In the Middle of Passive:
Middle Voice in Modern Greek vs. Passive Voice in English[*]

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1. Introduction

The Passive Construction has been the focus of many studies in Generative Grammar that gave rise to great discoveries (Chomsky 1957, Bach 1980, Roberts 1987), and yet there is no decisive analysis of the syntax and semantics of the Passive construction (cf. Baker, Johnson & Roberts 1989, Collins 2005, Legate 2009, Bruening 2013). A further complication is that in many languages, the same morphology used for a prototypical passive construction is also used in structures that lack a passive meaning like verbal reflexives and reciprocals as well as anticausatives which have been analyzed as lacking an implicit agent. An example of such a language is Modern Greek (henceforth Greek). As it is illustrated below, the same morphology is used for a prototypical passive (1), for a verbal reflexive (2) and for an anticausative (3) (see Alexiadou & Anagnostopoulou (2004) and references therein)[1]:

(1) O   Nikos   eksetaz-**ete**   (apo ton giatro)
     The Nick-Nom examine-MM.Pres.3sg (by the doctor)
      'Nick is being   examined (by the doctor).'

(2) O   Nikos plen-**ete**.
     The Nick   wash-MM.Pres.3sg
     'Nick is washing (himself).'

(3) I   supa   keg-**ete**.
     The soup-Nom burn-MM.Pres.3sg
     'The soup is getting burnt.'

If we define passive meaning as the presence of an implicit agent, then reflexives and reciprocals are not passives because the agent is explicit (the subject of the predicate is interpreted as both the agent and the theme) and anticausatives are not passive because they have no implicit agent. This variation has led to the idea that there are two distinct Voices, the Passive and the Middle, with the latter subsuming all other cases except for the prototypical passive one (Doron (2003), Alexiadou & Doron (2012)). Alexiadou & Doron (2012) classify languages to those that have both Middle and Passive Voice (Hebrew), those that have only Passive (English) and those that have only Middle (Greek)[2].

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[1] See footnote *5* for the morphological realization of passive in Present and Past Tenses in Modern Greek.
[2] It is important to mention that in many languages anticausatives and reflexives[2] pattern together but they are distinct from Passive Voice. This is the case in Romance languages and some Slavic languages (i.e. Bulgarian,

The purpose of this paper is twofold; first, it is shown that **in Greek** (and subsequently in all languages that pattern with Greek in that they have a single morphology for Passives, Reflexives and anticausatives) **the morphology used across the seemingly different environments has the same function and meaning and that this is a passive meaning** as defined by Bruening (2013) for English. Second, I explain **why the Passive in English** (and in other languages that pattern with English) **cannot have the additional meanings** that the Greek Middle has.

The overt borderline between the two types of languages (*Greek*-like vs. *English*-like) is the morphology which, as I hope to show, reveals different syntactic structures. To become more precise, in Greek, Passive Voice is realized via inflectional morphology on the verb whereas English has analytical Passive with the auxiliary *be* and a participle. I will argue that the syntax of the Greek Passive allows the additional meanings (reflexives and anticausatives) to be computed whereas the syntax of the English Passive does not allow the derivation of additional meanings. This distinction will be extended to other languages that use **synthetic** vs. **analytical** Passives.

Before coming to this point however it is necessary to show that the core meaning of all the structures under discussion in Greek is Passive and this is not obvious at all. First we need to carefully define what a Passive meaning is and then see how the additional meanings can be derived. We will start with the hypothesis that Passive is a functional head that has as its main job to existentially bind the external argument variable introduced by little *v*. Then, we will check whether the additional readings are derivable assuming that the Middle head has always this passive meaning. We will see that this unified account of Middle Voice can not only derive the additional readings (reflexive & anticausative) but also it can also solve other problems that have been discussed independently for reflexives and anticausatives.

Having explained how Middle works in Greek, the discussion will turn to English and, assuming that Passive in English also involves a functional head whose main job is to existentially bind the external argument, we'll try to explain why the other meanings cannot be generated. We will show that the main difference between English and Greek can be understood within the minimalist framework and under a dynamic view on phasehood. Following den Dikken's approach on phase extension by head-movement, it will be argued that head-movement of the verb to the Passive head extends the phase, and thus the VP and the little v belong to the same spell-out domain in Greek. On the contrary, as Bjorkman's analysis suggests, the verb doesn't raise to the Passive Voice head in English, and thus the VP is sent to spell-out without the head of the phase which is the little-*v*. It will be argued that the additional readings can be generated only if the little-*v* and the VP belong to same spell-out domain. More particularly, it will be shown that the additional readings are derived because of the interaction of the external argument variable with certain features and heads which belong to the complement of little-*v*. If this complement

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Serbian) where the clitic *se/si* encodes reflexives and anticausatives but also in non-Indo-European languages like Telugu, Japanese, a.o. These are also classified as Middle Voice in many typological studies (Genuisene 1987, Kemmer 1993) but we will not be concerned with these cases here, since they do not encode the prototypical passive reading.

is spelled-out separately from the little-*v* head which introduces the external argument (as in English), then any interaction between the two at LF will be impossible.

Throughout the paper I will bring data from other languages to reinforce the analysis and show that the distinction drawn concerns a larger set of languages, but the discussion is focusing mostly on Greek vs. English and doesn't aim to be a cross-linguistic study of Voice systems. A last note is necessary for the terminology I use. Despite arguing for a unified analysis of the Voice head as **Passive** in Greek, I use the term Middle Voice following the relevant typological studies and more recent work by Alexiadou & Doron (2012). Although I propose that the Greek Middle and the English Passive have exactly the same function, I find the term Middle convenient because it signals that other readings except for the prototypical passive one can be generated. Another term often used to cover all the cases under discussion is Non-Active. Generally when I discuss other proposals I keep the terminology that is used in the original paper. What is important is that whether we talk about Passive, Middle or Non-Active we mean the same morphology in Greek.

In the following section I set up the basic theoretical assumptions for the argument structure I follow throughout my analysis. Section 3 deals with the three different interpretations that Middle-marked verbs can have in Greek. First, I provide the general meaning for the Middle Voice head which is borrowed from the meaning that Bruening (2013) provides for the Passive head in English. In section 3.2., it is shown that the reflexive and the reciprocal interpretation is the result of an additional reflexivizing or reciprocalizing feature which identifies the argument introduced as identical to the external argument. Section 3.3 deals with the derivation of Anticausatives and it is argued, following Alexiadou, Anagnostopoulou & Schäfer (2006) (hence AA&S), that anticausatives emerge always when there is a Cause head in the structure.

Section 3.4. concludes with a general overview of Middle Voice in Modern Greek and introduces us to section 4, which addresses the question of the restricted English Passive compared to the Greek Middle. It is observed that the distinction involves a larger set of languages depending on whether they have a **synthetic** or an **analytic** Passive. Section 4.1 introduces some background on phasehood (den Dikken (2006)) and section 4.2. introduces Bjorkman's system for the analysis of Passives in English. Within this theoretical framework, I explain the blocking of the reflexive and (partially) the anticausative interpretation in English and in other languages that have an analytic passive (section 4.3) and I discuss the exceptional behavior of *get*-Passives and Hebrew Passives showing that they are not that exceptional after all (section 4.4). Section 5 concludes the main points of the paper and draws our attention to some empirical and theoretical questions which remain open.

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2. Background on argument structure

Any study that is concerned with verbal structure and argument structure alternations necessarily faces the question of labor division between the lexicon and the syntax. Although, it is largely accepted that Passiviziation is a syntactic operation (even among lexicalists this is relatively accepted see for example, Levin & Rappaport 1995, Reinhart & Siloni (2005), Horvath & Siloni 2008), there is a lively debate on whether verbal reflexives and anticausatives are derived in syntax or if they are the result of lexical processes. Two paths have been taken:

➢ *Lexical approach* (Levin & Rappaport 1995, Reinhart 2000, Reinhart & Siloni 2005, Horvath & Siloni 2008, Horvath & Siloni 2013): Verbs carry fully fledged meanings and certain operations allow the reduction or the increase of the arguments in the lexicon.

➢ *Syntactic approach* (Marantz 1984, Hale & Keyser 1993, Marantz 1997/2001, Borer 2005, Ramchand 2008): Lexicon consists only of roots and syntax is responsible for the introduction of the arguments. Under this approach, no operation can take place in the lexicon.

Here, I follow the syntactic approach, assuming that verbal structure is built in syntax. However, what is really relevant for this study is the semantic and syntactic status of the **external argument** of the verb. As proposed in Marantz (1997), Kratzer (2003) (and see also Chomsky (1995), Hale & Keyser (1993) for earlier proposals of the same idea), I take the external argument to be introduced in syntax by a little *v* head³ (Kratzer 1996, 2003). Below is the basic structure that I assume for a transitive verb like *clean*:

(4) John cleaned the room.

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³ In Kratzer (1996, 2003) the head that is responsible for the introduction of the external argument is called Voice whereas in Marantz (1997) it is called little *v*. Contra Marantz 1997, (but see Marantz 2013 for the distinction between little-v and Voice), I take this head to be simply responsible for the introduction of the external argument and I don't treat it as a verbalizer. I assume that at the level, when little *v* is merged the verbal root has already combined with a verbalizer which must be also responsible for the event argument. Although, I treat VP as a whole chunk for the sake of brevity, I follow the decompositional analysis as outlined in Marantz 2001, 2007, 2013 (and see also Borer 2005, Ramchand and the references above) according to which lexical formation is part of the syntax. If we accept that merge is a syntactic operation, then if there is really merge between a categorizing head and a root, this must be also part of the syntax (see Marantz 2007). The idomaticity and unpredictability of meanings derived by the combination of a root and a categorizing head are according to Marantz due to the creation of a first phase.

The only reason for calling the head that is responsible for the introduction of the external argument *little v* instead of *Voice* is that I want to tease apart the heads responsible for the introduction of the external argument and the Passive Voice head which I take to be a distinct head above little *v*. We find this distinction in many other works on argument structure (see Pylkkänen 2008, Alexiadou & Anagnostopoulou 2004, AA&S 2006, Wood 2012, a.o.). For a detailed discussion on the nature of little v and the different interpretations that linguists have attributed to it over the years see Harley (2012), Travis (2013).

(5)   vP λe. cleaning(e) & theme (e) = the room & agent (e) = John

         NP   v' λx. λe. cleaning(e) & theme(e) = the room & agent(e) = x
        John
                   v   VP λe. cleaning(e) & theme(e) = the room

                       V   NP
                      clean   the room

(6) → ⟦clean⟧[4]= λx. λe. cleaning(e) & theme(e)=x
    → ⟦v⟧ = λx. λe. Agent(e) = x
    → Combine ⟦v⟧ & ⟦VP⟧ via an Event Identification rule as proposed in Kratzer (1996).

A question that has been always hard to answer under the little *v* hypothesis is how do we know when an External argument is necessary or not. In other words, what determines whether the little *v* head must be merged or not. Additionally, Horvath & Siloni (2013, see their Appendix) point to semantic restrictions on the choice of the external argument (i.e. *The bees stung John vs. *The bees bit John*), which they take to be an argument against the introduction of the external argument by a separate head in the syntax. However, Kratzer's analysis involves event identification between the two heads (the little-v and the V-head), which means that even in the syntactic decompositional approach, the external argument is not independent from the main event encoded by the VP (see Kratzer 1996, pp.122-124 for a discussion on the relation between the Aktionsart of the main event and the thematic role of the external argument introduced by little-v). In fact, the observation that the nature of the external argument doesn't depend solely on the verb but on the whole predicate (VP) is behind the idea that the external argument is not just an argument of the verb but rather an argument of a head that selects the entire VP (Marantz 1984, Kratzer 1996). The extreme manifestation of the external argument being defined not by the verb but by the entire VP is noted in Levin & Rappaport (1995) for change of state verbs like 'break' which when they combine with certain internal arguments, necessarily require an external argument (that is, they cannot form an unaccusative):

(7) a. He broke his promise/the contract/the world record.
    b. #His promise/the contract/the world record broke.
                                              [Levin and Rappaport-Hovav 1995: 85, (9)]

Rappaport-Hovav and Levin (2011) solve this problem by analysing 'break' as a monadic predicate in the lexicon and arguing that "the choice of theme, however, determines whether the eventuality described is understood as internally or externally caused, and that, in turn, determines the range of available cause subjects. Thus, polysemy is minimized since there is no need to posit that 'break' is monadic when it describes internally caused eventualities and dyadic when it describes externally caused eventualities." Under a neo-davidsonian approach, we can simply say that this is true

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[4] As I said above, the internal structure and semantic decomposition of the VP is not immediately relevant, so for simplicity I stick to Kratzer's semantics where a transitive verb comes with an event argument and a theme argument.

for all verbs that have an internal argument. In other words, all verbs that have an internal argument enter the derivation as monadic and the requirement for an external argument is dictated by the semantics of the verb or of the predicate.

However, it has been observed that the presence of an external argument cannot be predicted simply by the semantics of the verb or the VP. More particuraly, we would expect verbs that have similar meanings across different languages to behave similarly as to whether they require an external argument or not. This expectation is born out to some extent (see Sorace 2000 a.o.) but not completely as there are many verbs that can form unaccusatives in some languages but not in others and vice-versa. The problem arises particularly for change of state verbs that participate in the causative – anticausative alternation (i.e. break, open, close, etc.). We will discuss these verbs extensively in Section 3.3. and we will see that the obligatoriness of an external argument must be encoded in the lexicon as featural property of the verb so that it can be satisfied as soon as little *v* is merged. We will call this feature [+Ext] as it expresses a requirement for the introduction of an external argument. If a verb is [+Ext], little *v* will be always merged. On the contrary, if a verb has no specification as to the [+Ext] feature an external argument will be optional and depending on the semantics of the predicate it will be more or less possible (see AAS (2006) for an analysis along these lines).

The idea of featural information encoded in the root is found in many works that assume that verb meanings are built in syntax. Ramchand (2008) provides an account according to which all arguments are introduced in syntax via subevent heads. According to her account the so-called external argument is introduced via the *init*-head which stands for a causing subevent. Crucially, for many verbs that require an external argument, the information for projecting an *init*-head is encoded with a feature [+init] in the root.

Long ago, in 1993, Hale & Keyser wrote a pioneering paper on Argument Structure, where the same problem is encountered. Namely, they argue that argument structure is built in syntax and they question why some verbs necessarily need an external argument (i.e. *smear*) whereas others don't (i.e. *splash*), the answer is again found in the lexical information carried by the verb: "…we must nevertheless assume that there is *something* lexical about entries for verbs like *shelve*, or any verbal entry, in fact." [H&K 1993; 94][5]. The position I'm taking here on argument structure is largely influenced by the aforementioned works. Having this background in mind, we can now proceed to see how additional Voice morphology functions in Modern Greek.

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[5] Hagit Borer in a series of work (Borer 1994, 2003, 2005) is defending a syntactic approach to argument structure rejecting that argument projection depends on lexical information at all.

3. Middle Voice in Greek and previous accounts

As mentioned above, Greek has a construction which has all the properties of the passive construction, as shown in (8); the verb has additional morphology (which fuses with Tense & Aspect and results in the ending –*ete*[6]), the internal argument becomes the subject and gets nominative case and the external argument is demoted and can be optionally expressed with a *by*-phrase.

(8) a. O   giatros   eksetaz-i   ton Niko.
       The doctor-Nom examine-pres the Nick-Acc.
       'The doctor is examining Nick.'
    b. O   Nikos   eksetaz-ete   (apo ton giatro)
       The Nick-Nom examine-MM.Pres.3sg (by the doctor)
       'Nick is being   examined (by the doctor).'

However, this morphology is not specific to Passive Structures. The same morphology is used to encode a reflexive (or reciprocal) relation between the two arguments of the verb (9) as well as in anticausative structures that lack an implicit agent as in (10)[7].

(9) O   Nikos plen-ete.
    The Nick   wash-MM.Pres.3sg
    'Nick is washing (himself).'

(10) I   supa   keg-ete.
     The soup-Nom burn-MM.Pres.3sg

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[6] Middle marking (glossed as **MM**) in Modern Greek is realized with inflectional morphology. In Imperfective Tenses it fuses with Tense whereas in Perfective Tenses, the Middle Marker is the **-th-** or (when the stem ends in a voiceless fricative) **-t-** morpheme that appears immediately after the stem. There is a discussion in the literature as to how the voice morphology is realized in different tenses. For example whether -th- or -thik is the exponent of Non-Active voice in the past (see Rivero 1990, Philippaki-Warburton 1973 for the former vs. Joseph and Smirniotopoulos (1993) for the latter). Here, I'm not concerned with the details of morphological realization, but rather with the syntactic analysis of the Voice head, which under this analysis is presumambly above vP. For details on Middle/Non-Active morphology in Greek see also Ralli 2005, Manzini, Roussou & Savoia, 2010 (henceforth MR&S)). Throughout the paper I use Present & Past Perfective in Middle Voice. The complete paradigms for these Tenses are given in the table below (the change of the stem is because of the imperfective – perfective distinction):

Person	Present		Past Perfective	
	Singular	Plural	Singular	Plural
1st	plen-**ome**	plen-**omaste**	pli-**th**-ika	pli-**th**-ikame
2nd	plen-**ese**	plen-**osaste**	pli-**th**-ikes	pli-**th**-ikate
3rd	plen-**ete**	plen-**onte**	pli-**th**-ike	pli-**th**-ikan

[7] There are actually more environments than those mentioned here. Generic Middles also employ this morphology. Although they have their own interesting properties, I'm not discussing them separately from Passives because their structure and meaning, until the point where Voice is merged, are equivalent with Passives. For an account on Generic Middles in Greek see Lekakou (2002, 2005) and Condoravdi (1989). Another case that I will discuss later is the case of deponent verbs that employ the same morphology without having an active counterpart.

'The soup is getting burnt.'

