

Compounding and its locus of realization: Evidence from Greek and Turkish¹

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Abstract

This article deals with the locus of realization and the grammatical nature of compounds. First, it suggests that a proper delineation of compounding should be given on formal grounds and that an approach relying on pure semantics is misleading. Second, it proposes that the diversity of views for defining compounding and the variety of theoretical approaches that are put forward for the analysis of compounds are highly dependent on the data under examination. Third, it defends the position that compounding cuts across two grammatical domains, morphology and syntax, assuming that they are distinct structure-building modules. On the basis of their structural properties, compounds can be distinguished into morphological objects and phrasal units bearing an atomic status, depending on the language one deals with. The first category includes compounds resulting from morphological rules (or templates/schemas), and involves units specific to morphology; the second category contains phrasal compounds, which are semi-visible to syntax, but their structure is derived in syntax, in that it is not based on morphologically-proper units and is not the product of morphological rules or templates. Claims and proposals are illustrated with data drawn from two genetically and typologically distinct languages, Modern Greek and Turkish, which significantly diverge as far as their compound formation is concerned.

1. Questions and premises

Compounding has been at the center of interest in recent years and several aspects of compounds present valuable challenges for refining our understanding of word formation and its locus in grammar. However, the very existence of compounding as a universal process has been a controversial issue. On the one hand, Greenberg (1963: 92) has explicitly stated that there exist “a considerable number of languages without

inflection, perhaps none without compounding and derivation". On the other hand, Štekauer, Valera & Kortvélyessy (2008) have claimed that in a corpus of 55 languages only 5 do not display compounding. Interestingly, for Bauer (2001: 705) this controversy is nothing but a matter of definition, since languages differ in the ways they realize compounds and there is no standard approach to encode these differences.

Bauer (2001: 695) defines a compound as a 'lexical unit made up of two or more elements, each of which can function as a lexeme independent of the other(s) in other contexts'. This definition accounts for the fact that prototypically compounding produces new lexemes, as other word-formation operations, but questions arise with respect to the input of the process. For instance, as Lieber & Scalise (2006: 10) note, constructions like *over-the-fence gossip* or *God-is-dead ideology* are considered to be compounds, although the first constituent is an entire phrase. Generally, there is a tendency in the literature to confuse compounds with pure metaphors or any multi-word lexical item, even with lexicalized phrases displaying an 'hapax' structural pattern, like for example the French phrase *comme il faut* (Bauer 2001: 704–705). In fact, the absence of systematic criteria is particularly noticeable in various attempts to define compounding, and there is no standard approach for treating the properties of constructions which are considered to be compounds.

Moreover, there are also conflicting views on the locus of compounding. An often observed similarity between compounds and syntactic structures and partial visibility of compounds to syntactic operations have led a number of linguists to consider compound formation as a matter of syntax. For instance, Anderson (1992: 253–319) excludes compounding from his a-morphous morphology component. Similarly, Aronoff (1994: 16) asserts that compounding should rather be treated as 'lexeme-internal syntax'. However, structures involving combinations of lexemes with morphological categories of an unclear status, the so-called 'affixoids' (i.e. units which display properties of both stems and affixes), render difficult a radical separation of compounding and derivation: if derivation occurs in morphology, the presence of affixoids advocates a morphological status of compounding as well (see Booij 2005 and Ralli 2010 for details).

Scalise & Vogel (2010: 4–5) provide a survey of the different approaches that have been proposed in the literature with respect to compounding and conclude that among scholars, there is no agreement on whether a compound is formed in morphology or syntax. It is worth mentioning their remark (2010: 2) that compounds constitute an 'anomaly' among grammatical constructions, since they behave like words but bear a type of 'internal syntax', which is usually manifested in the relation holding between their basic constituents, or in the theta-role saturation occurring within the so-called 'synthetic compounds'. In addition, the close relation between compounding and syntax is also revealed by the position of overtly realized inflection. Assuming that there is a distinction between inherent and contextual inflection, as proposed by Booij (1994, 1996), and that only inherent inflection appears within word structure, in certain languages, compounding violates this rule². Typical examples of this case can be found in Sanskrit and Ancient Greek, where a

contextual case value, such as accusative, can appear on the first constituent of compounds, i.e. word internally:

- (1) (a) Sanskrit (from Bauer 2001: 703)
 dhana-m-jaya
 wealth-ACC-winning
 ‘winning wealth’
- (b) Ancient Greek (from Ralli 2013)
 nou-n-ekhé:s
 mind-ACC-who.has
 ‘prudent’

On the basis of the above observations, it is clear that attempts to define compounding and its locus in grammar encounter difficulties and the questions which arise can be resumed in two crucial points: what a compound is and where a compound is formed.

In this paper, I propose that a proper definition of compounding should be given on formal grounds and that an approach relying on pure semantics is misleading. Since compounds are structures combining lexemes, I suggest that the diversity of views for defining compounding and the variety of theoretical approaches that are put forward for the analysis of compounds are highly dependent on the data which are used for illustrating the various working hypotheses. I defend the position that, on the basis of their structural properties, compounds can be distinguished into two categories, morphological objects and phrasal objects bearing an atomic status, depending on the language one deals with. Assuming that syntax and morphology are separate structure-building modules, the first category includes compounds resulting from morphological rules or templates³, and involves units specific to morphology. As such, compounds may share properties with other morphological objects, e.g. derived words, but are distinct from them. The second category comprises phrasal compounds, which may be semi-visible to syntax, their semantics may be non-compositional⁴, but their structure is derived in syntax, in that it is not based on morphologically-proper units and it is not the product of morphological rules or templates. I also believe that the overall set of phrasal compounds should not be confounded with lexicalized phrases (the so-called ‘listemes’ for Di Sciullo & Williams 1987), which bear also idiosyncratic properties, but are outputs of a lexicalization procedure applied to syntactically-built phrases (e.g. the French phrase *à toute à l’heure* or the English flower *forget me not*).⁵ In my opinion, in delineating compoundhood, focus should be put on structure and the criterion of semantic non-compositionality and idiomaticity should not be viewed as decisive as it is usually taken to be. In this, I agree with Gaeta & Ricca (2009: 36) who have claimed that we cannot rely on semantics (referential unity) for isolating compounds⁶ and that being a lexical unit should be independent from being the output of a morphological operation.

