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Greek derivational structures: restrictions and constraints

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Abstract This paper investigates the general principles governing the combination of a base with a particular suffix. Elaborating on the well-known conflict between base-driven and affix-driven selectional restrictions, we argue in favor of affix-driven selection. We claim that the various selectional restrictions imposed by the suffixes are inherent specifications, which characterize their entries at the lexical level; if suffixes are heads of derivational structures, these restrictions pass from heads to the derived items through percolation. Additionally, we propose that, beside selectional restrictions, the combinatorial behaviour of suffixes may be determined by a number of other lexically-specified properties such as the 'unique suffix' or 'closing suffix'. Finally, we claim that derivational structures are also governed by language-independent or language-specific constraints, operating on input structures.

Keywords Derivation · Suffixation · Affix-driven vs. base-driven restrictions · Lexically-specified features · Constraints · Standard Modern Greek · Dialectal variation

1 Introduction

Order, combinability and the combinatorial restrictions that derivational affixes are subject to have always been among the central issues of word formation, and various

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theoretical proposals have been put forward in order to account for them (see, for example, Fabb 1988; Scalise 1994; Plag 1996, 1999; Hay 2002, 2003).[1]

This paper deals with the structural principles underlying the combination of a base with a particular suffix, in Standard Modern Greek (hereafter SMG) and a number of its dialects. Its main purpose is to investigate whether (a) suffixes select bases of a specific type, (b) certain suffixes can be followed by other suffixes, while others are not susceptible to further suffixation, and (c) the overall number of attested suffix combinations is generally smaller than that which is theoretically possible.[2]

In Sect. 2 we offer a brief overview of the relevant previous literature on this particular topic, focusing on the structure-oriented approaches, namely on the level-ordering and the restriction-based models. In Sect. 3 we elaborate on the well known conflict between base-driven and suffix-driven selectional restrictions, and argue in favor of an approach which considers selectional restrictions to be determined by the suffix, as lexical specifications of its entry. We show that this approach can account for the occurring suffix chains, since multiple bases may select the same suffix, while the opposite is not very frequent (see also Gaeta 2005 about the same matter). In Sect. 4 we support the view that beside selectional restrictions, other lexically-specified features may affect derivational structures, along the lines of the proposal put forward by Lüdeling and Schmid (2003). We provide evidence that certain general cross-linguistic constraints, or language-dependent ones, may play a significant role in determining occurring or non-occurring suffix chains. Section 5 gives a brief summary of the main points of the paper.

Our claims and proposals are illustrated with evidence from SMG, a morphologically rich language, with a large variety of derivational suffixes, and some of its major dialects, namely the varieties spoken in the Asia Minor areas of Kydonies and Moschonisia (Aivaliot), Cappadocia (Cappadocian) and Pontus (Pontic).

2 Previous literature

In linguistic theory, a basic restriction for the non-occurrence of certain combinations between a base and a particular suffix may result from the so-called 'subcategorisation frame' (cf. Lieber 1980), according to which a suffix selects a base of a specific category to combine with. A typical illustration from SMG (see Ralli 1986, 1988) is the adjective *oryanotikos*[3] 'organizing', where the very productive adjectival suffix *–ik(os)*[4] can attach to a simple nominal base, for instance to

[1] For relevant discussion about the order between derivational and inflectional affixes, see Bybee (1985), while the order among inflectional affixes is examined by Booij (1994, 1996).

[2] Under a different framework, several of these issues have been tackled by Corbin (1987, 1991).

[3] Greek examples are given a broad phonological transcription. Stress will appear only if it is relevant for the argumentation.