The appearance of a single morphology across these environments is not a peculiarity of Greek. In other languages like Albanian (Kallulli 2006), Armenian (Dum-Tragut 2009), in Sanskrit (Grestenberger and partly in Latin (Grestenberger 2014), in Swedish (Lundquist 2013 and references therein), there are single morphemes on the verb that appear in Passives, Reflexives, Anticausatives and possibly other structures (for a more extensive list of languages that encode Passives, Reflexives and Anticausatives with a single morpheme on the verb see the table 3 in page 52). The **"multifunctionality"** of those morphemes across different languages has received lot of attention in typological studies (Haspelmath 1987, Genuisene 1987, Kemmer 1993, Shibatani 2006). In these studies, those structures are unified under the hypothesis of the "subject affectedness" which says that this morphology appears whenever the subject is affected. Although these studies have contributed a lot to the understanding of voice phenomena cross-linguistically and contain really important insights, they fail to provide a concrete account because the affectedness explanation both under- and over-generalizes (for example in unaccusatives the subject is affected, but unaccusatives do not always bear Middle Voice whereas in a Passive structure like '*The book was read*' which always bears Middle morphology in Greek and other languages of this type it's not clear how the subject is affected). Moreover, the syntactic behavior of those structures, namely that there is always argument reduction is often neglected by typologists and is treated a side-effect that isn't immediately related to the change in verbal morphology.

During the last decade there is a growing interest within the generative framework for this **"multifunctionality"** especially in Modern Greek (Alexiadou & Anagnostopoulou 2004, Theophanopoulou-Kontou 2004, Embick 1998, 2004, AAS 2006, Tsimpli 2006, Alexiadou & Doron 2012, Alexiadou 2013, a.o. and see also Kallulli 2006 for Albanian)[8].

The question is whether the Middle Marker has the same function in all three environments (Passive, Reflexive, Anticausative) or not. Here, I present an overview of studies that attempted a unified account of either morphology or syntax of Non-Active Voice in Greek. In Embick (1998, 2004) Non-Active Voice is treated as the morphological realization of a common structural property of all the aforementioned structures namely, the absence of an external argument. He proposes that there is a rule that adds Non-Active morphology to the verb whenever there is no external argument.

(11) $v \rightarrow v–X/$___No external argument

[Embick (2004); 150, (24)]

Embick (1998, 2004) proposes that this is possible because of the underspecification of morphology with respect to the syntax. More particularly, Embick treats Non-Active morphology (*X*) not

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[8] Of course this is not the first place where the question of whether a unified account is possible is addressed. Irene Filippaki-Warburton in her paper about "The Passive in English and Greek" acknowledges the need to have an analysis of "medio-passive reciprocal and reflexive" as well as of "*get* and *have* passives" in English in order to formulate a complete theory of Passive in the two languages (Warburton 1975; p.576).
Tsimpli (1989) examines Passive Voice and she argues against a unified account of Passives and Reflexives. In more recent work Tsimpli argues that reflexives differ from Passives not only in semantics but also in their derivational syntax and that this is due to different properties of the Non-Active morpheme in the two cases (Tsimpli 2006).

as an instantiation of a syntactic head with a specific function and meaning, but rather as the morphological exponent of the absence of an external argument in syntax. Embick 2004's paper is a landmark as it is one of the first papers that proposes a unified account of Non-Active Voice, including Passive (see also Chierchia (1989/2004), Reinhart (2000) for making the connection between marked anticausatives and reflexives, especially in Romance languages where the clitic *se* is used). The analysis captures the basic fact that there is an apparent argument reduction in all three cases, but it doesn't explain how the semantic and syntactic differences between them arise and moreover why there are unaccusative verbs which obviously lack an external argument and yet they don't have Non-Active morphology.

Manzini, Roussou, & Savoia (2010) attempt a morphosyntactic comparative analysis of Middle Voice in Greek and Albanian. Although they do not discuss the semantics of Middle Voice in depth, they propose that the derivation of the different readings is because of "the interaction of semantic and pragmatic factors at the LF interface", without though specifying and explaining these factors.

More recently, Alexiadou & Doron (2012), building on Doron (2003) and AAS (2006), attempt a unified analysis of Reflexives, Anticausatives and Generic Middles (treating Middle Voice as distinct from Passive) and they treat Middle Voice as a functional head that modifies the verbal root with respect to its requirement for an external argument. They differentiate Passive Voice head from Middle Voice head in that Passive Voice head requires merging of little *v* and saturation of the external argument while the Middle Voice modifies root's requirement for an external argument. For Greek they argue that there is no Passive and that the Passive readings where there is an implicit agent are derived because of the lexical meaning of the verb (i.e. for verbs like *murder, give*, etc. which necessarily require an agent) and not because of the syntactic structure.

My contribution to this topic is to reverse the picture and show that the Middle morphology in Modern Greek has a Passive function, in a way to be defined, in all the environments that appears in, namely the prototypical Passives, the Reflexives/Reciprocals and the Anticausatives. Of course, as I mentioned from very early on, we need to know and agree first on what the function of Passive is and this is what I will try to sketch out in the following section.

3.1 Passive as Existential Binding

The notion of existential binding has been prominent in the analysis of passive structures (Bach 1980, Roberts 1987, Chierchia 1989) for a long time. The meaning I give in (12) for Middle Voice is the one that Bruening (2013) proposes for the English Passive head. According to this meaning, the Middle Marker (MM) saturates the external argument variable introduced by little *v* via existential binding:

(12) $[\![\mu]\!] = \lambda P_{<e,st>}. \lambda e. \exists x. P(x,e)$

Although, it is usually assumed that short Passives (i.e. without a *by*-phrase) involve an existential quantifier and thus the sentences in (13) are equivalent (Bach 1980, Roberts 1987), this not precise:

(13) a. Somebody destroyed the city.
    b. The city was destroyed.

Existential closure via a head (in this case a passive head) is not the same as existential closure in quantifiers. First there is no restriction in the case of existential binding. Even in generalized quantifiers like 'somebody', 'something' there is a restriction as to whether the variable is [+/- human], [+/- plural], etc. This is completely undefined in existential binding via a head. The only other case of existential binding in the verbal domain that I'm aware of is existential binding of the event argument by the aspect or Tense head. In this case as well, the existential binding of the event leaves much space for the further specification of this e, namely its plurality, its time, etc. The fact that existential binding via a head is actually quite weaker than existential binding via quantifiers will prove important later in this paper.

The main challenge for an analysis of Passive Voice as a head that existentially binds the external argument variable is the analysis of long passives that have a *by*-phrase. The semantic and syntactic analysis of the *by*-phrase remains problematic under any account and here I will explain why. There are two proposals for the analysis of *by*-phrases assuming existential binding[9]. The one outlined in Bruening (2013) claims that, when there is a *by*-phrase, the Passive head is semantically vacuous and thus the external argument variable is saturated directly by the *by*-phrase, which is adjoined to little *v* (Voice in Bruening's terminology). The second one proposed by Legate (2010) is that the Passive Head is always contentful and that the *by*-phrase is an adjunct at the level of the Passive Phrase.

The first problem for Bruening's analysis is that whereas the Passive head is taken to be semantically vacuous it is nevertheless morphologically realized. Bruening (2013) proposes that the Passive head merges with the VP, independently of whether there is an unsaturated argument or not. Little *v* (Voice in his terminology) has an uninterpretable feature [S:N], which stands for a selectional feature of the little *v* head to merge with an object of category N [Noun]. According to Bruening, this feature is not checked when the *by*-phrase is merged and so the Passive head still needs to be merged. However, to my understanding there shouldn't exist two independent reasons for merge, one to satisfy the semantic course of the derivation and another to satisfy featural properties of the heads. Our system would be much more efficient if it was driven simply by contentful merge and then if there were agree relations to satisfy uninterpretable features.

In Legate's analysis there is no such problem as the Passive head is always contentful. However there is another problem which is exactly what Bruening is trying to avoid (see also Fox & Grodzinsky
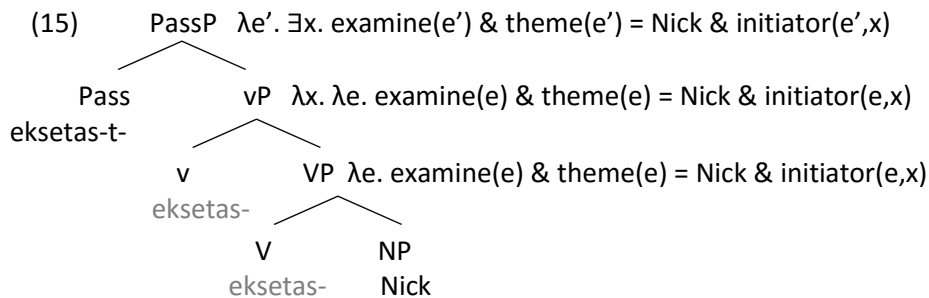
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[9] The analyses of "by-phrases" that I encounter here involve only those accounts where the Passive is analysed as a head that existentially binds the external argument. However, the *by*-phrase has been a problem for all analyses of passives, even those that argue for an actual syntactic argument in passives that saturates the external argument variable. In Baker, Johnson & Robert (1989)'s paper where –*en* stands as a clitic that saturates the external argument, the by-phrase was analysed as equivalent to clitic doubling where "a clitic forms a chain with a full NP [the by-phrase]". Collins (2005) proposes that the right analysis of passives is to treat "*by*" as the Voice head which introduces the external argument. In short Passives, the external argument is phonologically null like PRO, and the Passive Voice head is also null. For arguments against a PRO/clitic analysis of the implicit Passive argument see Landau (2010. See also van Urk (2013) for arguments in favor of the existential nature of the implicit argument in Passives.

(1998) for an analysis of transmission of the θ-role to the *by*-phrase). If we treat the *by*-phrase as an adjunct then somehow we must define its thematic role as identical to the thematic role of the external argument. Although, the problem can be remedied to some extent if we assume that there is only a general external θ-role (say initiator ala Ramchand) we have to explain why *by* **can** assign a θ-role (see Bruening's arguments against this idea). Moreover we would need to introduce twice the same θ-role (both by little-*v* and by "*by*"). Despite the problems, and since there is no better alternative, I will adopt Legate's account for *by*-phrases as it leaves intact the unified account of the Middle Voice that I want to pursue in this paper.

This analysis of Passives as existentially binding can be applied directly to Modern Greek which actually presents further evidence for the Passive being a functional head. This is so because, as we saw, the Passive is marked with inflectional morphology on the verb, and, crucially, it appears before Tense and Agreement, in the Perfective Past Tense, when it is not fused with Present (see footnote 6 above for the morphology of Passive in Greek). Consider the syntax for the following sentence:

(14) O   Nikos   eksetastik-e.
     The Nick-Nom examine-MM-Past.3sg
     'Nick was examined.

(15)   PassP λe'. ∃x. examine(e') & theme(e') = Nick & initiator(e',x)

     Pass   vP λx. λe. examine(e) & theme(e) = Nick & initiator(e,x)
   eksetas-t-
                 v   VP λe. examine(e) & theme(e) = Nick & initiator(e,x)
               eksetas-
                           V   NP
                         eksetas- Nick

When there is a by-phrase, it will be attached at PassP and it will be computed as an adjunct via Predicate modification.

However, the main task of this section is to explain how the other two readings the reflexive/reciprocal and the anticausative can be derived assuming that Middle Voice has always the default semantics of the Passive. Recently, Spathas, Alexiadou & Schäffer (2013, henceforth Spathas et. al.) propose an analysis of verbal reflexives in Modern Greek as involving existential binding. Here, I will also argue for an analysis of verbal reflexives and reciprocals as existential binding (proposing a different analysis with respect to reflexivization, see next section) and I will additionally argue that anticausatives can be analysed as involving existential binding. I will show that Middle operates in the same way across all the different environments it appears but the environment it appears is responsible for the derivation of different meanings.

3.2. Verbal Reflexives & Reciprocals

Verbal reflexives and reciprocals are verbal forms that give rise to a reflexive or reciprocal interpretation without the contribution of an anaphoric DP[10]. Verbal reflexives and reciprocals in Greek appear with Middle morphology. Consider the following examples:

(16) i   Maria   htenizete.
       the Maria.Nom comb-MM.Pres.3Sg
       'Maria is combing (her hair)
(17) i   Maria   ke o Nikos   filjunte.
       the Maria.Nom and the Nikos.Nom   kiss-MM.Pres.3Pl
       'Maria & Nick are kissing (each other)'

Although there is no reflexivizer in (16) or reciprocalizer in (17), their meaning is reflexive & reciprocal respectively (actually, they are, arguably, ambiguous between a passive and reflexive/reciprocal reading but the reflexive and the reciprocal is the most salient one in this environment). As has been noticed in many places before (Embick 2000, Alexiadou & Doron (2012), Spathas et. al. (to appear)), the reflexive or reciprocal meaning cannot be attributed to the Middle marker since a reflexive or reciprocal interpretation is possible only with verbs that have been characterized as naturally reflexive or reciprocal. For example, the following sentences can only get a passive interpretation:

(18) i   Maria   katigorite.
       the Maria.Nom accuse-MM.Pres.1Sg
       'Maria is accused.'
(19) i   Maria   ke o Nikos   katigorunte.
       the Maria.Nom and the Nikos.Nom   accuse-MM.Pres.3Pl
       'Maria & Nick are accused'

However, in Modern Greek almost all verbs that have an external argument can form verbal reflexives or reciprocals. Morphologically, we can distinguish two classes of verbal reflexives and reciprocals; i) verbs that can receive a reflexive or reciprocal interpretation simply by adding Middle morphology on them (like in (16) and (17) above ii) verbs that need an additional reflexive (*afto-* 'self') or reciprocal (*alilo-* 'each-other') prefix as in (20) and (21) below (see a.o. Rivero 1992, Embick 2004, Papangeli 2004, Dimitriadis 2008 (for *alilo-*), Spathas et al. 2013 (for *afto-*)):

(20) i   Maria **afto**katigorite.
       the.Nom   Maria REF-accuse-MM.Pres.1Sg
       'Maria accuses herself.'
(21) i   Maria   ke o Nikos   **alilo**katigorunte.
       the Maria.Nom and the Nikos.Nom REC-accuse-MM.Pres.3Pl
       'Maria & Nick accuse each other'

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[10] Greek also has reflexive (*ton eafto tu 'himself'*) and reciprocal (*o enas ton alo 'each other'*) expressions (see among others, Iatridou 1988, Anagnostopoulou & Everaert 1999, Spathas 2010 on the former and Dimitriadis 2008 on the latter). An anaphoric DP is possible with almost all verbs but, as we will see, verbal reflexives and reciprocals have different properties from the corresponding sentences with a reflexive or a reciprocal expression.

3.2.1. Afto-/alilo- marked and plain middle reflexives/reciprocals

As it has been noticed in the literature (Embick 1998, Spathas et. al. (to appear) a.o.), the two classes (*afto/alilo* vs. *plain middle*) correspond to well-discussed semantic classes in the literature. The, so-called, naturally reflexive or reciprocal verbs give rise to reflexive and reciprocal readings without the contribution of any prefix (plain middles). On the contrary, verbs that are non-naturally reflexive require *afto-* or *alilo-* to generate a reflexive or reciprocal interpretation respectively. Of course, the crucial question is how we define the set of naturally reflexive or reciprocal verbs.

Although, there have been several attempts to define a unified class of naturally reflexive verbs, the cross-linguistic data vary a lot. Haspelmath (2008) proposes a scale from introverted (self-directed) to extroverted actions (externally-directed actions i.e. *kill, hate*, etc.) and argues that verbs that describe introverted actions (i.e. grooming verbs like *wash, dress, shave*, etc.) are those compatible with "short" reflexive marking whereas those that are extroverted require "long"/"complex" marking. In our terms, verbs that describe introverted events do not require an overt reflexivizer whereas extroverted events do. Of course, the question is how we can decide if an event is introverted or extroverted. In contrast to the conceptual representation, which can be tentative and vague, the grammar needs to be fed with precise information. This leads us to the idea that there is a reflexivity feature associated with naturally reflexive verbs. The fact that this information varies a lot not only cross-linguistically but also among speakers of the same language suggests that which verbs are associated with this feature is to a large extent idiosyncratic, but as long as it is present in the grammar, it determines the derivational process. On the contrary, verbs characterized as extroverted, lack a reflexivity feature and so they can only yield a reflexive interpretation if they combine with the reflexivizing prefix *afto- 'self'*.

Similarly, naturally reciprocal verbs form verbal reciprocals without the contribution of a reciprocalizer. Naturally reciprocal verbs have been defined as inherently expressing a symmetric relation between the participants of an event. As with naturally reflexive verbs, there is no strict uniformity across languages as to which verbs fall into this class. Dimitriadis (2008) defines a prototypical class of reciprocals as irreducibly symmetric verbs (see also Haspelmath 2007). Those are predicates that if their arguments can be reversed, they can still have the same truth conditions i.e. *meet*, *fight, marry*. However, many more verbs in Modern Greek (and in other languages) fall into this class (i.e. verbs of social interaction like *greet, say goodmorning 'kalimerizo', say goodnight 'kalinixtizo'*; verbs of body interaction like *kiss, hug, hit, kick, make love,* etc.; verbs of emotional interaction like *love, hate, etc.*; and many others). Again, we need a feature that will determine whether an event can enter the derivation as reciprocal or not. If a verb is not marked as a reciprocal (for example, this is true for highly asymmetric relations i.e. *punish, order*), then it can only make a verbal reciprocal if it combines with the reciprocalizer prefix *alilo- 'each other'*.

The question which arises now is whether *afto*-marked reflexives and *alilo*-marked reciprocals behave differently from inherently reflexive/reciprocal verbs or not. In other words, should we treat the prefixes *afto-* and *alilo-* as overt realizations of an otherwise covert reflexivization and reciprocalization

feature or do they have a different semantic and syntactic function? I will argue for the first option based on tests that show i) that *afto*-reflexives pattern with inherently reflexive verbs, and not with argument reflexives[11], with respect to the "statue-reading" test and the "non-availability of non-sloppy-readings" test and ii) that *alilo*-reciprocals pattern with inherently reciprocal verbs, and not with argument reciprocals, with respect to the "*I* vs. *we* reading" test and the "collective vs. distributive reading".