In what follows, I argue that morphologically-built compounds, like other morphological objects, should be defined as clearly as possible by well-designated principles that are generally applicable to morphology. Similarly, phrasal compounds should be defined as syntactic formations, but should not be accessible to all syntactic operations; thus, they differ from common phrases, i.e. from formations that are freely interruptible, have loose semantics and referential connections between head and non-head, and bear an entirely compositional meaning. As mentioned above, phrasal compounds should also be distinct from listemes, since they do not constitute hapax formations and their structural pattern could be systematically reproduced for the creation of new phrasal compounds, being subject to productively derived neologisms.

An approach which demarcates compounding on formal grounds and traces a division between morphological and phrasal compounds, depending on the case and the language one deals with, has the advantage of making use of the lexical integrity hypothesis, i.e. the main criterion for distinguishing between morphology and syntax. On the one hand, it relates morphological compounds with derived words in that neither type of formation is accessible to syntax. On the other hand, it links phrasal compounds to syntactic constructions, both being structurally built within the same grammatical domain, i.e. syntax. Accepting the view that there are different categories of compounds and that compounding is a process which cuts across two grammatical domains, i.e. morphology and syntax, crucial evidence can be provided for the morphology-syntax interaction and the modularity of the grammar.⁷

In order to test my hypotheses and illustrate my claims and proposals, I consider two genetically and typologically distinct languages; I draw evidence from Modern Greek (hereafter Greek) and Turkish, which belong to different language families and have different typological properties: Greek is Indo-European and fusional, while Turkish is Altaic and agglutinative.⁸ As shown below, Greek and Turkish use different tools to build their compounds and display a varying degree of productivity in their compound formation. A contrastive investigation allows me to draw some interesting conclusions and point to areas which are valuable for the study of compounding. Although I deal with data from Greek and Turkish, the specific findings can be projected in other languages and be tested with the investigation of additional intriguing compounding phenomena.

2. Morphologically-based compounds

My argumentation in this section is based on the research hypothesis that what makes a compound morphological should be defined on a language-specific basis, since languages vary with respect to the realization of their morphological features and the use of morphologically-proper units. For instance, there are languages which have overt inflection and languages where the morphological realization of inflection is minimal (e.g. English) or rather absent (e.g. Chinese). Moreover, there are languages which base their word formation on units smaller than words (e.g. the stem-based Greek) and languages where words are used as the base for both word- and syntactic formations (e.g. English). For example, an English compound like *tablecloth* contains

the word forms *table* and *cloth*, while its Greek counterpart, *trapezomándilo* ‘tablecloth’, involves the stems of the words *trapéz(i)* ‘table’ and *mandíl(i)* ‘scarf, cloth’ (2a, cf. 2b).⁹

- (2) a. *Free forms of the constituents*
 trapézi mandíli
 table.NOM.SG cloth.NOM.SG
 ‘table’ ‘cloth’
- b. *Compound*
 trapez-o-mándil-o¹⁰
 table_[stem] -CM-cloth_[stem]-NOM.SG

Being a morphological object, the compound of a particular language has to obey certain criteria that are applicable to the morphology of this language and distinguish morphology from syntax. To this end, I will test my working hypothesis by reviewing some of the basic morphological properties of Greek, as they apply to compound structures (for details, see Ralli 2007, 2009, 2013):

- (a) *Lexical integrity/word atomicity*. As is well-known from the relevant literature, the lexical integrity of a compound is proven by the absence of independent modification of one of the constituents and the impossibility of insertion of new material within their structure (unbroken unity). Greek compounds always obey this principle, since they respond negatively to the application of certain tests, as the following data illustrate:

- (3) Compound: aγri-ó-γata
 wild-CM-cat
 ‘wild cat’
- Insertion: *aγri-o-mavri-ó-γata
 wild-CM-black-CM-cat
- Modification: *poli-aγri-ó-γata
 very-wild-CM-cat

- (b) *Absence of word-internal inflection*. A Greek compound never shows word-internal inflection, that is, inflection on the first constituent. This is due to the fact that, with the exception of formations beginning with an uninflected adverb (e.g. *ksanaγráfō* ‘rewrite’ < *ksaná* ‘again’ + *γráfō* ‘write’), the first constituent is always a stem:

- (4) (a) aγri-ó-γat-es versus *aγri-es-ó-γat-es
 wild-CM-cat-NOM.PL wild-NOM.PL-CM-cat-NOM.PL
 ‘wild cats’
- (b) θalas-ó-lik-os versus *θalas-as-ó-lik-os
 sea-CM-wolf-NOM.SG sea-GEN.SG-CM-wolf-NOM.SG
 ‘sea wolf, jack tar’ ‘wolf of sea’

- (c) *Presence of morphological categories*. As already mentioned, Greek compounds involve units smaller than words, i.e. stems, as far as the first constituent is

Since the presence of only one stress characterizes wordhood in Greek, this phonological property should be added to the morphological properties mentioned above for determining the morphological status of compounds. Interestingly, as shown by Nesp̄or & Ralli (1996), a compound-specific phonological rule, stressing the antepenultimate syllable, is related to a particular structure of compounds, that containing two stems ([[stem stem]INFL]).¹³ Most constructions belonging to this type have a different inflectional ending from the ending of the second constituent, when taken in isolation. For an illustration, compare the *-o* ending of the compound *kapnoxórafo* ‘tobacco field’ and the *-i* of its second member *xoráfi* ‘field’.

As far as semantics are concerned, an unpredictable meaning is often developed in compounds, although it is not always the case: there are instances which are semantically opaque (8a), but many Greek compounds are fully compositional, as the example in (8b):

- (8) (a) $\gamma\alpha\lambda\alpha z\text{-}o\text{-}\acute{\epsilon}\mu\alpha\tau\text{-}os$ < $\gamma\alpha\lambda\acute{\alpha}z(io)$ $\acute{\epsilon}\mu\alpha$
 light.blue-CM-blood-INFL ‘light blue’ ‘blood’
 ‘noble man, aristocrat’
- (b) $ele\text{-}o\text{-}k\alpha\lambda i\acute{\epsilon}\rho\gamma i\alpha$ < $el\acute{\epsilon}(a)$ $k\alpha\lambda i\acute{\epsilon}\rho\gamma i\alpha$
 olive-CM-culture ‘olive’ ‘culture’
 ‘olive culture’

In the overall literature, among the criteria that are often used to define compounds is semantic specialization. However, there exist syntactic constructions which may have lost their compositionality either because they have acquired a metaphoric sense or because they have assumed a lexicalization of meaning. Thus, I agree with Bauer (2001: 695) that non-compositionality is neither necessary nor sufficient for defining compounding.

