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Voice Systems and the Syntax/Morphology Interface*

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1 Introduction

The topic of this paper is the manner in which syntactic voice alternations (and syntactic configurations more generally) relate to voice morphology, and the implications of this for theories of voice and theories of morphology/syntax interactions. I argue based on the voice system of Modern Greek for three primary points: first, that treatments taking voice morphology as corresponding to a syntactic argument of the verb (see references below) will not work for voice systems like Greek; second, that voice morphology in Greek must be analyzed as related to a morphological feature which is added post-syntactically in specific syntactic configurations; and, third, that this analysis has consequences for the study of syntax/morphology interactions more generally. These points and their implications are discussed within the context of the theory of Distributed Morphology (Halle and Marantz (1993) and related work.) In order to establish these points certain sets of theoretical background assumptions must be highlighted; in the following paragraphs I review the major points of this discussion and provide an overview of previous theoretical treatments.

The first set of arguments presented shows that voice morphology in Modern Greek does not correspond to a syntactic argument of the verb. The background for the work presented here is provided by the prevailing syntactic treatment of voice morphology, according to which it is syntactically active in some sense; i.e. by interacting with Case and θ-role assignment. Voice morphology on such a view *effects* the relevant syntactic alternations (see e.g.Chomsky (1981), Marantz (1984), Jaeggli (1986), Baker (1988), Baker et al. (1989) for a number of different lexical and syntactic implementations.) I will establish through three arguments the point that voice morphology cannot be treated as syntactically active in this sense.

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The second part of the discussion is concerned with the proper treatment of voice in languages like Greek and the implications of this for the syntax/morphology interface. Beginning with the question of how non-active voice must be treated if not syntactically, I show in §5 that the Greek voice system must be treated as making reference to a morphological feature [NonAct] (for 'Non-Active'), and that this cannot be captured by any type of Lexicalist treatment (Minimalist or otherwise.) The treatment I propose in §6 is based on the idea that the [NonAct] feature in Greek voice alternations is assigned in specific syntactic configurations, and reflects properties of the syntactic environment rather than itself effecting an alternation. Specifically, I argue that [NonAct] is assigned post-syntactically to the verb when it (or the v-V complex) is not in a local relationship with an external argument. This type of treatment raises questions concerning the relationships between syntax, voice, and argument structure, which are explicitly addressed in §6.2. I argue that a treatment of voice morphology in this type of system in terms of a conception of argument structure as distinct from syntax suffers from serious defects. The analysis I provide illustrates a property which I call *dissociation*; this is defined as follows:

(1) **Dissociation:** A morphological signal[1] is *dissociated* when the morphosyntactic position/features it instantiates are not features figuring in the syntactic computation, but are instead added in the Morphological component under particular conditions.

The idea that voice morphology does not correspond to any syntactically active element is not novel to this approach.[2] The emphasis of this paper is on showing that Dissociation plays a crucial role in the proper analysis of Greek voice, and in articulating the implications of this for the study of the syntax/morphology interface. The notion of Dissociation figures prominently in the discussion to come, which illustrates the role it plays in the analysis of a particular voice system. However the real interest of this property for the present discussion is to be found in the effects it has on a theory of syntax/morphology interactions. The implications of having a morphological feature like [NonAct] mediating syntax and Vocabulary Insertion are discussed in detail in §7, where I discuss the role that Dissociation plays in determining what constrains the *Separation Hypothesis* (named by Beard (1966)) in syntax/morphology interactions. The essence of Separation is that morphosyntactic features and the phonological elements which appear in the corresponding morphosyntactic environments are distinct from one another. Theories which accept this differ in the extent to which the syntactic features and the morphological signals are mediated. On the one hand, certain approaches advocate

[1] In this paper I will use 'signal' and 'morphological signal' to refer to actual pieces of phonological material.

[2] Earlier approaches arguing for something similar in the domain of Voice include Babby (1975), Babby and Brecht (1975), and Cranmer (1976), and, to a certain extent, Langacker (1976). Similarly, in Relational Grammar verbal morphology serves as an indication of changes in the relational network of a clause (I thank David Pesetsky for this latter observation.)

direct interaction; the input to morphology contains syntactico-semantic features, and is not mapped through a distinct morphological component (for instance, this could be stated as a version of Distributed Morphology). On the other extreme are approaches like that of Aronoff (1994), which treat syntax and morphological realization as always mediated by a distinct level of representation. The arguments I present here are for a view of the interface which falls between these two opposed responses to Separation. Morphological diacritics like the feature [NonAct] are systematically related to syntactic configurations, but this does not mean that disparate syntactic structures can be mapped to intermediate morphological features arbitrarily. The treatment I propose allows for morphological features to be related to a coherent set of syntactic configurations and a set of inherently specified verbs, but does not allow situations in which a single feature is related to two disparate sets of syntactic configurations.

2 Preliminary Facts: The Voice System of Modern Greek

Modern Greek has two morphological voices; the details concerning the actual realization of voice-forms will be addressed in §5.3 below. In this section, I will present three arguments for Dissociation based on facts from the voice system. The focus will be on *voice syncretisms*, which are defined as follows:

(2) **Voice Syncretisms:** Situations in which distinct syntactic alternations (e.g. passive and reflexive) are realized with identical morphology.

There are three syntactic alternations which syncretize in the Non-Active voice in Modern Greek. A fourth case involving the Non-Active, *deponent verbs* (defined and exemplified below), is not part of an alternation. Beginning with the syntactic alternations, the first environment is passive verbs, which always show the Non-Active:

(3) Afto to vivlio dhiavas-tik-e xtes.
this-NOM the-NOM book-NOM read-N/A-3S yesterday
'This book was read yesterday.'

Non-Active morphology also appears with certain reflexives:

(4) I Maria xtenize-te kathe mera.
the-NOM Maria-NOM comb-N/A.3S every day
'Maria combs herself every day.'

The third environment is in the Transitivity Alternation, where the Non-Active appears on (some) intransitive alternating verbs:

(5) 'Anticausative' Alternations (Haspelmath (1993))

Intrans	**Trans**	**Translation**
tsakizo-me	tsakizo	'break'
keo-me	keo	'burn'
singendrono-me	singendrono	'gather'
dhiadhidho-me	dhiadhidho	'spread'
aplono-me	aplono	'spread'
vitizo-me	vithizo	'sink'
xano-me	xano	'get lost/lose'
anaptiso-me	anaptiso	'develop'

Finally, Non-Active appears on *deponent verbs*, verbs which are only capable of appearing in the Non-Active, and never in the Active voice (for descriptions of Modern Greek deponents see Mirambel (1949), Philippaki-Warburton (1970), and Mackridge (1987).) Some deponents are intransitives, while others, which I will focus on here, are transitive, with Nominative subjects and Accusative objects:

(6) a. Metaxirizome poli to lexiko mu otan grafo elinika.
use-N/A-1S much the dictionary-ACC my when write-1S Greek
'I use my dictionary a lot when I write Greek.'

b. To kalokeri xriazomaste pola ruxa.
the summer need-N/A-1PL many clothes
'During the summer we need many clothes.'

3 A Non-Accidental Pattern

One point has to do with the distribution of this pattern of syncretism. In the typological literature, this type of relationship between passive, anticausative, and reflexive syntax has been studied in e.g. Siewierska (1979), Haspelmath (1987), Haspelmath (1987, 1990), Geniušiene (1987) and others; these discussions show this type of distribution (or variations on it) to be found among widely unrelated language families. For instance, it is found in the Indo-European (in many major branches), Uto-Aztecan, Athapaskan, Turkic, Ethiopian Semitic, Dravidian, and many other language families. Theoretical accounts have recognized the systematicity of this pattern as well (see, for example, Babby (1975), Babby and Brecht (1975), Langacker (1976), Marantz (1984), Mendikoetxea (1994), Lidz (1996) for a sample of approaches.) From this distribution an argument for the systematicity of the correlation can be derived. Accidental syncretisms, i.e. homophonies, can be expected to be random. The occurrence of the syncretism

analyzed here in widely unrelated languages, and its role in diachronic processes, argue that treating it as an accident would be trivializing an issue that is worthy of a systematic explanation.