Let's look first at *afto*-reflexives. It has long been observed in the literature (Reinhart & Reuland 1993, Lidz 2001, Kishida 2012) that cross-linguistically there are two types of reflexivization strategies; the one gives rise to the so-called "pure" reflexives (in Lidz's terms) and is realized morphologically with a bound morpheme on the verb or a "simplex" pronoun and the other to the so called "near" reflexives and it is realized with a full ("complex") reflexive pronoun. The two patterns have been shown to differ with respect to whether they allow "statue"-readings and whether the permit "non-sloppy" readings in elliptical constructions. As we can see below *afto*-reflexives pattern with "pure" reflexives with respect to both tests:

i. Statue reading

In a context where *Johnny Depp goes to Mm Tussauds and he takes a picture of his statue, it's o.k. to say (22a) using the anaphoric pronoun but it's not o.k. to say (22b) using the afto-reflexive:*

(22) a. O   Johnny   fotografise   ton eafto tu.
         The.Nom Johnny   photographed himself.
         'Johnny photographed himself.'
      b. #O   Johnny   aftofotografistike.
          The.Nom Johnny   self-photographe-MM.Past.3sg
          'Babis photographed himself.'

On the contrary, in a context where *Johnny is in Acropolis and he wants to take a picture of himself there, it is o.k. to say (23b) meaning that he was holding the camera with his hand and he took a picture of himself (selfie).*

(23) a. O   Johnny   fotografise   ton eafto tu.
          The.Nom Johnny   photographed himself.
          'Johnny photographed himself.'
      b. O   Johnny   aftofotografistike.
         The.Nom Johnny   self-photographe-MM.Past.3sg
         'Johnny photographed himself.'

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[11]By argument reflexives or reciprocals I mean predicates that contain a full reflexive or reciprocal expression (see footnote 10 above).

ii. Availability of non-sloppy reading

As the contrast between (24a) and (24b) shows, a non-sloppy reading is fine when we use the full pronominal but it's bad when the *afto*-reflexive is used.

(24) a. O   Babis   eleghi   ton eafto tu kalitera ap'oti o proistamenos tu.
      The Babis.Nom   controls himself   better   than   his boss.Nom
      'Babis controls himself better than his boss does.'
      Meaning 1: than his boss controls himself.
      Meaning 2: than his Boss controls Babis.

    b. O   Babis   aftoeleghete   kalitera ap'oti o proistamenos tu.
      The Babis.Nom   self-control.MM.Pres.3sg   better   than   his boss.Nom.
      'Babis controls himself better than his boss does.'
      Meaning 1: than his boss controls himself.
      #Meaning 2: than his Boss controls Babis.

Similarly, *alilo*-marked reciprocals pattern with the other verbal reciprocals and not with argument reciprocals. As in the case of reflexives, we can distinguish two reciprocalization strategies, one that is realized with a bound morpheme (or a simplex pronoun) and another which is realized with a full reciprocal anaphor[12]. The former, as shown in Siloni (2002, 2012), differs from the latter in that it only allows "we"-readings and it can only have a collective reading.

i. "I" vs. "we" reading (Higginbotham 1980):

In (25a) below there is an ambiguity triggered by the reciprocal in the embedded sentence. The sentence can mean that each one argues that he helped the other one (but he was not helped by the other) or it can mean that they both argue that they gave and got help. The availability of the first reading becomes clear when we add the phrase "*but nobody admits that he got help*" and the sentence still makes sense.

(25)a. O   Babis   ke o Nikos   lene oti voithisan o enas ton alon
      The Babis.Nom and the Nick.Nom say   that helped.3Pl the one the other

     (ala kanis   apo tus dio   den paredexete oti   exi dexti   voithia).
     but no one of   the two   not accepts   that has accepted   help.

     'Babis and Nick say that they helped each other (but none of them accepts that he was helped).'

    → "We" and "I"-reading are available but when we add the phrase in parentheses only the "I"
      reading is compatible (otherwise the sentence would be contradictory).

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[12] Notice that usually there is no morphological distinction between a pure reciprocal and a reflexive structure (for example in Greek, Romance languages, Russian, etc.) but there is always a distinction between full reflexive and full reciprocal pronouns. At least I'm not aware of any language that employs the same full anaphor for both. This provides further evidence that the Middle-marker is not responsible neither for reflexivization nor for reciprocalization, because if the middle marker was contributing to a reflexive or reciprocal meaning we would expect them to be argument reflexives and reciprocals are.

b. O   Babis   ke   o   Nikos   lene oti   alilovoithithikan
The.Nom Babis   and the.Nom Nick   say   that   alilo-help-MM.Past.3Pl

(#ala kanis   apo tus dio   den paredexete oti   exi dexti   voithia).
 but no one of   the two   not accepts   that has accepted   help.

'Babis and Nick say that they helped each other (but none of them accepts that he was helped).'

→ Only the "we" reading is possible. If we add the phrase in parentheses the sentence is contradictory.

ii.   Counting events (collecting vs. distributing events over the subject)

The argument is that with argument-reciprocals it is possible to get a distributive reading aside from the collective one. On the contrary, verbal reciprocals are compatible only with the collective reading.

(26) a. i   Tula ke   i   Kula   voithane i   mia   tin ali
        The.Nom Tula and the.Nom Kula   help   the one   the other

(otan kapia apo tis dio   exi provlima).
 when one of   the two has problem.

'Tula & Kula help each other when one of the two is in trouble.'

b. i   Tula ke   i   Kula   alilovoithiunte   (#otan kapia apo tis dio exi provlima).
     The.Nom Tula and the.Nom Kula   alilo-help.MM.Pres.3pl when one of the two has problem.
     'Tula & Kula help each other when one of the two is in trouble.'

The above contrasts suggest that all verbal reflexives and reciprocals, irrespectively of whether they are *afto-* / *alilo-* marked or not, should receive a common analysis, different from the analysis of reflexive and reciprocal structures that involve full reflexive and reciprocal anaphors[13]. Now that we

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[13]It is important to tease apart *afto-* and *alilo*-marked middles from argument reflexives and reciprocals because one could argue that the *afto-* and the *alilo-* are incorporated internal arguments (see Rivero 1992, section 3, for an analysis along these lines). This is not an implausible idea since incorporation of internal arguments is possible in Modern Greek, though not very productive i.e.

    i.   pezo hart-ja → hartopezo 'play cards'
       play card-s → cardplay

Crucially, however, argument incorporation never gives rise to Middle Voice marking and it would be very unexpected if it did. On the contrary, *alilo*-reciprocals and *afto*-reflexives always appear with Middle marking which suggests that something different than argument incorporation is at play (Rivero (1992) notes this problem, see pp.317-319). Notice that in Ancient Greek where there was an actual reciprocal anaphor (out of which this prefix has emerged in Modern Greek) *alilous,* and we find a few instances of verbs that can incorporate *alilo* i.e. *ἀλληλοφαγέω – alilofaγeo 'eat one onother' , ἀλληλοφιλέω – alilofileo 'love one another', ἀλληλοκτονέω – aliloktoneo 'kill one another', ἀλληλομισέω – alilomiseo 'hate one another'*
(Data taken from Perseus Corpora:
http://www.perseus.tufts.edu/hopper/resolveform?type=start&lookup=a%29llhl&lang=greek).
Crucially, all of those verbs appear in Active Voice, without any Middle marking, although we know that inherently reflexive and reciprocals verbs where Middle marked in Ancient Greek as well. The contrast between Modern and Ancient Greek provides further evidence that *alilo-* and *afto-* middle marked verbs differ from argument reciprocals and reflexives in Modern Greek.

have shown that *afto*-reflexives and *alilo*-reciprocals behave similarly to the other verbal reflexives & reciprocals, we need to find out what is exactly the function of those prefixes and why they can appear only with verbs that have been characterized as not naturally reflexive or reciprocal.

3.2.2. On reflexivization and reciprocalization

Let us recapitulate the basic observations made in this section. We saw that verbal reflexives and reciprocals always occur with Middle Voice and moreover we saw that there are two class of verbs; i) those that are characterized as naturally reflexive and reciprocals and are always ambiguous between a passive and a reflexive or reciprocal meaning (see below for tests showing that there is ambiguity) and ii) those that can only get a reflexive or reciprocal reading if they combine with the *afto-* or the *alilo-*prefix respectively. Furthermore, we showed that the *afto-* and *alilo-* marked verbs share the same properties with natural reflexive and reciprocal verbs. Also, a fact that wasn't quite stressed in the previous section but is important for our analysis is that with prototypical naturally reflexive and reciprocal verbs, *afto-* & *alilo*-prefixation is redundant and it is considered degraded by native speakers (see also Papangeli 2004). On the contrary, it is possible in many cases to have an anaphor with these verbs (though I think that the full anaphor is licensed in environments where it needs to convey a meaning that cannot be expressed by the verbal form i.e. *statue reading* for the reflexive and *distributive reading* for the reciprocal):

(27) a. i   Maria   (*afto)htenizete.
        the   Maria.Nom (self) comb-MM.Pres.3Sg
        'Maria is combing (her hair)
    b. i   Maria   xtenizi   ton eafto tis.
        the Maria   comb-Pres.3Sg   the self   her
        'Maria is combing herself.'

(28) a. i   Maria   ke o Nikos   (*alilo)filjunte.
        the   Maria.Nom and the Nikos.Nom   (REC)kiss-MM.Pres.3Pl
        'Maria & Nick are kissing (each other)'

    b. i   Maria   ke o Nikos   filane   o   enas ton   alon.
        the   Maria.Nom and the Nikos.Nom   kiss-Pres.3Pl the.Nom one   the.Acc other
        'Maria & Nick are kissing each other.'

The fact that the reflexivizing prefix *afto-* and the reciprocalizing *alilo-* are incompatible with naturally reflexive and reciprocal verbs suggests that the latter are already endowed with a reflexivizing or reciprocalizing feature by virtue of their meaning (cf. Reinhart & Reuland 1993). Thus, combining with *afto-* or *alilo-* would be redundant. Based on these facts I propose that the grammar contains a single Reflexivizer and a single Reciprocalizer, which in the case of naturally reflexive and reciprocal verbs comes as a part of the meaning of the verb and thus needs not be realized overtly whereas in the case of

non-naturally reflexive and reciprocal verbs it is not part of the meaning and thus it is realized independently as *afto-* and *alilo-* respectively[14].

At this point, the discussion leads us naturally to the question of what is a reflexivizer and a reciprocalizer and what is the process of reflexivization and reciprocalization. Reflexivization is discussed in two places in the literature. First, with respect to naturally reflexive verbs Reinhart & Reuland 1993, Reinhart (2000), Chierchia (2003), Reinhart & Siloni (2005) have argued that a reflexivization process takes place in the lexicon in many languages. According to Reinhart & Siloni (2005), a transitive verb is turned into an intransitive by a bundling operation that takes a predicate which assigns two thematic roles and forms a predicate that assigns one complex θ-role (bundling of the two θ-roles).

(29) $[\theta_i]$ $[\theta_j]$ $\rightarrow$ $[\theta_i - \theta_j]$, where θ_i is an external θ-role.   [R&S (2005); p. 400, (24)]

A similar reflexivization operation has been also proposed as a way to derive the binding effects for full anaphors like '*himself*' in English. Namely, Lechner (2012), following previous proposals by Bach and Partee (1980) and Szabolcsi (1987, 1989), argues that 'self' is a reflexivizer whose job is to co-bind the two arguments of a binary predicate as shown in (30)[15]:

(30) $[\![self_{<x,x>}]\!] = \lambda R_{<e,<e,t>>}.\lambda x[R(x)(x)]$ [Lechner(2012); p.10, (14)]

Crucially, in both cases above the reflexivization process involves argument reduction, thus it turns a two place predicate into a one place predicate by bundling or co-binding two distinct θ-roles. It is obvious that any analysis that assumes that the external argument is introduced via a separate head is not compatible with this perspective on reflexivization[16]. What I would like to propose here is that the crucial component of reflexivization is argument co-identification and not argument reduction.

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[14] Notice that *afto-* and *alilo-* can also appear with nouns:

Meaning	**Noun**	**afto 'self'**	**alilo 'each other'**
Accusation	Katigoria	**Afto**katigoria	**Alilo**katigoria
Punishment	Timoria	**Afto**timoria	**Alilo**timoria
Examination	Eksetasi	**Afto**eksetasi	**Alilo**eksetasi
admiration	thavmasmos	**afto**thavmasmos	**alilo**thavmasmos

This is expected under the proposed analysis since the reflexivizer and the reciprocalizer attach to the verb (see also Embick 2004). Moreover, they appear with nouns whose corresponding verb cannot combine with this marker (i.e. *aftosevasmos 'self-respect', alilosevasmos, 'respect of each other'* but not *aftosevome* 'self-respect$_v$'. The fact that the verb cannot be *afto-* or alilo-marked is due to its status as a deponent verb. That is the verb has already Passive morphology and so middle morphology cannot reappear on it, thus the verb lacks a passive, reflexive and reciprocal form. For a discussion on deponents see section 3.4.

[15] His analysis involves also movement of the anaphor and the binder in order to derive locality effects as well as the binding facts for ditransitive verbs. This paper makes no predictions for binding via full anaphors, so I leave those issues apart. What is important to keep is the proposed function of '*self*' as a reflexivizer.

[16] Reinhart & Siloni (2005) for independent reasons acknowledge that a lexical approach is not possible in some languages (including Modern Greek) and propose an alternative syntactic account which is based on the idea that the main function of the clitic or the Middle morphology in Greek is case reduction. Under this account, the internal argument is not merged (because there is no force for case to be assigned) and thus bundling as defined in (30) takes place upon the merging of the external argument. In fact, no argument reduction takes place in syntax, the DP that is merged at the external argument position will receive both the external and the internal θ-role.

First of all, I'm only considering here verbal reflexives and particularly naturally reflexive verbs and *afto*-reflexives in Modern Greek. The reflexivizer in these cases can be understood as a feature that can attach to any predicative verbal head and identify the argument introduced by this head as identical with the external argument, the initiator. Thus, the reflexivizer will always have the same meaning and depending on which verbal head it attaches to, it will derive a reflexivity relation between the corresponding argument and the initiator. This analysis not only is compatible with a syntactic approach on argument structure (as proposed by Hale & Keyser, Marantz, Ramchand a.o.) but also it explains why verbal reflexives are always 'agent' or better, in our terms, 'initiator' oriented. To my knowledge, there is no verbal reflexive that is not 'initiator' oriented (see also Reinhart & Siloni 1999[17]).

Note that under an "argument reduction" analysis of reflexivization it is not clear why the θ-roles of the two internal arguments of ditransitives cannot be bundled. However if we treat the reflexivizer as triggering an identification operation between an argument introduced by a predicative head and the external argument, this is immediately explained. Below I present the exact semantic function of this feature, whether overt or covert, using the notation [*Ref*] for the reflexivizer. Reflexivization is now treated as a function that takes and returns a one place predicate with the difference that identifies its argument as identical to the external argument:

(31) $[\![Ref]\!] = \lambda f_{<e,st>}. \lambda x_e. \lambda e_s. f(x,e) \ \& \ initiator(e) = x$

Crucially, the meaning in (31) suggests that the reflexivizing feature will only be interpretable for verbs that can take an external argument (an initiator). I will take this requirement to be a requirement on merging the little-*v* head that introduces the external argument and moreover it being in the same interpretation domain with the reflexivizing feature. This requirement will prove important later on when we will explain the difference between Greek and English Passive (Section 5.3). Below we'll see how reflexivization interacts with Middle Voice, but we first need to explain how reciprocalization differs from reflexivization.

Reciprocalization is more complex than reflexivization, as it is not enough to say that the introduced argument is identified as being identical with the initiator. The core intuition is that verbal reciprocals express an event that contains at least two subevents of the same sort, e_1 and e_2, such that the theme of e_1 is the initiator of e_2 and the initiator of e_1 is the theme of e_2. This means that in the super-event, the initiator and the theme are identical. The meaning for a reciprocal that contains two subevents can be expressed formally as shown below:

There are many questions that arise from this account (for example, why merge of an argument should depend on case) but the point is not to discuss those points here but rather to appreciate the complication. See also Papangeli (2004) who addresses exactly this issue from the point of view of Reinhart & Siloni's Lexicons vs. Syntax Parameter. Papangeli argues that Greek represents an in-between case, i.e. it behaves like a syntax language but differs from syntax languages in ways that can be explained through Case.
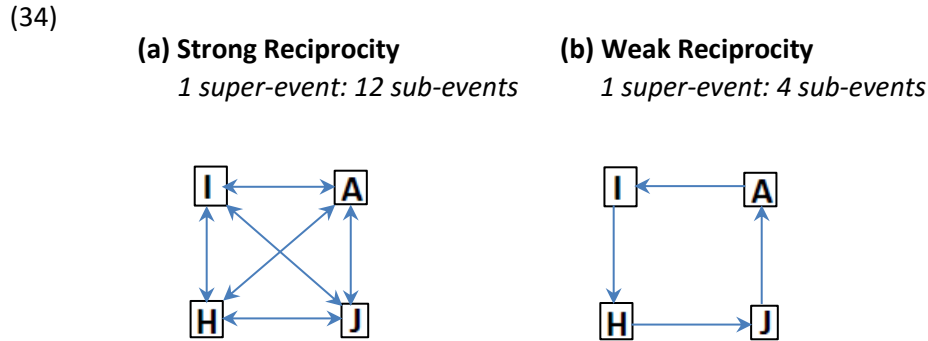
[17] "[w]hether the reduced argument is accusative or dative, identification must take place with the external argument, even if the verb is a three place predicate. Thus, while it is possible for an anaphor in situ to be bound by an internal coargument, as illustrated in French (9a) or Hebrew (9b), reflexive reduction involving two internal coarguments is entirely inconceivable…"   [Reinhart and Siloni (1999); p.5]

(32) $\llbracket Rec \rrbracket = \lambda f_{<e,st>}. \ \lambda z: |z| \geq 2. \lambda e: |e| \geq 2. \exists z_1 \neq z_2 \in z . \exists e_1 \neq e_2 \in e. f(e,z) \ \& \ initiator \ (e) =$ $z \ \& \ [f(e_1, z_1) \ \& \ initiator(e_1) = z_2] \ \& \ [f(e_2, z_2) \ \& \ initiator(e_2) = z_1]$

Things are simple when there are only two participants and therefore two subevents; the reciprocal relation expressed is necessarily symmetric. However, when there is a plural subject that contains more than two elements, then it must be decided what kind of reciprocal relation is expressed between the participants of this event. Consider the example in (33):

(33) Ta pedja   kinigiunte.
     The children chase-MM.Pres.3Pl
     'The children chase each other.'

