Word formation as syntax-morphology interaction: Evidence from theme vowels in Modern Greek

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Abstract

The purpose of this paper is to investigate the function and the features represented in theme vowels (TVs) in Modern Greek (MG). It is argued that TVs represent morphological (class) and aspectual features. It is also claimed that TVs trigger morphological processes resulting in the formation of stems in MG. The evidence presented shows that word formation is a complex process involving the obligatory interaction of syntax as well as morphology, contra the purely syntactic approaches (Baker 1985, Rivero 1990), and the morphological ones (Di Sciullo and Williams 1987, Joseph and Smirniotopoulos 1993).

Keywords: theme vowels, Greek, morphology, syntax, word formation

1. Introduction

The aim of this paper is to discuss the syntax-morphology interaction as seen in word formation by looking at theme vowels (TVs) in Modern Greek (MG). The account developed here is formulated within the framework of Distributed Morphology (DM) (Halle and Marantz 1993). In specific, I concentrate on the function and status of TVs. I claim that TVs in MG should not only be seen as markers of the conjugational classes to which verbs belong (primary features), but also as morphemes representing the features of aspect (secondary features), subject to the realisation of voice in certain cases. The representation of the secondary features, though, contradicts what has been previously suggested in the literature (cf. Harris 1998, Spencer 1991). As for their function, I propose that TVs trigger the application of morphological operations resulting in the
formation of MG stems. Moreover, the distribution of the morphological and syntacticosemantic features of these units provides support for the claim that word formation is a complex process and this alternative analysis to TVs shows that a part of word formation is interpreted in syntax and another part is necessarily interpreted at the morphological component.

The rest of the paper is organised as follows: in section 2, I present the data drawn from the verbal forms in MG. Once the main principles of the framework adopted are briefly introduced in section 3.1, the alternative account of TVs is presented in section 3.2. The paper concludes in section 4, where a short reference to the main points raised is made.

2. Data: Modern Greek

In this section I pay attention to the features represented in TVs in MG.¹ The discussion departs with a short reference to traditional claims in the literature regarding the status of TVs, as depicted in Spencer (1991). Following, I sketch a (purely synchronic) morphological discussion of the verbal forms in MG, focusing on stems. The discussion aims to highlight the incompatibility of the traditional view on TVs for its application to MG and the need for the formulation of an alternative analysis. However, it has to be made clear that the data is restricted to certain verbal classes due to space limitations. Consequently, I do not touch upon suppletive stems, subclasses or minor inflectional classes, phonological alternations, allomorphic and stress patterns or pure lexical idiosyncrasies (see Galani (in preparation) for the relevant discussion). Additionally, any assumptions made in relation to voice features and their realisation are based on claims made in Galani (to appear, a).

The traditional treatment of TVs in the Romance languages (cf. Harris 1998, for Spanish) and Russian sees TVs as morphemes which "serve no other purpose than to help create a base on which to attach the inflectional desinences, and to define the separate morphological classes" (Spencer 1991: 11). In the Russian example below (adopted from Spencer 1991: 11), the TVs -aj- (1a-b) and -i- (1c-d) attach to the roots, del- 'root.do' (1a-b) and govor- 'root.speak' (1c-d), respectively, to form the stems to which the pieces of inflection, -u- 'PR.AC.1SG' (1a), -et 'PR.AC.3SG' (1b), -te 'PR.AC.2PL' (1d), are further added. The two stems, delaj- 'stem.do' (1a-b)

¹ For an extensive discussion of the problems previous accounts around the verbal morphology in MG face for the re-analysis of TVs in MG, see Galani (2003a).
and *govori*—‘stem.speak’ (1c–d), belong to different conjugational classes and this information is encoded in/by the TV selection in each form.²

(1a) del – aj – u  
    \(\sqrt{do} – TV – PR.AC.1SG\)

(1b) del – aj – et  
    \(\sqrt{do} – TV – PR.AC.3SG\)

(1c) govor – i – t  
    \(\sqrt{speak} – TV – PR.AC.3SG\)

(1d) govor – i – te  
    \(\sqrt{speak} – TV – PR.AC.2PL\)

Crucially, the TVs add no syntacticosemantic information to the forms they attach to. They only define class. So, TVs are formative in nature, following Ralli’s (1983) notation.