The goal of this paper is not to present a detailed explanation of for this pattern as it exists across languages. This type of syncretism is governed by both syntactic and morphological considerations, and it would be beyond the scope of this paper to make extensive typological claims. Rather, I will analyze the Modern Greek system in detail, and show that the treatment required for voice in this language has implications for theories of the syntax/morphology interface.[3]

4 Voice Morphology in Greek

In this section I present three arguments from the Greek voice system showing that the view that voice morphology effects syntactic alternations by virtue of serving as an argument of the verb is incorrect.[4]

4.1 Argument 1: Non-Active Voice in Reflexives

The first argument against the morphology-as-argument treatment comes from the distribution of voice morphology in reflexives. To begin with, Modern Greek shows a type of reflexive in which an overt anaphor is used, and in which the verb in such cases show the active voice:

(7) Vlep-o ton eafto mu.
see-1s the self my
'I see myself.'

There are two distinct types of reflexives which show non-active morphology in Modern Greek. The first of these, illustrated in (8), shows a verb without a direct object in the non-active, with a reflexive interpretation:

(8) I Maria xteniz-et-e kathe mera.
the-NOM Maria-NOM comb-N/A-3S every day
'Maria combs herself every day.'

The second type of reflexive showing non-active morphology shows a transitive verb prefixed with the element *afto-* 'self':

[3] A more typologically oriented study is presented in Embick (In Prep.)

[4] Arguments for a similar position concerning whether voice morphology serves as an argument of the verb may also be found in Lidz (1996).

(9) O Yanis afto- katastraf-ik-e
the Yani self destroy-N/A-3S
'Yani destroyed himself.'

Crucially, it is the combination of the element *afto* and the non-active morphology which is responsible for the reflexive interpretation; without *afto* the result is a simple passive, and without the non-active the *afto*-prefixed forms are ungrammatical:

(10) a. O Yanis katastrafike (apo tis sinehis apergies)
the Yani destroyed-N/A-3S by the continuous strikes
'Yanis was destroyed (by the continuous strikes.)

b. * O Yanis afto-katastrep-se.
the Yani self-destroyed-ACT-3S
'Yani destroyed himself.'

The position that I will take is that Non-Active Voice is incapable of reflexivizing any type of verb. This is clear when the properties of Non-active voice in reflexive are compared with reflexivizing elements seen elsewhere. With e.g. French reflexive clitics, any transitive verb can be reflexivized:

(11) a. Marie se lave.
Marie SE washes.
'Marie washes (herself).'

b. Jean se frappe.
Jean SE hits
'Jean hit himself.'

In Greek, the only verbs interpreted as reflexives when they appear with the non-active are of a specific type: *shave, comb*, etc., Kemmer's (1993) 'Body Action' verbs. With other verbs, the Non-active form has passive interpretation:

(12) O Yanis katastraf-ik-e.
the Yani destroy-N/A-3S
'Yanis was destroyed.'

The verbs which are reflexive with Non-active only are verbs which are capable of being 'inherently reflexive' anyway; evidence from other verb classes

shows that the Non-active morphology does not really reflexivize anything.[5]

The first point to establish is that *afto* actually does reflexivize the elements to which it attaches. That this is the case may be seen in the fact that nominals prefixed with it receive a reflexive interpretation:

(13) afto-travmatismos 'self-hitting'
afto-katastrofi 'self-destruction'
afto-thisia 'self-sacrifice'

This argues that *afto-* could be treated as the realization of a deep clitic anaphor, as in the syntactic treatment of reflexive clitics found in Marantz (1984) (and discussed more recently in McGinnis (1997).) The surface subject in *afto-*reflexives is then the raised logical object.

The relationship between *afto-* and the non-active voice morphology is clarified by a class of verbs which have *afto-*, but no Non-active; examples are given in (14):[6]

(14) Active *afto*-verbs

***Afto*-Form**	**Translation**	**Transitive Form**
aftoktono	'commit suicide'	*ktono
aftomolo	'change sides'	*molo
aftoschedhiazo	'improvise'	schedhiazo = 'design'

The difference between the two cases is that whereas with the *afto*-cases discussed earlier there were regular, active transitive verbs without *afto*, with *aftoktono* there is no corresponding verb *ktono*. In the case of *aftoschedhiazo*, there is a form *schedhiazo*, but the former is not the reflexive of the latter. This can be seen in the fact that, as noted by Kostopoulou (1989) (as cited in Rivero (1992)), *aftoschedhiazo* does in fact take a direct object, and can be passivized:

(15) a. O Yanis aftosxediase ena logidrio.
the John improvised a short-speech
'John improvised a short speech.'

[5] 'Inherent Reflexivity' thus amounts to the property of being able to appear in the relevant reflexive syntactic environment without the realization of *afto-*. Which verbs are capable of this is to some extent a language-specific matter.

[6] Some of the examples here (and perhaps others of this type) appear to be back-formed from nominals.

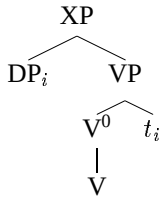
b. Ena logidrio aftosxedias-tik-e apo ton Yani.
a short-speech improvise-N/A by the John
'A short speech was improvised by John.'

Thus it is not all verbs with *afto-* that have Non-active morphology. The conclusion I draw from this is that non-active morphology appears only with the *afto*-verbs that are actually reflexivized. Taken together with the fact that non-active morphology only appears on verbs capable of appearing as inherently reflexive, this leads to the following generalization:

(16) Non-active voice does not reflexivize verbs, but appears on verbs which are syntactically reflexivized by other means; i.e**.** by virtue of being 'Inherently Reflexive', or by virtue of *afto*.

This leaves the question as to what specifically the non-active morphology is sensitive to. I assume a version of the analysis of Romance reflexive clitics, i.e. an analysis in which the surface subject is the logical object for the inherent reflexive cases:

(17) Reflexives



What it means to be 'inherently reflexive' on this account is that the verb may appear in this syntactic environment without the realization of *afto*. Effectively this is a matter of stipulation, in that the verbs appearing in this class will to some extent vary from language to language. The appearance of voice morphology is the same in each of these cases because it is related to syntactic structure and not to particular properties of the verb. Specifically, this structure involves a verb in a VP from which the object has been A-moved; this will connect with passivization and anticausatives as well, see below.[7] This will be elaborated on below. For the moment, I conclude that while non-active voice is systematically correlated with

[7]The fact that verbs with anaphors as direct object appear with active morphology indicates that the morphology is not sensitive to some notion like *Reflexive-Marked Predicate* (Reinhart and Reuland (1993).), as in the analysis of Kannada presented in Lidz (1995).

(aspects of) the syntax of reflexivization, but does not bring it about; in this sense it is *dissociated*, i.e.does not correspond to a syntactically active terminal.

4.2 Argument 2: Passive/Anticausative Syncretism

A second argument for Dissociated Voice Morphology is based on syncretisms between Anticausatives and Passives. As the examples below show, Modern Greek shows Non-Active morphology both in the intransitive members of verbs in the Transitivity Alternation and in passives. The following are anticausatives in the Transitivity Alternation:

(18) 'Anticausative' Alternations

Intrans	**Trans**	**Translation**
tsakizo-me	tsakizo	'break'
keo-me	keo	'burn'
singendrono-me	singendrono	'gather'

The argument is based on the assumption, following the analyses of Chomsky (1970) and Marantz (1995), that the verbs in the Transitivity Alternation are basically intransitive roots, capable of being transitive only in certain syntactic environments. These arguments are based on the behavior of these verbs in nominalizations. On the implementation of Marantz (1995), roots participating in the Transitivity Alternation are only capable of being Transitive in a sentential syntactic environment, in which an Agent is licensed by a syntactic head.