Suppose there are 4 children, Hercules, Isis, Josef and Acan. I will use some of the schemas that Langedoen (1978) employs to describe two of the possible situations where this sentence can be true (there are many other situations that I'm not exploring here for space reasons, to get an idea see Langedoen (1978; 180, (5)):

(34)
        (a) Strong Reciprocity   **(b) Weak Reciprocity**
       1 super-event: 12 sub-events   *1 super-event: 4 sub-events*

The schema in (34a) expresses a symmetric relation between all the participants; if we count, we can find 12 subevents of chasing. The schema in (34b) is the most minimal that is licensed; all participants are both themes & initiators in the super-event. However, there are no symmetric relations between the participants (*Josef chases Acan* but *Acan never chases Josef* and so on for all the participants). The fact that (34b) can be a scenario for (33) shows that the meaning of (32) must be modified a bit to capture all the cases irrespectively of the number of the participants. Langedoen defines Weak Reciprocity as follows:

(35) $(\forall x \in A)(\exists y, z \in A)(x \neq y \ \wedge \ x \neq z \wedge \ xRy \ \wedge zRx)$

Bruening (2006), based on Langedoen's analysis, proposes the following meaning for a reciprocalizing morpheme in Passamaquoddy that seems to replace (according to Bruening's analysis) the Voice/little *v* head that introduces the external argument:

(36) $\llbracket RecipV \rrbracket = \lambda f_{<e,st>}. \ \lambda z: |z| \geq 2. \forall x \in z. \exists y, q \in z. (y \neq x \ \& \ q \neq x) \ \& \ (\exists e'[f(e',y)$ $\& \ Agent \ (e', x) \ \& \ e' \leq e] \ \& \ \exists e''[f(e'', x) \ \& \ Agent(e'', q) \ \& \ e'' \leq e]))$

                                                       [Bruening 2006; 6(18)]

Based on those two, we can provide the general meaning in (37) for the reciprocalizer feature in Greek compatible with a one place predicate that will further combine with a little *v*-head that introduces the external argument[18]:

(37) $\llbracket Rec \rrbracket = \lambda f_{<e,st>}.\ \lambda z : |z| \geq 2.\ \lambda e : |e| \geq\ 2.\ \forall x \in z.\ \exists y, q \in z.\ (y \neq x\ \&\ q \neq x)$
    $\&\ (f(e,z)\ \&\ initiator\ (e) = z)\ \&\ (\exists e'[f(e',y)\ \&\ initiator(e') = x\ \&\ e' \leq e]$
    $\&\ \exists e''[f(e'',x)\ \&\ initiator(e'') =\ q\ \&\ e'' \leq e])$

    In order to understand better how the reflexivization & reciprocalization process interacts with the entire syntactic and semantic derivation, the next step is to inspect once more the role of Middle Voice focusing on how it interacts with the reflexivizing and the reciprocalizing feature. This is what we will do in the following section.
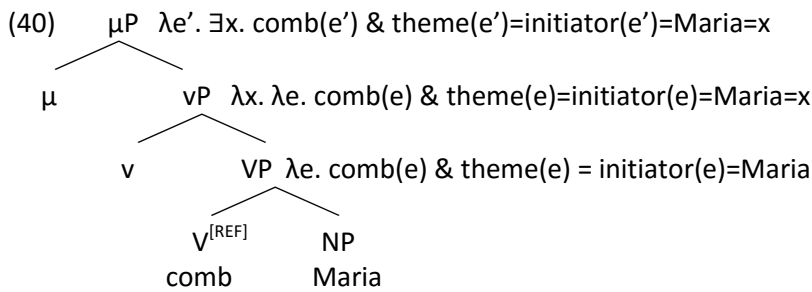

3.2.3. Reciflexivization & Middle Voice

    The function of the Middle Voice has been defined as existential binding of the external argument as shown in (38) repeated from (12) above:

(38) $\llbracket \mu \rrbracket = \lambda P_{<e,st>}.\ \lambda e.\ \exists x.\ P(x,e)$

Combining this function of Middle Voice with the reflexivization process described in (31) above will lead to the following syntactic and semantic derivation for a sentence like (39) which contains a naturally reflexive verb:

(39) i   Maria   htenizete.
      the   Maria.Nom comb-MM.Pres.3Sg
      'Maria is combing (her hair)

(40)   μP   λe'. ∃x. comb(e') & theme(e')=initiator(e')=Maria=x

      μ   vP   λx. λe. comb(e) & theme(e)=initiator(e)=Maria=x

           v   VP λe. comb(e) & theme(e) = initiator(e)=Maria

               V[REF]   NP
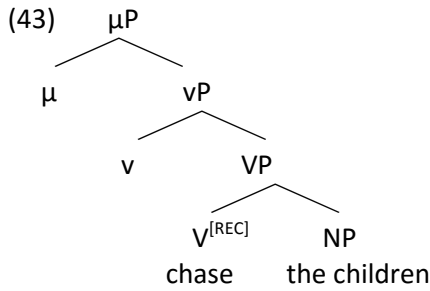   comb   Maria

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[18] The fact that I'm proposing this analysis for Greek doesn't mean that I aim to extend it to Passamaquoddy. The morpheme in Passamaquoddy is clearly responsible for reciprocalization and for saturation of the external argument and according to Bruening's analysis it attaches rather high at the level where Voice is attached. In Greek the reciprocalizer is either an inherent feature combining with the root or prefixal (*alilo-*) and it attaches lower to V before the internal argument is saturated. Notice that Bruening, as well, clearly states that his analysis of reciprocalization in Passamaquody cannot be extended to languages which use a strategy that is not exclusive for reciprocals (like Hebrew and Romance Ls).

(41) ⟦*comb*⟧= *λx. λe. comb(e) & theme(e)=x*

⟦*Ref*⟧(⟦*comb*⟧)= *[λf$_{<e,st>}$. λx$_e$. λe$_s$. f(x,e) & initiator(e) = x](λx. λe. comb(e) & theme(e)=x)=*

= *λx$_e$. λe$_s$. [λz. λe. comb(e) & theme(e)=z](x,e) & initiator(e) = x*

= *λx$_e$. λe$_s$. comb(e) & theme(e)=x & initiator(e) = x*

= *λx$_e$. λe$_s$. comb(e) & theme(e)=initiator(e)=x*

As shown in (41) the reflexivizer first combines with the verb and signals that the internal argument is identical to the initiator. Subsequently, the internal argument, in this case *Maria* will be identified as both the them and the initiator. Merge of little-*v* head is necessary in order for the reflexivity feature to be interpreted, this is because the reflexivizer is always about identifying an argument as identical to the initiator, so little-*v* which introduces the initiator must be merged otherwise the reflexivizing feature will not be interpreted.

Similarly, for reciprocals the derivation is the following:

(42) Ta pedja   kinigiunte.
     The children chase-MM.Pres.3Pl
     'The children chase each other.

(43)   μP

     μ   vP

          v   VP

               V$^{[REC]}$ NP
               chase   the children

(44) ⟦*chase*⟧= *λx. λe. chase(e) & theme(e)=x*

⟦*Rec*⟧(⟦*chase*⟧)= *[λf$_{<e,st>}$. λz : |z| ≥ 2. λe : |e| ≥ 2. ∀x ∈ z. ∃y,q ∈ z. (y ≠ x & q ≠ x)*
& (f(e,z) & initiator (e) = z) & (∃e'[f(e',y) & initiator(e') = x & e' ≤ e]
& ∃e''[f(e'',x) & initiator(e'') = q & e'' ≤ e])](λx. λe. chase(e) & theme(e)=x)

= *λz : |z| ≥ 2. λe : |e| ≥ 2. ∀x ∈ z. ∃y,q ∈ z. (y ≠ x & q ≠ x)*
& (λe. chase(e)&theme(e) = z) & initiator (e) = z) &
(∃e'[λe'. chase(e') & theme(e = y) & initiator(e') = x & e' ≤ e]
& ∃e''[λe''. chase(e'') & theme(e'') = x & initiator(e'') = q & e'' ≤ e])

⟦*chase^{REC}*⟧(*the children*)= *λz : |z| ≥ 2. λe. ∀x ∈ z. ∃y,q ∈ z. (y ≠ x & q ≠ x)*
& (λe. chase(e)&theme(e) = z) & initiator (e) = z) &
(∃e'[λe'. chase(e') & theme(e = y) & initiator(e') = x & e' ≤ e]
& ∃e''[λe''. chase(e'') & theme(e'') = x & initiator(e'') = q & e'' ≤ e])(the children)=

$$= \lambda e. \forall x \in children. \exists y, q \in z. (y \neq x \& q \neq x)$$
$$\& (\lambda e. chase(e) \& theme(e) = children) \& initiator\ (e) = children) \&$$
$$(\exists e'[\lambda e'. chase(e') \& theme(e = y) \& initiator(e') = x \& e' \leq e]$$
$$\& \exists e''[\lambda e''. chase(e'') \& theme(e'') = x \& initiator(e'') = q \& e'' \leq e])$$

$$[\![v]\!]([\![VP]\!]) = \lambda e. \lambda k. \forall x \in children. \exists y, q \in z. (y \neq x \& q \neq x)$$
$$\& (\lambda e. chase(e) \& theme(e) = initiator\ (e) = children \& initiator(e) = k) \&$$
$$(\exists e'[\lambda e'. chase(e') \& theme(e') = y) \& initiator(e') = x \& e' \leq e]$$
$$\& \exists e''[\lambda e''. chase(e'') \& theme(e'') = x \& initiator(e'') = q \& e'' \leq e])$$

$$[\![Pass]\!]([\![vP]\!]) = \lambda e. \exists k. \forall x \in children. \exists y, q \in z. (y \neq x \& q \neq x)$$
$$\& (\lambda e. chase(e) \& theme(e) = initiator\ (e) = children = k) \&$$
$$(\exists e'[\lambda e'. chase(e') \& theme(e') = y) \& initiator(e') = x \& e' \leq e]$$
$$\& \exists e''[\lambda e''. chase(e'') \& theme(e'') = x \& initiator(e'') = q \& e'' \leq e])$$

Similarly to what happens in reflexives, the reciprocalizer will combine with the verb and it will derive a reciprocal interpretation. The reciprocal predicate signals that there is a super-event, consisting of subevents, and that in each subevent the theme and the initiator are distinct but in the super event they are both the theme and the initiator. Again, merge of little-*v* is necessary in order for the reciprocity feature to be interpreted because, like the reflexivizer, it matches the internal argument with the initiator. Thus, little-*v* is introduced and the middle-voice head is necessary in order to saturate the argument introduced.

As we can see, the only possibility for a derivation that contains a reflexivizer or reciprocalizer of this sort to be interpreted is to not introduce a DP argument at Spec,*v*P but instead to existentially bind the external argument variable. If we merge an R-expression principle C will arise because the internal argument will be bound by it. Of course, this raises the question why we cannot have an anaphor as the internal argument, thus allowing us to bind it and derive a reflexive interpretation. Here it is necessary to rethink the exact function of an anaphor. Is it just a bound variable or is it a reflexivizer in its own? Following Lechner (2012)'s idea and as also proposed in Alexiadou, Spathas & Schäfer (2013), I would like to suggest that the anaphoric expression in Greek '*ton eafto mu'* similarly to the English '*himself*' contains a reflexivizer that is responsible for the reflexivization. This means that if the anaphoric expression was merged in an environment that already contains a reflexivizer (as in the case of reflexive verbs), we would get two reflexivizers for the same argument. Thus, an anaphor will be banned from environments that contain a reflexivizer because they are redundant (and the reflexivizing process can only apply once).

However, if we can find pronouns that can be bound locally without containing a reflexivizer we would expect them to be licensed as the argument of naturally reflexive verbs. English and Greek lack such local bound variables, but crucially Romance and Germanic languages have them, the so called *se*-clitic in Romance languages and the *zich* in German is the one used with naturally reflexive verbs. The contrast becomes clearer in languages that have both bound pronouns (*zich* type) and reflexivizer pronouns (*zichself* type) like in Dutch (see specifically Alexiadou, Spathas & Schäfer (2013) for an account for the differences between '*himself*' and '*se/zich*' clitics). I leave this issue and the exact function of *se*-clitics open here, as it is not within the scope of this paper to account for the reflexives.

What is important to keep is that it is predicted that naturally reflexive verbs are different from the rest of the verbs in all languages in that they do not additionally combine with a reflexivizing item, either a bound pronoun is merged (instead of a reflexivizing expression) or in the case of Greek (which lacks local bound pronous), the external argument is existentially bound, avoiding in this way any Principle C violation.

Treating verbal reflexives as involving existential binding of the external argument means that syntactically they are passives. This idea is not new. It has been proposed as a vague idea in Campos (1987) but it is only explored in detail for Greek verbal reflexives in Spathas et. al. (to appear). However, their analysis differs from the one proposed here in that they assume that in naturally reflexive verbs there is no reflexivizer but instead the reflexive interpretation is derived because of our pragmatic knowledge about these verbs[19]. It becomes evident that the two analyses make different predictions with respect to the difference between naturally reflexive middle verbs and passive verbs in Greek. According to the analysis proposed here, there should be a semantic ambiguity between naturally reflexive marked verbs and passive verbs (i.e. the middle-marked variants of verbs like *wash, comb,* etc. are ambiguous between a reflexive and a passive reading) whereas according to the analysis in Spathas et. al. there should be none. The decision is not easy at all but I will try to provide evidence below that a middle marked naturally reflexive verb is indeed ambiguous between a reflexive and a passive reading. The right way to check this is to see what happens under ellipsis; are both interpretations possible or the interpretation of the deleted phrase is constrained by the interpretation of its antecedent?

Spathas et.al. (to appear) argue that the sentence in (45) is true in a scenario where John was washed by someone else whereas Mary washed herself:

(45) *John was washed by his mother, Mary washed herself.*
    O   Janis   pli-thike   ke i Maria   epis is.
    the John.NOM washed-NACT.3SG and the Mary.NOM too
    'John was washed and Mary washed herself too.'

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[19] For the *afto-*prefixed reflexives Spathas et al. argue that *afto-* is an anti-assistive intensifier attached at the level of Middle Voice. Although I think that we can find environments where *afto-* has an anti-assistive reading, especially with some adjectival participles that origin from ancient Greek like *aftofotos 'self-lightened', afto-kinitos 'self-moving'*, this doesn't seem to be the productive use of *afto-* in Modern Greek. Notice that the above participles do not form good verbal reflexives: ?**to robotaki mu afto-kinite 'my small robot moves itself'*. If *afto-* had the anti-assistive reading, then we would expect this to be good but it isn't. Moreover, if the afto- had an antiassistive content we would expect it to be incompatible with the modifier "*with the help of*" but we can actually find examples of these sort. The following examples are judged as natural by native speakers:
(i) To   sistima aftodiafimizete   me ti   voithia ke ton   MME os dimokratiko.
    The system self-advertize-MM.Pres.3sg with the help   and the.Gen media as democratic
    'The system is advertising itself as democratic with the help of Media as well.'
(ii) O   Lanister aftoanakirihthike   vasilias me ti   voithia tis   miteras tu.
     The Lanister self-declare-MM.Past.3Sg king   with the help   the.Gen mother his
     'Lanister declared himself king with his mother's help.'

Although, I agree that indeed the sentence is true in this context, I'm not convinced that this not due to a strong preference to judge the sentence true as long as we focus on the result[20] of the action described and not to the participants of it. Even in English where the passive cannot yield any reflexive reading, this interpretation is possible. Consider the following example (although the passive form is (46) is ambiguous between a verbal and an adjectival passive, I think that the scenario strongly favors the verbal passive – also, I made sure that speakers interpret this as verbal and not as adjectival):

Context: *A dermatologist is going to a daycare to check if the children are healthy. He's going to use a new method that requires the children to be washed. So the first thing he wants to know is if the children have been washed. So he asks the nurse*:

   (46) - Were all the children washed?
        - Yes! All of them were washed! Most of them were washed by the nurse and the older ones washed themselves.
        # - No! Some of them were washed but some others washed themselves.

The above example suggests that we cannot conclude whether there is or not ambiguity between a reflexive or a passive reading on the basis of a test like (45). At the same time, we can find different examples which show that there must be an ambiguity between a passive and a reflexive or reciprocal reading. The following example, though describing a perfectly understandable situation, is judged as weird (native speakers try to modify the sentence and not use Ellipsis).

Context: *At my home we buy olive oil from a producer. My father always checks if the producer sold him the agreed quantity. To do so, he first weighs himself to check if the scale works properly and then he weighs the olive oil to see if he paid for the right quantity.*

   (47) #kathe fora pu   pernume ladi
         Every tima that buy-3PL oil

         prota zigizete   o   pateras mou sti   zigaria ke   meta to   ladi.
         first   weigh-MM.3sg the father my in-the scale   and then the olive-oil.