To partially sum up, compounding in Greek is a process which is governed by properties different from those which characterize phrases. Therefore, it is safe to assume that Greek compounds are morphologically-built objects. They are single prosodic words, involve constituents that do not have an active role in the formation of phrases, i.e. stems, and a linking element *-o-* which marks the process of compounding itself, and in many cases, the constituents display a different order from that observed in syntax.¹⁴ Finally, they are subject to lexical integrity.

3. Phrasal compounds

Greek compounds contrast with one type of formations that are usually regarded as compounds in Turkish, i.e. N(ominal)N(ominal)-(s)I(n) concatenations. These constructions belong to nominals and are made up of two words – the first being an adjective or noun, and the second a noun – while a suffix *-(s)I(n)*¹⁵ may appear at the right periphery¹⁶ (see, among others, Majzel’ 1957, Swift 1963, König 1987,

Schaaik 1992, 2002, Hayasi 1996, Kaya et al 1997, Kornfilt 1997, Yüksek 1998, Göksel & Kerslake 2005, and Göksel 2009):¹⁷

- (9) (a) ev çatı -sı
house roof -(s)I(n)
'house roof'
(b) kitap sayfa -sı
book page -(s)I(n)
'book page'
(c) kapı kol -u
door handle -(s)I(n)
'doorknob'
(d) Türkiye başbakan -ı
Turkey prime.minister -(s)I(n)
'Prime Minister of Turkey'

In the literature, it is usually accepted that the structure of the concatenations in (9) derive from the structure of 3SG GEN-POSS referential phrases (10), but they lack the genitive marker *-sIn* of definite/specific noun phrases, which is attached to the non-head (see, among others, Kornfilt 1984, Yüksek 1998, Göksel 2009):

- (10) Cem -in araba -sı
Cem -3SG.GEN car -3SG.POSS
'Cem's car'

In these formations, the lack of the genitive marker and the obligatory adjacency of the non-head and the head have been subject to different analyses. Yüksek (1998), for example, states that the non-head, being non-specific in these examples, is adjoined to the head.¹⁸ Schaaik (2002), on the other hand, observes that only some concatenations can be analyzed with a structure corresponding to that of (10).

Generally, these examples, which clearly indicate a part-whole relation between the constituents (see 9), seem to differ from those of (11) semantically:

- (11) (a) diş doktor -u
tooth doctor -(s)I(n)
'dentist'
(b) sakız ağac -ı
lit. gum tree -(s)I(n)
'lentisk, mastic tree'
(c) buz dolab -ı
ice closet -(s)I(n)
'fridge'
(d) yemek oda -sı
food room -(s)I(n)
'dining room'

Ultimately though, under the following morphosyntactic tests the comparison of the data in (9) and (11) yields to no radical difference.¹⁹

(a) *Separate modifiability.* The non-head of the examples in (9) and (11) can be modified separately, even though it is very restricted for the elements in (11):

- (12) (a) büyük [diş doktor -u]
big tooth doctor -(s)I(n)
'big dentist'
(b) [çürük diş] doktor -u
rotten tooth doctor -(s)I(n)
'doctor for decayed teeth'
(c) eski [ev çatı -sı]
old house roof -(s)I(n)
'old roof of some house'
(d) [eski ev] çatı -sı
old house roof -(s)I(n)
'roof of an old house'

(b) *Possibility of coordination.* The examples in (9) and (11) allow coordination of their non-heads:

- (13) (a) yemek ve yatak oda -lar -ı
food and bed room PL -(s)I(n)
'dining and bed rooms'
(b) Türkiye ve Yunanistan başbakan -lar -ı
Turkey and Greece Prime Minister PL -(s)I(n)
'the Prime Ministers of Turkey and Greece'

(c) *Appearance of another -(s)I(n).* In all the examples, when the concatenations appear as the head of other 3SG GEN-POSS phrases, the -(s)I(n) of their structure is never retained:²⁰

- (14) (a) *Ali -nin [diş doktor -u] -su
Ali -GEN tooth doctor -(s)I(n) -POSS
but
(b) Ali -nin [diş doktor] -u
Ali -GEN tooth doctor -POSS
'Ali's dentist'
(c) *Ali -nin [ev çatı -sı] -sı
Ali -GEN house roof -(s)I(n) -POSS
but
(d) Ali -nin [ev çatı] -sı
Ali -GEN house roof -POSS
'Ali's house roof'

(d) *Insertion of another suffix.* In (9) and (11) the plural suffix precedes $-(s)I(n)$:

- (15) (a) diş doktor -lar -ı
tooth doctor -PL -(s)I(n)
'dentists'
- (b) ev çatı -lar -ı
house roof -PL -(s)I(n)
'house roofs'

Given the structural transparency of the concatenations under examination, I agree with Kornfilt (1984) and Yüksek (1987, 1998), who have claimed that they are syntactic formations, comparable to those of 3SG GEN-POSS phrases. As they involve two lexemes, I would call them compounds. However, contrary to Greek compounds which display properties proper to morphology, the structure of Turkish compounds is syntactic.²¹ Even the form of the marker $-(s)I(n)$ resembles the possessive marker which is found in 3SG GEN-POSS phrases (10), although $-(s)I(n)$ in compounds does not seem to bear a meaning of possession, as stated by Göksel & Kerslake (2005: 104).²²

Further support that the formations in (9) and (11) share the same structure comes from phonology, since they receive the same type of primary stress, that is, they are primarily stressed on the last syllable of the non-head constituent.