On the assumption that this approach to Transitivity Alternation verbs is correct, a Morphology-as-Argument type approach to passive/anticausative syncretism cannot be formed. In the passive, there is effectively valency reduction, such that the voice morphology serves as an argument of the verb. In the anticausative, however, this cannot be the case. If TA-verbs are fundamentally intransitive, then there is simply no way the voice morphology can be an argument of the verb. The correlation between passive and anticausative is severed.

In light of this argument there are two options. One would be to abandon the arguments for the intransitivity of TA verbs, and argue that voice morphology in each case brings about valency reduction. The second, which I will follow, is to accept the arguments for intransitivity, and abandon the idea that voice morphology must be effecting syntactic alternations whenever it appears.

4.3 Argument 3: Deponent Verbs

The third case to be examined involves deponent verbs. On the traditional definition, a deponent is a verb which is passive in form, but not passive in meaning. Based on syntactic arguments, I will show that there are transitive deponent verbs which are 'passive' (i.e. non-active) in form, but active syntactically. The following types of examples, in which deponent verbs take Nominative subjects and Accusative objects, are relevant:

(19) Metaxirizo-me poli to lexiko mu otan grafo elinika.
use-N/A-1S much the dictionary-ACC my when write-1S Greek
'I use my dictionary a lot when I write Greek.'

(20) To kalokeri xriazo-maste pola ruxa.
the summer need-N/A-1PL many clothes
'During the summer we need many clothes.'

One possible analysis would be to say that the appearance of voice morphology with these verbs is systematic, i.e. to hold that all transitive deponents are actually psych-verbs. This can be tested, however, with a number of syntactic diagnostics developed by Anagnostopoulou (1997) to distinguish psych-verbs from other transitives in Greek. When certain transitive deponents are tested with these diagnostics, they pattern with the normal, active transitives, not the psych-verbs, for all six tests (data from Anagnostopoulou p.c.). One such diagnostic involves word order. With psych verbs, the order EXP_{DAT}-V-TH_{NOM} and TH_{NOM}-V-EXP_{DAT} are both equally unmarked in terms of their discourse status, as opposed to cases in which an object (direct or indirect) is fronted and produces a *Clitic Left Dislocation* (CLLD)-type reading. Deponents like *metaxirizome* 'use' pattern with the non-psych-verbs:

(21) a. O Petros metaxirizi-te to vivlio.
the Peter uses the book
'Peter uses the book'. (Neutral)

b. To vivlio to metaxirizi-te o Petros.
the book CL uses the Peter
'The book, Peter uses' (CLLD)

The conclusion I draw is that non-active morphology here cannot be effecting a syntactic alternation, as there is no recognizable syntactic alternation to be effected. The Non-active morphology in these cases is (1) not syntactically

active– these are not different from transitive verbs;[8] and (2) not reflecting a particular structural configuration, as these verbs have normal Accusative objects etc. Thus it must be the case that verbs of the relevant type which are not provably syntactically distinct from actives possess inherently the feature [NonAct] which is also assigned to V in the syntactic configuration discussed above: /V/[NonAct].

5 Architecture

In this section I discuss the implications of the Greek voice system for conceptions of grammatical architecture. In particular, I present an argument showing that the system must be analyzed with a post-syntactic morphological component.

5.1 Underspecification and Syncretism

One means of capturing syncretisms is through the underspecification of morphological signals, and it is possible to consider approaches to the Greek voice system employing this strategy. Concretely, a morphology-as-argument approach to reflexive and passive syntax could employ the following representation for the elements involved in the syntactic alternation:

(22) Representations of Syntactic Arguments

$$\text{Non-Active}_{\,1}: \begin{bmatrix} \text{Affix} \\ \text{+Anaphor} \\ \theta\text{-Role Required} \\ \vdots \end{bmatrix}$$

$$\text{Non-Active}_{\,2}: \begin{bmatrix} \text{I}^0\text{-clitic} \\ \text{+Pronominal} \\ \theta\text{-Role Required} \\ \vdots \end{bmatrix}$$

A syncretism between passive and reflexive here could, for instance, be accom-

[8] Except that they may not (in most cases) be passivized. The reason for this prohibition seems to be relatively superficial: the resultant form would be doubly marked for [NonAct] and thus in some sense difficult to realize morphophonologically. However, this is a tendency rather than an absolute prohibition. In some languages certain transitive deponents may appear in both active and passive syntax. This is especially the case for Latin and, to some extent for Classical Greek as well; see Embick (1997), (In Prep.). For Modern Greek, some speakers accept certain transitive deponents in passive syntax. I will not discuss this here.

plished by underspecifying the voice morphology to be sensitive to only a feature like +Arg:

(23) Arg $\leftrightarrow -X-$

In the case of the voice system of Modern Greek this argument will not work for reasons discussed in §4.2 above. There is simply no argument for the non-active morphology to correspond to when it appears in anticausatives.

It is possible, however, to form a more syntactically oriented approach to the underspecification of voice morphology. One could take the position that among the many syntactic features involved in Passives, Reflexives, etc., non-active morphology corresponds to (and checks) the feature shared by these syntactic configurations, i.e.X:

(24) Syntactic Features

Reflexive:	X, Y, Z
Passive:	X, Y, V
Anticausative	X, T, U

The features which differentiate these cases from each other would then have no morphological realization.

Given the cases represented in (24), this type of analysis is in principle possible. However, the presence of deponent verbs in the voice system serves as the basis for an argument against this 'syntactic underspecification' type of approach. The argument for this position will be presented in §5.4.

5.2 The Argument for a Post-Syntactic Treatment

To summarize the discussion of the last subsection, it is possible to conceive of a modified Lexicalist/Minimalist analysis of certain morphosyntactic syncretisms like passive/anticausative. Ultimately, as I will show in §6.1, this type of syntactic approach is uninsightful, and should be rejected. Putting this aside for the moment, I will now demonstrate how the existence of transitive deponent verbs shows such a treatment to be inadequate. The argument for this is based on the following point:

(25) **Identity of Voice Features:** Voice morphology in the syntactic alternations and the voice morphology in deponent verbs are related to the same morphological feature.

That is, the voice morphology found with deponent verbs and the voice morphology found in syntactic alternations is identical in terms of the features conditioning its insertion. I will now show first that (25) is in fact valid (§5.3), and then that on Lexicalist or Minimalist/Lexicalist conceptions of syntax/morphology interactions, the correlation between the two types of morphology can only be accidental (§5.4).

5.3 Feature Identity

The first point to be made is that deponent verbs and verbs in specific syntactic configurations in Greek are both related to the same morphological feature [NonAct]. Demonstrating this point is more difficult in certain cases than in others. In cases in which there is (effectively) a single signal at issue the question of underlying identity is difficult to answer. To illustrate, we may take the case of a language with a single 'passive morpheme' *-AFF-*, such that verbs in passive syntactic configurations appear as V-AFF. If such a language had a set of verbs which always appeared in the form V-AFF irrespective of syntactic context, the question of whether these verbs should be treated as inherently specified for a feature like [Pass] is unclear. It could, for instance, be the case that there are a number of verbs which, purely coincidentally, have stem-forms which contain as a subcomponent an *-AFF-* like the passive *-AFF-*. Concretely, we may consider the case in English of identity between the realization of Third-Person singular and the realization of Possessive, both /-z/. In this case it is clear that an analysis which does not treat this fact as systematic is not missing any fundamental generalizations about English morphology. The only evidence to suggest that there might be a relationship here is the fact that there seems to be identical morphophonological behavior in these cases, but this speaks more to the regularity of English morphophonology than it does to any point concerning a complex identity between Plural and Possessive.