        'Every time we buy olive oil, first my father weighs (himself) and then (he weighs) the olive-oil.

Notice though that it is always possible that the speaker can go back and reinterpret the first conjunct as passive and so he will be able to parse the sentence. Consider another example which shows the contrast between a passive and a reciprocal reading. The sentence in (48) is ambiguous between a

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[20] As noted to me by Elena Anagnostopoulou a question arises as to whether the same sentence behaves differently in present Tense. More particularly, is the sentence true if John is washing himself and Maria is washed by someone else?
(i) O Janis   plen-ete   ke i Maria   episis.
     the John.NOM washed-MM.Pres.3SG and the Mary.NOM too
     'John is washing himself and Mary is washing herself too.'
     # 'John is being washed and Mary is washing herself too.'
I actually find it much harder to judge this sentence true in this scenario. This becomes clearer if I replace 'John' with the 'baby' which is expected that it is washed by someone else. The sentence becomes very weird unless Maria is also washed by someone else. If this is true then we should expect a difference in the case of the English, if we turn example (46) into Present Progressive i.e. *Yes, all of them are being washed*.

reciprocal and a passive reading. However, when we change the elliptical phrase into one that has a singular external argument the antecedent can be only parsed as Passive (the reciprocal interpretation is excluded because a reciprocal reading requires multiple initiators):

Context:
For Meaning 1: *the left wing contains many people with different views so all the time they fight with each other. The right wing also contains people with different views but they fight less.*
For Meaning 2: *the left wing is attacked more (by the media or the police for example) than the right wing.*

    (48) i   aristeri   xtipiunte   pio sklira ap'oti   i   deksii.
         the left-Pl.Nom hit-MM.Pres.3PL more cruelly than-that   the right-Pl.Nom.
         M1: 'The left people hit each other more cruelly than the right people do.
         M2: 'The left people are hit more cruelly than the right people.'
    (49) i   aristeri   xtipiunte   pio sklira ap'oti   enas kinos eglimatias.
         the left-Pl.Nom hit-MM.Pres.3PL more cruelly than-that   a   common criminal.
         #M1: 'The left people hit each other more cruelly than a common criminal is hit.
         M2: 'The left people are hit more cruelly than a common criminal.'

On the basis of the above examples (and other similar that one can construct) it can be shown that there is an ambiguity between reflexives, reciprocals and passives, which is predicted by the analysis proposed here[21].

The second point that this analysis makes, in line with Spathas et. al. (to appear), is that the verbal reflexives and reciprocals are all Passives in that the internal argument is the one that surfaces as the subject of the sentence. This issue relates to a central question in the literature of verbal reflexives, namely whether they should be considered as unergative or unaccusatives. Chierchia (2004) and Embick (2004) among others argue in favor of an unaccusative approach, especially due to the morphological identity of reflexives & anticausatives but also because verbal reflexives are sensitive to some unaccusativity diagnostics. On the other hand, R&S (1999)/(2005) and Sportiche (in press) argue that an

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[21] One obvious counterexample to this conclusion is the following example of Ellipsis where the elliptical phrase must be interpreted as reflexive and the antecedent as passive or vice versa:
Context: Maria's hair looks awful whereas Ana's hair looks perfect. So, I ask Maria "*Why is your hair so awful and Clara's so nice?*" She then answers:

(i) Giati   i Ana   xtenistike   apo tin komotria   eno   ego <xtenistika> moni mu.
    Because the Ana.Nom comb-MM.Pres.3Sg by   the hairdresser while I   alone
    Because Ann was combed by the hairdresser whereas I combed myself.

The example above is suspiciously good compared with all the cases that we saw above. However, the only case where this possible is with this item *monos mu* 'in my own/alone' which according to Spathas et. al. (to appear) has an anti-assistive reading and it is certainly not unique to reflexive readings, i.e.:

(ii) O Gianis   extise to spiti   tu   monos tu.
    The Gianis.Nom built   the house his alone   his
    'John built his house alone.'

My explanation for this reading is that this phrase "monos tu" is exclusively responsible for the reflexive reading of the elided verb. In other words, the verb has no [Refl] feature but it can be interpreted as reflexive because of this expression.

unaccusative approach is not possible and that the agent argument is syntactically present. Here the answer to this question is straightforward; verbal reflexives and reciprocals in Modern Greek are Passives[22]. Unfortunately, there are not many reliable tests in Greek to show when the subject is derived from an internal argument position, but see Alexiadou & Schäfer (to appear) for a discussion on this issue. Finally, there is one last piece of evidence that verbal reflexives and reciprocals pattern with passives and this, as I show in the following section, comes from ditransitive verbs.

3.2.4. Reflexivization & Reciprocalization of ditransitives patterns with Passivization

It is well-known that in Modern Greek Dative/Genitive and PP arguments cannot undergo NP-movement in Passivization (see Anagnostopoulou 2003 and references cited there)[23]. This is shown below for both a ditranstive and a mono-transitive verb:

(50) a. O Nikos   edose   tis Anas   ton   harti.
        The Nick.Nom   gave   the.Gen Ann.Gen the.Acc map.Acc
        'Nick gave Ann the map.'

    b. *I Ana   dothike   ton   xarti.
        the Ann.Nom   give-MM.Past.3sg the.Acc map.Acc
        'Ana was given the map.'
    c. o   xartis   dothike   (?)tis Anas/   stin Ana.
        the map.Nom   give-MM.Past.3sg   the Ann.Gen/ to-the Ann
        'The map was given to Ana.'

The exact same pattern is observed for Reflexives and Reciprocals. It is possible to reflexivize the Accusative object but not the Dative one (see Papangeli 2004).

(51) a. O Nikos   edose   ena doro ston   eafto tu/?tu eaftu tu[24].
        The Nick.Nom gave   a   gift to   himself / himself.Gen
        'Nick gave a gift to himself.'
    b. *O Nikos   (afto)dothike   ena doro.
        The Nick.Nom (self)give-MM.Past.3sg a   gift
        'Nick gave a gift to himself.'

---

[22] Once more, I would like to stress that I don't put together verbal reflexives with the *se*-reflexives in Romance, Slavic and *zich*-reflexives in Germanic languages. Alexiadou & Schäfer (to appear) argue that verbal reflexives in Modern Greek are like Passives, while *zich*-reflexives in German are treated as transitive verbs with *zich* originating in object position, and that, finally, English naturally reflexive verbs like "wash" are unergatives. Since different strategies are employed for reflexivization in different languages, it is quite possible that a similar outcome is the result of different syntax and semantics across different languages.

[23] The facts about Passivization of ditranstives in Modern Greek are much more interesting than this description implies (see Anagnostopoulou (2003) for details).

[24] Anagnostopoulou & Everaert (1999) judge the example in (51a) with an anaphor in Genitive Case '*tu eaftu tu*' (as opposed to the PP anaphoe '*ston eafto tu*') as ungrammatical. However, it is clear that there is a contrast between "(afto)dothike" in (51b) which is much much worse.

(52) a. O Nikos   edose ton eafto tu   ston agona.
         the Nick.Nom gave himself.Acc to-the fight.
         'Nick gave himself to the fight (for freedom)'
     b. O Nikos   dothike   ston agona.
         the Nick.Nom give-MM.Past.3sg to-the fight.
         'Nick gave himself to the fight (for freedom)'

Similarly, for reciprocals it is not possible to form a verbal reciprocal for the indirect object but it's o.k for the direct one:

(53) a. O Nikos   ke i Ana   stelnun gramata o   enas ston   alo.
         The Nick.Nom   and the Ana.Nom send   letters   the one to-the other.
         'Nick and Ann send letters to each other.'
     b. *O Nikos   ke i Ana   (alilo)stelnontai   gramata.
         The Nick.Nom   and the Ana.Nom (alilo)send-MM.Pres.3Pl letters
         'Nick and Ann send letters to each other.'

(54) a. O Nikos   ke i Ana   stelnun o   enas   ton   alo sto   diaolo .
         The Nick.Nom   and the Ana.Nom send   letters   the one the other to-the devil.
         'Nick and Ann send each other to the hell.'
     b. O Nikos   ke i Ana   (alilo)stelnontai   sto   diaolo.
         The Nick.Nom   and the Ana.Nom (alilo)send-MM.Pres.3Pl to-the hell.
         'Nick and Ann send each other to the hell.'

Similarly, a monotranstitive verb that takes a dative/genitive object cannot be passivized or reciflexivized[25].

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[25] There is an exception to this. The verb *tilefono 'phone'* takes a dative or PP object but it forms a reciprocal:
(i) a. O   Nikos   tilefonise tis Anas/   stin   Ana.
        the Nick.Nom called   the Ana.Gen/ to-the Ann.
        'Nick called Ann.'
    b. o   Nikos   ke i   Ana   tilefonithikan.
        the Nick.Nom and the Ana.Nom call-MM.Past.3Pl
        'Nick and Ann called each other.'
Notice though that the reciprocal form is not entirely equivalent to the active form in meaning. It is possible to call someone without him answering i.e. *I called Mary but she didn't answer*. But when we use the reciprocal form the meaning is more "*we talk on the phone*". Thus the following is bad:
(ii) - Milises   me   tin Ana?
         'Did you talk with Ana?'
     - #Oxi, tilefoniomastan   xtes,   ala ute   afti to sikone ute   ego.
         No, call-MM.Impf.Past.1PL yesterday but neiter she it pick-up neither I
         'No, we were calling each other yesterday but none of us answered the phone.'

Similarly, the verb *milao 'talk'* has a reciprocal form only in Imperfective Tenses which roughly means 'have relation (friendly or typical)' with sb:
(iii) Apo persi   den miliomaste,   leme   mono ta vasika.
       Since last year not talk-MM.Pres.1PL say-1PL only the basics
        'Since last year, we don't talk to each other, we only say the basics.'
Those two are the only two verbs that form a reciprocal despite taking a dative/PP argument. Interestingly, as noticed in Iatridou (1996) the verb *milao 'talk'* can be also passivized but yielding a different reading i.e. *someone is made part of a conspiracy by telling him something*. It is an interesting fact that verb meanings vary depending on whether they are

(55) a. O Nikos   milise tis Anas/   stin   Ana.
        the Nick.Nom   talked the Ana.Gen/ to-the Ann.
        'Nick talked to Ann.'
    b. *I   Ana milithike (apo ton Niko)
         the Ana talk-MM.Past.3sg
         'Ann was talked to (by Nick).'
    c. *o   Nikos   ke i   Ana   (alilo)-milithikan.
        the Nick.Nom and the Ana.Nom   alilo-talk-MM.Past.3Pl

These facts provide further evidence for the hypothesis that the same process underlies Passivization and Reciflexivization with the only difference being the presence of the reciflexivizer in the latter. In the next section we will see what drives the use of Middle morphology in anticausatives.

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passivized, reciprocalized or not and as we will see in the last section of this paper this behavior is related with the size of the structure that is sent to spell-out.

3.3. Anticausatives

Anticausative[26] is a cover term for all the intransitive verbs that participate in the causative – anticausative alternation as exemplified in (56):

(56) a. John broke the mirror.
     b. The mirror broke.

Anticausatives in languages like Greek are particularly important for our understanding of Middle because -in contrast to Passives and Reflexives which are always Middle-Marked- they can either be Middle-marked or unmarked, depending on the verb or the environment more generally. As discussed in Alexiadou & Anagnostopoulou (2004) among others, the anticausative variant of a particular verb is either obligatorily unmarked, as in (57), obligatorily marked, as in (58), or optionally (un-) marked as in (59):

(57) <u>Unmarked</u>
     a. O   Gianis   espase   ton kathrefti.
        The John-Nom broke   the mirror-Acc
        'John broke the mirror.'
     b. O kathreftis   espase /*spas-tik-e.
        the mirror-Nom   broke. / break-MM.Past.3sg
        'The mirror broke.'

(58) <u>Middle-marked</u>
     a. O   Nikos   ekapse ti   supa.
        The Nick-Nom burnt   the soup-Acc
        'Nick burnt the soup.'
     b. I   supa   ka-ike/   *ekapse.
        The soup-Nom burn-MM.Past.3sg/   burnt
        'The soup got burnt.

(59) <u>Both options possible</u>
     a. O   Gianis   lerose to   trapezomantilo.
        The John-Nom   dirtied the tablecloth-Acc
        'John dirtied the tablecloth.'
     b. To trapezomantilo   lerose.
        the tablecloth-Nom dirtied
        'The tablecloth got dirty.'
     c. To trapezomantilo   lero-**thike**.
        the tablecloth-Nom dirtied-MM
        'The tablecloth got dirty.'

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[26]The term anticausative, according to Haspelmath (1987), was first introduced in the literature by Nedjalkov & Sil'nickij (1969) in their introductory article in a collection of articles on causative constructions from the Leningrad Typological School (Xolodovic ed. 1969).

This pattern of distribution is found in many other languages (see Haspelmath 1987 and many others), though the individual verbs showing or not showing special morphology vary a lot across languages. In the next section, we will define the environment where anticausative verbs (marked and unmarked) emerge.

3.3.1. Anticausatives emerge in the presence of a Cause head

Before proceeding to an explanation for the distribution of Middle marking in Greek anticausatives it is necessary to define i) what do we mean by *anticausative interpretation* and ii) under which conditions can a verb participate in the causative – anticausative alternation. Following the intuition expressed in many places before (Haspelmath 1987, Levin & Rappaport 1995, Reinhart 2002, AA&S 2006), the set of verbs participating in the causative – anticausative alternation can be best described as **verbs that encode a change of state due to an external cause[27]**. For example, (56b) above describes the change of state of the mirror from an unbroken into a broken state; typically, this change is brought about by an external cause and not because of an inherent property of the mirror.

The fact that change of state verbs[28] participate in the causative – anticausative alternation is uncontroversial and I will not spent more time on this (see L&RH 1995, 2011 for extensive discussions

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[27] The term "external causation" necessarily contrasts with the term "internal causation". Indeed, "internal causation" has been used by L&R(1995) (and see also subsequent work by AA&S (2006)) to describe unaccusative verbs that do not have a transtive counterpart (i.e. *blossom, whither*, glitter, sparkle, etc.). L&R note that "the eventualities described by such verbs come about as a result of internal physical characteristics of their argument" [L&R (1995);92]. These verbs are contrasted with the verbs that participate in the causative – anticausative alternation (i.e. break, tear, close, etc.) and for which the eventuality they describe cannot be described as an inherent property of the argument. Notice though that some verbs can be understood as either internally or externally caused depending on their argument. For example, as noted in A&A (2004) the verb *keo 'burn'* usually behaves as a verb encoding external causation but when its argument is the *fire* or the *sun*, it can be only understood as internally caused, i.e contrast (i) below with (58) above.

(i) i   fotia kei /   *kegete.

   the fire   burns/   burn-MM.Pres.3sg

   'The fire burns.'

In this paper, I take the cause head to always encode external causation and I represent verbs expressing internal causation (unaccusatives that lack a transitive variant) as VPs without any additionl layer (see section 3.3.3. and table 1).

[28] Of course, not all change of state verbs participate in the causative – anticausative alternation but rather verbs that do not specify a particular means of change. Levin and Rappaport explain for the difference between *break* and *cut* verbs: "[but] the *break* verbs unlike the *cut* verbs are pure verbs of change of state, and their meaning, unlike that of the *cut* verbs, provides no information about *how the change of the state came about*" [L&R 1993;242]. Haspelmath reports the same intuition providing evidence from German: "For a change in the undergoer to come about spontaneously, *the change may not be effected with too specific means*. Thus, all actions are excluded which imply specific instruments or methods, like *bite, cut, dig, grind, […],* etc." He provides the following example:

(25) Ayşe schneidet das Papier. → *'Das Papier schneidet (sich).

    Ayşe is cutting the paper." → "The paper is cutting."   [Haspelmath 1987; 15]

Notice however that across languages there is a variation with what is considered "*too specific means*". For example, as noted in AA&S (2006), in Greek the verb *kovo 'cut'* forms a perfect marked anticausative in some environments (see section 3.2.4. for a discussion). Also, L&RH (2011) report attested examples where 'cut' is used as an unaccusative in English, i.e. *Suddenly, the rope cut and he fell down the well.* [L&RH 2011; 6(12d)]

and Levin (1993) on the particular verb classes exhibiting the alternation). What is under debate in the literature is whether there is an understood external cause present in anticausatives. The term of external causation (as opposed to internal causation) is introduced in Levin & Rappaport 1995, but the same intuition has been expressed in the literature by various terms (cf. the term "outside force" used in Haspelmath 1987). I will argue that the presence of an external Cause is not only present but also *the necessary & sufficient condition* for the emergence of an anticausative.

For the difference between marked and unmarked anticausatives, in a language like Greek, it will be shown that it is a meaningful difference derived from a further difference in the internal make-up of the verb complex, namely whether the Cause requires an external argument (initiator) in its own or not. This distinction will be further supported drawing evidence from verbs that have both marked and unmarked anticausative variants (as in (59)).

Finally, for the verbs that are pure unaccusatives I assume, following Alexiadou, Anagnostopoulou & Schäfer 2006 (AA&S), that they differ from both marked and unmarked anticausatives in that they denote that the change of state is a property of the theme for which no external cause is required though it's not forbidden to specify the particular factor that facilitated this change of state (i.e. *blossom/die from the heat*, see L&R (1995), AA&S (2006) for a discussion).

My analysis follows in many respects the decomposition analysis proposed in AA&S (2006) (and see also Pylkkänen, 2008) of change of state verbs into a verbal root, a cause and a Voice head (responsible for the introduction of the external argument) as shown in (60) below:

(60) [Voice [CAUS [Root]]]   [AA&S 2006; 189]

However, it also departs from their analysis, and to my knowledge from all previous analyses, in one important respect; I argue that the Cause head is not always present in change of state verbs. More particularly, I will show that it is possible to allow all the attested patterns if we treat Cause head as a head that is free to merge with any verb at first place but is only interpretable if the verb allows or requires it.

