a) [stem stem] with a highly idiosyncratic second member (e.g., *kapnoδοχος* ‘chimney’ containing the [+learned] *-δοχος*). b) [stem stem], constituting one stress unit, which receives stress on the antepenultimate syllable (e.g., *likoskilo* ‘wolf-dog’). c) [stem word], which shows a stress-preserving property of the second constituent (e.g., *katsikokleftis* ‘goat-thief’). While the first and the second types of compounds are built at the first and the second level, respectively, of a stratified word-formation component, the third type belongs to the most productive third level.^{xxi} They further claim that while [stem stem] compounds have one or two domains for stress, depending on the case, [stem word] compounds have only two domains. Accordingly, there are varying types like *paljófilos* ‘old friend/pal’ (one-stressing domain) and *paljofilos* ‘lousy friend’ (two-stressing domain).

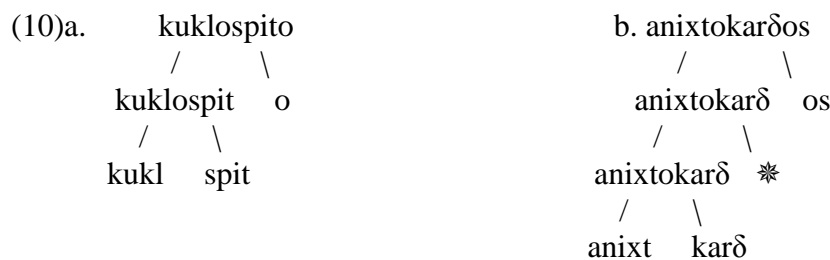
A general structural differentiation in [stem stem], [stem word] and [word word] compounds is adopted by Ralli & Nespors (1994, 1996) who propose that the basic criteria for this distinction are stress and inflection. [stem stem] compounds are submitted to the compound-specific antepenultimate-syllable stress rule, and contain an inflectional ending which may be different from the ending of the second member, when this member is taken independently. *Psarokaiko* ‘fish-boat’ is a typical example of this category. It ends in *-o* (the word *kaiki* ‘boat’ ends in *-i*), and stress falls on the antepenultimate syllable, while *kaiki* is stressed on the penultimate. [stem word] compounds have a word as their second member (e.g., *taverna* ‘tavern’ in *psarotaverna* ‘fish tavern’). As such, they are submitted to a lexical structure-preservation rule (cf. Emonds 1985), according to which, stress and inflection of the second member are not changed when this constituent participates in compounding. For Nespors and Ralli, it is the same principle that makes [word word] structures (*zoni asfalias* ‘security belt’) to keep their two phonological words.^{xxii}

The issue of stress in [stem word] compounds has also been approached by Revithiadou (1997). She argues that this type of compounds sometimes exhibit a

prosodic structure which is typical of [stem stem] compounds, in that it is subject to the antepenultimate stress rule (e.g., *lemonódasos* ‘lemon forest’), as opposed to compounds like *psarotave ἄρνα*, which always follow the stress of the second member (*tave ἄρνα*). Thus, Revithiadou proposes that compounds of the *lemonódasos* type range between [stem stem] and [stem word] compounds. They have the [stem word] structure, but are mapped onto one prosodic word.^{xxiii}

Finally, an additional type of [word stem] compounds is proposed by Raftopoulou (2001, 2002), mostly for Ancient Greek compounds with word-internal case, such as *nyktilampes* ‘who shines at night’, and also for some of their relics in Modern Greek (e.g., *angeliaforos* ‘messenger’).

In Ralli’s (1988, 1992) analysis, compounds are basically defined as right headed (see Williams 1981). These are the endocentric compounds, while those that do not contain a head within the confines of their structure are analyzed as exocentric, and their basic morpho-syntactic features, as well as their category and the basic meaning, are considered to derive by a zero-suffix which is added at the compound stem, before the attachment of the inflectional ending. For instance, the following representations are supposed to characterize an endocentric compound like *kuklospito* ‘doll’s house’ (a) and an exocentric one like *anixtokarδos* ‘open-hearted’ (b).