[4] In this paper, inflectional endings and other stem material that are not relevant for the discussion are included in parentheses.

orγan(o) 'organ, instrument' (1a), as well as to a deverbal nominal one, e.g. *orγan-o-ti(s)*[5] 'organizer' (1b), but not to a verbal base (1c):

(1) a. orγano_{N} > $\text{orγan}_{N}\text{-ik(os)}_{Adj.}$[6]
organ, instrument organic, instrumental

b. orγano_{N} > $\text{orγan}_{N}\text{-on(o)}_{V}$ > $\text{orγan-o}_{V}\text{-ti(s)}_{N}$ > $\text{orγan}_{N}\text{-o}_{V}\text{-t}_{N}\text{-ik(os)}_{Adj.}$
organ to organize organizer organizing
but

c. $*\text{orγan}_{N}\text{-on}_{V}\text{-ik(os)}_{Adj.}$

The first systematic attempt to account for the combinatorial behaviour of affixes was made within the framework of strata-oriented models (cf. Siegel 1974; Allen 1978; Selkirk 1982; Kiparsky 1982; Mohanan 1986), according to which the different combinatorial properties of derivational affixes follow, to a great extent, from the position they hold in different 'lexical strata' ('levels' in Kiparsky's 1982 terms). These strata can account for the attested combinations, in the sense that suffixes belonging to a particular stratum attach to bases ending in suffixes of the same stratum, or to those of a preceding one. Thus, they cannot appear in the periphery of suffixes belonging to a subsequent stratum. Within this framework, Kiparsky (1982) and Mohanan (1986) have proposed that English and German suffixes belong either to stratum 1 or to stratum 2. Suffixes of stratum 1 tend to be of Latin origin, cause phonological and morphological changes (e.g. stress shift), and their formations are less productive and semantically less compositional than those of stratum 2. Along the same lines, Ralli (1988) has proposed an organization of the Greek lexicon into three levels (strata), relying on the notion of productivity of word-formation processes. In her work, derivational structures occurring in level 1 involve suffixations which are not productive, while the most productive ones are assigned to level 2, together with a number of less productive compound structures. As for level 3, it is the site of the formation of inflectional structures, and that of the most productive compound types.

The strata-oriented models, despite their advantages as far as the order, position and productivity of affixes and morphological processes are concerned, have been subject to severe criticism, on both theoretical and empirical grounds (see, among others, Fabb 1988; Scalise 1994; Plag 1996, 1999; Booij 2002; Gaeta 2005). One of their most important theoretical weaknesses is that the assignment of a suffix to a particular stratum is not clearly decided on the basis of a specific property, or a number of properties. Moreover, on the empirical level, there are many

[5] *-ti(s)* productively builds agentive and/or instrumental deverbal nouns (cf. Malikouti-Drachman and Drachman 1995; Ralli 2005). Like the vast majority of deverbal suffixes, it combines with verbal stems, which are used in the inflectional paradigms of the perfective aspectual value. For instance, the noun *kalierγiti(s)* 'cultivator' is created by attaching *-ti(s)* to the stem *kalierγi-*, of the verb *kalierγ(o)* 'to cultivate', which appears in the inflectional paradigms of the aorist and simple future, both marked as [+perfective].

[6] For clarity reasons, hyphens separate the derivational suffixes from the base.

"unexpected" suffix combinations, which violate the predicted order and combination of various suffixes within the same word (cf. Aronoff and Sridhar 1987).[7]

As a reaction to the stratified models, another approach has been developed, according to which various possible or impossible derivational combinations are due to selectional restrictions, which are imposed either by the affixes or by the bases (cf. Fabb 1988; Plag 1996, 1999, 2002, etc.). On the one hand, Fabb (1988) has observed that the occurring suffix combinations are far fewer than those which are theoretically possible in a strata-oriented model. More particularly, he lists only 50 attested combinations of 43 English suffixes, while strata ordering would predict 459 combinations. In an effort to account for this discrepancy, he argues that the attested suffix chains can be interpreted by appealing to idiosyncratic affix-driven selectional restrictions, and proposes a distribution of suffixes into four categories, according to their combinatorial behaviour (see next section for more details). On the other hand, Plag, criticizing certain shortcomings of Fabb's categorization, argues that the grouping of various suffixes results primarily from base-driven selectional restrictions, and also from some general principles, such as the blocking device (Plag 1999, p. 80).