Let us now move on to the morphological sketch of stems in the verbal forms in MG generally assumed in the literature; verbal forms in MG consist of a stem—representing mainly aspect but also voice—and the agreement/tense suffixes (Joseph and Smirniotopoulos 1993, Philippaki-Warburton 1973 and Ralli 1993).³

In (2a), the stem *apolimen*—‘disinfect.IMP’ is used in the forms representing the imperfective aspect, whereas *apoliman*—‘disinfect.PER.AC’ (2b) represents the perfective aspect and active voice contra (2c), *apolimanthik*—‘disinfect.PER.NACpst’, which also represents the perfective aspect but non-active voice.

(2a) apolimen – a  
    stem.disinfect.IMP – 1SG.PST

(2b) apoliman – a  
    stem.disinfect.PER.AC – 1SG.PST

(2c) apolimanthik – a  
    stem.disinfect.PER.NACpst – 1SG.PST

In a similar fashion, the imperfective aspect and active voice are represented in *agapag*—‘love.IMP.AC’ (3a), whereas its perfective, active and perfective, non-active counterparts are *agapis*—‘love.PER.AC’ (3b) and *agapithik*—‘love.PER.NACpst’ (3c), respectively.

² The following abbreviations are used in the examples: PR(esent), P(a)ST, S(in)G(ular), PL(ural), AC(tive), N(on)-AC(tive), IMP(erfective), PER(fective).

³ Due to space limitations and the purpose of the paper, no reference is made to details and/or any deviations in the analyses presented in the afore-mentioned works.
(3a) agapag – a
  stem.love.IMP.AC – 1SG.PST
(3b) agapis – a
  stem.love.PER.AC – 1SG.PST
(3c) agapithik – a
  stem.love.PER.NACpst – 1SG.PST

Following this treatment, though, TVs are not accounted for, despite the fact that it is generally accepted that TVs do appear in MG (Philippaki-Warburton 1973, Ralli 1988). Moreover, it is unclear how class specification is determined. This is even more obvious when one considers (4) that follows. Additionally, the morphological spell-out of stems can be only seen as the result of the application of adjustment rules, especially in (2a-b). So, the formation of stems is not the result of particularly productive processes.

Nevertheless, Ralli (1983) claims that TVs are present in forms such as (4), similarly to Spencer (1991). The TVs, -iz- (4a-b) and -on- (4c-d), attach to the roots, zograf- ‘draw’ (4a-b) and kikl- ‘circle’ (4c-d), respectively, to form stems, zografiz- (4a-b) and kiklon- (4c-d). These morphemes define the verb class to which the two forms belong.

(4a) zograf – iz – o
  v.draw – TV – 1SG.PR
(4b) zograf – iz – a
  v.draw – TV – 1SG.PST
(4c) kikl – on – o
  v.circle – TV – 1SG.PR
(4d) kikl – on – a
  v.circle – TV – 1SG.PST

Nonetheless, in line with what has been said so far, aspect should be represented in the stems. If TVs are the only morphological units attaching to the roots in order for the stems to be formed, one expects TVs to carry the syntacticosemantic specification in addition to the information regarding class. For the time being, this seems plausible, as illustrated in (5), although this claim will be revisited slightly in what follows, when the perfective forms are taken into account. The stems zografiz- (5a-b) and kiklon- (5c-d) both appear in the imperfective forms of the roots zograf- ‘draw’ and kikl- ‘circle’, respectively.

(5a) zograf – iz – o
  v.draw – TV.IMP – 1SG.PR
(5b)  zograf – iz – a
   √ draw – TV.IMP – 1SG.PST
(5c)  kikl – on – o
   √ circle – TV.IMP – 1SG.PR
(5d)  kikl – on – a
   √ circle – TV.IMP – 1SG.PST

The claim regarding the representation of aspectual features in what seems to behave as TVs in MG is more obvious and finds further support, if one takes a closer look at the morphological analysis of forms such as the ones in (2-3) (see Galani 2002a and subsequent work for an extensive discussion).