4.1.1 The linking vowel

It should be noticed that the –o- appearing between the two members of Greek compounds has been described by Triantaphyllides (1991:153), and adopted by Ralli (1988) and Smirniotopoulos (1992), as a composition vowel (συνθετικό φωνήεν), which is added to the stem of the first constituent. In a more detailed study of Greek compounds, Ralli (1992:153) has observed that, in all contexts, this element invariably occurs as –o- something that does not justify a possible treatment as a thematic vowel, or as an inflectional element. She calls it ‘linking vowel’ and proposes a morpho-phonological status, assuming that it is inserted by a string-dependent rule, which applies in a compounding environment, when the first member is a stem and the second begins by a consonant. In fact, compounds containing words as their first constituent (e.g., *ksanakano* ‘to redo’) or with a vowel-initial second constituent (e.g., *aksiayapitos* ‘worth loving’) are not submitted to the application of this rule (see also Ralli 2002b).^{xxiv}

Elaborating on the semi-morphological or semi-phonological status of –o-, within a natural-morphology framework (Dressler et als. 1987), Crocco-Galeas (2001) proposes that it is an interrational interfix whose function is to signal the morpheme boundary between the members of a compound, in a stem-based language like Greek. In an effort to explain why this element does not extensively occur in other languages, she puts forward a particularly strong claim about the actual Greek morphology type, by relating the presence of –o- to a language-specific strategy, which compensates the

predominance of its stem-based morphological structures as opposed to a universal preference for word-based morphology.

Within an optimality-theory framework, the –o- in compound structures has also been examined by Malikouti-Drachman (1996).^{xxv} Without entering into a discussion whether it has an affixal or a non-affixal status, Malikouti-Drachman tries to interpret the presence or absence of –o- in word types like *paljaloyo* and *paljoaloyo* ‘bad horse’ as resulting from a different ranking of the constraints ONSET and ALIGN LEFT. The first constraint requires that every syllable has an onset, thus, in a chasmody environment, one of the vowels may be deleted. The second constraint aligns the edge of a morphological category with the edge of a prosodic category. Thus, when –o- is deleted (*paljaloyo*), the ONSET constraint is ranked higher than the ALIGN LEFT one. The opposite ranking interprets the type *paljoaloyo*, where the boundary of a prosodic word (*aloyo*), which interferes between the stem *paljo* ‘old, bad’ and the word *aloyo* ‘horse’ blocks the application of the phonological rule of /o/ deletion.

Diachronically, Anastasiadi-Symeonidi (1983) and Ralli & Raftopoulou (1998) have shown that –o- comes from the ancient thematic vowel of the second declension nouns in –os/-on (e.g., *toksoforos* ‘bowman, archer’, *tokson* ‘bow’). They observe that, already in pre-classical period, it had been analogically used in compounds containing as first members nouns that belong to other declensions too (e.g., *psychopompos* ‘soul guide’, *psyche*: ‘soul’). Nevertheless, compounds displaying vowels different from /o/, between the first and second member, are also common (e.g., *nyktilampes* ‘night shining’). Following Ralli & Raftopoulou, a grammaticalization of –o- into a linking element might ended around the Hellenistic period, where there are no attested instances of other vowels that are productively used between the first and the second member of novel formations.

4.1.2 Verbal compounds

As opposed to many languages where verbal compounding is uncommon, Modern Greek displays a significant number of compounds whose second member is a verb. Most of these compounds have an adverb at the non-head position (e.g., *sixnoroto* ‘to ask frequently’), while fewer constructions display a noun (e.g., *xartopezō* ‘to play cards’).

According to Rivero (1992), [adverb verb] constructions are base generated in syntax as VP structures, which contain adverbs similar to NP complements. These adverbs form complex words with the verb by the syntactic process of incorporation. According to Baker (1988), incorporation is subject to the Head Movement Constraint, and has been proposed for nouns that are traditionally considered to be arguments of the incorporating verb head. Rivero (1992: 290) argues that by treating compounding as a subcase of constructions with noun incorporation, the analysis correctly distinguishes between the class of manner adverbs that function as complements and may incorporate (e.g., *sixna* ‘often’ as in *sixnorota* ‘(s)he asks frequently’ above), and those that function as predicates, or non-complements, and fail to incorporate (e.g., the time adverbs like *akomi* ‘yet’ as in **akomimilai* ‘(s)he still speaks’).^{xxvi}

Rivero’s arguments about a syntactic account of [adverb verb] complexes have been questioned by Kakouriotes, Papastathi and Tsangalidis (1997). They observe that beside the fact that the meaning of these complexes is often lexicalized, Rivero offers no sufficient and independent evidence for distinguishing adverbs that incorporate from other similar adverbs that fail to incorporate (e.g., compare

ksanayrafo ‘re-write’ < *ksana* ‘again’ + *γrafo* ‘write’ to **paliyrafo* ‘write again’ < *pali* ‘again’ + *γrafo*). In addition, in many cases, there are verbs that do not allow incorporation (e.g., **sostoferome* ‘to behave correctly’ < *sosta* ‘correctly’ + *ferome* ‘to behave’). In the same vein, Smirniotopoulos and Joseph (1997, 1998) note that although some of [adverb verb] combinations are very productive (see the *ksana*-verb formations), they do not fully respond to the following predictions that usually should hold in case of a syntactic incorporation account.