On the basis of the structural and phonological similarity of (9) and (11), it would be safe to assume that the Turkish $N N-(s)I(n)$ compounds have a different locus of realization from that of Greek compounds. I consider them to be phrasal formations, as opposed to Greek compounds which are morphological objects (Ralli 1992, 2007, 2009, 2013). Since compounding is a different process from noun-phrase formation, I would further suggest that a phrasal analysis should clearly differentiate between compound formation and noun-phrase formation.²³ Similarly, morphologically-built compounds should be subject to a distinct analysis from that of derived words.

In this paper, I shall not enter into detail on how the Turkish $N N-(s)I(n)$ compounds are accounted for in the syntax, and how their generation differs from that of generic referential 3SG GEN-POSS phrases. There are several suggestions on this matter, trying to differentiate the structural representation of the two categories (see, for instance, Spencer 1991: 313 ff., Yüksek 1998, Arslan-Kechriotis 2006 and Bağrıaçık & Ralli 2012). For instance, according to Arslan-Kechriotis (2006), the structure of Turkish $N N-(s)I(n)$ compounds is a copy of the structure of the 3SG GEN-POSS constructions, and the difference between the two is that $-(s)I(n)$, considered to be a functional (possessive) head, has lost its functional force in compounds, and has been reduced to a compound marker.²⁴

4. Comparing Greek and Turkish compounds

An analysis which considers Turkish $N N-(s)I(n)$ compounds to be of phrasal nature, while it treats the Greek ones as morphological, has a number of advantages.

First, it represents the fact that while Greek compounds display a different structure from corresponding phrases, Turkish *N N-(s)I(n)* compounds show similarities with the syntactic formations of 3SG GEN-POSS, though it is plausible that the respective derivations diverge at certain points.

Second, a phrasal account of Turkish *N N-(s)I(n)* compounds better explains why their suffix *-(s)I(n)* has the same form as that of noun phrases, although synchronically, they must count as two different suffixes: *-(s)I(n)* is a possessive marker, entirely visible to syntax in the case of 3SG GEN-POSS phrases, while in compounds, it has lost its syntactic function and has become a semantically empty string (Schaaik 2002, Ralli 2008, Göksel 2009). It is important to note that being phrasal formations, Turkish compounds use a marker which originates from a functional element, employed in syntax. In this, they contrast with the morphologically-built Greek compounds, the specific marker of which originates from a purely morphological segment, the ancient thematic vowel *-o-*, which, in the past, was nothing but a stem formative.

Third, a phrasal analysis of the Turkish constructions may also account for the existence of compounds having phrases as their left-hand elements, such as the following:²⁵

- (16) burada ne sat-ıl -ıyor -Ø soru -su
 here what sell-PASS -PROG -3SG question -(s)I(n)
 ‘the question “what is sold here”’

Crucially, there is no possibility of combining phrases with the stem- or the word heads in Greek compounding: as already mentioned in section 2, their left constituent is always a stem.

Fourth, treating Turkish *N N-(s)I(n)* compounds within the syntax could take into consideration the fact that all instances do not behave uniformly with respect to the application of tests described above, and that there are cases varying between structural opacity and semi-visibility. For example, when pluralized, *diş doktor-u* lit. tooth doctor ‘dentist’ has the plural marker preceding *-(s)I(n)* (17a), while in *ayakkab-ı* lit. foot cover ‘shoe’ the plural marker follows *-(s)I(n)* (17b).²⁶ Interestingly, there are also cases presenting alternating forms, such as *kasımpat-ı* ‘chrysanthemum’ (17c):

- (17) (a) diş doktor -lar -ı versus *diş doktor -u -lar
 tooth doctor -PL -(s)I(n)
 ‘dentists’
 (b) ayak kab -ı -lar versus *ayak kab -lar -ı
 foot cover -(s)I(n) -PL
 ‘shoes’
 (c) kasım pat -lar -ı versus kasım pat -ı -lar
 November boom -PL -(s)I(n)
 ‘chrysanthemums’

Again, no partial visibility to syntax is possible in Greek compounds, such as the ones described in (2–8), the structure of which, with no exceptions, is not accessible to syntactic operations.

It is worth pointing out that the existence of examples with a varying degree of structural visibility to syntactic operations pleads in favour of the position that within the same grammatical module, i.e. syntax, there is a *continuum*, as has also been observed for Hebrew by Borer (2009), which ranges from entirely visible phrases to invisible occurrences like *ayakkabi*. For morphology, another continuum defined on different grounds has already been asserted by Ralli (2010, 2013), where the existence of compounds involving categories situated between stems and affixes renders difficult a radical separation of morphological compounding and derivation.

A last question to be answered is whether the operation of compounding is really productive or it rather constitutes lexicalization of noun phrases. Greek and Turkish data are most revealing with respect to this matter. In Greek, compounding is an extremely productive process, since there are massively produced neologisms conforming to two basic compound patterns, [stem stem] and [stem word], as defined in Ralli (2007, 2013):

(18) (a) *stem stem compounds*

Neologism:	karav-o-kátart-o	<	karáv(i)	katárt(i)
	boat-CM-mast-INFL		'boat'	'mast'
	'boat mast'			
similar to:	karav-ó-pan-o	<	karáv(i)	pan(i)
	boat-CM-cloth-INFL		'boat'	'cloth'
	'sail cloth, canvas'			

(b) *stem word compounds*

Neologism:	koz-m-o-θálasa	<	kózm(os)	θálasa
	world-CM-sea		'world'	'sea'
	'world like a sea'			
similar to:	la-o-θálasa	<	la(ós)	θálasa
	people-CM-sea		'people'	'sea'
	'mass of people'			

Similarly, in Turkish, there are many neologisms which match the *NN-(s)I(n)* pattern:

- (19) (a) Neologism: kaplumbağa bakıcı -sı
 tortoise keeper -sIn
 'tortoise keeper'
- similar to: at bakıcı -sı
 'horse tamer'
- (b) Neologism: havuç ağac -ı
 carrot tree -sIn
 'carrot tree'
- similar to: elma ağac -ı
 'apple tree'

Thus, compounding stands as an active word-formation process, which enriches the lexicon with structures deriving from rules, morphological or syntactic, or from patterns that are productively replicated, depending on the approach one may adopt.²⁷ Nevertheless, lexicalization may function parallel to compounding, and may also affect it, particularly on the semantic level. Typical examples are the Greek *kal-o-kéri* (good-CM-weather) ‘summer’ as well as the Turkish *kasım-pat-ı* (November-bloom-(s)I(n)) ‘chrysanthemum’. Often, occurrences affected by lexicalization display structural irregularities that do not belong to common compounds. For instance, as already indicated, *kasım-pat-ı* displays two alternating types in the plural number, one having the plural marker before *-(s)I(n)* and another having it as a closing suffix (see (17c) above).