The situation is different in Greek, in that there is not just a single signal which is identical in deponent and syntactically determined cases of voice morphology. There is a set of signals correlated with the non-active voice, and deponent verbs are identical for this entire set with verbs in the Non-Active syntactic environments. Thus consider the Non-Active inflection of the Greek verb *grafo* 'write', which is normal and has both active and non-active forms:

(26) Non-Active forms of *grafo*

	IMPERFECTIVE		PERFECTIVE	
P/N	**Non-Past**	**Past**	**Non-Past**	**Past**
1S	gráfo-me	graf-ó-muna	graf-t-ó	gráf-tik-a
2S	gráfe-se	graf-ó-suna	graf-t-ís	gráf-tik-es
3S	gráfe-te	graf-ó-tan(e)	graf-t-í	gráf-tik-e
1PL	grafó-maste	graf-ó-maste	graf-t-úme	graf-tík-ame
2PL	gráfe-ste	graf-ó-saste	graf-t-íte	graf- tík-ate
3PL	gráfo-nde	graf-ó-ndan/ grafó-ndane	graf-t-ún(e)	graf-tík-ane/ gráf-tik-an

The point is established by the desinences found in the Imperfective forms. The Person/Number endings found here are different from those found in the active:[9]

(27) Active forms of *grafo* 'write'

	IMPERFECTIVE		PERFECTIVE	
P/N	**Non-Past**	**Past**	**Non-Past**	**Past**
1S	gráf-o	é-graf-a	gráp-s-o	é-grap-s-a
2S	gráf-is	é-graf-es	gráp-s-is	é-grap-s-es
3S	gráf-i	é-graf-e	gráp-s-i	é-grap-s-e
1PL	gráf-ume	gráf-ame	gráp-s-ume	gráp-s-ame
2PL	gráf-ete	gráf-ate	gráp-s-ete	gráp-s-ate
3PL	gráf-un(e)	gráf-ane/ é-graf-an	gráp-s-un(e)	gráp-s-ane/ é-grap-s-an

This active set of forms is not found with deponents.

Putting the desinences for the Non-Past Imperfective next to each other, we have the following, which contrasts the sets of active and non-active endings directly:

(28) Active/Non-Active Endings

P/N	**Active**	**Non-Active**
1S	-o	-me
2S	-is	-se
3S	-i	-te
1P	-ume	-maste
2P	-ete	-este
3P	-un(e)	-onde

[9]The Perfective forms contain a signal *-tik-* (i.e. *-θik-* and allomorphs) along with the Active Person/Number endings.

I will now show that this requires a feature [NonAct] in the morphology. To begin with, there are two methods of encoding allomorphy to be considered. One involves simple listing, that is, the specification with a signal that it will instantiate a node only with certain listed verbs. The following specifications from Halle & Marantz (1993) for English inflection illustrates:

(29) Allomorphy encoded on Signal

[+participle,+past] ↔ /-n/ / X +__
X = ^ *hew, go, beat, ...*

In the case of English verbal endings, the listing approach appears sufficient. The reason for this is that the generizations intended to be captured by the lists extend only as far as single morphological signals. There is no need for an overarching diacritic, in that there is no further need to appeal to the same list of Vocabulary Items for further morphological processes. The significance of this point can be seen when the listing approach is extended to the deponent verbs of Modern Greek. This could be done by modifying the relevant signals (i.e. the person/number endings appearing in non-active contexts) with a list of deponent verbs:

(30) Extension to Deponents (MG)

[1 S] ↔ /-me/ / X +__
X = /V_1/ ... /V_n/

The problem with this type of treatment becomes evident when we consider that the affix *-me* for 1S non-active voice is not the only morphological signal that is involved when a particular verb is deponent. Deponent verbs take the non-active voice forms for all persons and numbers; thus, something like the following would be required to handle the distribution of non-active endings (these are not arranged disjunctively here; this is merely a list of the relevant signals):

(31) Full Array of Signals (MG)

[1 S]	↔	/-me/ / X + __ X = /V_1/ ... /V_n/
[2 S]	↔	/-se/ / X + __ X = /V_1/ ... /V_n/
[3 S]	↔	/-te/ / X + __ X = /V_1/ ... /V_n/
[1 P]	↔	/-maste/ / X + __ X = /V_1/ ... /V_n/
[2 P]	↔	/-ste/ / X + __ X = /V_1/ ... /V_n/
[3 P]	↔	/-nde/ / X + __ X = /V_1/ ... /V_n/

The problem is that there is nothing in the listing approach which ensures the identity of the classes /V_1/ ... /V_n/ referred to. That is, the fact that a particular verb takes non-active inflection is a property which is prior to the specifications of the particular signals involved; it is a property of the verb root that non-active inflection is required, and this extends across Person and Number combinations. There is no means of encoding the fact that all of the lists in this particular instance are identical. If different lists were possible, then verbs which are deponent only in certain Person/Number combinations should be attested, but they are not. The listing approach is therefore unrestricted in that it allows for the existence of a large number of possible verbal classes, none of which are found. The conclusion to be drawn from this is that the existence of deponent classes like the Modern Greek deponents forces the use of diacritic features. As the property of being deponent extends through the Person/Number system, the diacritic must be appealed to capture the fact that the same verbs (i.e. same Lists) are being referred to repeatedly in the morphological component (i.e. in the spell-out rules of a number of different affixes.)

On the analysis I have presented, there is a single feature, [NonAct], which is assigned in particular syntactic configurations, and in addition is possessed inherently by certain verbs. If the behavior of deponents and non-active verbs were not analyzed in this manner, the fact that there are entire sets of signals patterning identically in each of these two cases would be accidental.[10]

5.4 Lexicalist(Minimalist) Approaches

On a Lexicalist treatment, in which Voice morphology must be checked against a syntactic feature, the parallel inflection of syntactic passives and of deponents cannot be captured. In cases in which it accompanies e.g. syntactic

[10]This is one type of argument for the identity of morphological features in inherently specified verbs and syntactic configurations. As discussed in Embick (In Prep), different types of arguments may be made for different systems.

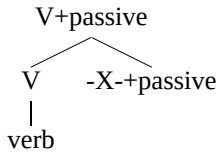
passivization, the Voice morphology must be checked against a specific syntactic feature, which is correlated with specific syntactic properties (non-thematic subject position, etc.) Transitive deponents will have this same morphology, but syntactically will not possess a feature against which the Non-Active morphology can be checked. The fact that certain verbs are inflected in the same way as verbs in e.g.verbs in passive syntax is thus completely accidental on this approach. I will illustrate this first with a Lexicalist treatment involving affixation and feature percolation, as the argument presented here will also apply to syntactic treatments of voice morphology in which the goal is to achieve a unified Lexical entry for voice in distinct syntactic structures. I then show that the relevant facts are impossible to capture on the Lexicalist version of Minimalism (Chomsky (1995).)

In a standard Lexicalist treatment, the relevant forms, the voice morphology would play a role in defining the external syntactic behavior of the verb. Specifically, the passive/non-active affixes would contribute through the percolation of features making the entire verb+affix unit syntactically passive/non-active. That is, the voice morphology would be specified with features as follows (I am ignoring details of subcategorization for the moment):

(32) -X- = [[$_V$] +passive +1]
-Y- = [[$_V$] +passive +2]

Affixation produces a 'passive verb':

(33) Passive Verb

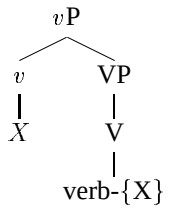


Affixation on this treatment determines external behavior. However, in the case of inherently specified verbs, the external behavior is not that of a passive verb. The affixes found with inherently specified verbs must therefore be differently specified. As a result, this theory posits two sets of identical affixes, with these contributing distinct features (or possessing distinct subcategorization frames). The relationship between the two cases is entirely severed, contrary to the results established above.[11]

[11] The same argument may be made if the 'passive morphology' is specified so as to be subcategorized for a 'passive verb'; in this case 'passive morphology' will subcategorize for both syntactically passive verbs, and inherently specified syntactically active verbs. But the fact that each particular affix subcategorizes for 'passive verbs' if and only if it also subcatgorizes for a diacritically specified set of active verbs is entirely accidental.