- a) For every phrasal combination of Verb + Adverb, there is a corresponding composite. The dubious acceptability of the verb **?ksanaperijelo* ‘re-mock’ (< *ksana* + *perijelo* ‘mock’), as opposed to the perfectly acceptable phrasal form *ton perijelasan ksana* ‘they mocked him again’, constitutes an exception to this prediction (Smirniotopoulos and Joseph 1998: 456).
- b) If there is no phrasal combination, there is no corresponding composite and every composite has a phrasal counterpart. Note that to the composite *ksananjono* ‘to rejuvenate, to become young again’, mentioned by Mendez-Dosuna (1997), there is no independent phrase *njono ksana* or independent verb **njono*.
- c) Every composite is compositional in meaning, and shows no idiosyncratic meaning differences from its phrasal source. However, there are *ksana*-verb composites that develop a non-predictable meaning (as well as a non-predictable syntactic behavior) that is not determined compositionally from the combination of *ksana* with the verb. Consider the examples in (11) for an illustration to this last observation, taken from Ralli (2002bc).

(11)a. *den prosekse ke ksanakilise*
 Lit. (S/he) wasn’t careful and relapsed
ksanapjanete me tin idja dulja
 Lit. (S/he) is re-taken with the same job
 ‘She starts again the same job’

b. **den prosekse ke kilise ksana*
 **den pjanete ksana me tin idja dulja*
 vs.

c. *den prosekse ke kilise ksana sto vurko*
 Lit. (S/he) wasn’t careful and rolled again in the mud
den pjanete ksana stin pajiða
 Lit. (S/he) is taken again in the trap

Generally, on the basis of productivity and idiosyncrasies in meaning that [adverb verb] complexes show, Smirniotopoulos and Joseph (1998) claim that they are compounds, or affixed forms, resulting from the operation of lexical rules, while Ralli (2002b) concludes that the [*ksana* verb] formations are compounds, which are built in an autonomous morphological component.

With respect to [noun/object verb] composites (e.g., *trofodoto* ‘give food’ < *trofi* ‘food’ + *-doto* ‘give’), which are also supposed to derive via incorporation according to Rivero’s account, Smirniotopoulos and Joseph (1998) show that, in their vast majority, they are not fully productive, and do not display a non-compositional meaning. In other words, their characteristics are more consistent with a lexical treatment than with a syntactic one. It is important to repeat what Smirniotopoulos and Joseph (1998: 447) point out about the non-syntactic status of [adverb verb] complexes, which offer “an argument against frameworks in which morphology is

collapsed into the syntactic component without being a separate component of grammar”.

4.1.3 Deverbal compounds

Greek deverbal compounds are usually endocentric formations whose head derives from a verb, and the non-head may be interpreted as an argument to the head:

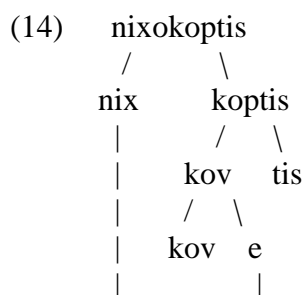
- (12)a. *iliovasilema* < *ili-* *vasilema*
 sunset sun set
 b. *xartopektis* < *xart-* *pektis*
 card player card player
 c. *laomisitos* < *la-* *misitos*
 heated by people people hated

According to Ralli (1989, 1992), the structure of a Greek deverbal compound is [stem [V-affix]], where, the deverbal constituent derives before the compounding process takes place. Evidence for this proposal comes from argument saturation inside the compounds, which is restricted to a non-subject argument saturation by the non-head, i.e., by the left-hand member. That the subject plays no role in the compound-internal argument saturation is proved by the ungrammaticality of compounds such as **iliokeo* ‘to sun burn’, where *ili-* acts as the subject of the verb *keo*. In spite of the absence of **iliokeo*, a participle/deverbal adjective *iliokamenos* ‘burnt by the sun’ is grammatical, where the same nominal stem *ili-* has the role of a by-object to the deverbal adjective/participle *kamenos* ‘burnt’. Following a lexical functional grammar (LFG) framework (see Bresnan 1982), Ralli argues that the grammaticality of the latter is due to the presence of the derivational affix *-men(os)* which lexically affects the argument structure of the active verb base *keo* by assigning an object function (by-object) to the subject.