In addition, various attempts have been made to deduce the combinatorial behaviour of suffixes from general properties, which are based on specific characteristics of either an etymological (cf. Aronoff and Fuhrhop 2002) or phonological nature (cf. Booij 2002).[8] For instance, Aronoff and Fuhrhop (2002) argue that the combinatorial behaviour of English suffixes can be interpreted by taking into consideration a basic property of English morphology: the Germanic vs. Latinate dichotomy, formulated in the so called 'monosuffix constraint',[9] while Booij (2002) interprets the different combinatorial behaviour of Dutch suffixes on the basis of the combination of features such as [±native] and [±cohering].[10,11] Again, these proposals have been criticized for the absence of crosslinguistic value, on the basis of several attested counter-examples (cf. Gaeta 2005). Within this spirit, Lüdeling and Schmid (2003, pp. 255–266) have tested Booij's (2002) proposal by applying it to the German suffixes, and argue that origin and phonological properties cannot sufficiently account for their combinatorial behaviour, which are due, to a high degree, to lexically-specified properties.

Apart from structural approaches, it is worth mentioning that there are also psycholinguistic ones, according to which the mental representation of linguistic

[7] More recently, and on the basis of English data, Giegerich (1999) has put forward a different proposal of adopting lexical strata, which are not defined in terms of the affixes, but in terms of the bases. However, while his model overcomes the problem of suffix ordering within the same stratum, it weakens the predictive power of the previous models. See, among others, Plag (1999, pp. 54–57, 2002, pp. 287–289) for further discussion.

[8] For a phonologically motivated analysis see also Anshen et al. (1986), and Van Heuven et al. (1993).

[9] For Aronoff and Fuhrhop (2002), the 'monosuffix constraint' summarizes the general tendency of English derivation and inflection to allow for no more than one Germanic suffix in a word structure.

[10] A [+cohering] suffix creates one prosodic word with the base it attaches to. On the contrary, a [-cohering] suffix constitutes a prosodic word by itself.

[11] According to Booij (2002) [−native] suffixes attach only to [−native] bases, while [+native] suffixes to [±native] bases. In addition, [+native] suffixes attach to the periphery of [−native] suffixes, while only [−cohering] suffixes, which are [+native], attach freely to already suffixed bases.

entities, as well as the processes that take place in the brain with regard to the linguistic input, may play a crucial role for the determination of the combinatorial properties of affixes (cf. Hay 2003, 2002; Hay and Baayen 2002). Finally, there are also proposals that try to combine both structural and psycholinguistic models, such as those by Hay and Plag (2004) and Zirkel (2010). A detailed presentation of psycholinguistic proposals is omitted here, since the basic purpose of the paper is to show whether selection is base-driven or affix-driven, and to what extent structural constraints affect the Greek derivational structures.

3 Base-driven versus affix-driven selection

As already mentioned in the previous section, there are two opposing views concerning selection in derivational morphology.

The first one is principally formulated by Fabb (1988), and Scalise (1994), who argue in favor of suffix-driven selectional restrictions, and claim that the suffix selects the base. However, both Fabb and Scalise, in order to account for the combinatorial properties of English and Italian suffixes add to their analysis an independently motivated suffixal classification into four classes. They propose that suffixes are divided in (a) those which do not attach to already suffixed words, (b) those that follow another suffix, (c) suffixes that combine freely with bases, and (d) problematic suffixes. This classification has been criticized mostly by Plag (1996, 1999), Hay and Plag (2004), and Gaeta, (2005), who point out that it is not well grounded but rather arbitrary, and they provide counter-examples to this particular distribution.