Let us first consider the forms in (3), appearing revised in (6) below. It seems that what follows the root, agap- ‘love’, are the morphemes mainly representing the aspectual features; -ag- for the imperfective (active) forms in (6a)⁴ and -i- for the perfective forms in (6b-c). The inflectional units that follow the TV represent the features of voice,⁵ covertly (6a) or overtly (-s- for the active (perfective) (6b) and -thik- for the non-active (perfective) (6c)). The root, the TVs and the morpheme representing voice form the stems to which the agreement/tense suffixes are further attached. The TV, -i- (6b-c) contra -iz- (5a-b) and -on- (5c-d), defines the separate conjugational class to which this verb belongs.

(6a)  agap – ag – Ø – a
   √ love – IMPac.pst.TV – AComp – 1SG.PST
(6b)  agap – i – s – a
   √ love – PER.TV – AComp – 1SG.PST
(6c)  agap – i – thik – a
   √ love – PER.TV – NAComp.pst – 1SG.PST

Similarly, the root apolin- ‘disinfect’ in (7) is followed by the morpheme representing aspect (-en- for the imperfective aspect (7a), and -an- for the perfective aspect (7b-c)). Voice may be also represented covertly, (7a), or overtly (-s- (7b), -thik- (7c)), as above. Once the stems are formed, the agreement/tense suffixes are added. This verb also belongs to a separate morphological class based on the selection of the TV; compare -en- (7) to -iz- (5a-b), -on- (5c-d) and -i- (6b-c).

⁴ In descriptive terms, voice seems to be represented in the TV in the absence of an overt marker in (6a).
⁵ The role of the features illustrated in small case in the examples is discussed in section 3.2.
(7a) apolim - en - Ø - a  
√.disinfect - IMP.TV - AC - 1SG.PST

(7b) apolim - an - s - a → apoliman - a (after phonol. changes)⁶  
√.disinfect - PER.TV - ACper - 1SG.PST

(7c) apolim - an - thik - a  
√.disinfect - PER.TV - NACper.pst - 1SG.PST

Interestingly, based on the information drawn from TVs, the morphological spell-out of the morphemes representing the syntacticosemantic features may be also predicted. For instance, the active imperfective morpheme of verbs belonging to the same conjugational class as (5a-b) is -iz-, whereas for those similar to (7) is -en-. Moreover, there is no need to assume any readjustment rules to derive stems such as (7b-c) from (7a).

Nevertheless, if one attempts to apply this treatment to the perfective forms of (5), repeated here enriched in (8-9), the following problems are raised. Let us first consider the representation of the aspecltal features before moving onto the phonological inadequacies.

(8a) zograf - iz - Ø - a  
√.draw - TV.IMP - AC - 1SG.PST

(8b) zograf - iz - s - a → zografis - a (after phonol. changes)  
√.draw - TV.IMP - ACper - 1SG.PST

(8c) zograf - iz - tik - a → zografistik-a (after phonol. changes)⁷  
√.draw - TV.IMP - NACper.pst - 1SG.PST

If -iz- (8) and -on- (9) were the TVs representing the imperfective aspect, they should not be present in the perfective forms, (8b-c) and (9b-c). Consequently, there are feature mismatches within the same forms. This leaves us with two options; either TVs do not represent aspecltal features or forms such as (8-9) show a peculiar morphological behaviour. In section 3.2, I propose that such forms exhibit an exceptional morphological behaviour and do not comply to the general pattern in the perfective forms; the root followed by the TV (representing aspect). This peculiarity, though, can be predicted on the basis of the conjugational class in combination with the realisation of voice. It seems that the overt spell-out of voice in these classes trigger the application of an operation which deletes the features of aspect in the TV.

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⁶ Any phonological changes are discussed later in the section.

⁷ Allomorphic patterns are not discussed in the paper. See Galani (2003b).
(9a) \(k\text{k} - \text{on} - \emptyset - a\)  
\(\sqrt{\text{v.} \text{circle}} - \text{TV.IMP} - \text{AC} - 1\text{SG.PST}\)

(9b) \(k\text{k} - \text{on} - s - a \rightarrow \text{kiklos} - a\) (after phonol. changes)  
\(\sqrt{\text{v.} \text{draw}} - \text{TV.IMP} - \text{ACper} - 1\text{SG.PST}\)

(9c) \(k\text{k} - \text{on} - \text{thik} - a \rightarrow \text{kiklothik} - a\) (after ph. changes)  
\(\sqrt{\text{v.} \text{draw}} - \text{TV.IMP} - \text{NACper.pst} - 1\text{SG.PST}\)

Finally, let us now move onto the phonological discrepancies, first between (7c) and (9c), repeated here as (10a-b), respectively.