Finally, in this paper, I have limited my investigation only to Greek and Turkish *N N-(s)I(n)* compounds and to data that are clearly morphological or clearly syntactic. However, I do not rule out the possibility for a language to have both types. In fact, instances of some phrasal compounds have emerged in Greek in the second half of the twentieth century, under the influence of English.²⁸ These compounds show characteristics of noun phrases, but also a number of properties found in typical, morphologically-created compounds. Structurally, they contain an adjective and a noun (20a) or two nouns (20b) (see Ralli & Stavrou 1998, Ralli 2007, 2013):

- (20) (a) *psixrós pólemos*
 ‘cold war’
 (b) *praktorío iðíseon*
 lit. agency news ‘news agency’

In the first case, the adjective agrees with the noun head in gender, number and case (*psixrós*.MASC.SG.NOM *pólemos*.MASC.SG.NOM), while in the second case, the non-head (second constituent) is assigned genitive case by the head (*praktorío iðíseon*.GEN.PL).

Like compounds, these constructions display a certain degree of structural opacity. For instance, it is impossible to reverse the order of their constituents, as is usually the case with common noun phrases in Greek, their non-head cannot be independently modified, and no item, or parenthetical expression, can be inserted between their constituents:

- | | |
|---|--|
| (21) (a) Compound | (b) Noun phrase |
| <i>psixrós pólemos</i> vs. * <i>pólemos psixrós</i> | <i>ti psixrí níxta/níxta psixrí ítan aftí!</i> |
| cold war war cold | what cold night/night cold was that! |
| * <i>iðiétera psixrós pólemos</i> | <i>iðiétera psixrí níxta</i> |
| particularly cold war | particularly cold night |
| * <i>psixrós ke meýálos pólemos</i> | <i>psixrí ke meýáli níxta</i> |
| cold and big war | cold and long night |

(22) (a) Compound	(b) Noun phrase
αγορά εργασίας/*εργασίας αγορά	ανζήτιση εργασίας/ ?εργασίας ανζήτιση
market job.GEN	search job.GEN/job.GEN search
‘job market’	‘search for job’
*αγορά μόνιμης εργασίας	ανζήτιση μόνιμης εργασίας
market permanent.GEN job.GEN	search permanent.GEN job.GEN
	‘search for permanent job’
*αγορά εργασίας ke απασχόληση	ανζήτιση εργασίας ke απασχόληση
market job.GEN and	search job.GEN and
occupation.GEN	occupation.GEN
	‘search for job and occupation’

Moreover, in the case of adjective–noun formations, the definite article cannot be reduplicated, unlike what happens in the corresponding phrases (compare *i psixrí i níxta* ‘the cold the night’ with **o psixrós o pólemos* ‘the cold the war’). Nevertheless, both types of formations share with noun phrases the property of containing two independent inflected words, corresponding to two phonological words, and their constituents are placed in the same order as that of the constituents of noun phrases with a similar structure. They also differ from compounds in that there is no compound marker between their members. Therefore, according to the argumentation of the previous sections, these formations could be considered to constitute phrasal compounds. Assuming that compounding is a word–formation process which cuts across morphology and syntax, Greek one–word compounds are morphological objects, since they are subject to morphological rules and principles and are formed from proper morphological units (stems and compound marker). On the contrary, Greek phrasal compounds showing semi–visibility to syntactic operations, are created in syntax.

5. Concluding remarks

In this paper, I have accepted compounding to be a combination of lexemes showing invisibility, or partial invisibility, to syntax. I have proposed that compounding cuts across the two grammatical domains, morphology and syntax, depending on the language and the data one deals with. To this end, I have examined evidence from two languages, Greek and Turkish, where compounding differs significantly, and which serve as a good illustration for my claims. Typical Greek compounding is considered to be morphological, since its structures involve morphologically–proper categories and properties, although a recent tendency is to produce phrasal compounds which are mostly restricted in the domain of scientific terminology. Compared to Greek, Turkish does not show any radical difference between occurrences considered to be *NN-(s)I(n)* compounds and ‘3SG GEN-POSS phrases’. Thus, I have proposed that these Turkish compounds are phrasal. Finally, I have suggested that wordhood determined only on semantic opacity is not sufficient to delineate compounding, which should be defined on clear criteria and be based on rules (or patterns/templates, depending on the approach one may adopt), which systematically produce new

occurrences. Seen in this way, compounds are dynamically produced and should not be confused with entries listed in the lexicon, or with pure lexicalized phrases, i.e. with those simplexes or those morphologically or syntactically complex items that are not predictable by grammatical principles.