The second view is mainly expressed by Plag (1996, 1999) who claims that combinations of a base and a suffix are not primarily suffix driven, as in Fabb's and Scalise's proposal, but base driven. More specifically, he argues that the combinatorial behaviour of derivational structures follows from the specifications of the pertinent bases. In other words, Plag claims that the base selects the suffix to be attached to, and blocks other possible combinations. However, even this approach displays certain weaknesses: it is often the case that several bases, simple or derived, combine with the same derivational suffix. Thus, instead of supposing that each different base is separately responsible for the selection of the same suffix, it is much more economical to presume that the suffix selects a particular kind of base. On this, we agree with Gaeta (2005, p. 234), who has observed that the fact that more than one base selects a specific suffix renders the frame of the base too complex as far as its lexical specifications are concerned. A considerable number of Greek data provides substantial confirmation to this position, as the examples in (2) illustrate, which involve the attachment of the deverbal nominal suffix *-ma* to various verbal bases:[12]

(2)		Base	Derived item
	a.	aniγ(o)	aniγ-ma
		to open	opening, aperture

[12] For the semantics of verb forming suffixes in Modern Greek see Efthymiou (2009).

b.	kimiz(o)	kimiz-ma
	to put to bed	putting to bed
c.	pasxiz(o)	pasxiz-ma
	to try hard	trying hard, big effort
d.	traγuδ(o)	traγuδi-ma[13]
	sing	singing

With respect to *-ma*, it is worth noting that Malikouti-Drachman and Drachman (1988, 1995) have observed that, with the exception of few cases (e.g. *kama* 'heat < *keo* 'to burn'), it is subject to a selectional restriction of phonological nature, according to which *-ma* selects verbal bases of more than one syllable.

Crucially, additional support to the thesis that selection is suffix driven is provided by the choice of a particular form of a derived base. Consider the *-ik(os)* suffix, which productively combines with nominal bases in order to form adjectives denoting property. In certain cases, **-***ik(os)* selects the extended allomorph of the suffixed nominal base, that is the allomorph with ends in *-δ-*, and is found in the plural number, see (3a–b), while in other cases, it attaches to the shorter form of the base, which characterizes the paradigm of the singular number (3c–d):

(3)		Simple base	Derived base	Plural form	Adjective in -ik(os)
	a.	samatá(s)	samata-dz(ís)	samata-dzíδ(es)	samata-dzíδ-ik(os)
		fuss	rowdy		rowdy
	b.	fiγúra	fiγura-dzí(s)	fiγura-dzíδ(es)	fiγura-dzíδ-ik(os)
		swank	swank, exhibitionist		exhibitionistic
	c.	taksíδi	taksiδi-áris	taksiδi-áriδ(es)	taksiδi-ár-ik(os)
		travel	fond of travelling		traveling
	d.	kítrin(os)	kitrin-iáris	kitrin-iáriδ(es)	kitrin-iár-ik(os)
		yellow	pale-faced		pale-faced'

In the examples under (3) we see that *-ik(os)* is attached to the extended allomorph of the base in *-dzi(s),* that is to that in *-dziδ-*. On the contrary, when it combines with bases in *-(i)ari(s)*,[14] it selects the shorter form. A possible suggestion for accounting for this behaviour may appeal to phonology, since bases which are stressed on the final vowel of their suffix (e.g. bases ending in *-dzi(s))* are usually those which display the longer allomorph in their combinations with *-ik(os).*

Therefore, in the light of evidence provided above, we argue in favor of the main thesis taken by Fabb (1988) and Scalise (1994), according to which suffix-driven selectional restrictions govern the formation of derivational structures.

Furthermore, and in accordance with Ralli (1988, 2005) and Anastassiadi-Symeonidi (1998), we claim that selectional restrictions are inherent specifications,

[13] In certain verbs, the difference between the stem of the present tense and the stem which appears in derived words is due to a lexically-specified allomorphic variation. As already stated in footnote 5, verbal stems which undergo derivation are those which are usually used in the perfective context (see Malikouti-Drachman and Drachman 1988, 1995 and Ralli 1988, 2005 for further details).