(10a) \(\text{apolim} - \text{an} - \text{thik} - a\)  
\(\sqrt{\text{v. disinfect}} - \text{PER.TV} - \text{NACper.pst} - 1\text{SG.PST}\)

(10b) \(k\text{k} - \text{on} - \text{thik} - a \rightarrow \text{kiklothik} - a\) (after ph. changes)  
\(\sqrt{\text{v.} \text{draw}} - \text{TV.IMP} - \text{NACper.pst} - 1\text{SG.PST}\)

When phonology applies to (10b), the final consonant of what is treated as the TV is deleted in the presence of -\(\text{th}\)-. If this is an MG phonological rule, why is it not applied to (10a)? The question that needs to be asked is what conditions this phonological alternation and which is the exceptional pattern in this case. As argued in the next section, this phonological pattern can be also predicted based on the information drawn from the TVs of the two forms and is, consequently, seen as conditioned upon class. It also makes interesting predictions regarding stem formation, as explored in section 3.2.

The last piece of data relates to the peculiar phonological behaviour of the perfective, active marker, -\(s\)-, in forms such as (7b) and (9b), repeated here as (11a-b), respectively.

(11a) \(\text{apolim} - \text{an} - \emptyset - a\)  
\(\sqrt{\text{v. disinfect}} - \text{PER.TV} - \text{AC} - 1\text{SG.PST}\)

(11b) \(k\text{k} - \text{on} - s - a \rightarrow \text{kiklos} - a\) (after ph. changes)  
\(\sqrt{\text{v.} \text{draw}} - \text{TV.IMP} - \text{ACper} - 1\text{SG.PST}\)

If one assumes that -\(s\)- acts as the default active voice marker which is added to a stem (root and the TV) such as \textit{apoliman-s-}, one predicts that -\(n\)- deletion should occur following (11b), *\textit{apolimasa}. Here, it should be made clear that the pattern observed in (11b) is the norm in MG (Setatos 1973). If one assumes that -\(s\)- is indeed the voice marker and this pattern is not phonologically motivated, the constraints which will block the application of the relevant phonological rule to forms such as (11a) need to be set.

To summarise, a synchronic view on the verbal morphology in MG sees forms consisting of the root to which the TVs are attached. TVs are seen as markers of the class to which verbs belong as well as units representing the aspectual
features. The way voice is realised in the forms in combination with class features, though, may alter the specification of TVs. Finally, class information may also function as the device according to which abnormal phonological patterns are conditioned.

3. An alternative account

I first start off by highlighting the main principles of the framework under which the alternative account of TVs in MG is formalised. I then move onto this account and the modifications of the DM framework in section 3.2.

3.1 The framework of Distributed Morphology

DM is a post-syntactic framework developed by Halle and Marantz (1993). Syntactic terminal nodes are complexes of syntactic and semantic features which are called morphemes. These morphemes lack any phonological specification. Head-movement applies at the syntactic component. Once the syntactic operations are complete, the structure enters the morphological component. Morphological processes may further modify the structure mainly before Vocabulary Insertion. Fusion, for instance, is the operation by which two terminal nodes are fused into a single one. Only one Vocabulary Item (VI), the specification of which matches the specification of the fused node, can compete for insertion in this node. Nevertheless, fusion may also apply at the syntactic component, as in the discussion that follows.

On the other hand, Local Dislocation (Embick and Noyer 1999) is a type of merger which occurs after Vocabulary Insertion and operates in terms of linear adjacency. In (12), “X’s relation to [Z Y] has been exchanged for a relation of adjunction to the left-peripheral element of [Z Y]” (Embick and Noyer 1999:271). In such cases, though, and contra fusion, two VIs compete for insertion and are inserted to the nodes.

\[(12) \; [X \; [Z \; Y]] \rightarrow [Z^0 \; Z + X \; Y]\]

Vocabulary Insertion is the operation which supplies the terminal nodes with phonological features. It should be noted that Vocabulary Insertion is subject to the Subset Principle (Halle 1997); the competition between the VIs is won by the most highly specified item for the features of the given terminal node.