Notes

1. This paper has been composed during a stay at the *Seeger Center for Hellenic Studies* of Princeton University, which was made possible by a Visiting Research Fellowship 2012. I would like to thank the Center and its director Dimitri Gondicas for giving me a unique opportunity to conduct my research in a very constructive and friendly environment. A preliminary version of the paper was already presented at the *8th Mediterranean Morphology Meeting* (Cagliari: September 2011). I am very much indebted to Metin Bağrıaçık for his assistance with the Turkish data; without his precious help this work would not have been realized.
2. In Booij's (1996: 2) terms, "inherent inflection is the kind of inflection that is not required by the syntactic context although it may have syntactic relevance [e.g. the category number for nouns, comparatives and superlatives]. [...] Contextual inflection, on the other hand, is that kind of inflection that is dictated by syntax, such as person and number markers on verbs that agree with subjects and/or objects, agreement markers for adjectives, and structural case markers on nouns. We should realize, however, that there is no clear-cut boundary between structural and semantic case" (Booij 1996: 2). Moreover, Booij (1994: 27) states that only certain types of inherent inflection can feed word formation. In the examples (1a–b), it is clearly seen that the accusative case, which is licenced by the deverbal head, i.e. the right-hand constituent, appears on the non-head, i.e. on the left constituent. Thus, the presence of such *contextual* inflectional affixes inside compounds, i.e. affixes that are required by syntax, poses an apparent problem for Booij's assertion.
3. Generative approaches usually advocate word formation via rule application, while templates are used in a construction-grammar model (Booij 2010).
4. Non-compositional semantics may be one of the differences between a phrasal compound and a phrase.
5. Spencer (2001: 330) also expresses the same point of view with respect to English NN constructions.
6. In Gaeta & Ricca's (2009: 36) terms "...nothing in the referential properties of a certain unit tells us whether the denotatum is referred to by means of a compound or a phrase or even a simplex."
7. Lexical Integrity is a property of morphologically-built elements and thus, constituents that are unambiguously syntactic are expected not to conform to lexical integrity. What I claim here is that if compounds are created both in morphology and syntax, then it is only the morphologically-built ones which are subject to lexical integrity. See also endnote 21.
8. For the basic morphological properties of Greek and Turkish, the reader is referred to Ralli (2005) and Göksel & Kerslake (2005, 2011), respectively.
9. Modern Greek examples will be given in broad phonological transcription. Inflectional endings and other stem material which do not participate in compounding will be included in parentheses. Abbreviations in this paper are CM = compound marker, INFL = inflection, MASC = masculine, FEM = feminine, NEU = neuter, SG = singular,

PL = plural, ACC = accusative, GEN = genitive, NOM = nominative, PASS = passive, PROG = progressive and POSS = possessive.

10. CM stands for compound marker, that is, the linking element which ensures the transition between the two stems (Ralli 2008). Greek compounds of the [[stem stem]INFL] type usually bear a different inflectional ending from that of the second constituent when taken in isolation. For instance, many nouns of this type end in *-o*, which marks the nominative singular. In contrast, compounds of the [stem word] type always have the same inflectional ending with their head word (for details of this distinction, see Ralli 2013). In an elaborate study of the Greek nominal inflection (Ralli 2000, 2002, 2005), nouns are not categorized in terms of gender (i.e. MASC, FEM or NEU), but in terms of eight inflection classes (IC1, IC2, IC3... etc.), while a feature co-occurrence rule relates the two features. In this analysis, the [stem stem] concatenation which accepts *-o* in the nominative singular belongs to IC5 and to neuter gender. However, *-o* is not the only NOM.SG ending in Greek. The relatively complex Greek inflection is simplified in the Greek examples given throughout the paper, where inflection-class labels and gender values are not given except when they are directly relevant to the discussion.
11. In Greek, adjectives are preposed in both compounds and noun phrases:

- | | | |
|----------------------------------|--------------|-----------------|
| (i) (a) compound | versus | (b) noun phrase |
| αγρίανθρωπος < άγρι(ος) άνθρωπος | | άγριος άνθρωπος |
| ‘wild man’ | ‘wild’ ‘man’ | ‘wild man’ |

12. Examples bear the same meaning. Concerning the inflectional endings and classes, see endnote 10 above.
13. For simplicity reasons, INFL will be used when a detailed presentation of the inflectional features is irrelevant for the argumentation.
14. In fact, Spencer (2001: 309) had already observed that in many languages, compounds which are distinct from phrasal combinations involve stem forms and a special linking element.
15. Due to vowel harmony, /I/ may surface as [i], [i],[u] or [ü]. /s/ surfaces only when the word to which *-(s)I(n)* is attached ends in vowel (except in a few loans from Arabic), and /n/ is seen only when the suffix is followed by another suffix (Göksel & Kerslake 2005: 66, section 8.1.1).
16. There are also compounds combining two nominals, without the presence of *-(s)I(n)*. An analysis of these compounds is provided by Bağrıaçık & Ralli (in press):

- (ii) (a) kara dul
black widow
‘insect *Latrodectus mactans*’
- (b) son bahar
final spring
‘autumn’

For a recent and elaborate account of all types of compounds in Turkish, the reader is referred to Göksel (2009).

17. The examples in this section are taken from Bağrıaçık & Ralli (2012).
18. Yüksek (1998: 465–467) provides details on the syntactic analysis of these constructions.

19. But see Bağrıaçık (2010) and Bağrıaçık & Ralli (2012) for an analysis that implies a difference in their respective structures as well.
20. Kornfilt (1986) and Haig (2004) offer a constraint-based (“Stuttering Prohibition” for the former) blocking of $-(s)I(n)$. Göksel (2009) and Bağrıaçık and Ralli (2012) provide an explanation in terms of phrase structure.
21. It is important to mention one more test: $-(s)I(n)$ in some Turkish compounds can be ‘suspended’, a phenomenon described as ‘suspended affixation’ (see Lewis 1967 and Kornfilt 1996, 2012, among others). In this phenomenon, “[...] the last conjunct in a coordination (which can consist of two or more conjuncts) bears a certain word-final suffix (or a sequence of word-final suffixes), while the other conjuncts lack that/those suffix(es); the “suspended” affix(es) distribut(es) over *all* conjuncts.” (Kornfilt 2012: 181–182):

(iii) kitap sayfa ve kapağ-ı
 book page-Ø and cover-(s)I(n)
 ‘book page and book cover’

- Interestingly, suspended affixation is observed in other syntactically-built words/nominalizations (Kornfilt & Whitman 2011 and references therein), which indicates that syntactic(ally-built) constituents do not obey lexical integrity. This further supports the relative lack of applicability of lexical integrity to Turkish compounds. See also endnote 7.
22. Kornfilt (1997), Schaaik (2002) and Ralli (2008) offer arguments in favor of the compound-marker status assigned to $-(s)I(n)$.
 23. It should be noticed that many adherents of generative approaches (among others, Lees 1965, Kornfilt 1984, Hankamer 1988, Yüksek 1998, Arslan-Kechriotis 2006, and Kharytonova 2009) have provided a syntactic account for these constructions.
 24. However, for Yüksek (1998), $-(s)I(n)$ is a functional head, and its affixation to the head (right-hand constituent) enables the generation of a specifier slot in the NP.
 25. Schaaik (2002) calls them ‘higher order compounds’.
 26. Göksel (2009: 219, fn. 12) calls items such as *ayakkabı* ‘lexicalized exceptions’ and Schaaik (2002: 92–93) ‘lexicalized (possessive) compounds’.
 27. See endnote 3.
 28. As suggested by an anonymous referee, Turkish may have morphologically-built compounding too, for instance, dvandva compounding. First, it is not my intention to account for Turkish compounding in general, something which has raised enough debate in the literature. Second, Turkish dvandva compounds are of a problematic nature: for instance, there are examples with one or two stresses, and cases containing non-meaningful elements (e.g. *konu-komşu* lit. ?-neighbor, ‘people around, acquaintances’). Thus, I choose to present the two types of formations in Greek, where the distinction between morphological and phrasal compounds is very clear. For a recent and elaborate account of all types of Turkish compounds, see Göksel (2009).