The importance of affixation (both derivational and inflectional) in argument/theta-role saturation inside the deverbal compounds is also stressed in Ralli (1996) and Di Sciullo & Ralli (1994, 1999). In particular, overt inflectional affixation is related to the presence of a rich variety of theta-roles that can be saturated inside the compounds. Following a minimalist framework (Chomsky 1995), where language variation is reduced to morphological variation, the authors claim that languages with strong morphology (i.e., with overt realization of inflectional features), such as Greek, allow a variety of arguments/theta-roles to be saturated within compounds, whereas languages with weak morphology (i.e., with no overt realization of inflectional information), such as English, allow for a more restricted set of arguments/theta-roles to be saturated. In fact, in Greek compounds, there is a great range of theta-roles that are saturated:

- (13) Agent: *thalasodarmenos* ‘sea-bitten’
 Theme: *kapnokaliertia* ‘tobacco cultivation’
 Instrument: *oksiyonokolisi* ‘welding’
 Location/source: *uranokatevatos* ‘sky-come-down’
 Instrument/Material: *plakostrosi* ‘flat-stone paving’
 Goal and Theme: *ayrotoðanioðotisi* ‘farmer-loan-giving’

Di Sciullo and Ralli (1999) further propose that the two members of a deverbal compound are in an overt adjunct-head relation, the left-hand member being the adjunct and the head the deverbal noun. This relation explains the semantic interpretation of the left-hand constituent as a modifying element of the deverbal head. Since the left-hand constituent is also interpreted as an argument of the head, the authors assume that there is a complement-verb relation in a deeper level, which is not visible to the phonological as well as to the conceptual-intentional levels. This relation is represented as a binary structure containing the verb stem and an empty element at the complement position, the latter being linked to the adjunct. According to Di Sciullo (1996), no movement is allowed in morphological structures. Therefore, there is no lexical material appearing in the complement position that can be moved leftwards leaving a trace. Thus, the only way to have a coindexation between the complement and the adjunct is by a link operation. The following representation illustrates the internal structure of a deverbal compound like *nixokoptis* ‘nail clipper’. For the sake of the argument no distinction is made between the derivational suffix (-*ti-*) and the inflectional one (-*s*).



It is worth adding that within a morphological structure, theta-role saturation is also possible by a derivational suffix. In the compound described above, the derivational suffix *-ti-* saturates the agent theta-role of the verb. See Kakouriotes (1993) for a detailed study of theta-role saturation by *-ti-*.

Along the lines of the analysis proposed by Ralli (1992), the general issue of argument structure in connection with morphology, namely derivation, inflection and compounding, has also been investigated by Mela-Athanasopoulou (1997, 2001). She shows the effect that a deverbal suffix like *-simos* (e.g., *posimos* ‘drinkable’), or an inflectional suffix like *-is/-es* (e.g., *sizmopathis* ‘hit by earthquake’) may have on the argument structure of the root verb. She also approaches deverbal compounds in *-ma* (e.g., *pondikofayoma* ‘rat eating’), *-menos* (e.g., *pondikofayomenos* ‘rat eaten’), and *-simo* (e.g., *anemoðarsimo* ‘wind-sweeping’), where argument saturation occurs by the first member of the compound structure.

Moreover, the same issue has also been studied by Szigeti (1998), under a more syntactically oriented perspective. In particular, he deals with some theoretical and empirical problems related to Projection Principle, as has been formulated by Chomsky (1981), and proposes an analysis within the framework of a representational model of grammar, along the lines of Brody’s (1995) Lexico-Logical Form model.

4.2 Multi-word compounds

According to Anastasiadi-Symeonidi (1986), there are multi-word units (she calls them ‘lexical phrases’) that are distinguished from other noun phrases (she calls them

‘free’), because they do not have a fully compositional meaning, and are not accessible to some common syntactic operations. For instance, in a two-member lexical phrase, no syntactic operation can affect their internal structure by moving, inserting, or replacing a constituent. Lexical phrases belong to three types: N + N-GEN (*zoni asfalias* ‘security belt’), N + N-NOM (*pedi thavma* ‘wonder boy’) and A + N (*emfilios polemos* ‘civil war’). Because of their different structural and semantic behavior, Anastasiadi-Symeonidi proposes that lexical phrases are like lexical units, and are analyzed in a different manner than free noun phrases (the analysis is provided within the EST framework of Chomsky 1965, 1970). Crucially, for the first time in Greek linguistic literature, the notion of lexical item is extended in order to include constructs that do not coincide with simple words, but have a multi-word structure.