Finally and according to the Feature Disjointness principle (Embick 2000:188), “features that are phonological, or purely morphological, or arbitrary properties of VIs, are not present in the syntax; syntacticosemantic features are not inserted in the morphology”.
3.2 The analysis

I see word formation as a complex process involving the obligatory interaction of syntax, morphology as well as phonology. If any violations occur at any of these stages of the word formation process, ungrammaticality will result. Consequently, this position contradicts both the purely syntactic (Baker 1985, Rivero 1990) as well as the purely morphological accounts to word formation (Di Sciullo and Williams 1987, Joseph and Smirniotopoulos 1993).

Moreover, I propose that roots are generated in syntax contra Marantz (1997) and Galani (2002b) who claim that the syntactic category V is a morphological category created by syntax.

At the syntactic level, the terminal nodes are arranged in the way exemplified in (13a). Fusion applies to AgrP and TP, resulting in AgrTP as shown in (13b). Head-movement applies to (13b) which is the syntactic output serving as the morphological input.

\[
\begin{align*}
(13a) & \quad \begin{array}{c}
\text{AgrP} \\
\text{Agr} & \text{TP} \\
+\text{Pst} & \text{VoiceP} \\
\text{Agr} & \text{VoiceP} \\
\text{TP} & \text{VoiceP} \\
\end{array} \\
(13b) & \quad \begin{array}{c}
\text{AgrTP} \\
\text{AgrT} & \text{VoiceP} \\
+\text{NAC} & \text{AspectP} \\
\text{NAC} & \text{PER} \\
\text{T} & \text{P} \\
\end{array}
\end{align*}
\]

I now turn onto the analysis of the morphological and syntactico-semantic features represented in TVs within DM.

There are two main points an alternative theory of TVs in MG should account for: (a) TVs are seen as markers of the conjunctational classes (morphological features), and (b) they are also morphemes carrying syntactico-semantic information. This means that the first set of features should be interpreted at the morphological component, whereas the second set in syntax. The presence of the morphological features, though, at the syntactic component seems to violate the Feature Disjointness principle. Nevertheless, as Galani (to appear, a)

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8 There are syntactic (cf. Alexiadou and Anagnostopoulou 1998) and morphological reasons (cumulative exponent, cf. Galani 2002b) for which fusion is triggered. As this point does not relate to TVs, the discussion is omitted.
argues, morphological features are not visible at the syntactic level, as this component can only interpret syntacticosemantic features. Consequently, this modification does not violate the principle.

Moving on to the morphological features TVs carry in MG, it has been proposed that the features of class are seen as abstract features\(^9\) (Galani to appear, b). Furthermore, TVs provide information about the class specification to the roots and the inflectional suffixes. What this means is that TVs carry morphological features for which roots and inflectional suffixes are also specified in the grammar. This mechanism of morphological features mapping enables the correct matching between roots and suffixes. For each morphological piece to attach to the remaining ones, the morphological features should be identical. Otherwise, there is feature violation and the derivation crashes.

Let us exemplify this point by looking at the TVs which appear in the perfective (active) forms in (6b, 7b, 8b, 9b), repeated here as (14a-d), respectively. Any phonological changes that may occur as well as the exact features represented in (14c-d) are disregarded at this stage. Additionally, it should be made clear that, as the discussion that follows serves only as an illustration of the proposals made and for simplification purposes, the exact features which appear in the forms do not correspond to the actual feature specification of TVs in MG (as discussed in Galani, in preparation).

\[
\begin{align*}
(14a) & \quad \text{agap} & -i & -s & -a \\
& \quad \sqrt{\text{love}}[+a] & -[+a]\text{PER} & -\text{ACper} & -1\text{SG.PST} \\
(14b) & \quad \text{apolim} & -an & -s & -a \\
& \quad \sqrt{\text{disinfect}}[-a,+b] & -[-a,+b]\text{PER} & -\text{ACper} & -1\text{SG.PST} \\
(14c) & \quad \text{zograf} & -iz & -s & -a \\
& \quad \sqrt{\text{draw}}[-a,-b,+g] & -[-a,-b,+g]\text{IMP} & -\text{ACper} & -1\text{SG.PST} \\
(14d) & \quad \text{kikl} & -on & -s & -a \\
& \quad \sqrt{\text{draw}}[-a,-b,-g] & -[-a,-b,-g]\text{IMP} & -\text{ACper} & -1\text{SG.PST}
\end{align*}
\]