References

- Anastasiadi-Symeonidi, Anna. 1983. La composition en grec moderne d’un point de vue diachronique. *LALIES* 2: 77–90.
- Anderson, Stephen R. 1992. *A-morphous morphology* (= Cambridge Studies in Linguistics; 62). Cambridge: Cambridge University Press.

- Aronoff, Mark. 1994. *Morphology by itself: Stems and inflectional classes*. Cambridge, MA: MIT Press.
- Arslan-Kechriotis, Ceyda Z. 2006. *Case as an uninterpretable feature*. Unpublished Ph.D. Diss. Istanbul: Boğaziçi University.
- Bağrıaçık, Metin. 2010. *Onomatika syntheta stis Altaikes glosses* (Nominal compounding in Altaic languages), Unpublished MA Thesis, University of Patras.
- Bağrıaçık, Metin & Angela Ralli. In press. Bare N(ominal) N(ominal) concatenations in Turkish: Compounds or syntactic fallacies? In Nabil Hathout & Fabio Montermini (eds.), *Morphologie à Toulouse. Proceedings of Decembrettes VII*. München: LINCOM.
- Bağrıaçık, Metin & Angela Ralli. 2012. Construct-state nominals and phrasal compounds in Turkish. Paper read at the *8th Workshop on Altaic Formal Linguistics*, May 18–20, 2012, Stuttgart. To appear in MIT Working Papers.
- Bauer, Laurie. 2001. Compounding. In Martin Haspelmath, Ekkehard König, Wulf Oesterreicher & Wolfgang Raible (eds.), *Language universals and language typology*. Berlin and New York: de Gruyter, 2001, 695–707.
- Booij, Geert. 1994. Against split morphology. In Geert Booij & Jaap van Marle (eds.), *Yearbook of Morphology 1993*, Dordrecht: Kluwer, 27–50.
- Booij, Geert. 1996. Inherent versus contextual inflection and the split morphology hypothesis. In Geert Booij & Jaap van Marle (eds.), *Yearbook of Morphology 1995*. Dordrecht: Kluwer, 1–16.
- Booij, Geert. 2005. Compounding and derivation: Evidence for Construction Morphology. In Wolfgang U. Dressler, Franz Rainer, Dieter Kastovsky and Oskar Pfeiffer (eds.), *Morphology and its demarcations*. Amsterdam and Philadelphia: John Benjamins, 109–132.
- Booij, Geert. 2010. Compound construction: Schemas or analogy? A Construction Morphology perspective. In Sergio Scalise & Irene Vogel (eds.), *Cross-disciplinary issues in compounding*. Amsterdam and Philadelphia: John Benjamins, 93–108.
- Borer, Hagit. 2009. Afro-Asiatic, Semitic: Hebrew. In Rochelle Lieber & Pavol Štekauer (eds.), *Handbook of compounding*. Oxford: Oxford University Press, 491–511.
- Di Sciullo, Anna Maria & Edwin Williams. 1987. *On the definition of word*. Linguistic Inquiry Monographs 14. Cambridge: MIT Press.
- Gaeta, Livio & Davide Ricca. 2009. Composita solvantur: Compounds as lexical units or morphological objects? In Livio Gaeta & Maria Grossmann (eds.), *Compounds between syntax and lexicon. Special Issue of Italian Journal of Linguistics* 21(1): 35–70.
- Göksel, Aslı. 2009. Compounds in Turkish. *Lingue e Linguaggio*, 8 (2): 213–36.
- Göksel, Aslı & Celia Kerslake. 2005. *Turkish. A comprehensive grammar*. London: Routledge.
- Göksel, Aslı & Celia Kerslake. 2011. *Turkish. An essential grammar*. London: Routledge.
- Greenberg, Joseph H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In Joseph H. Greenberg (ed.), *Universals of language*. London: MIT Press, 73–113.
- Haig, Geoffrey. 2004. Constraints on morpheme repetition in Turkish? In Kamile İmer & Gürkan Doğan (eds.) *Current research in Turkish linguistics*. Gazimagusa: Eastern Mediterranean University Press, 3–12.
- Hankamer, Jorge. 1988. *Parsing nominal compounds in Turkish, Morphology as a computational problem*. Occasional Paper 7. University of California at Los Angeles.
- Hayasi, Toru. 1996. The dual status of possessive compounds in Modern Turkish. In Árpád Berta, Bernt Brendemoen & Claus Schönig (eds.), *Symbolae Turcologicae. Studies in honor of*