The Minimalist/Lexicalist treatment along the lines of Chomsky (1995) differs in implementation, but is subject to the same type of counterargument. On this type of account, morphology, in particular voice morphology, corresponds to features in the syntax which determine the syntax of voice alternations. Assuming for concreteness that v is the locus of such effects, the verb would, by virtue of having 'passive morphology', have a specific feature, here X, to check in v:

(34) Minimalist/Lexicalist



The actual implementation is unimportant (at this point; see §6 for questions of implementation that matter.) What is crucial, however, is the fact that the voice morphology corresponds to a syntactic effect, i.e. a voice alternation, with this being encoded through the checking relationship. In a case in which X-syntax is present, but the verb does not have X-morphology, the derivation will crash. This will also be the case in which the verb has X-morphology but X-syntax is not present; i.e**,** the case of an inherently specified verb.

If inherently specified verbs had the same feature that was correlated with the syntactic voice alternations, the derivation would crash. The only way for this type of morphology to be present on the Minimalist/Lexicalist treatment is for it to be correlated specifically with a syntactic effect. In the case of inherently specified verbs it is not. Hence it must be concluded on this type of treatment that the relationship between the morphology found in inherently specified verbs and that found in syntactic alternations is entirely accidental. In light of the arguments presented here, this postion is clearly inadequate.

6 Syntax and Voice Systems

In §6.1 I address the question of what it is about the syntax that Non-Active voice morphology is reflecting. The solution I present to the question of voice syncretism is syntactic. Other approaches have treated the syncretism as arising from considerations of argument structure, which figures prominently in the syntax of voice. I thus devote §6.2 to a discussion of argument structure-based treatments of voice syncretism.

6.1 Voice Morphology and Syntax

The arguments of the last section show that both syntactic configurations and individual verbs are related to the same feature associated with non-active morphology. I now present an analysis of the Greek voice system based on this fact. In the discussion to come I will refer to the morphological feature associated with non-active morphology as [NonAct]. The role of [NonAct] in morphological spell-out is that it conditions the insertion of the non-active set of Person/Number endings (as well as the 'passive formant' involving -θ*ik*-.)

In the first case to be dealt with, that of deponent verbs, individual verbs are simply specified for this feature inherently:

(35) V[NonAct]

The other case to address is that in which non-active morphology appears in syntactic alternations. The basic idea I will develop is that voice morphology in some cases results from the fact that the verb is in a particular structural configuration. In such configurations, the Morphology targets the verb with a morphological position which encapsulates information about the syntactic environment. The morphological process stated abstractly is as follows:

(36) Dissociated Voice Assignment

V $\longrightarrow$ V-VOC[NonAct]/___ SYNTACTIC ENVIRONMENTS

I will now discuss three ways in which the notion of 'Syntactic Environment' involved in this process may be stated.[12]

1. The [Non-Act] feature is related to a syntactic feature.

The morphology cannot simply be the same syntactic feature, as this leads to serious difficulties. Suppose non-active morphology corresponds to (i.e. must be checked against) a feature F in the syntactic computation. On the scenario sketched above F is a feature of v, to be checked in the overt syntax. If deponent verbs are to be treated as identical morphologically with verbs in non-active syntax, then these verbs too must have the feature F. But the insertion of a deponent verb post-syntactically amounts to the reintroduction of a syntactic feature requiring

[12]The manner in which this type of condition is stated below should be taken as relative to the Greek voice system; typological variation in voice systems could be captured with different types of conditions on Dissociated voice assignment. I will not discuss this further here, however.

checking on the PF branch, after the workings of the syntax. Such a derivation should therefore be impossible. On this type of account, then, the reasonable stance would be to have the (checked) syntactic feature still visible in morphology, for the purposes of the following operation:

(37) V $\rightarrow$ V-[NonAct]/__ F

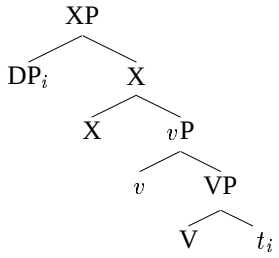
A further point is that this amounts to making the features involved in the syntactic derivation visible for the workings of Morphology. An option would be to posit a process which converts this syntactic feature into one that can be dealt with in the morphology; that is, to hold that syntactic features after being dealt with in the syntactic computation are visible for morphology. The problem then is with the status of this feature. The feature in question would presumably be a feature of v. However, it is not needed to attract the verb to v, as this is assumed to occur anyway. If this is a feature that needs to be checked, then it should be possible to associate a coherent syntactic property with its distribution. Moreover the content of v in the relevant environments is heterogeneous; in passives and reflexives v is Agentive, whereas in anticausatives it is crucially non-agentive. That is, there is a common factor underlying these three syntactic configurations, but it is not a semantic property, unless it is stipulated that 'lacks an external argument in some sense' is a feature relevant for interpretation. The conclusion that is then forced is that non-active morphology checks an uninterpretable feature of v. This, however, is superfluous, given that the verb will move to v anyway. The presence of this additional uninterpretable feature on v must simply be stipulated.

2. [Non-Act] occurs in a configuration with NP-movement

A second possibility is that the voice morphology is sensitive to a configuration in which an internal argument has undergone NP movement. This amounts to making the morphological operation sensitive to a relationship established between the VP-internal position, and the higher position to which this argument moves.

The syntactic configuration in question is as follows, with XP here standing for the target of NP-movement:

(38) Relevant Structure



According to this approach two facts are involved in the assignment of the [NonAct] feature, involving the presence of a VP-internal argument and its NP-movement.

There are two points to consider here. The first concerns whether it is the actual NP-movement that is associated with the assignment of the [NonAct] feature, or whether actual A-movement is a secondary effect. There is reason to believe that it is the latter. This can be seen in the fact that the logical object need not appear in the raised position in unaccusatives; the following illustrates with the Transitivity Alternation verb *spread*:[13]

(39) aplo-thik-e o lekes
spread-N/A the stain
'The stain spread.'

Similarly with passives:

(40) Xtes dolgoni-thik-e o Athanasiadhis apo tin 17 Noemvri
yesterday assassinated-N/A the Athanasiadhis by the 17th November
'Yesterday Athanasiadhis was assassinated by 17th November.'

This shows that a formulation in terms of actual movement from a VP-internal position is not what is at work; the next (and final) formulation takes account of this.

3. Localized Information

On the alternative view, the information required for the realization of non-active morphology is more localized, and has to do with a property of v.

[13]I thank Alec Marantz for pointing out the relevance of this type of example in determining how the conditions on voice assignment should be stated.

Specifically, when v is not in a local relationship with an external argument, the [NonAct] feature is assigned.[14,15]

(41) V $\rightarrow$ V-VOC[NonAct]/__ No external DP argument

The point to be stressed is that while this process is localized to v, it does not correspond to a syntactic feature of that head. The syntactic features involved in the syncretism are heterogeneous with respect to v, in some cases being Agentive (e.g. Reflexives, Passives), in other cases non-Agentive (Anticausatives.) This is evident in the fact that the condition on the application of this rule may potentially be met in various ways. In unaccusatives it will, for instance, be met because there is no external argument to begin with. In passives or reflexives on the clitic-type analysis noted above, the condition will be met by virtue of the fact that the external argument has 'cliticized' in the syntax.[16] Finally, Raising verbs like *seem* also meet the relevant conditions.

Like the approach discussed immediately above, this treatment is configurational. However, what is relevant does not involve a VP-internal argument, but instead merely whether or not v is in a particular structural relationship with an externally projected argument (or the trace of one.) In cases in which no such argument is present (for one of the reasons noted above), the possibility for NP-movement will arise.