The abstract morphological features TVs carry are further mapped to the roots, so that for \textit{agap}- 'root.love' (14a) to be matched to the morpheme representing the aspectual features, there should be a morphological feature matching. So, the root specified for \([+a]\) features can be only matched with the VI that bears the same features, \(-i\) \('[+a].\text{PER}'. The matching between the roots and the TVs in (14b-d) is achieved in a similar fashion.

An issue I have not touched upon yet relates to the features which are illustrated in small case and capitals in the examples. I claim that each inflectional

\(^9\) Class feature representation as abstract is also supported in Alexiadou and Muller (2004).
unit in MG may represent two sets of syntacticosemantic features; the primary and the secondary ones.\textsuperscript{10,11} Primary features are the main features each morphological unit represents, whereas secondary features only condition the exact environment in which each unit may appear. The secondary features necessarily need to be checked with the primary features of the remaining pieces of inflection. During Vocabulary Insertion, only the primary features need to match the features of the node they compete for insertion at. Unless the secondary features of an item match the primary features of the relevant item, vocabulary insertion does not occur. The primary features of the TVs are the morphological and not the syntacticosemantic ones.

Moreover, diacritics may also appear in the TVs’ specification in addition to the morphological and syntacticosemantic features. The role of diacritics is to signal any irregular patterns which are interpreted once the item wins the competition of Vocabulary Insertion. These irregular patterns may correspond to morphological or phonological modifications VIs need to undergo. What I am proposing here is that the TVs of the classes [-a, -b, +g]IMP* (15a) and [-a, -b, -g]IMP* (15b) also bear a special set of diacritics. Let us illustrate them by *. What these diacritics do when the item wins vocabulary competition is that they activate a rule which says: “for classes [-a, -b, +g]IMP* and [-a, -b, -g]IMP* and when voice is overtly realised, delete ASPECT from TV”. So, in such cases TVs are only formative in nature, as Ralli (1988) sees them.

\[
(15a) \text{zograf} \quad -iz \quad -s \quad -a \\
\sqrt{\text{draw}}[-a, -b, +g] \quad [-a, -b, +g] \quad -\text{ACper} \quad -1\text{SG.PST}
\]

\[
(15b) \text{kikl} \quad -on \quad -s \quad -a \\
\sqrt{\text{draw}}[-a, -b, -g] \quad [-a, -b, -g] \quad -\text{ACper} \quad -1\text{SG.PST}
\]

Similarly, a diacritic (*) should appear in the TV in (16a) which will block the application of the phonological rule (applying to (16b)), when the structure enters PF.

\[
(16a) \text{apolim} \quad -an \quad -s \quad -a \rightarrow \text{apoliman} \quad -a \text{ (ph. change)} \\
\sqrt{\text{disinfect}} \quad [-a, +b]\text{per}^* \quad \text{Acper} \quad -1\text{SG.PST}
\]

\[
(16b) \text{kikl} \quad -on \quad -s \quad -a \rightarrow \text{kiklos} \quad -a \text{ (phonol. change)} \\
\sqrt{\text{draw}} \quad [-a, -b, -g] \quad -\text{ACper} \quad -1\text{SG.PST}
\]

Moreover, the way morphological features are arranged within an item further reflects on the complexity of the morphological pattern. What this means

\textsuperscript{10}This corresponds to what is treated as minimal pairs in the literature (cf. Tsangalidis 1993).