3.3.2. On the meaning of the Cause head and its optional merge

In order to understand how the proposed system works, it is necessary to define first the meaning and the function of the postulated Cause head. Following Pylkännen (2008) (and in line with AA&S 2006), I propose that the Cause head encodes a relation between two events, the main event that describes the change of state and the causing event that brings this change about. The formal meaning is provided in (61); since it encodes a relation between events it will always take an argument of type <st> and return a function of the same type.

(61) $[\![cause]\!] = \lambda f_{<st>}. \lambda e. \exists e'. f(e') \ \& \ cause(e,e')$ [Pylkkänen 2008; 84,(9)]

Now let us consider the consequences of merging such a head with a VP. Normally, when the little *v* head (Voice in other works) is merged with the VP ([v + [VP]]), it introduces the external

argument for the main event expressed by the VP. However, if the little *v* head is merged above the Cause head ([v + [Cause [+ VP]]]), then it can only introduce the external argument for the causing event (either by event identification or by functional application, similarly to what happens in [v + [VP]] configurations). No matter what the thematic role of the external argument is, any thematic connection between the main event and the external argument is impossible. This means that, even if we assume that little *v* introduces an agent, this agent will be the *agent of the causing event,* and thus any agentive interpretation of the main event should be impossible (see also Wood (2012) for an analysis of the cause head and its relation with little-*v* along these lines). Indeed, what we find is that transitive change of state verbs are ambiguous between an agentive and non-agentive reading when there is an animate subject. For example, (62) is ambiguous between two readings; under one reading, the external argument is the agent of the main cutting event (i.e. he took a knife and cut his finger), whereas under another reading the external argument is understood as the agent of another event that caused the main cutting event to happen (i.e. he was trying to cut a tomato and he unintentionally cut his finger):

(62) John cut his finger.

Because of our socio-cultural knowledge the second reading is foregrounded but in the right context, the first reading is also possible (i.e. John and Peter are very good friends and they want to become "blood brothers" so they cut their fingers to interchange blood). On the contrary in the following example, the first reading is much more plausible than the first one, and we don't need any context to foreground it:
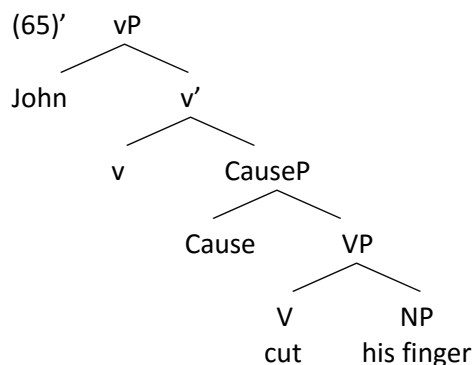
(63) John cut the bread.

Similarly, (64) below shows that this is true for a wide range of change of state verbs that can take an animate subject:
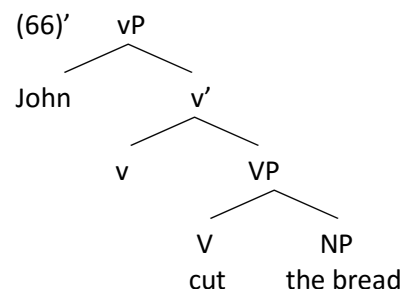
(64) a. Mary tore her diploma.
     b. Mary tore her skirt.

The source of ambiguity, according to this account, is due to the presence or absence of a CAUSE head before little *v* is merged. A structure like (65)' is plausible for (65) whereas a structure like (66)' is more plausible for (66):

(65)   John cut his finger.   (66) John cut the bread.

Since, (65)' involves more structure than (66)' then it means that the verb is truly ambiguous and so we would expect the following to be bad under a reading where John cut his finger unintentionally and Mary cut the bread intentionally (see Merchant 2013 for how ellipsis tests can provide evidence for the internal structure of the verb phrase):

(67) John cut the bread and Mary her finger.

The judgments are subtle but, indeed, native speakers find the sentence weird and they are forced towards an intentional reading for the second conjunct as well. If we reverse the conjuncts we are forced towards an accidental reading in both cases:

(68) Mary cut her finger and John the bread.

Although the examples above suggest that the absence of the cause head is related with intentionality, this is not a requirement. Intentionality is an inference derived from the fact that in (66) the external argument is taken to be the initiator of the main event and usually initiating an event implies intentionality. However, this is not always the case; in the following example the external argument is more possible to be interpreted as acting unintentionally but still there is no cause head involved.

(69) I bit my tongue.

Crucially, in Greek *dagono 'bite'* (as opposed to the verb *kovo 'cut'*) cannot form an anticausative. The middle-marked verb will be interpreted as either passive or reflexive.

(70)a. Dagosa   ti   glosa   mu.
         bite-Past.1sg the tongue my
         'I bit my tongue'
      b. #Dagothike   i   glosa   mu.
          bite-MM.Past.3sg   the tongue my.
          'My tongue got bitten.'

It also seems that we can have ellipsis with this verb and still get an intentional vs. unintentional reading. In the following example the preferred reading is that *I bit my tongue unintentionally and my dog bit his toy-bone intentionally* and it is a possible reading.

(71) Dagosa   ti   glosa   mu pio dinata   ap'oti o   skilos mu to   kokalo tu.
       bite-Past.1sg the tongue my more strongly than the dog   my the bone   his
       'I bit my tongue stronger than my dog does his toy bone.'

If intentionality vs. unintentionality does not comly with the lack vs. presence of cause head, the the question is if we can find any other difference that corresponds to lack vs. presence of cause. Levin & Rappaport Hovav (2011) propose that a predicate can either encode result (i.e. *break, open, melt,* etc.) or manner (*wipe, shovel, pour*, etc.). Moreover, they claim based on earlier work (RH&L 1998, Levin 2006) that predicates that encode result are necessarily complex events whereas predicates encoding manner are simple events as shown in (72) below:

(72) a. Result: [[x ACT] CAUSE [BECOME [y <RES-STATE>]]]
     b. Manner: [x ACT <MANNER>]

This manner – result complementarity expresses exactly the intuition for the difference between *"John cut his finger"* and *"John cut the bread"*. No manner or means can be inferred in the case of *finger cut* in the unintentional context we provided but in the case of *bread cut* the manner is quite salient (though not obvious). Levin and Rappaport-Hovav (2011) examine the behavior of the verb *cut* as it was presented to them as a counterexample for their proposal about manner – result complementarity. They reach exactly the same conclusion; *cut* can encode result or manner but never at the same time: *"it lexicalizes a notion of result in most uses, but has some uses where it lexicalizes a notion of manner; thus, we claim it lacks uses which simultaneously lexicalize both manner and result. If we are correct, then, any single use of cut meets the lexicalization constraint"* [L&RH 2011;6].

Crucially, as they acknowledge themselves, under their account within the lexicalist framework the verb *cut* is polysemous between a manner and a result: *"Given our definition of lexicalization, which requires lexicalized meaning to be constant across all uses of a verb, such verbs, then, must be polysemous, having both manner and result senses."* [L&RH 2011;19]. Under the present analysis the crucial factor determining whether we will get a result or manner interpretation is merge of the cause head or not respectively. But what is it that prevents the manner to be encoded when there is a cause head? L&RH (2011) suggest that a verb root can be associated only with a single position in the event schema and since manner and result are associated with distinct positions they can be never realized in the same event schema. I would suggest that manner is associated with little-*v* introducing the initiator (I can't think of any verb that lacks an external argument and encodes manner) and when there is a cause head manner cannot be encoded on little-*v* because it is not identified any more as the main event incorporating the verbal root (event identification applies only between the causing event and the little-v). Since, as L&RH (1998) propose result verbs are always complex involving a cause head, this means that result and manner will be always in complementary distribution.

The syntactic decompositional approach of verb structure provides an immediate explanation for all cases where the verbs deviate from their core interpretation. In a sense, any verb can combine with a cause head or not. However, if a verb strongly lexicalizes manner this needs to be expressed and consequently it will never appear in a cause environment. Similarly, if a verb lexicalizes result this will need to be expressed and thus it will always appear in a cause environment but it may be possible in certain contexts to be interpreted as lacking a cause head. Famous examples of this sort are the ones reported in Levin & Rappaport (1995, 2011):

(73) a. He broke his promise/the contract/the world record.
    b. *His promise/the contract/the world record broke.

[Levin and Rappaport Hovav 1995: 85, (9)]

The whole predicate '*break a promise/the contract/the world record*' cannot yield any reading if it combines with a Cause head because there can be no causing event understood in these sentences.

The external argument is the initiator of the main event of *cancelling/voiding a promise or a contract*. The only way for this predicate to receive an interpretation is to combine immediately with a little *v* head that introduces the external argument along the lines in (66). In further support of this, consider the pair in (74). The verb *violate* is not a change of state verb, it cannot participate in the causative – anticausative alternation (neither in Greek which has marked anticausatives) and so there is no reason to assume that it contains a causing event. The external argument is initiating the main event (intentionally or not). The meaning of (74b) is equivalent to (74a) where the verb *break* is used; there is no reason to assume that in this case, there is a causing event either.

(74) a. John broke the law.
      b. John violated the law.

Many more examples can be found which in a lexicalist framework should be treated as polysemous or in a framework that postulates thematic features, i.e. [+/- agentive, +/- mental, [+/- cause] should be treated as having different varieties of features in different environments. Consider a final example; the verb *trivo* 'grate, rub, scrub, wear, massage' in Greek is used in a variety of environments but its core meaning in all these environments is the same derived from the notion of *friction*. For example, in (75a) it is translated as 'grate' and the external argument must be interpreted as the initiator of the main event and the manner is very salient (i.e. as an agent) whereas in (75b) the predicate is clearly understood as a marked anticausative where it is not clear how the change of state is brought up.

(75) a. i   Ana etripse to tiri.
             the Ana grated the cheese.
             'Ana grated the cheese.'
       b. ta   pantelonia mu triftikan.
          the trousers   my rub-MM.Past.3Pl
          'my trousers wore.'

Thus, under the assumption that by merging a Cause head we necessarily get a causer external argument whereas in the absence of a causative head the external will be interpreted as necessarily agentive, we can explain the flexibility of the external argument with respect to its thematic characterization without resorting to any featural properties of the verbal root (i.e. +/- agentive, etc.).

3.3.3. Patterns of change of state verbs

In light of this decompositional analysis of change of state verbs, we can consider now all the possible patterns that can be derived and see if they are attested in natural languages. We start with the hypothesis that all the combinations are possible, starting from the simplest structures to the more complex ones:

(76) <u>Possibilities for change of state verbs</u>

I.   **VP**: Pure unaccusatives – verbs that change of state is internally caused (i.e. *die*, *blossom, sprout, whither*)

II. **[v + [VP]]**: transitive change of state verbs that do not involve a causing event but the external argument is the initiator in the main event (*cut the bread, break a promise, destroy chemical weapons, burn the file[29], etc.*)

III. **[v + [Cause + [VP]]]**[30]: transitive change of state verbs that involve a causing event in a way that it is evident that the external argument is an argument of the causing event and not of the main event (*cut my finger, tear the curtain, break the glass, burn the chicken, destroy my new shoes)*

The only combination missing from the list above is [**Cause + [VP]**]. Also, note that none of these combinations constitutes a natural class of the verbs that participate in the causative – anticausative alternation in English. As we will see below, the [Cause + VP] environment is the environment of unmarked anticausatives, but let's first consider all the other possibilities. **Class-I** does not have a causative variant because the change of state is an inherent property of the theme and cannot be brought exclusively by an external cause or agent. **Class-II** does not have an anticausative variant because it doesn't have a Cause at first place. The verbs in **Class-III** are mixed; some of them can participate in the anticausative alternation (i.e. *break, open*) whereas others cannot in English (i.e. *cut, destroy*). Crucially, as has been pointed out by AAS 2006, in Modern Greek (similarly to other languages which have marked anticausatives) all the verbs of Class-III do have an anticausative variant, with the difference that some of them are marked (i.e. *cut, tear, burn, destroy, sadden*) whereas others are unmarked (i.e. *break, open, worry*).

There are two ways to account for the unmarked anticausatives; one is to say that unmarked anticausatives lack a cause head altogether (see e.g. Pylkkaenen 2008 for English vs. Finnish and Japanese), and so they are in fact like internally caused verbs structurally[31]. In the present system, this would seem to be incorrect for two reasons. First, the environments in which the causative and anticausative variants appear seem to be identical (in contrast with the causative vs. agentive *break* for

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[29] Although I try to use predicates that foreground an agentive reading in Class-II and a causative one in Class-III, it should be mentioned that with most predicates both options are possible (i.e. *Mary burnt the chicken in purpose to anger her husband* → Agentive reading)

[30] In principle we could imagine that the reverse order is also possible: **Cause + v + VP**. Nothing prevents this order but if we think about it there is nothing that this order can account for. The result would be the same as the combination **v + VP** plus that there is a causing event that caused [v + VP], but this adds no more information as there can be always a cause for things to happen. On the contrary, a [v + [Cause [+ [v + VP]]]] would make perfect sense as it would add one more argument to the structure. I believe that only a verb can trigger the introduction of an argument and this is probably the difference between causative heads and causative verbs cross-linguistically. Cause in our system is simply a functional head. The minimum requirement for something to be considered as a verb would be to have overt phonological material.

[31] Pylkkaenen (2008) suggests that this is the case in English unmarked anticausatives (*break, melt, open*, etc.) which are analysed as BECOME-State verbs as opposed to unmarked anticausatives in Finnish and Japanese which are possible to involve a cause head without merging a little-*v*/Voice head above. The difference is taken to be syntactic and not semantic, in English it is proposed that the cause head and the little-*v*/Voice head are bundled into one head whereas in Japanese and Finnish they are not and so Cause can appear independently from Voice.

example). In the example below the causative and the anticausative variants can be used in the same context:

(77) a. John tore the curtain when he was trying to open the window.
    b. The curtain tore when John was trying to open the window.

This is not to say that (77a) and (77b) are semantically equivalent. In (77a) it is part of the meaning of the sentence that 'John' is the initiator in the causing event whereas in (77b) we need a series of pragmatic inferences to reach such a conclusion, namely we need to infer that the causing event was the attempt to open the window and that John was the initiator of this event. However in both cases there is an understood external causation. Based on this intuition, it would be arbitrary to say that in their causative variant they are externally caused[32], whereas in their anticausative variant they are internally caused.

The second reason for thinking that a cause head is present both in the marked and the unmarked variants is the fact that cross-linguistically the same verb can appear as unmarked in a language (i.e. *break* in Greek) and marked in another (i.e. *break* in French) (see Haspelmath (1993) for an extensive discussion). As discussed in detail in Schäfer 2008, the interpretation of an anticausative verb doesn't vary with respect to external causation depending on markedness, i.e. they both imply external causation.

If we are to take these facts seriously we have to assume that unmarked anticausatives fall into the fourth category:

IV.   **[Cause + [VP]]**: Unmarked anticausatives where there is an external cause event argument expressed but no individual argument introduced (*the door opened, the skirt tore,* etc.).

The table below presents all the relevant attested patterns and shows how we can account for the formation and distribution of the anticausative variants based on this particular decompositional view of change of state verbs.

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[32] A further argument could be that PP-modification is very widespread with unmarked anticausatives:
(i) a. The glass broke from the pressure.
    b. The window cracked from the explosion.
However, as correctly pointed out in AA&S (2006) PP modification is allowed with internally caused unaccusatives without this meaning that there is an external cause event head, i.e:
(ii) The flowers wilted from the heat.

Table 1: Patterns of change of state verbs

Unaccusative	Unmarked Anticausative	Marked Anticausative or Transitive	Passive or Transitive
VP	[Cause + [VP]]	[v + [Cause [+ VP]]]	v + VP
blossom -------->			
die ------>			
	burn the chicken -----	my finger -----------	the file ----->
	break the glass ------------------------------		the promise ->
	crumple the skirt/ -----	the fender of the car -------------->	
	clear the sky -----------------		the counter -->
	tear -->		
	roll/move -->		
	delight/worry---------------------->		
		puzzle/sadden	
		cut/destroy/kill ------------------->	
			murder/build

This table presents a continuum of change of state verbs depending on their requirement for an external argument and its status. Verbs that are classified under the first column [VP] are pure unaccusatives, in the sense that they always lack an external argument. Verbs that are classified under the second column [cause + VP] are verbs which combine with a cause head but do not necessarily need an external argument. Crucially, all verbs of this category are free to combine with an external argument in their transitive version and so they can also be under the 3rd ([v + [Cause + VP]]) and possibly the 4th column ([v + VP]). On the contrary, verbs that are classified only under 3rd column can possibly belong to the 4th column but not to the 2nd column. This means that the set of [Cause + VP] verbs is a subset of [v + [Cause + VP]] verbs and not vice versa.

There are two questions which arise at this point. The first one is whether all [v + [Cause + VP]] verbs can also be [v + VP]. In other words, are there any verbs that require the merge of a cause head and thus they are always interpreted as causative? As I show in the table, the answer to this question is positive. There is a particular class of verbs for which an agentive interpretation of the external argument is very hard to get, and they also seem to resist passivization. This is the class of *object-*

experiencer psych verbs. It is well-known that object-experiencer verbs do not form a uniform class (see Landau 2010) but at least for some of them it has been argued that they involve a causer external argument[33] i.e. *exhaust, fascinate, move, puzzle, sadden, excite, shock, etc.* When these verbs are Middle-marked in Greek they are unambiguously anticausatives and they can never have a passive reading. Consider the following examples. (78a) is a transitive sentence with an animate subject but this can only perceived as the initiator of the causing event not as the initiator of the main event per se. Equally, (78b) can be only perceived as an anticausative and not as a passive, as the preference for *me 'with'* vs. *apo 'by/from'* shows.