[14] For a detailed analysis of the *-(i)ari(s)*suffix, see Anastassiadi-Symeonidi (1998, 2000).

which characterize suffixes at the lexical level. This claim presupposes that suffixes are lexical entries, which are listed in the lexicon, together with roots or non-derived stems, and that they assume the role of heads in derivational structures. As such, they transmit their selectional restrictions to the derived items, via percolation. In this way, we may account for the fact that certain suffixed bases display features that do not belong to their roots, but to their suffixal parts. For instance, for the formation of Greek female personal nouns denoting property or profession (see (4)), the female suffix *-isa* requires bases marked as [+profession/+property] and [+masculine].[15]

With respect to nouns given in (4b–g), these features are provided to the derived bases by the suffixes *–δor(os), -ari(s), -ieri(s), oti(s),* and *atora(s),* which, as opposed to *–isa,* do not require roots marked for a specific gender value:

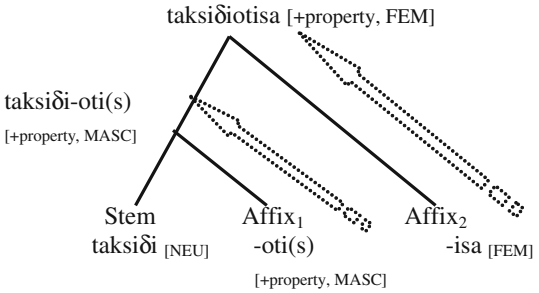
(4)					
	a.		bakali(s)		bakal-isa
			grocer.MASC		female grocer
	b.	-δor(os) + -isa	traka	traka-δor(os)	traka-δor-isa
			touch.FEM	scrounger.MASC	female scrounger
	c.	-ari(s) + -isa:	furn(os)	furn-ari(s)	furn-ar-isa
			oven/ bakery.MASC	baker.MASC	female baker/ baker's wife
	d.	-ieri(s) + -isa:	kamila	kamil-ieri(s)	kamil-ier-isa
			camel.FEM	cameleer.MASC	female cameleer
	e.	-iti(s) + -isa:	poli	pol-iti(s)	pol-it-isa
			city.FEM	citizen.MASC	female citizen
	f.	-oti(s) + -isa:	taksiδi	taksiδi-oti(s)	taksiδi-ot-isa
			travel.NEU	traveller.MASC	female traveller
	g.	-atora(s) + -isa:	estia	esti-atora(s)	esti-ator-isa
			fire place/ home.FEM	restaurant. owner.MASC	female restaurant owner

As stated in the introduction, and given the large variety of bases *-isa* combines with, it is much more economical and consistent with the principles of headedness and percolation (see, among others, Williams 1981; Selkirk 1982; Di Sciullo and Williams 1987; Lieber 1980, 1989; Scalise 1988; Ralli 1988, 2005) to assume that it is *-isa* which selects the base, instead of supposing that each simple (4a) or suffixed base (4b–g) is separately responsible for the selection of the same suffix.

Schematically, the percolation of features in a derived structure, such as that of *taksiδiotisa* 'female baker', is depicted by Schema 1:

[15] Due to its property to provide the feminine value to bases marked as [+masculine], an anonymous reviewer has suggested that *-isa* could be considered as an inflectional suffix. However, this is not the case, because (a) gender is a feature which, in Greek, characterizes the base, and is not realized by the inflectional suffix (see Ralli 2002), and (b) nouns in *–isa* are followed by distinct inflectional suffixes denoting number and case:

(i) furn-ar-is-es
bakery-MASC-FEM-NOM/ACC.PL
'female baker'



Schema 1 Feature percolation in Greek derived structures

At this point, an obvious question concerns the case of more than one suffix, which can combine with the same base (5), and might cast doubt on the validity of the argument in favor of the affix-driven selection. Consider the following deverbal items, created out of the same verbal base:

(5)		Base	Derived items		
	a.	skoton(o)	skoto-ma	skoto-m(os)	
		to kill	killing	killing	
	b.	kin(o)	kini-ma	kini-si	kini-t(os)
		to move	movement	movement	mobile
	c.	pern(o)	peraz-ma	peras-ia	pera-si
		to pass	passage	passage	passing

It is worth pointing out that cases such as those in (5), where the same base leads to the creation of more than one item by combining with more than one suffix are few, compared to the vast majority of those where the same suffix combines with multiple bases. From this point of view, it is more economical to adopt an affix-driven approach than a base-driven one. As an anonymous reviewer has suggested, another option would be to claim that Greek derivational structures are in some cases base-driven, while in others suffix-driven. For theoretical reasons, we would like to reject this suggestion, since it lacks consistency and generalization: it assigns and deprives, at its convenience, a strong property, i.e. selection, from the same morphological elements (suffixes), which in any other respect, exhibit the same structural behavior, that is they are heads, and thus, responsible for transmitting their features to the derived structures.