The atomic character of these constructions, with respect to syntax, is also studied by Ralli (1990, 1992) who considers lexical phrases as a particular kind of compounds, which she calls ‘word constructs’. However, Ralli differentiates these constructs from one-word compounds on the basis of certain criteria, such as stress, headedness and inflection.^{xxvii} In fact, N + N lexical phrases contain two phonological words (typical compounds constitute one phonological word formations), are left-headed (contrary to one-word compounds which are right headed), and inflectional information marks both constituents, as opposed to compounds where inflection appears to the right edge of the word. According to Ralli (1992), an appropriate treatment of these items should consider both phrasal and word properties. Along the lines of Borer (1988), she proposes to regard them as having been formed within a word-formation component operating in parallel with syntax, which allows us to account for the fact that some word formations are opaque to syntactic operations and some others are not (15). In this framework, one-word compounds are supposed to be available to syntax prior to the level of D-structure, while lexical phrases are formed in a morphological level interacting with the syntactic S-structure level: while the first are not accessible to syntactic operations, the second may be subject to a syntactic operation, like agreement in A + N formations.

(15)	Word-Formation Component		Syntax
	Compounds	→	D-Structure
	Word-Constructs	→	S-Structure

A more detailed account of the A + N lexical phrases is found in Ralli & Stavrou (1995, 1998). Elaborating Ralli’s (1992) proposal that lexical phrases are compounds and, as such, should be treated within a morphological component, they show that not all instances of the particular set of constructions are morphological. Although formations like *mavri lista* ‘black list’ with a non-compositional meaning are compatible with the assumption that they are not syntactic formations, there are other constructions, which can be considered to be built in syntax (e.g. *proedriko diatagma* ‘presidential decree’). Ralli & Stavrou claim that although the structure of the latter presents a number of properties similar to those of compounds, these properties are due to the nature of the adjectives (the left-hand constituents) and their structural relationship with the noun they modify. These adjectives are relational (also called ‘pseudo-adjectives’ by Anastasiadi-Symeonidi 1986), and, in their vast majority, derive from object-denoting nouns, via a process involving the derivational

textual functions with multi-word units in Greek, she concludes that these similarities constitute strong evidence in favor of the compoundhood of the Greek structures.

4.3 Bound stems in compounding

A particularly productive process in Greek compounding is word formation with the use of a bound stem, that is, with a stem which never appears as an independent word even after been submitted to an inflectional process. Most bound stems are second members in a morphologically-complex word (17a), but there are also occurrences appearing at the lefthand side (17b):

- (17)a. -*logos* : *γλωσολογος* ‘linguist’
 -*maxos* : *ταβρομαξος* ‘bullfighter’
 -*ktonos* : *πατροκτονος* ‘patricide’
 b. *radio-* : *ραδιοθεραπια* ‘radiotherapy’
tile- : *τιλεπικινονιες* ‘telecommunications’

Word formation with a bound stem constitutes a borderline case between derivation and compounding because of the uncertainty as to whether it should be treated as derivation or compounding. In fact, Anastasiadi-Symeonidi (1986) focuses on the non-free character of these elements, and considers them to be a particular kind of affixes the so-called ‘confixes’, following Martinet’s (1960) terminology. Ralli (1992), however, places them closer to stems on the basis of the following criteria:

- a) They do not subcategorize to particular bases, as opposed to affixes, which typically select their bases.
- b) They may combine with affixes in order to produce a morphologically-complex item (e.g., *apoplano* < *apo-* + *-plano* ‘to seduce’), contrary to affixes, which never combine between themselves.
- c) In most cases, there is usually a linking vowel –o– between the first member and the bound stem, as an indication of a compounding process (e.g., *tavr-o-maxos*).

More recently, Giannouloupoulou (2000) has provided a thorough analysis of these elements, focusing on the diachronic, semantic and pragmatic aspects of their derivation. Giannouloupoulou observes that, with respect to other stems, they display a limited capacity in combining between themselves, and calls them ‘confixes’, adopting the term used by Anastasiadi-Symeonidi (1986). She argues that although suffixal confixes are more ‘grammaticalized’ than prefixal ones, they should not be treated as affixes since they are not fully grammaticalized. Thus, she considers the processes in which they participate as ranging between compounding and derivation. According to her study, these elements are usually of Ancient Greek and Latin origin, and most of them are used in order to fulfill the needs of scientific terminology.

5. Clitics

According to Drachman (1994: 219), what is particularly interesting in clitics is that they are “elements responding to as many forces as there are modules in the grammar”. In his paper, Drachman gives an overview of the clitic properties, with special emphasis to pronominal clitics. From the morphological point of view, he

illustrates the derivation of clitics from fuller forms (the strong pronouns), and demonstrates the close relation between object pronominals and the verbal endings of both the copula and the medio-passive forms, assuming that these endings are historically derived from an incorporation process. For instance, in forms like *ime* ‘I am’ and *ɣrafome* ‘I am written’ we can identify the clitic form *me* ‘me’. Moreover, by contrasting forms like *natos* / *naton* ‘there he is’ or *puntos* / *punton* ‘where is he’, Drachman further identifies the unique case of subject clitics (e.g., *tos/ton*) where the nominative marker *-s* alternates with the accusative marker *-n*.