(78) a. i   Ana   siŋginise ton Marko   otan tu   ipe oti ton   agapa.
        the Ana.Nom moved   the Marko.Acc when him-Cl.Gen said that him-Cl.Acc loves.
        'Ana moved Marcus when she told him that she loves him.'
     b. o Markos   siŋginithike   ??apo/me tin Ana otan tu   ipe oti ton   agapa.
        the Marcus.Nom move-MM.Past.3Sg by /with   the Ana when him-Cl.Gen said that him-Cl. loves
        'Marcus was moved by/with Ana when she told him that she loves him.'

At first sight, it seems strange that only this class of [v + [Cause + VP]] verbs is banned from being [v + VP] as well. However, if we consider more carefully the properties of object-experiencer verbs we can see why the external argument cannot be perceived as the direct initiator of the event encoded by the verbal root. The change of state for these verbs is never under the entire control of the external argument, even if it can be interpreted as a volitional agent. Consider the verb *zesteno 'heat/warm'*; when it takes an inanimate internal argument it behaves as the other change of state verbs which can form an anticausative or a passive. However, when it takes an animate internal argument, it can only form an anticausative, not a passive:

(79) a. O   Nikos   zestane to fagito.
        the Nick.Nom heated the food.Acc.
        'Nick heated the food.'
     b. To fagito zestathike   (apo ton Niko).
        the food   heat-MM.Past.3Sg   by the Nick
        'The food was heated by Nick.'

(80) a. O   Nikos   zestane tin Ana.
        the Nick.Nom heated the Ana.Acc.
        'Nick warmed Ana up.'
     b. i Ana   zestathike   (*apo ton Niko).
        the food   heat-MM.Past.3Sg   by the Nick
        'Ana warmed up (*by Nick).'

The second question which will be addressed in the following subsection is on the opposite direction of the table. Namely, we will see how we can define this subset of verbs that has no

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[33]Those verbs are different from object-experiencer verbs for which the subject is not interpreted as a causer but in Pesetsky (1995)'s term "*subject matter*", i.e*. interest, concern*, etc. It is true that the transitive variants of those verbs can never be interpreted as agentive and this has led to their analysis as unaccusatives with two internal arguments. I think that the intuition is correct, but the question is what the role of the Middle morphology is in the intransitive variant. We'll come back to these cases in section 3.4.

requirement for an external argument, showing that in a language like Greek, which has both unmarked and marked anticausatives, the difference between **[Cause + [VP]]** verbs vs. **[v + [Cause + VP]]-only** is reflected in the form of the anticausative variant (unmarked vs. marked).

3.3.4. Marked vs. Unmarked Anticausatives

It is true, as observed in Haspelmath (1993), that verbs which are likely to occur spontaneously without an initiator being involved in the causing event can be unmarked (i.e. *break, tear, open*) whereas change of state verbs that are likely to require an agent involved in the causing event tend to be marked (i.e. *kill, destroy*)[34] (see also A&A 2004, AAS 2006 for discussion; cf. Schaefer 2008 on German and other Germanic languages). Consider the contrast in PP-modification with a verb like *kill* that can only be a marked anticausative and the verb *break* which is always unmarked in Modern Greek. In (81a) a PP that expresses a cause is possible but only if this causing event is triggered by some external initiator (i.e. an explosion). An external cause but not violently triggered by anyone (i.e. *heat*) cannot be understood as the cause for a "killing event". On the contrary, for a breaking event both options are possible as shown in (81b). Finally, (81a) contrasts with (81c) where the internally caused verb *die* is used and the PP "from the heat" is perfectly fine.

(81) **a.** O Nikos   skotothike   apo tin ekriksi   / #apo tin zesti.   **Class III**
        The Nick.Nom kill-MM-Past.3sg from the explosion   from the heat
        'Nick got killed from the explosion/#from the heat.'
      b. To tzami espase apo tin ekriksi / apo ti zesti.   **Class III & Class IV**
        The glass   broke from the explosion / from the heat.
        'The glass broke from the explosion/from the heat.'
      c. O Nikos   pethane apo   tin ekriksi / apo tin zesti.   **Class I**
        The Nick.Nom   died   from the explosion / from the heat.
        'Nick died from the explosion/from the heat.'

Although the contrasts in (81) are suggestive (though not conclusive), they provide no clue for the **(**un**)**markedness of those verbs that do not require an agent/causer involved in the causing event (i.e. *open, close, break, tear, burn*). As in the case of reflexive/reciprocal verbs, we have to assume that some information is idiosyncratic and it is encoded in the verbal root. For most verbs this information is immediately available to the learner because of the meaning of the verb but in some cases it is not clear whether an external argument is necessary or not (this class of verbs is expressed in AA&S (2006) as Cause Unspecified). Therefore, we have to assume that if a verb necessarily requires an External argument, the verbal root will carry the information [+Eχт][35]. If a verb does not have a specification for

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[34]English obscures this picture because it lacks marked anticausatives (see section 5 for an explanation, see AAS 2006, Schaefer 2008 for discussion) but I will assume that exactly because of this gap, it makes extensive use of what can be perceived of as intermediate case, thus having quite a big class of unmarked anticausatives which in other languages can appear as marked. Overall, however anticausatives are fewer in English exactly because there no marked anticausatives (as in the case of Greek, Romance, Germanic and many other languages).

[35] The fact that some verbs carry idiosyncratic information which cannot be predicted by the semantics of the verb suggests children will have trouble acquiring this information and thus correctly forming the anticausative variant.

the external argument, then it is expected the anticausative will be unmarked (see AA&S (2006), Schäfer (2008), Wood (2012))[36].

At this point, it is relevant to return to the main question of this section namely what is the function of the Middle Marker in anticausatives. The discussion so far leads us to the following conclusion:

(82) Middle-marked anticausatives occur in the environment of Class-III: [v + [Cause + [VP]]]

Similarly to what proposed in AA&S (2006), I argue that any change of state verb that involves external causation and is marked as [+Ext] is expected to form a middle-marked anticausative. Under the proposed analysis here, this is so because the function of the Middle Voice is to existentially bind the argument introduced by the little-*v* head. Consequently, middle-marked anticausatives are different from unmarked anticausatives in that unmarked anticausatives do not require a little-*v* head and thus there is no task for Middle Voice in a *v*-less environment (cf. Schäfer who proposes that Middle voice is expletive in anticausatives, see below for a discussion on this issue).

The crucial question now is how different are Middle-marked and unmarked anticausatives. This question is prominent in many studies of Anticausatives. I refer to Schäfer (2008) for an overview of this literature, which points to differences between marked and unmarked anticausatives mainly in Romance and Germanic languages where the marked anticausative is marked with the "reflexive" clitic se/sich. Despite the differences that have been observed cross-linguistically, Schäfer (2008) concludes that the differences observed are not conclusive because there are many counterexamples in each case and also because, after all, unmarked and marked anticausatives seem to appear in similar environments. According to him (and see Wood (2012) for a similar analysis of Icelandic marked anticausatives), the difference between the two is only syntactic and not semantic. Some verbs (those that are marked as [+Ext]) require voice to be merged, to check their [+Ext] feature but the voice-head doesn't carry any meaning, thus it is expletive.

Here my goal is to bring together Schäfer's proposal that unmarked and marked anticausatives do not differ in their semantics and proposals that argue for a difference of external vs. non-external

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It is worth looking into this class of verbs for which there is cross-linguistic variation as to whether they are marked or unmarked and check if children make mistakes (for some acquisition work of middle-marked verbs see Tsimpli (2005), Zombolou & Alexiadou (2012)).

[36] In fact the reasoning here is the following: Conceptual representation or encyclopedic knowledge is relevant to the language but it's messy and quite different cross-linguistically & cross-individually. On the other hand, language is a precise system with certain operations and principles that are common cross-linguistically. Events, and in particular events that describe a change of state, can be conceptually perceived as a continuum of events that require no external causation, at least no other causation except for the laws of the nature (i.e. *blossom*) → events that require external causation but not necessarily a forced causation involving an initiator (i.e. *break*) → events that require forced external causation with an initiator (i.e. *destroy*). Crucially, in conceptual representation this can be a continuum with no borderline between the different types of events. But the lexicon doesn't consist of concepts, it consists from items that in order to be eligible for merge and interpretation must be specific. So, roots that describe events must be filed with specific features in our lexicon, setting aside the messiness and variability of conceptual representation.

causation in marked vs. unmarked anticausatives (AAS 2006, Labelle & Doron, 2010). Namely, I will argue that there is indeed a meaning difference between marked and unmarked anticausatives but this difference can be minimized or almost reduced thus resulting in equivalent semantics as Schäfer (2008) argues.

The way to address the differences between marked and unmarked anticausatives is to look at verbs that belong to Class-II: [Cause + [VP]] (i.e. verbs that are not specified with a [+ExT] feature) in a language that has Middle marked anticausatives and check i) if they form a marked anticausative aside from the unmarked one and ii) if they do so, if there is any meaningful difference between the two variants. The evidence we draw by looking in Greek anticausatives is somehow contradictory. On the one hand, most unmarked anticausatives do not have a marked counterpart, that is, the anticausative variant of a verb is either unmarked or marked. On the other hand, as we have shown above in (59), there are cases where a verb exhibits both variants. First, I will argue that indeed there is a difference between the unmarked and the marked anticausative in cases where both variants exist (cf. A&A 2004). Then, I will suggest that this difference can be so minimal that the unmarked variant wins over the marked one in most cases.

Verbs that have both variants (i.e. *lerono* 'dirty$_v$', *gremizo* 'demolish', *zesteno* 'heat', *dialio* 'disolve/disperse', etc. see A&A, 2004 for discussion and references) are particularly useful in order to detect the semantic differences between the marked and unmarked anticausatives in general. Although**,** in some environments the two variants are interchangeable, in most cases, it is possible to detect a difference. When the unmarked variant is used, the causation is understood as without any outside force whereas when we use the marked variant the causation is more understood as triggered by an initiator[37].

Let us consider some examples, to make the intuition more clear. The (a)-examples contain the unmarked whereas the (b)-examples the marked anticausatives. In (83a) we can imagine a scenario where the protesters get bored quickly or the weather conditions are bad and the demonstration gets dispersed. In (83b) on the other hand, the presence of an outside force is more obvious; it can be an attack by the police, a shooting and so on.

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[37] A&A (2004) notice and discuss another difference between unmarked and marked anticausatives. Based on examples like (i) they argue that the unmarked variant entails a partial change whereas the marked one is possible to encode a complete change as well:
(i) a. to ktirio   gremise   se ena simio ala   den gremistike/*gremise entelos.
       the building collapsed.Act in one spot   but NEG collapsed.NAct/*Act completely.
     b. to ktirio   gremistike   se ena simio ala   den   gremistike/*gremise entelos.
       the building collapsed.NAct   in one spot   but NEG collapsed.NAct/*Act completely.
                                                                                                [A&A 2006; 129,(25)-(26)]
I think that this intuition can be accommodated under the proposed analysis. A change of state that is not directly triggered by an outside initiator can be gradual and without a natural endpoint. On the contrary, if there is an understood outside force the change of state can be complete with a natural endpoint. This idea ties to the proposal that the presence of an external causer/agent makes the verb into an accomplishment (see Landau 2010 for discussion in the domain of psych verbs).

(83) a. i   poria   dielise   grigora.
        the demonstration   dispersed   quickly.
        'The demonstration   got dispersed quickly.'
     b. i   poria   dialithike   grigora.
         the demonstration   dispersed-MM   quickly.
        'The demonstration got quickly.'

Moreover, we observe a difference depending on the properties of the theme. The fender of a car in (84) is hard to get crumpled. There is always an implied outside force that brings the change of state (it can be a car accident, or a comet falling on the car, etc.). On the contrary, it is very natural for a skirt to crumple.

(84) a. To   ftero   tu   aftokinitou mou ?tsalakose / tsalakothike.
        The fender of the car   my crumpled / crumpled-MM
        'The fender of my car crumpled.'
     b. I   fusta mu tsalakose / tsalakothike.
         the skirt my crumple/crumpled-MM
         'My skirt crumpled.'

The warming of the sea in (85) is usually conceived as a process due to the increase of the natural temperature. On the other hand, the warming of the water (in a house) is usually caused by someone who needs hot water (i.e. by turning the water heater on).

(85) a. I   thalasa zestane.
          the sea   warm-Past-3sg.
          'The sea got warm'
     b. To nero   zestathike.
          the water   warm-MM-Past-3sg.
          'The water got warm.'

The above contrasts suggest that the hypothesis that marked anticausatives occur in [v + [Cause + [VP]]] whereas unmarked in a [Cause + [VP]] environment is on the right track[38]. However, we still have to answer the question of why unmarked anticausatives normally don't have a marked counterpart and why the two pattern together with respect to properties like the restriction in PP-modification by agentive *by*-phrases or the acceptability of the '*by itself*' phrase as observed in A&A (2004) and AA&S (2006).

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[38] Another possibility would be that the unmarked variants lack the Cause head entirely (see Labelle & Doron (2010) for a proposal that treats unmarked anticausatives as lacking a cause head altogether, as opposed to marked anticausatives). However, based on examples like the following I think that such a proposal would be wrong:
(i) i   ipsiles thermokrasies zestanan   to   nero tis   thalasas.
    the high   temperatures heat.Past.3Pl the water the.Gen sea.Gen
     'The high temperatures heated the sea water.'
As I have mentioned above for verbs that only have an unmarked anticausative the presence of the external cause is even more obvious (see the discussion in pages 23-24 above).

In Greek the same preposition *apo* '*from/by*' is used to introduce a Causer and an Agent. Whereas *apo*-phrases encoding causers can be perfectly combined with anticausatives, the agentive *apo*-phrases yield a marginal result (see Alexiadou & Anagnostopoulou 2004 and AA&S 2006 for tests with PP-modification). Since the same morphology is used for anticausatives and Passives in Greek, in many cases it is hard to say if something is an anticausative or a passive, but the following examples foreground an anticausative reading and as we can see an agentive *apo*-phrase is not as good (as opposed to a causer PP):

(86) a. I   kurtina skistike   ??apo ton Giorgo (tin ora pu anige to parathiro).
       The curtain tear-MM.Past.3Sg   by   the George (when he was opening the window)
       'The curtain was torn by George when he was opening the window.'
     b. i   kurtina skistike   apo   ton aera.
        the curtain tear-MM.Past.3Sg from the wind.
        'The curtain tore from the wind.'

Whereas it is predicted that an agentive reading is not possible with anticausative structure, there is nothing to prevent at first place the interpretation of the *by*-phrase as the initiator in the causing event, as it is possible in the transitive variant as shown below:

(87) O   Giorgos   eskise   tin kurtina (tin ora pu prospathuse na aniksi to parathiro).
     The George.Nom tear-Past.3Sg the curtain when he was trying to open the window
     'George tore the curtain when he was trying to open the window.'

A naïve explanation to the contrast between (86a)-(87) could be that *by*-phrases are generally dispreferred even with prototypical passives. However, the effect in (86a) is stronger and it cannot be reduced to the general dispreference of *by*-phrases in Greek.

The second observation made in AA&S (2006) is that the *by-itself* phrase is good with unmarked and marked anticausatives but crucially not with marked anticausatives that always require an external argument.

(88) a. o   kathreftis espase   apo monos tu.
        the mirror   break-MM.Past.3Sg by alone   his
        'the mirror broke by itself.'
     b. i   kurtina skistike   apo   moni tis.
        the curtain tear-MM.Past.3Sg   by   alone her.
        'The curtain tore by itself.'
     c. To   paketo katastrafike   (*apo mono tu).
        the parcel destroy-MM.Past.3Sg (by alone its).
        'The parcel was destroyed by itself.'   [AA&S 2006;193]

The differences are again subtle but we need to account for the similarities between marked and unmarked anticausatives as well as for their differences. We have already accounted for their differences by arguing that marked anticausatives involve a *v*-head but unmarked don't. Let's see now how, based on this assumption, we can also derive their similarities.

What I would like to propose is that there is a process in marked anticausatives which foregrounds the interpretation of the external argument as the causing event itself. One way to go is to assume that the little *v* can have different semantics when it selects a CauseP. This is in fact what Pylkkänen (2002, 2008) proposes. More particularly, on the basis of examples like (89) she proposes that little *v* can introduce an argument that specifies what the causing event is.

(89)   a. The explosion broke the glasses.
          b. The fact that John failed the exam worried Mary.

Based on this intuition she suggests that it's possible for a little *v* that selects a CAUSE head to have the following semantics:

(90) $[\![v_{caus}]\!]$ = λx_e. λe_s. x=e

Instead of introducing an argument for the causing event the little-*v* simply identifies the argument introduced as identical to the causing event argument. This proposal is not without problems. The most obvious one is the type mismatch between entities and events. But even if we assume that entities and events belong to a larger common class of the same type, there is another problem. We saw above that a transitive change of state verb with an animate subject like '*John cut his finger*' can be interpreted as involving a cause head and 'John" can only be interpreted as an initiator in this causing event and not as the causing event of course. So, we cannot simply say that whenever there is a cause head, the little-*v* will have the meaning in (90). How can we define the conditions under which little-*v* has the special semantics in (90)? What I would like to suggest is that little-*v* can be interpreted as in (90) only under two conditions; i) when it is in the same interpretation domain with the cause head ii) when the external argument is unspecified, thus when a syntactic argument is not introduced and when the verb doesn't posit certain restrictions on the external argument.

The first requirement is grounded on the general idea that the interpretation of a functional head can depend on the environment it appears (i.e. the cause head in our system) granted that they are in the same spell-out domain. If the cause head and the little-*v* belong to different domains, then it is expected that the interpretation of little-*v* cannot be affected by the presence of the cause-head (this will prove important later in the analysis of English passives).