4 Constraints and other lexically-specified combinatorial properties

In the previous section, we have argued that the well-formed combinations between a base and a suffix are governed by selectional restrictions imposed by the suffix as part of its lexically-specified properties. In this section, we would like to propose that derivational structures are also subject to the operation of language-independent or language-specific constraints, and that suffixes may also be lexically specified for

certain additional properties, which are of combinatorial nature, and control the morphological structures in which suffixes participate. Some of these are the well-known 'unique suffix' or the 'closing suffix' ones, which are proposed by Aronoff and Fuhrhop (2002). We believe that these properties do not constitute independently motivated morphological information, but information which may inherently specify the suffixal entry, and through percolation (see previous section), it can be transmitted to the suffixed item.[16] This position is in accordance with Lüdeling and Schmid (2003, p. 263), who argue that some suffixes may exhibit a particular combinatorial behaviour, which cannot be accounted for by referring only to selectional restrictions.

As shown by the examples listed in (4), a suffix selects a particular base, which can be simple or derived. In (6), we provide an example, where a suffix is unique, in that it is combined with a simple base, and the product of combination cannot be further suffixed. This is the case of the locative-inclusive suffix *-ona(s)* (Fyntanis 2003; Melissaropoulou in print):

(6) a. strat(os) strat-ona(s)
army soldiers' quarters
b. orniθ(a) orniθ-ona(s)
hen hennery
c. kalami kalami-ona(s)
reed field planted with reed

Exemplification of a suffix specified as closing is offered by the diminutive suffixes *-itsa* (+female) and *-aki* (+neuter), as illustrated by the examples in (7–8), where *-itsa* and *-aki* are combined with derived bases ending in another diminutive suffix, *-ula/i*. In a Greek diminutivized item, diminutive suffixes may cumulate under one condition: *-aki*, and *-itsa* must appear at the periphery of derivation. Thus, we consider these suffixes to be marked as [+closing], as opposed to *-ula/i*, whose derivative structures can be followed by another diminutive suffix.

(7) Cumulation of female diminutive suffixes -ula + -itsa[17]
a. vark(a) vark-ul-itsa but not *vark-its-ula
boat.FEM small.boat.FEM
b. man(a) man-ul-itsa but not *man-its-ula
mother.FEM mummy.FEM

(8) Cumulation of neuter diminutive suffixes –uli + -aki
a. avγ(o) avγ-ul-aki but not *avγ-ak-uli
egg.NEU little.egg.NEU
b. mikr(o) mikr-ul-aki but not *mikr-ak-uli
small.NEU very.small/tiny.NEU

[16] This lexically-specified information may also have a classifying function, distributing suffixes into different groups, within the spirit of Fabb's (1988) and Scalise's (1994) approach.

[17] Cumulation of diminutive suffixes is allowed in Standard Modern Greek words, but prohibited in certain dialects. See Melissaropoulou and Ralli (2008) for further details.

Lexical specifications for closing or unique suffixes are not sufficient though to account for ungrammatical structures, where further suffixation is prohibited. Unless some kind of base-driven restrictions are allowed, the suffixes cannot possibly 'know' that they cannot attach to derived bases specified as unique or as closing. We would like to propose that the formation of ungrammatical structures involving non-occurring suffix chains is not only blocked by affix-driven selectional restrictions, but also by the operation of morphological constraints.[18] In this particular case, a morphological constraint applies to the input of derivational structures and checks their combinatorial features. Let us call it the 'unique/closing-suffix constraint' and formulate it as *[closing/unique base—derivational suffix]. Its application does not allow a derivative morphological structure, ending in a suffix marked as [+unique] or [+closing], to be further derived. In fact, structures such as those in (6–8) are susceptible only to inflection.