6.2 Voice and Argument Structure

The analysis above treats voice morphology as being sensitive to the output of the syntax. This clarifies the current position with respect to alternatives which attempt to capture voice syncretisms by making morphology sensitive to the workings of Argument Structure, with the latter conceptualized as a module of the grammar distinct from the syntax (in the sense of e.g. Grimshaw (1990).) In the syntax of the syncretizing configurations, there is no uniformity at the level of argument structure. Passives and reflexives are agentive, while anticausatives are not, making an argument-structure solution stated in terms of the internal workings of Argument Structure untenable.

A treatment of syncretisms based on an identity at the level of argument structure is presented in Lidz (1996). Lidz assumes a theory of argument-structure

[14] The relevant object here is actually the V-v complex, which I will refer to simply as V for simplicity.

[15] I will again stress the fact that this is meant to capture the situation in Greek, and that I am not addressing the various dimensions along which voice systems will vary.

[16] The notion of 'cliticization in the syntax' remains somewhat vague. The basic idea involves an XP adjoining to a head in the syntax; in doing so the element no longer counts as an XP for certain processes.

with two tiers, following Grimshaw (1990). The account is anti-Lexicalist in orientation, in the sense that it attempts to correlate the presence of 'verbal reflexive' morphology not with a particular set of syntactic/semantic features possessed by the 'reflexive morpheme', but with particular properties of the argument structure of a verb. The discussion relies directly on the two-tiered argument structure of Grimshaw (1990), which I will summarize briefly. The first tier is *Argument Structure*, a list of thematic roles over which an ordering has been defined:

(42) (Agent (Experiencer (Goal/Source/Location (Theme))))

The syntactic realization does not correspond exactly to the hierarchy given here, a point Grimshaw notes in connection with pairs of verbs like *fear* and *frighten*. In order to account for such cases Grimshaw appeals to a second, *Aspectual* tier

(43) (Cause (other (...)))

Each of the two hierarchies operates to impose its own set of prominence relations on the arguments of a particular verb.

(44) **Lidz's Formulation:** Verbal Reflexives occur whenever the most prominent element on the aspectual tier is unlinked to an element on the thematic tier. (1996:11)

In the case of anticausatives this is applicable because these are assumed to be underlyingly transitive, so that the non-projection of the Agent meets the relevant conditions.

This formulation is meant to be universally applicable; in other words, the definition in (44) is meant to provide a universal characterization of what phenomena are at play when a signal associated with verbal reflexivization also appears in other syntactic configurations.

There are three major objections to be brought against this treatment. A first argument may be made against the specific aspect of this proposal concerning Transitivity Alternation verbs, which Lidz assumes to be basically causative. This objection is restricted to the particular set of assumptions made by Lidz. Two further arguments apply more generally to solutions stated in terms of argument structure. Like the Lexicalist accounts discussed earlier, this type of approach is unable to account for the systematic morphological identity of deponent and other non-active verbs. This objection is in some sense restricted to voice systems showing deponent verbs. In addition, there is a more general objection to this

approach which has to do with modularity. This account is styled as an interface treatment, but what precisely is interfacing is unclear. The role of the two levels of Argument-Structure representation in Grimshaw's work is to define how arguments corresponding to the roles will be projected into the syntax. That is, the relevant levels of representation provide the interface between the Lexicon and D-structure. This leads to a natural question; how is the morphological realization of the verbal reflexive sensitive to this? The most explicit statement Lidz makes about morphology is that the verbal reflexive is 'licensed' in cases with the relevant argument structure pattern, and this does not answer the question.[17] It seems, then, that on the model under discussion the morphological component must be sensitive not only to the properties of argument structure which are represented in the syntax, but in addition to properties which are internal to argument structure. One of the major tenets underlying the present investigation is that the syntax serves as the input to morphology, which in turn interprets the syntax according to its own concerns. This type of approach is more restrictive than one on which different components of the grammar have access to the internal workings of other components, and should not be discarded in favor of a less restrictive approach without considerable motivation.

Other types of treatments at a level of Argument Structure are also found. For instance, Reinhart (1997) seeks to capture the fact that reflexives and anti-causatives display some properties in common by analyzing them as both involving an operation of *Reduction* at the level of argument structure. Her position is that while the same abstract operation applies in each of these cases, in the case of reflexives it removes the internal argument, and in the case of anticausatives the external argument (Reinhart assumes that Transitivity Alternation verbs are underlyingly causative.) Reinhart's account seeks to reduce the fact that reflexives and unaccusatives are at the same time morphologically similar and syntactically not the same. She attempts to reduce these facts to the effects of a generalized sort of pre-syntactic operation. If the operation truly is so generalized as to be the same in each of these cases, then the fact that they have different external syntactic behavior is unaccounted for. If there are really two distinct operations subsumed under the heading *Reduction*, then it is unclear why the morphological realization for these two operations should be the same. One could interpret Reinhart's operation of Reduction to leave a feature on the verbs it has applied to, with this being responsible for the syncretism. However, this would simply be a restatement of the position discussed (and rejected) in §6.1 above.

In concluding this discussion of voice and argument structure, I would like to make a correlation between how argument structure interacts with each of the interfaces. The relevance of this is to be found in the fact that part of the research

[17] One can imagine an implementation of this licensing in terms of checking theory, so that a 'reflexive' verb would have to be checked against a head related somehow to argument structure (perhaps v.) An approach of this type is essentially syntactic (and not based on Argument Structure as a component of the grammar); as a purely syntactic account it is subject to the considerations of §§5-6.1.

program of argument structure is concerned with the projection of arguments and alternations in argument structure, phenomena which are directly implicated in the domain of voice. The arguments presented above show that the syncretism found in the Greek voice system cannot be handled with argument structure operations, and is instead basically determined in the syntax (as opposed to in the Lexicon or in a module of Argument Structure.) The considertations of this section take on a different perspective from the viewpoint of a configurational approach to argument structure, as in the theory of Hale and Keyser (1993). In this type of approach argument structure does not determine syntactic projection, it simply is syntactic projection: thematic interpretation is determined structurally, in terms of position of Merger or otherwise; this aspect of argument structure is simply syntax. In this sense it is not surprising that voice alternations, which are taken in many cases to have effects on argument structure, should be associated with conditions on the realization of morphology which are defined syntactically.

6.3 The Greek Voice System

At this point we have a clear idea of how the components comprising the Greek voice system relate to one another and to Non-Active morphology. Bringing the elements of the preceding sections together, the Greek system may be analyzed as follows:[18]

[18]Two added complications must be noted. First, morphological marking in the Transitivity Alternation is variable. In Greek, this may be seen in TA verbs which are Active in both their transitive and intransitive forms (contrasted here with alternating verbs, discussed above):

(1) Active-only TA Verbs

Verb	**Translation**
ksipno	'wake up'
spazo	'break'
anigo	'open'

This phenomenon is widespread cross-linguistically, and sets the appearance of voice in the Transitivity Alternation apart from voice in other syntactic alternations (e.g. the passive), in which no such 'suppression' is found. While attempts have been made concerning why some TA verbs show voice morphology while others do not (see e.g. Pesetsky (1995), Levin and Rappaport-Hovav (1995), also Haspelmath (1993)), there is a further question concerning why variation should be possible in this as opposed to other domains in the first place. Concerning this latter question, see Embick (1996) for some discussion and preliminary suggestions.

Perhaps related to this is the fact that voice marking within the class of non-alternating unaccusatives are also variable; some are always active, others always non-active. Some Modern Greek deponents are most likely unaccusative; other apparent unaccusatives like *anthizo* 'bloom' (which forms a resultative, object-oriented participle: *anthizmenos* 'bloomed') have active inflection. Despite the lack of total regularity within the system of unaccusatives, it would be misguided to assume there is no systematicity, i.e. that such verbs bear [NonAct] inherently like deponents. The reason for this is that within the Transitivity Alternation the pattern is systematic, in the sense that Non-active morphology appears only on intransitives when it appears, and never on transitive TA verbs. This argues against an approach requiring inherent specification.