Clitics are generally considered to be entities that range between words and affixes. The categorical status of clitics has commanded attention by several linguists. For instance, Borer (1984) considers them as syntactic affixes, while Zwicky and Pullum (1983) treat them as non-affixes. In Greek linguistic literature, Joseph (1988, 1989, 1990, 2000) has proposed that clitics are affixes. He bases this claim on the fact that clitics are phonologically dependent, cannot stand alone, and may display some idiosyncrasies on both distributional and semantic grounds. For example, they appear between the negative marker *den* and the verb base, as well as between the future marker *tha* and the verb.

- (18)a. *den to vlepo*
 not it see-1Sg
 ‘I don’t see it’
 b. *tha to vlepo*
 shall it see-1Sg
 ‘I shall see it’

Moreover, they may appear with some adjectives (e.g., *monos tu* ‘on his own’), but not with all adjectives, and develop an idiomatic reading when occurring with verbs (e.g., *ti vrikame* lit. we found her ‘we are happy’). If clitics are affixes, some apparent endoclysis cases may be interpreted, which, according to Zwicky (1985, 1987), should not be allowed under a clitic status.

- (19)a. *feri-me-ti*
 bring-me-2Pl
 ‘bring me’
 b. *domiti*
 give-me-2Pl
 ‘give me’

In the examples above, which are taken from some northern Greek dialects, the unity of the imperative forms of the second person plural is interrupted by the appearance of the weak pronoun *me* ‘to me’.^{xxviii} If endoclysis is not permitted, this appearance is justified if weak pronouns have an affixal status, in particular a morphological affixal status. It should be noticed, however, that forms like the ones described here arise only with the first person singular form *me* and never with another form of the weak pronoun (e.g., *mas* as in **ferimasti* ‘bring to us’). According to Joseph (1989), the formation of the examples in (19) is due to reanalysis and lexicalization. That is, the combination of the verb form in the singular with the weak pronoun (*fereme*) is reanalyzed and lexicalized as a stem base, to which the ending *-te* is attached.

That clitics may share some similarities with inflectional endings, thus with affixes if the latter are considered to be of an affixal status, has also been stated by Malikouti-Drachman and Drachman (1992) and Drachman (1999). On the basis of verbal stress properties in Modern Greek dialects, the authors have demonstrated that, in some dialects, the inflectional endings display a post-cyclic phonological behavior (clitics are also post-cyclic) and, as such, are subject to the preservation of metrical structure. According to the authors, this similarity explains why in the above mentioned imperative forms of the northern Greek dialects, clitics may appear word internally, before the verbal endings. Interestingly, the authors have also supported the affixal status of clitics in an earlier paper (Malikouti-Drachman & Drachman 1988): they have shown that clitics behave phonologically like prefixes on the basis of the phenomena of nasal loss and voice spread.

It is important to point out that through the examination of clitics, Joseph (2000) argues that they may provide a basis for understanding the notion of ‘wordhood’ in Greek. Working on a hypothesis that allows only words and affixes as basic units, as well as degrees of typicality or atypicality among the members of those categories, he shows that clitics display the properties of rather ‘atypical’ affixes that are attached to verbal bases by word-formation processes, namely inflectional processes.

Joseph’s claim that clitics are morphological units, i.e., affixes, has been challenged by Philippaki-Warburton & Spyropoulos (1999) who concentrate on the verb-modifying elements that make up the verbal complex, such as object weak pronouns and modal and negative particles. They argue that they are full grammatical words occurring in syntax (see also Philippaki-Warburton 1994). Among the arguments that they use in order to reject the affixal status of object clitics is that, under this analysis, the lexicon should contain main verb forms prefixed by clitics (e.g., *to eyrapsa* ‘I wrote it’), something that is not an economical solution. In addition, in periphrastic forms with the auxiliary *exo* ‘to have’, one should be forced to postulate that clitics are lexically prefixed to the auxiliary (e.g., *to exo di* ‘I have seen it’), although they depend on the main verb and are subcategorized by it. For the authors, object weak pronouns are lexical entries, or derive in the morphological component before entering the syntactic component as the arguments of the verb. Since they are phonologically reduced, they have to move and attach on to their hosting verb. That is, they end up as affixes in the syntactic component because, during the syntactic derivation, they combine with other full grammatical words to create syntactic words (or secondary words in their own terms). Following Di Sciullo & Williams (1987) who propose a distinction between morphological and syntactic words, Philippaki-Warburton & Spyropoulos suppose that there are two kinds of words operating within syntax. While grammatical (or primary) words enter syntax as separate entries, syntactic (or secondary) words are built after the interface, consisting of combinations of reduced lexical material (clitics and particles) and grammatical words that act as heads of the constructions. Note that the word-level status that Philippaki-Warburton & Spyropoulos assign to the object clitics justifies a non-affixal treatment for the modal particles *tha* and *na*, and indirectly for the negative particles *den* and *min*, since all these elements are interconnected to each other within the verbal complex.