Constraints constitute an efficient device for restricting grammars and filtering out ungrammatical structures. They have become popular in phonological theory, and occupy a prominent position in the constraint-based framework of Optimality Theory (Prince and Smolensky 1993). As shown by Ralli and Karasimos (2009), constraints may also apply to the other levels of grammar, for instance, to morphology, where they may elucidate why certain word structures are possible, while other structures are not.[19] Constraints may be language independent or language specific. The *[closing/unique base—derivational suffix] constraint belongs to the first category, since closing or unique suffixes may be found in all languages with suffixation. As a language-independent constraint applying to the input of derivational structures, we could also interpret the well-known blocking device,[20] which has been proposed by Aronoff (1976), and further elaborated by Rainer (1988) as 'token-blocking'. According to this, the formation of certain words can be prevented if the language has already items bearing the same root and the same meaning. Consider the following data, drawn form Standard Modern Greek:

(9)	a.	xnuδ(i)	xnuδ-er(os)	*xnuδ-ik(os)
		down	downy	
		paγ(os)	paγ-er(os)	*paγ-ik(os)
		ice	icy	
	b.	efniδi-az(o)	efniδi-az-m(os)	*efniδi-az-ma
		to spring on	suddenness	
		efoδi-az(o)	efoδi-az-m(os)	*efoδi-az-ma
		to provide	provision	

[18] Along the same lines, Plag (1999) has pointed out that independent general principles may play a crucial role on the well-formedness of derivational structures.

[19] Hints about the operation of constraints can also be found in Rainer (2000), where he mentions the occurrence of morphological restrictions on the input, which he calls 'rule- or process-specific constraints'.

[20] Corbin (1987, p. 407) expresses a different view, according to which the blocking principle lacks predictability and interpretative adequacy: "Ce principe ne permet pas de prédire quelles formes sont éliminées. La sélection des mots construits attestés parmi plusieurs produits concurrents est un processus ad hoc."

In (9a), the attachment of *-ik(os)* to simple nominal bases like *xnuδ(i)* and *paγ(os)* for the formation of potential adjectives is blocked by the already existing synonymous words in *-er(os)*. Similarly, in (9b), the formation of deverbal nouns in - *ma* is prohibited by the existence of deverbal nouns in *-m(os)*. It should be noticed though that in certain cases, both deverbal nouns in *-ma* and *-m(os)* coexist, as possible derivative items of the same base. When this situation occurs, there is a specialization of the meaning of one of the two structures. As an illustration, consider the examples below, where the structures in *-ma* have developped a specialized meaning:

(10)	a.	skot-on(o)	skot-o-m(os)	skot-o-ma
		to kill	killing	exhaustion/panic/smash
	b.	aγi-az(o)	aγi-az-m(os)	aγi-az-ma
		to sanctify	sanctification	holy water

Finally, it is worth illustrating the existence of a language specific constraint, which refers to the non-occurrence of multiple diminutive suffixes. This time, we will illustrate our claims with data from certain Modern Greek dialects.

As noted by Melissaropoulou (2006) and Melissaropoulou and Ralli (2008), cumulation of diminutive suffixes is not usually acceptable in a number of dialects, as opposed to SMG, where a diminutivized word can bear two or three diminutive suffixes (see also examples 7–8, in Sect. 3). Melissaropoulou and Ralli have proposed that this dialectal behaviour is due to a constraint, according to which the creation of complex derivative structures displaying more than one suffix with the same meaning (or function) is avoided.[21] Its application is attested in Pontic (11), Cappadocian (13) and Aivaliot (14), i.e. in the dialects spoken once in the former Ottoman Empire, and still spoken in certain parts of Greece, within communities of first, second, and third generation refugees.