\textsuperscript{11}Embick (1998) refers to these features as intrinsic versus extrinsic.
is that the more complex the morphological feature representation of the TV is, the more irregular the morphological spell-out of the form will be. This pattern is formally accounted for in terms of embedness in the markdeness hierarchy according to which VIs are organised in DM following Galani (to appear c). The most embedded a VI appears, the most complex processes will apply for the formation of the forms it belongs to.

\[
\text{(17)}
\]

\[
\begin{array}{c}
\text{Inflectional Suffixes} \\
\text{unmarked [+]} \\
\text{marked [-]} \\
/\text{-/i/-per}
\end{array}
\]

\[
\begin{array}{c}
\text{unmarked [+]} \\
\text{marked [-]} \\
/\text{-/an/-per}
\end{array}
\]

\[
\begin{array}{c}
\text{unmarked [+]} \\
\text{marked [-]} \\
/\text{-/iz/-imp} \\
/\text{-/on/-imp} \\
\end{array}
\]

Let us now illustrate the exact ways by which the formation of the forms presented in section 2 is formalised in DM terms. The discussion also aims to show the role of TVs as elements which trigger the application of morphological processes. When the syntactic output (recall (13b)) enters the morphological component, Vocabulary Insertion occurs and the items the specification of which matches the morphological and syntacticosemantic specification of the nodes are inserted into the nodes. Following, Local Dislocation (illustrated as [...] in (18)) first applies to AspP and vP, resulting in vP, unless otherwise imposed by the presence of special morphological features or diacritics in the vP.\textsuperscript{12} Local Dislocation (illustrated as {...} (18)) further applies to vP and VoicP, resulting in the formation of stems.

\[
(18a) \quad \{[\text{agap} -i] \quad \text{thik}\} \quad \text{a} \\
\quad \text{v.love[+a] - [+a]per - NACper.pst - 1SG.PST}
\]

\[
(18b) \quad \{[\text{apolim} - an] \quad \text{thik}\} \quad \text{a} \\
\quad \text{v.disinfect[-a,+b] - [-a,+b]per - NACper.pst - 1SG.PST}
\]

Nonetheless, the second application of Local Dislocation will be blocked by

\textsuperscript{12} An illustrative example is the formation of suppletive stems in MG. The presence of certain morphological features blocks the application of Local Dislocation and triggers fusion. See Galani (2004 a,b).
the presence of the features [-a, +b]per-NACper.pst, [-a, -b, +g]imp*-ACper, [-a, -b, -g]imp*-ACper, [-a, -b, +g]imp*-NACper.pst, [-a, -b, -g]imp*-NACper.pst. In such cases, the structure enters PF where Local Dislocation (illustrated as $\ldots$ in (19)) applies after the application of any phonological rules and prior to the application of stress assignment.

(19a) $\{\text{apologize} \quad - \text{an}\} \quad - \$ \quad - a$

$\sqrt{\text{disinfect}[-a, +b]} \quad [-a, +b]p^e - \text{ACper} - 1SG.PST$

(19b) $\{\text{zograf} \quad - \text{i}\} \quad - s\$ \quad - a$

$\sqrt{\text{draw}[-a, -b, +g]} \quad [-a, -b, +g]p^m - \text{ACper} - 1SG.PST$

(19c) $\{\text{zograf} \quad - \text{is}\} \quad - \text{tik}\$ \quad - a$

$\sqrt{\text{draw}[-a, -b, +g]} \quad [-a, -b, +g]p^m - \text{NACper.pst} - 1SG.PST$

(19d) $\{\text{kikl} \quad - \text{o}\} \quad - s\$ \quad - a$

$\sqrt{\text{draw}[-a, -b, -g]} \quad [-a, -b, -g]p^m - \text{ACper} - 1SG.PST$

(19e) $\{\text{kikl} \quad - \text{o}\} \quad - \text{thik}\$ \quad - a$

$\sqrt{\text{draw}[-a, -b, -g]} \quad [-a, -b, -g]p^m - \text{NACper.pst} - 1SG.PST$

Finally, and as was previously said, $n$-deletion will be blocked in forms such as (19a) and $s$-deletion will occur, instead.

4. Conclusion

It has been proposed that the primary features of TVs in MG are (abstract) morphological (class), whereas the secondary ones aspectual. Their primary features serve as the mechanism that triggers the application (or the blocking) of morphological and phonological operations - Local Dislocation resulting in the formation of non-suppletive stems. The function of TVs provides support for the claim that word formation is a complex process involving the obligatory interaction of syntax-morphology (as well as phonology); syntax sets the structures which are further manipulated at the morphological and phonological components.

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