(45) Greek System: Type I

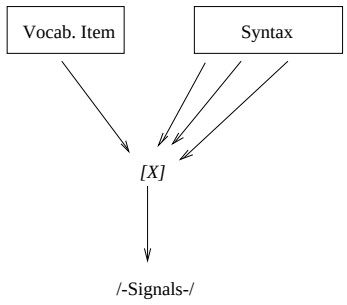


Figure 1: Modern Greek System

Syntactic configurations, in this case Passive, Reflexive, and Anticausative, all result in the assignment of [NonAct] by the process in (41). At the same time, specific Roots, i.e. the deponent verbs, possess the same [NonAct] feature inherently.

Taking in mind this conception of what the Greek voice systems looks like, other systems can be analyzed in order to determine the range of possibilities for syntax/morphology interactions. The most direct relationship involves a case in which a syntactic alternation involves feature (set) X, which is directly associated with morphological realization. There is no reason to appeal to Dissociation. The possibility for syncretism could, however, still arise through Underspecification.

A further type of interaction is less direct. The Greek system associates uniform syntactic configurations with the assignment of the morphological feature. This situation may be contrasted with a hypothetical case, in which disparate (sets of) syntactic environments are mapped to an identical morphological feature, making the syntax associated with the morphological feature non-uniform:

(46) Hypothetical System: Type II

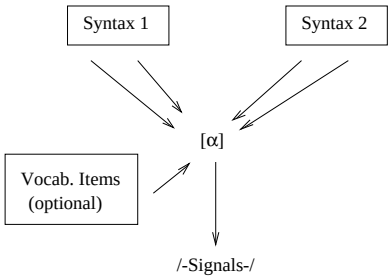


Figure 2: Full Polyfunctionality

The morphology associated with the feature $[\alpha]$ in this system is truly polyfunctional, in the sense that it is systematically associated with distinct syntactic environments. However, the same morphological feature is associated with the same morphological signals in each of these cases; there is thus simultaneously morphological unity associated with disparate syntactic configurations.[19]

Both of these systems have a morphological feature defined disjunctively. In the case of a Type I system, the disjunction is between a syntactic environment and a set of Vocabulary Items possessing the feature inherently. With a Type II system, the disjunction covers distinct (and disparate) syntactic environments. The claim I am making here is that systems of the Greek type (Type I) must be recognized, and allow for systematic syntax/morphology interactions, while the existence of systems of Type II would limit severely what could be said about the interface (the type of theory necessary for Type II, with a fully mediated interface, will be discussed in the following section.) Before I turn to this, some clarification is required concerning the difference between these two types of system, particularly surrounding the point that the syntax in Type I is uniform while the syntax associated with Type II is non-uniform. In actuality, the position that the syntax associated with a system of Type I here is uniform is valid only from a particular point of view. Because the syntax associated with e.g.transitive deponents is not going to be the same as that which is found with other instances of the relevant morphology, the syntax is in some sense non-uniform. The difference between these two types of system lies in the fact that in the system of Type I the feature is related in one case to a syntactic configuration, and in the other case to a set of verbs in such a way that the feature has nothing to do with syntax at all. In a Type II system the syntactic conditions determining assignment of the same feature are disjoint.

[19] A system of Type II with a feature $[\alpha]$ would of course have to be shown to involve abstract morphological identity, as opposed to simple homophony.

The upshot of this is that the syntactic behavior of the verbs within the class of diacritically specified deponents need not be uniform. For instance, in Greek both transitive and intransitive verbs may be deponent. This does not make a diacritic class necessarily polyfunctional, in that by virtue of being a property of particular Vocabulary Items, the feature in such cases is systematically unrelated to the syntax. Thus in a Type I system, although a number of syntactic environments are associated with the verbs that possess the feature inherently, it is not the case that these are structures in which the feature is assigned systematically. Rather, the presence of the feature in such cases is completely orthogonal to the syntax.

The argument that I am making is that a theory of the syntax/morphology interface must allow the features found in Type I systems, but should exclude systems of Type II (conceptual/methodological reasons for this will be discussed below.) The interface does allow diacritic features, but only if these are related to coherent sets of syntactic configurations. Cases of inherent specification, i.e. deponent verbs, are not excluded for the reasons discussed above.

7 Conclusions: Syntax/Morphology Interactions

The results presented here may be seen as intermediate between distinct conceptions of the interface. At the outset, two opposing views of syntax/morphology interactions may be contrasted with each other. One approach advocates direct interaction: the morphology realizes the features of the syntax directly, without any intermediate levels or features added following the syntactic derivation.[20,21] A theory of this type could be presented as a form of Distributed Morphology (Halle and Marantz 1993, 1994). Contrasting with this view is an 'indirect' or 'mediated' theory, in which syntactic configurations can be associated systematically with inflectional classes even when the configurations in question are disparate; Aronoff (1994) presents what is effectively a theory of this type. Even in cases in which there is a relatively uniform association between syntax and morphological realization, Aronoff assumes an intermediate 'morphome', a function relating the two.

The effects that the present study have on theories of the syntax/morphology interface is clarified when the types of features at play in syntax and morphology are considered. To begin with, there are the following types:

[20] Agreement represents something of a hybrid case on this type of view. If AGR nodes are added in the Morphology (along the lines of Marantz (1992), with features then copied to them prior to realization, then agreement morphology does in fact involve only features present in the syntax. The *node* in question is Dissociated, but the features (e.g.[1 PL]) are interpretable features present in the syntax which have been copied in the morphology.

[21] Notice that this does not mean that certain diacritic features will not be introduced with particular Vocabulary Items. Rather, syntactic configurations will not be related to diacritics in a way so as to 'mediate' syntax and morphology.

(47) Types of Features

a. Features driving the syntactic computation *((Formal) Syntactic Features)*

   EXAMPLE: Strong F present on some head

b. Features present in the syntactic computation *(Interpretable Morphosyntactic Features)*

   EXAMPLE: [$\pm$Perfective]

c. Features added morphologically, which encode aspects of the syntactic environment *(Copied Features of type (b))*

   EXAMPLE: AGR (see Fn.20)

d. Features existing only in the Morphology *(Diacritic Features)*

   EXAMPLE: [*Conjugation I*]

The existence of *diacritic features* on particular Vocabulary Items is compatible with the strongest form of Direct syntax/morphology interactions, in that these features in no way relate to syntax. However, the arguments presented here show that the feature [NonAct] in Modern Greek are purely morphological (i.e. post-syntactic) in nature, and that it is furthermore systematically assigned in syntactic configurations as well as possessed inherently by certain verbs. Features like [NonAct] in the Greek voice system are special in that they have a dual provenance.[22] I turn now to the implications that may be drawn from their existence.

The two types of theory outlined in the first paragraph of this section offer diametrically opposed views of the role of the *Separation Hypothesis* in linguistic theory. Both acknowledge Separation, but while the Direct view constrains Separation by relating morphology directly to the output of the syntactic derivation, the Indirect view allows for Separation to be constrained by nothing beyond learnability. Separation is the end of the story on the mediated approach, as there is in principle nothing to be said about syntax and morphology beyond the fact that they are distinct from one another. In an extreme form, fully Indirect theories assert that there is nothing interesting to say about the interaction of syntax and morphology. As discussed in the previous section, proof of the existence of Type II systems would be evidence in favor of a mediated interface. Irrespective of the question of whether Type II systems are found in natural language, which is empirical, the point is that the fully mediated approach to syntax/morphology should be rejected on conceptual grounds. As a theoretical position it is extreme, in that it allows for

[22] Although I do not have space to discuss this here, the natural question to ask is how other morphosyntactic categories (Tense, Aspect, Mood, etc.) behave in this respect, and which are potentially of dual provenance like Greek Voice. See Embick (In Prep.) for discussion.

a theory in which there is simply nothing to say about the interaction of syntax and morphology; furthermore, as a methodological stance it is simply unworkable in that there is no reason to undertake empirical investigations of syntax/morphology interactions if any apparent systematicities must be granted the same theoretical status as accidents.