In Pontic, among the diminutive suffixes we find the feminine *-itsa,* the masculine *-itsi(s)*, and the neuter *-op(on).*[22] *-itsa* combines with feminine bases, *-itsi(s)* with bases marked as [+masculine] and [+human], and *-op(on)* does not impose any selectional restrictions, attaching freely to all nominal bases. In this dialect, cumulation of diminutive suffixes is not attested within the same word (11a–b),[23] as opposed to SMG (12a–b), where a corresponding cumulation is perfectly fine.

(11)		Pontic			
	a.	aθrop(os)	aθrop-op(on) / aθrop-itsi(s)	but	*aθrop-its-op(on)
		man.MASC	little/poor.man.NEU	or	*aθrop-op-itsi(s)
	b.	jinek(a)	jinek-op(on) / jinek-itsa	but	*jinek-its-op(on)
		woman.FEM	little/poor.woman.FEM	or	*jinek-op-itsa
		versus			

[21] The same holds for augmentation as well, since no double augmentatives are acceptable. As an anonymous reviewer has suggested, further research is needed in order to see where other derivational domains, i.e. multiple prefixation, could offer further support to the proposed constraint.

[22] According to Andriotis (1992), *-itsa* is of Slavic origin.

[23] It should be noticed that according to Koutita-Kaimaki (1984) cumulation of diminutive suffixes in Pontic may become possible when the diminutive meaning of the first suffix has become opaque.

(12) SMG

a.	vark(a)	vark-ula / vark-itsa	vark-ul-itsa
	boat.FEM	small.boat.FEM	
b.	mikr(o)	mikr-uli / mikr-aki	mikr-ul-aki
	small.NEU	very small/tiny.NEU	

Like Pontic, Cappadocian also avoids cumulation of diminutive suffixes. It displays the diminutive suffix *-okk(o)*, and its variant *-opp(o)*, which are used with practically every nominal base susceptible to diminution, and never appear at the periphery of other diminutive suffixes, such as *-itsa* or *-isk(o)*:

(13) Cappadocian[24]

a.	kak(a)	kak-opp(o) / kak-itsa	but	*kak-its-opp(o)
	grandmother	grannie		
b.	mikr(o)	mikr-opp(o) / mikr-isk(o)	but	*mikr-isk-opp(o)
	small	very small, tiny		

Finally, a similar situation holds in Aivaliot (cf. Melissaropoulou 2007). In this dialect, the two more productive diminutive suffixes are *-uδa*, which selects feminine bases (14a), and *-eʎ*, which combines freely with bases of any gender value (14b–d). Although the attachment of *-eʎ* to already diminutivized bases with *-uδa* would be perfectly acceptable in terms of selectional restrictions, cumulation of diminutive suffixes is not generally attested (14e):[25]

(14) Aivaliot

a.	karéγl(a)	kariγl-úδa[26]
	chair.FEM	small.chair.FEM
b.	pitn(ós)	pitn-éʎ
	cock.MASC	small.cock.NEU
c.	karéγla	kariγl-éʎ
	chair.FEM	small.chair.NEU
d.	rúx(u)	rx-éʎ
	cloth.NEU	small.cloth.NEU
	but	
e.	*kariγl-uδ-éʎ	

[24] Cappadocian noun inflection has lost the formal distinction of the three gender values, due to the Turkish influence, see Janse (forthcoming) and Ralli (2009).

[25] An alternative solution to the non-occurrence of multiple diminutive suffixes in the three dialects would be to consider them as [+closing]. This would spare us from the dialect-specific constraint, but it would cancel any possible link with the same or similar suffixes in SMG and other dialectal systems.

[26] In Aivaliot, the mid vowels /e/ and /o/ become /i/ and /u/ respectively, when found in an unstressed position. Unstressed high vowels in this dialect are usually deleted (see (14d)).

5 Summary

In this paper, we have argued that the combination of a base with a derivational suffix is basically suffix-driven, and is determined by features, which are inherent specifications of the suffixal lexical entry. These features include selectional restrictions and combinatorial properties. We have also proposed that well-formed derivational structures are further governed by a number of constraints, which can be language independent or language specific. We have illustrated our claims with data from Greek (SMG) and its dialects.

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