A response to Philippaki-Warburton & Spyropoulos (1999) is given by Joseph (2002) who argues that their argumentation is tied to the particular theoretical assumptions of minimalism (Chomsky 1995). For instance, under a different theory that treats syntactic nodes to be feature bundles, the auxiliary *exo* (see previous

paragraph) could be invisible to subcategorization requirements that make the clitic depend on the main verb. Joseph shows that there are morpho-phonological idiosyncrasies associated with the object clitic, as well as ordering restrictions among indirect object and direct object clitics, which could be unexpected if they were words. He further proves that the term ‘clitic’ which has been used in the past (e.g., Joseph & Philippaki-Warburton 1987) to label some short, prosodically deficient elements, with a grammatical function, is vague and meaningless as a classificatory designation. He rejects the category of clitics, agreeing with Zwicky (1994: xiii) who argues that ‘clitic’ is an umbrella term, not a genuine category in grammatical theory. On the basis of his previous claims about having two classes, words and affixes, and degrees of typicality within each such class, Joseph proves that the so-called ‘clitics’ do not form a unified category but constitute atypical groups, within the two classes. Under this assumption, weak object pronouns are affixes, morphologically attached to verbs. It is important to notice that Joseph’s claims show the important role of the morphological make-up of some entities (e.g., affixed verb forms) that are usually treated by syntax or explained by phonological principles. Moreover, it advances our understanding of how to identify and define ‘word’ in Greek. However, as also noted by Joseph, a further elaboration is needed in order to fully understand how all of the identifiable pieces of words and phrases are to be classified in Greek.

6. Conclusions

In this paper, I tried to present the major works on Greek theoretical morphology in the last forty years. There are areas that are relatively well-studied (e.g., inflection), according to various frameworks, and areas that still call-out for a thorough exploration (e.g., derivation or compounding). I hope that this overview will provide the incentive for further research in morphology, a domain which has always balanced between phonology and syntax, and still struggles for a place of its own within the theory of grammar. Greek is a language with an interesting variety of morphological phenomena, some of which are particularly intriguing. By realizing the possibilities given by such a linguistic system, work can be rewarding and may have implications for the overall design of grammar.

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Notes

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ⁱ It should be noticed that there is no general agreement among syntacticians about the number and the specific position that functional categories hold in the tree representation dominating the verbal phrase (VP). Interestingly, Drachman (1995) rejects a distinct projection for each morpho-syntactic category, and proposes a restriction of the number of functional projections.

ⁱⁱ Triantaphyllides (1936) is the first to observe that the augment today is only a stress carrier. The close relation between stress and the augment has also been noticed by Philippaki-Warbuton (1970: 153).

ⁱⁱⁱ Compare this proposal to Hamp (1961) who claims that the augment is one part of a discontinuous morpheme, the other being the ending.

^{iv} For a detailed analysis of the morpho-syntactic category of gender, see A. Anastasiadi-Symeonidi, A. Ralli, and D. Cheila-Markopoulou (to appear).

^v According to Ralli, Class II also includes nouns in *-es* (*kafes* ‘coffee’) and *-us* (*papus* ‘grandfather’), which share the same inflectional endings, and show an allomorphic variation too (see section 1.3 on allomorphy).

^{vi} Inflection classes are basically eight, but can reach the number of ten, if we add the ‘learned’ nouns in *-is* (*evjenis* ‘noble’) and *-es* (*velinekes* ‘range’). See Ralli (2000) for more details.

^{vii} Ralli’s (1988) analysis has been recently adopted by Thomadaki (1994) and Mela-Athanasopoulou (1999).

^{viii} According to Ralli (1988) and Ralli & Touratzides (1992), even stress properties percolate from heads to mother nodes. Elaborating on this idea, Revithiadou (1999) has proposed that accent sponsored by morphological heads must be given priority over other accents within derived, compound and inflected words.

^{ix} For a thorough criticism of the right-hand head rule, see Joseph & Wallace (1984).

^x See also Christophidou (1990) who deals with the same affix, as well as with the variant form *-aris*.

^{xi}In fact, Horrocks and Stavrou (p. 26) admit that there are exceptions to this strong prediction. For instance, they mention the verbs in *-eno* (e.g., *ripeno* ‘to pollute’ vs. *ripansi* ‘pollution’). They claim, however, that these exceptions are very few and most of them are of ‘learned’ origin.