The results presented here show that a Direct view of the interface in its most powerful form is not tenable. Yet while the recognition of Dissociation as being manifested voice systems plays a role in the proper characterization of the syntax/morphology interface but by itself does not constitute any sort of final statement in the absence of a theory of what governs its distribution, and a statement of what types of features may be dissociated. This situation is paralleled by other theoretical notions employed in the analysis of syntax/morphology interactions. For instance, as noted above the Separation Hypothesis plays an important role in this area. Yet an appeal to Separation does not, at this point, constitute a satisfactory analysis of any set of linguistic phenomena.[23] The interesting questions in this domain center around demonstrations of phenomena showing how Separation is constrained.[24] Similarly, the value of recognizing Dissociation is to be found in the role it plays in characterizing the interface and in providing evidence for particular models of the grammar. Arguments based on the voice system of Greek show that this is a useful notion, and that a theory of the syntax/morphology interface must allow for mediation in the form of processes relating to dissociated features. This analysis in and of itself does not say anything about the *extent* to which the interface is mediated, nor does it specify exhaustively the properties of features like Greek [NonAct]; as such it provides the basis for a further set of questions rather than constituting an isolated and closed issue.

References

Anagnostopoulou, E. (1997) "On Experiencers," to appear in Alexiadou, Horrocks, and Stavrou eds. *Studies in Greek Syntax*, Kluwer.

Anderson, S. (1992) *Amorphous Morphology*, Cambridge University Press, Cambridge.

Aronoff, M. (1994) *Morphology by Itself: Stems and Inflectional Classes*, MIT Press, Cambridge, MA.

Babby, L. (1975) "A Transformational Analysis of Transitive -sja Verbs in Russian," *Lingua* 35, 297–332.

Babby, L., and R. Brecht (1975) "The Syntax of Voice in Russian," *Language* 51, 342–67.

Baker, M. (1988) *Incorporation: A Theory of Grammatical Function Changing*, University of Chicago Press, Chicago.

[23] Although it does serve as an end in itself in the case against Lexicalist Morphology, which has been amply made in recent discussions (Anderson (1992), Noyer (1992), Halle and Marantz (1993) for various aspects of this.)

[24] For instance, a theory of systematic neutralizations involving the operation of Impoverishment is a step in this direction (Bonet (1991), Noyer (1992), (1995)); Carstairs (1987) also investigates possible syncretisms, albeit from a different perspective.

Baker, M., K. Johnson, and I. Roberts (1989) "Passive Arguments Raised," *Linguistic Inquiry* 20:2, 219–251.

Beard, R. (1966) *The Affixation of Adjectives in Contemporary Literary Serbo-Croatian*, Doctoral dissertation, University of Michigan.

Bonet, E. (1991) *Morphology After Syntax: Pronominal Clitics in Romance*, Doctoral dissertation, MIT.

Carstairs, A. (1987) *Allomorphy in Inflexion*, Croom Helm, London.

Chomsky, N. (1970) "Remarks on Nominalization," in R. Jacobs and P. Rosenbaum, eds., *Readings in English Transformational Grammar*, Georgetown University Press, Washington D.C.

Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.

Chomsky, N. (1993) "A Minimalist Program for Linguistic Theory," in K. Hale and S. Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, MIT Press, Cambridge, MA.

Chomsky, N. (1995) *The Minimalist Program*, The MIT Press, Cambridge, MA.

Cranmer, D. (1976) *Derived Intransitivity, a Contrastive Analysis of Certain Reflexive Verbs in German, Russian and English*, Niemeyer, Tübingen.

Embick, D. (1996) "Causativization in Hupa," in the Proceedings of BLS 22.

Embick, D. (1997) "The Latin Analytic/Synthetic Perfect/Perfective," ms., University of Pennsylvania.

Embick, D. (In Prep.) "Voice and the Syntactic Interfaces," Ph.D Thesis, University of Pennsylvania.

Geniušiene, E. (1987) *The Typology of Reflexives*, Mouton de Gruyter, Berlin.

Grimshaw, J. (1990) *Argument Structure*, MIT Press, Cambridge, MA.

Hale, K., and S. Keyser (1993) "Argument Structure," in K. Hale and S. Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, MIT Press, Cambridge, MA.

Halle, M., and A. Marantz (1993) "Distributed Morphology and the Pieces of Inflection," in K. Hale and S. Keyser, eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, MIT Press, Cambridge, MA.

Halle, M., and A. Marantz (1994) "Some Key Features of Distributed Morphology," in A. Carnie, H. Harley, and T. Bures, eds., *Papers on Phonology and Morphology*, MITWPL, Cambridge, MA.

Haspelmath, M. (1987) "Transitivity Alternations of the Unaccusative Type," Arbeitspapier 5, Institut für Sprachwissenschaft, Universität zu Köln.

Haspelmath, M. (1990) "The Grammaticization of Passive Morphology," *Studies in Language* 14:1, 25–72.

Haspelmath, M. (1993) "More on the Typology of Inchoative/Causative Verb Alternations," in B. Comrie and M. Polinsky, eds., *Causatives and Transitivity*, Benjamins, Amsterdam.

Jaeggli, O. (1986) "Passive," *Linguistic Inquiry* 17:4, 587–622.

Kemmer, S. (1993) *The Middle Voice*, Benjamins, Amsterdam.

Kostopoulou, E. (1989) "On Noun Incorporation in Modern Greek," *Cahiers Linguisitiqes d'Ottowa*.

Langacker, R. W. (1976) *Non-Distinct Arguments in Uto-Aztecan*, University of California Press, Berkeley.

Levin, B., and M. Rappaport-Hovav (1995) *Unaccusativity: at the Syntax/Lexical Semantics Interface*, MIT Press, Cambridge, MA.

Lidz, J. (1995) "Morphological Reflexive Marking: Evidence from Kannada," *Linguistic Inquiry* 26:4, 705–710.
Lidz, J. (1996) "Dimensions of Reflexivity," Ph.D Dissertation, University of Delaware.
Mackridge, P. (1987) *The Modern Greek Language*, Oxford University Press, Oxford.
Marantz, A. (1984) *On the Nature of Grammatical Relations*, MIT Press, Cambridge, MA.
Marantz, A. (1992) "Case and Licensing," *ESCOL 91*, 234–53.
Marantz, A. (1995) "'Cat' as a Phrasal Idiom: Consequences of Late Insertion in Distributed Morphology," ms., MIT.
McGinnis, M. (1997) "Reflexive Binding and Lethal Ambiguity," to appear the Proceedings of WCCFL 16.
Mendikoetxea, A. (1994) "Clitics as AGR, and PRO in Finite Clauses," *Proceedings of the Colloquium on Generative Grammar* 4.
Mirambel, A. (1949) "Remarques sur les voix du verbe grec moderne," *Bulletin de la Société de la Linguistique* 45, 111–127.
Noyer, R. (1992) *Features, Affixes, and Positions in Autonomous Morphological Structure*, Doctoral dissertation, MIT.
Noyer, R. (1995) "Impoverishment Theory and Morphosyntactic Markedness," in S. Lapointe, D. Brentari, and P. Farrell, eds., *Morphology and Its Relation to Syntax and Phonology*, CSLI, Stanford.
Pesetsky, D. (1995) *Zero Syntax: Experiencers and Cascades*, MIT Press, Cambridge, MA.
Philippaki-Warburton, I. (1970) *On the Verb in Modern Greek*, Indiana University, Bloomington.
Reinhart, T., and E. Reuland (1993) "Reflexivity," *Linguistic Inquiry* 24:4, 657–720.
Rivero, M.-L. (1992) "Adverb Incorporation and the Syntax of Adverbs in Modern Greek," *Linguistics and Philosophy* 15, 289–331.
Siewierska, A. (1979) *The Passive: A Comparative Linguistic Analysis*, Croom Helm, London.
Tsimpli, I.-M. (1989) "On the Properties of the Passive Affix in Modern Greek," ms., University College London.

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