- Lars Johanson on the occasion of his sixtieth birthday*, 6. İstanbul: Swedish research institute in İstanbul, Transaction, 119–29.
- Kaya, Güven İ., Cemil Öztürk, Asuman Yılğör, Nesrin Altun & Selimhacıoğlu Bedri. 1997. *Türk Dili Ders Notları*. İstanbul: Boğaziçi University Press.
- Kharytonova, Volha. 2009. Nominal compounds and possessive constructions in Turkish. In Sila Ay, Özgür Aydın, İclâl Ergenç, Seda Gökmen, Selçuk İşsever & Dilek Peçenek (eds.), *Essays on Turkish linguistics (Proceedings of the 14th international conference on Turkish linguistics)*, Turcologica 79. Wiesbaden: Harrassowitz, 113–20.
- Kornfilt, Jacklin. 1984. *Case marking, agreement and empty categories in Turkish*. Ph.D. diss., Cambridge, Mass: Harvard University.
- Kornfilt, Jacklin. 1986. The stuttering prohibition and morpheme deletion in Turkish. In Ayhan Aksu Koç & Eser Erguvanlı-Taylan (eds.), *Proceedings of the second international conference in Turkish linguistics*. İstanbul: Boğaziçi University Publications, 59–83.
- Kornfilt, Jacklin. 1996. On copular clitic forms in Turkish. In Artemis Alexiadou, Nanna Fuhrhop, Paul Law & Sylvia Löhken (eds.), *ZAS Papers in Linguistics* 6. ZAS, Berlin, 96–114.
- Kornfilt, Jacklin. 1997. *Turkish*. London: Routledge.
- Kornfilt, Jacklin. 2012. Revisiting suspended affixation and other coordinate mysteries. In Laura Brugé, Anna Cardinaletti, Giuliana Giusti, Nicola Munaro and Cecilia Poletto (eds.), *Functional heads, The cartography of syntactic structures 7*. Oxford/New York: Oxford University Press, 181–196.
- Kornfilt, Jacklin & John Whitman. 2011. Afterword: Nominalizations in syntactic theory. *Lingua* 121 (7): 1297–1313.
- König, Wolf D. 1987. Nominalkomposita in Türkischen [Nominal compounds in Turkish]. *Zeitschrift für Sprachwissenschaft* 6 (2): 165–85.
- Lees, Robert B. 1965. Turkish nominalizations and the problem of ellipsis. *Foundations of Language* 1: 112–21.
- Lewis, Geoffrey. 1967. *Turkish grammar*. Oxford: Clarendon Press.
- Lieber, Rochelle & Sergio Scalise. 2006. The Lexical Integrity Hypothesis in a new theoretical universe. *Lingue e Linguaggio* 5: 7–32.
- Majzel', Sergejevich S. 1957. *Izafet v Turetskom jazyke* [Izafet in Turkish]. Moskva-Leningrad: Izdatel'stvo Akademii Nauk SSSR.
- Munn, Alan. 1995. The possessor that stayed close to home. In Vida Samiian and Jeanette Schaeffer (eds.), *Proceedings of the 24th Western Conference on Linguistics (WECOL '94)*. California State University, Fresno, CA. Vol.7, pp. 181–195.
- Nespor, Marina & Angela Ralli. 1996. Morphology-phonology interface: phonological domains in Greek compounds. *The Linguistic Review* 13: 357–382.
- Ralli, Angela. 1992. Compounds in Modern Greek. *Rivista di Linguistica* 4 (2): 143–173.
- Ralli, Angela. 2000. A feature-based analysis of Greek nominal inflection. *Glossologia* 11–12: 201–227.
- Ralli, Angela. 2002. The role of morphology in gender determination: evidence from Modern Greek. *Linguistics* 40 (3): 519–551.
- Ralli, Angela. 2005. *Morphology*. Athens: Patakis.
- Ralli, Angela. 2007. *I sinthesi lekseon: diaglossiki morfologiki prosengisi*. Athens: Patakis.
- Ralli, Angela. 2008. Compound markers and parametric variation. *Language Typology and Universals (STUF)* 61: 19–38.

- Ralli, Angela. 2009. IE Hellenic: Modern Greek. In Rochelle Lieber & Pavol Štekauer (eds.), *Handbook of compounding*. Oxford: Oxford University Press, 453–463.
- Ralli, Angela. 2010. Compounding versus derivation. In Sergio Scalise & Irene Vogel (eds.), *Cross-disciplinary issues in compounding*. Amsterdam: John Benjamins, 57–76.
- Ralli, Angela. 2013. *Compounding in Modern Greek*. Dordrecht: Springer.
- Ralli, Angela & Maria Raftopoulou. 1999. I sinthesi os diachroniko fenomeno schimatizmu lekseon. *Studies in Greek Language* 1998: 389–403. Thessaloniki: Kyriakides.
- Ralli, Angela & Melita Stavrou. 1998. Morphology–syntax interface: A–N compounds versus A–N constructs in Modern Greek. In Geert Booij & Jaap van Marle (eds.), *Yearbook of Morphology* 1997. Dordrecht: Kluwer, 243–264.
- Scalise, Sergio & Irene Vogel. 2010. Why compounding? In Sergio Scalise & Irene Vogel (eds.), *Cross-disciplinary issues in compounding*. Amsterdam: John Benjamins, 1–18.
- Schaaik, Gerjan van. 1992. The treatment of Turkish nominal compounds in Functional Grammar. In Michael Fortescue, Peter Harder & Lars Kristoffersen (eds.), *Layered structure and reference in a functional perspective*. Amsterdam: John Benjamins, 231–52.
- Schaaik, Gerjan van. 2002. *The noun in Turkish: Its argument structure and the compounding straitjacket*. *Turcologica* 49. Wiesbaden: Harrassowitz Verlag.
- Spencer, Andrew. 1991. *Morphological theory. An introduction to word structure in Generative Grammar*. Oxford, UK/Cambridge, Mass.: Blackwell.
- Spencer, Andrew. 2001. Does English have productive compounding? In Janet deCesaris, Geert Booij, Angela Ralli & Sergio Scalise (eds.), *Proceedings of the 3rd Mediterranean Morphology Meeting*. Barcelona: Pompeu Fabra, 327–341.
- Štekauer, Pavol, Salvador Valera & Livia Kortvélyessy. 2008. *Word-formation in the world's languages: A typological survey*. Cambridge: Cambridge University Press.
- Swift, Lloyd B. 1963. *A reference grammar of Modern Turkish*. Indiana University Publications, Uralic and Altaic series 19, Bloomington. The Hague: Mouton.
- Yükseker, Hitay. 1987. Turkish nominal compounds. In Peter Avery & Hitay Yüksek (eds.), *Toronto Working Papers in Linguistics* 7: 83–103, Department of Linguistics, University of Toronto.
- Yükseker, Hitay. 1998. Possessive constructions in Turkish. In Lars Johanson (ed.), in cooperation with Éva Ágnes Csató, Vanessa Locke, Astrid Menz & Dorothea Winterling, *The Mainz meeting. Proceedings of the VIIth international conference of Turkish linguistics*, *Turcologica* 32. Wiesbaden: Harrassowitz Verlag, 458–477.

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