^{xii}The *o/e* variants in the vocative case of proper nouns (e.g., *Kitso* vs. *Xristofore*) is also explained along the same lines. See Malikouti-Drachman and Drachman (1995: 192-193) for more details.

^{xiii} See also Setatos (1985) for a comparative study of forms in *-menos* and *-tos*, seen as deverbal adjectives.

^{xiv} Underspecified basic stems, or roots, are minimal entries, not specified for syntactic and semantic information.

^{xv} In their diachronic study of Ancient Greek prepositions, Karantzola and Giannouloupoulou (2000) also adopt the traditional view that they participate into a compounding process, with the exception of *kse-* (e.g., *ksekanō* ‘to unmake’), which derives from the ancient preposition *ek*.

^{xvi} The same indecision as to whether we deal with a compound or with a prefixed structure can be found with other words too. See, for instance, Efthymiou & Gavriilidou (to appear) who treat the word *poli* ‘much’ as a prefix, in formations like *polikimame* ‘to sleep a lot’.

^{xvii} See also Ralli & Touratzides (1992) for an application of this proposal to inflection.

^{xviii} For a detailed analysis of the different meanings of *para*, see Pouloupoulou (1996) who claims that we deal with one polysemous *para*.

^{xix} Although far from been exhaustive, compounding is best described in the grammars of Triantaphyllides (1991), Mackridge (1985), Joseph & Philippaki-Warbuton (1987), and Clairis & Babiniotis (1996).

^{xx} I should also mention Tserepis (1902) who had provided a detailed presentation of compounding in Ancient Greek.

^{xxi} In accordance with Ralli (1988) who suggests that phrases like *pedi θάμμα* ‘wonder boy’ are like compounds (she calls them “semi-compounds”) deriving at a postlexical level, Malikouti-Drachman & Drachman (1989) also distinguish a fourth type of compounds, [word word], which involves two phonological words.

^{xxii} An analysis of [stem stem], [stem word] and [word word] lexical constructions as instances of compound formations has also been followed by Fliatouras (2002ab) in his study of place names in the area of Achaia.

^{xxiii} See section 3.3 where there is a proposal by Revithiadou for a similar analysis of the same type of prefixed structures.

^{xxiv} With the exception of cases with a rather loose bond between the compound members, such as *pijenoerxome* ‘come and go’, *italoamerikanos* ‘Italo-American’, *kaloaniyo* ‘to open well’, where *-o-* appears in front of a vowel-initial second constituent.

^{xxv} The *-o-* appearance, or non-appearance, in compounds were already dealt by Drachman & Malikouti-Drachman (1994), as the result of a rule application which deletes *-o-* within a single prosodic domain of stress (e.g., *ksilemboros* ‘wood-merchant’). The same rule is blocked across two prosodic domains, as in *psiloemboros* ‘small trader’. Moreover, the compound internal *-o-* in Ancient Greek is discussed by Drachman (2000).

^{xxvi} It should be noticed that a syntactic account of [adverb verb] compounds is in principled proposed by Drachman & Malikouti-Drachman (1994) too. However, the authors recognize the fact that some cases, like *kutsoperpato* ‘to walk a little’, must be lexically derived since they have no syntactic source available (**perpato kutsa*).

^{xxvii} For the issue of stress of these compounds, see Revithiadou (1995).

^{xxviii} It should be noticed that clitic forms in the morphology of Greek dialects have been a favorite topic in linguistic literature. See, for instance, Newton (1972) for the Cypriot clitics, Janse (1998) for the Cappadocian ones, and Gafos and Ralli (2001ab) for the possessive clitics in the dialectal varieties of the island of Lesbos.

Περίληψη

Στην εργασία παρουσιάζονται οι σημαντικότερες, κατά τη γνώμη μου, εργασίες τα τελευταία σαράντα χρόνια στο χώρο της μορφολογίας της ελληνικής γλώσσας, ενώ ιδιαίτερη έμφαση δίνεται στις μελέτες της γενετικής προσέγγισης. Επισημαίνονται τα θέματα που κατά κύριο λόγο έχουν απασχολήσει την έρευνα, όπως είναι η αυτονομία της μορφολογίας σε σχέση με τη σύνταξη, η κλίση, η παραγωγή, η σύνθεση και τα κλιτικά, και αναδεικνύεται η σημασία

τους για τη γραμματική ανάλυση. Το εύρος των φαινομένων, η ποικιλία και η πολυπλοκότητά τους καθιστούν φανερό ότι γλώσσες με πλούσια μορφολογία, όπως είναι η ελληνική, δεν μπορούν να αγνοούνται από το γενικότερο προβληματισμό της θεωρίας της γραμματικής.