The second restriction is a stipulation which states that little-*v* cannot be reduced to the causing event as long as there is an overt argument that must be interpreted or if the verb posits certain restrictions to the interpretation of the causing event. Although stipulative, it allows us to account for two distinct problems. First, the type mismatch in (90) between entities (e) and eventeualities (s) is resolved because we can say that the argument introduced is of unspecified type, being specified by its identity with the causing event. Second, in many cases it is very hard to decide when an argument introduced identifies the causing event or the initiator of this event. The following examples instantiate this vagueness:

(91) O   sismos   gremise   oli   tin poli.
       The earthquake   demolished whole the city
       'The earthquake demolished the whole city.'

Is the 'earthquake', in this case, the causing event or the initiator in the causing event? This depends largely on the definition of the earthquake, is it an event or a natural force? Similarly, Pylkkänen uses the following example, to show that the external argument can name the causing event:

(92) Sensoo-ga Taroo-o   sin-ase-ta.
       war-Nom   Taro-Acc die-Cause-Past
       'The war caused Taro to die.'

But is 'war' the causing event of 'killing Taro'? Or is it 'war' that initiated the causing event of 'killing'? For example, we can still hypothesize that 'Taro' died from hunger caused by the war of from explosions due to the war, etc. I would suggest that it's more concrete to assume that, whenever named, the external argument is the initiator rather than saying that sometimes it can be the initiator whereas other times can be the causing event itself. Crucially, however when the external argument is not named then there are no such issues and the external argument is interpreted as the causing event, resulting, in fact, in the reduction of the external argument in semantics.

In the light of the above assumptions, let us consider once more the meaning of a marked anticausative.

(93) i   kurtina skistike.
       the curtain tear-MM.Past.3Sg
       'the curtain tore'.

If we stick to the general meaning of little-*v*, then at the level where both the event argument and the external argument variable will be bound (let's say at the *Asp*P level) we will get the following meaning:

(94) ∃e. ∃x. ∃e'. tearing(e') & theme(e') = the curtain & cause(e')=e & initiator(e)=x

However, as shown above, marked anticausatives pattern with unmarked anticausatives in that it is not specified whether there is an initiator or not. The tests with PP modification show that a *by*-phrase naming an animate initiator is not good (86a) and that the *by-itself* phrase is good with these verbs (88b). This behavior can be captured if we assume that the little-*v* head has the semantics in (90). The syntactic & semantic derivation for (93), assuming the updated semantics for the little-*v* head is shown below:

(95)   μP λe. ∃x. ∃e'. tear(e') & theme(e') = the curtain & cause(e')=e=x

         μ   vP   λx. λe. ∃e'. tear(e') & theme(e') = the curtain & cause(e')=e & x=e

              v_Caus   CauseP λe. ∃e'. tear(e') & theme(e') = the curtain & cause(e')=e

                       Cause   VP λe. tear(e) & theme(e) = the curtain

One welcome consequence of this modification in our system is that the meaning of the marked anticausative can turn out to be identical with the unmarked ones[39]. For example, the meaning of 'the glass broke' would be [∃*e*. ∃*e'*. *breaking(e') & theme(e') = the glass & cause(e')=e*] which is identical to the one of the marked-anticausative *tear* above. The difference with the proposal outlined in Schäfer (2008) is that instead of stipulating an expletive voice head (which in our system would be two expletive heads little-v introducing an external argument and middle voice saturating it), I stipulate different semantics for little-*v* head when they are in the environment of a cause head following the idea proposed in Pylkkänen (2008).

By restricting the specific semantics of the v_{caus}-head to the environments where the external argument is not specified either by its actual syntactic realization (in transitive sentences) either by the lexical meaning of the verb, we can account for the difference between marked anticausatives like *tear* and *destroy*. As noted in AA&S (2006), Schäfer (2008) and explained above, verbs like *destroy* and *kill* can be perceived as anticausatives (thus involving a cause head) but they do not pattern with the other anticausatives with respect to PP modification (they disallow by-itself phrases (88c), they disallow certain causers (86a) and they allow *by*-phrases with animate arguments without necessarily being interpreted as passives). I would like to suggest that this type of change of state verbs differ from the other change of state verbs like *tear, burn, dirty* in that they specify that external causation must be violent thus brought by an initiator, that's why it's not possible to give little-*v* the semantics in (90) when it combines with these predicates. As a result of the lexical meaning of the root of these verbs, they can combine with a cause head but they can never reduce their external argument to the causing event itself (cf. L&RH 2011 for verbs like *cut* and *slice*).
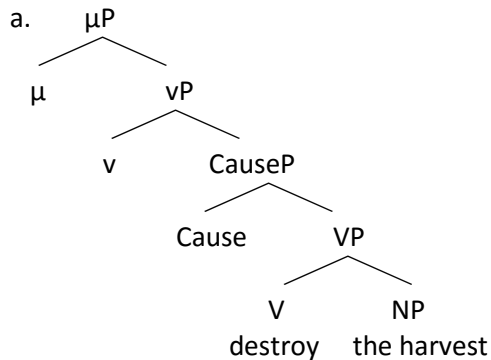
In the next section, we show that the difference between marked anticausatives and passives falls naturally under the present account. In passives there is no cause-head introduced and the external argument which will be understood as the initiator of the main event.
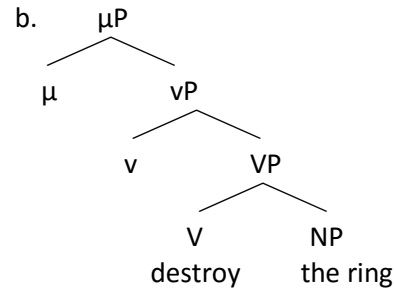
3.3.5. Marked Anticausatives vs. Passives

The difference between Anticausatives and Passives receives a natural explanation under the proposed analysis. Namely, I argue that Middle Marker will have exactly the same function in the two structures, with the difference that in (89a) the Middle Marker existentially closes the external argument of the causing event (blocking an agentive interpretation) whereas in the case of (89b) the external argument of the main event thus deriving an agentive interpretation. Below, I present the derivation for a marked anticausative vs. a passive for the same verb '*destroy*' in Modern Greek:

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[39] Another welcome consequence of having this special little v_{caus}-head is that we can see why Reflexives and anticausatives pattern together in many languages. Namely, in Romance, Germanic and many Slavic languages a reflexive clitic is used in both verbal reflexives and anticausatives. If both of them involve an identity relation between the external argument and another element of the structure, then it is easy to imagine a unified analysis of the two on this basis. I leave this as an idea for further consideration as it is not possible to be further explored within this paper.

(96) a. i   sodia   katastrafike   (apo/me   to halazi).   b. to daxtilidi   katastrafike   (apo/[*me] to Frodo)
          the harvest destroy-MM.Past.3Sg (from/with the hail)   the ring-Nom destroy-MM.Past.3Sg (by/*with Frodo)
          'The harvest got destroyed (from/with the hail).'   'The ring was destroyed by/[*with] Frodo.'

a.   μP   b.   μP

    μ   vP   μ   vP

         v   CauseP   v   VP

              Cause   VP   V   NP
                                                                            destroy   the ring
                      V   NP
                   destroy   the harvest

⟦*CauseP*⟧= λe. ∃e'. destroying(e') & theme(e') = the harvest   ⟦*vP*⟧= λx. λe. destroying(e) & theme(e) = the ring &
& cause(e')=e   initiator(e) = x
⟦*vP*⟧= λx. λe. ∃e'. cutting(e') & theme(e') = the harvest &   ⟦*μP*⟧= λe.∃x. destroying(e) & theme(e) = the ring &
cause(e')=e & initiator(e) = x   initiator(e) = x
⟦*μP*⟧= λe.∃x. ∃e'. cutting(e') & theme(e') = the harvest &
cause(e')=e & initiator(e)=x

    The derived meaning for (96a) correctly predicts that the anticausatives can never have an agentive reading as opposed to the agentive meaning of (96b) (notice that I use the verb *destroy* instead of a prototypical marked anticausative (i.e. *burn, tear*) to show that even when little-*v* head is not reduced to the causing event, the interpretation is different due to the cause-head).

    The picture, though, is more complicated. Although we would expect all class-III ([v + [Cause + [VP]]]) verbs which can be agentive (Class-II: [v + [VP]]) in active voice to be possible to be agentive when they are Middle marked, some Class-III verbs that are middle-marked tend to be interpreted as anticausatives and not as passives. As it is mentioned above the prototypical Passive is not as common as in English. However, it seems that even with core anticausatives it is possible to get an agentive Passive reading if the context strongly encourages this interpretation. The following examples are taken from Google (02/23/2014) but native speakers agree that they sound natural and well-formed:

(97) i   piges   mas   lene   oti   to aerplano kaike   epitides   apo to KEPN.
     the Sources our   say-3Pl that   the plane   burn-MM.Past.3Sg deliberately from the CDC
     'Our sourses say the plane was burnt deliberately by the CDC.'
                    http://el.glosbe.com/el/en/%CE%B5%CF%80%CE%AF%CF%84%CE%B7%CE%B4%CE%B5%CF%82

(98) Tin perasmeni vdomada skorpistike   epitides   fimi   gia   anadiapragmatefsi.
     The previous   week   spread-MM.Past.3Sg deliberately rumor about renegotiation.
     'Last week a rumor about renegotiation (of the debt) was spread deliberately.'
                                                http://panosz.wordpress.com/2010/04/29/imf/

(99) i esoteriki plevra tis   loridas   kopike   epitides   anomiomorfa oste na….
     The inner side   the tape.Gen cut.MM.Past.3Sg deliberately unevenly   so that….
     'The inner side of the tape was cut unevenly deliberately so that…'
                                http://www.astrovox.gr/forum/viewtopic.php?t=5680&highlight=astrosolar

We end up with a similar conclusion, as for reflexives/reciprocals, that when there is competition between a prototypical passive reading and an anticausative one, the anticausative one wins if the context doesn't foreground the Passive. This cannot be attributed to a preference of the causative over the agentive reading in general, because the transitive variants are more likely to be agentive than the intransitive ones. We leave the question of the restriction on Passives open for now but we may come back to it later.

Finally, notice that for verbs that form unmarked anticausatives, the middle-marked variant is unambiguously passive (A&A 2004, AAS 2006). This provides further evidence for the optionality of Cause head in change of state verbs. If there was a cause-head always present in these verbs, then we couldn't explain the agentive readings in the following examples:

(100) To vazo anixtike   (apo ton Niko).
      The jar   open-MM.Past.3Sg   (by   the Nick)
      'The jar was opened (by Nick).'

(101) i   lamba alaxtike   (apo ton Niko).
      The bulb   change-MM.Past.3Sg   (by   the Nick)
      'The bulb was changed (by Nick).'

(102) i   valitses   adiastikan   (apo ton Niko).
       the suitcases empty-MM.Past.3Pl (by   the Nick)
      'The suitcases were emptied (by Nick).

In the above examples, the *by*-phrase is not perceived as the initiator of some causing event that leads to the main event, but as the initiator of the main event. Also, following the discussion between *manner* vs. *result* complementarity above, notice that the manner is salient in (100)-(102) whereas it's not in their anticausative variants.

In conclusion, the purpose of this section was to show that Middle marking in anticausatives has the same function as in passives, this of existential binding of the external argument. However, the excursion to the wider area of anticausatives proved inevitable in order to i) **show that Middle Voice is meaningful in anticausatives** (as opposed to approaches that treat it as expletive, most prominently Schaefer 2008 and work building on him) and ii) **derive the differences between marked anticausatives and Passives**. In the next summarizing section, I will try to put all the pieces together (*i. Passives, ii. Verbal Reflexives & Reciprocals, iii. Anticausatives*) adding some less canonical cases, which will complete the discussion of function of Middle Voice in Greek, according to the present proposal.

4. Interim Summary & the case of Deponents

We started the investigation of Middle marked forms with the hypothesis that there is a unique Middle Voice head with the same function across the different environments. This hypothesis was reinforced by the fact that in many other languages, except Greek, passives, verbal reflexives & reciprocals and anticausatives appear with the same morphology. Based on the analysis of Middle Voice as existential binding of the external argument, we were able to derive Passives, which were characterized as the default case, verbal Reflexives & Reciprocals which are supplemented with a reflexivity/reciprocity feature and anticausatives which involve a *Cause* head.   The table below summarizes the distribution of Middle Marked forms and their interpretation based on the environment they appear.

Table 2: The patterns of Middle marked forms

	[v + VP]	[v + $V_{Ref/Rec}$P]	[v + [Cause + VP]]
Passive	√	–	–
Verbal Reflexive/Reciprocal	–	√	–
Anticausative	–	–	√

Let us see now which predictions our system makes for the meanings that can be derived from a single verbal root. First, it is predicted that since Middle Voice has the same function in all environments, Passives, Verbal Reflexives and anticausatives are mutually exclusive. A verb that contains a cause head, by the definition of the cause head, cannot be interpreted as Reflexive or Passive because its external argument, which is saturated by the Middle Voice, is the argument of the causing event and not of the main event. In verbal reflexives & reciprocals, the saturated external argument will have been already identified as identical with the internal argument and so any effort to interpret it as default passive will be in vain. Crucially, however, as we have stressed out through this paper, this mutual exclusivity doesn't mean that a middle marked verb can only have one reading, passive, reflexive or anticausative. On the contrary, we have shown that a middle marked verb can be ambiguous or polysemous depending on the ability of the predicate to combine with a cause head or not or on the featural properties of the verb with respect to reflexivity or reciprocity. What we get is three classes of middle-marked verbs; i) some verbs can have all the three interpretations, ii) some can have only two of them and iii) some are unambiguously passive, reflexive or anticausative. In Greek all those three classes are attested.

We have already presented in section 3.2., how a middle-marked verb can be ambiguous between a reflexive or reciprocal reading and a passive one. Verbs like *wash*, *comb, weight*, etc. are always ambiguous between a Reflexive and a Passive reading. Similarly, verbs like *hit, kick, chase, kiss,* etc. are ambiguous between a reciprocal and a passive reading. It is also possible for a middle-marked verb to be ambiguous between a reflexive, reciprocal and passive reading, in these cases the intended interpretation becomes clear from the context. The following example, where the verb *htipo 'hit'* is used, is taken from the internet and when it is presented out of its context it can have all three readings.

(103) Dite   giati htipiunte   i   danistes.
       See-Imper. why hit-MM.Pres.3Pl the creditors.Nom
       M1 REF: 'See why the creditors hit themselves – express intensively their opposition to something.'
       M2 REC: 'See why the creditors hit each other – fight with each other.'
       M3 PASS: 'See why the creditors are hit – are attacked (i.e. by the media).'

<div align="right">http://loutraki1.blogspot.com/2014/03/blog-post_4463.html</div>

Notice furthermore that its meaning is very difficult to translate in English using the same verb *'hit'* in the three versions. This is because each variant gives rise to different more or less metaphorical interpretations which however are transparent to native speakers. The most idiomatic one is the reflexive use of the verb *htipieme 'hit myself'* which is usually taken to mean '*express my sorrow with intense vigorous movements*' and it is extended in contexts when someone expresses very intensively his (negative) feelings towards something. The reciprocal reading is quite straightforward and it means '*hit/attack each other*' and similarly the passive reading means that someone or something is hit or attacked.

Examples of this sort are neat because they reveal how with few devices in our grammar and with a finite set of lexical items we can create infinite number of meanings and structures. In the previous section, we observed the same ambiguity for some middle-marked change of state verbs which can be interpreted as anticausatives or passives which we attributed to the presence of a Cause head or not (subsection 3.3.5). The question is if we can find middle-marked change of state verbs that can be three-way ambiguous among an anticausative, a passive and a reflexive reading and it seems that we can find some examples of this sort. For example, the most salient reading for the middle-marked verb *leronome 'dirty'* is the anticausative interpretation (104a) but in the right context we can take a passive (104b) or a reflexive reading (104c):

(104) a. O Nikos   /to pukamiso tu Niku   lerothike.
          The Nick.Nom/ the shirt   the.Gen Nick.Gen   dirty-MM.Past.3Sg
          'Nick / Nick's shirt got dirty.'
       b. To pukamiso tu   Niku lerothike   epitides   apo ton sinergo tu
          The shirt   the.Gen Niku dirty-MM.Past.3Pl in purpsose by   the abettor his
          gia   na katigorithi   mono ekinos gia to fono.
          in order to be accused   only he   for the murder
          'Nick's shirt was dirtied in purpose by his abettor, in order to accuse only him (Nick) for the murder.'
       c. O Nikos   lerothike   me tomatohimo gia   na tromaksi tin Ana.
          The Nick.Nom dirty-MM.Past.3Sg with tomato-juice in order to scare   the Ana.
          'Nick dirtied himself with tomato-juice in order to scare Ana.'

Generally, for the majority of middle-marked change of state verbs we need a very strong context in order to override the anticausative reading and get a reflexive or a passive one. But, as we have shown above, for change of state verbs which only form an unmarked anticausative, if there is a middle-marked variant it will be passive and in some cases reflexive. Again in this case, we observe the emergence of metaphorical readings through reflexivization. The verb *anigo 'open'* forms an unmarked anticausative in Greek. Thus, when it is middle-marked it will be either passive (105a) or reflexive (105b).

The reflexive one is of course metaphorical since we cannot imagine how a human being can be opened but the metaphorical reading is very transparent as the English translation shows:

(105) a. o   fakelos   anixtike   apo tin astinomia.
          the envelop open-MM.past.3Sg by   the police
          'The envelop was opened by the police.'
      b. O   Nikos   anixtike   stus   filus   tu.
          The Nick.Nom open-MM.Past.3Sg to-the friends his
          'Nick opened himself up to his friends.'

Another restriction which is predicted in our system is the restriction on reflexivation of verbs which always involve a cause head. In section 3.3.3., verbs like impress, *exhaust, fascinate, move, etc.* were analysed as being always causative, thus excluding a passive interpretation of the middle-marked counterpart. Nicely, the same restriction holds for reflexivization and reciprocalization. Trying to add the reflexivizer *afto-* or the reciprocalizer *alilo-*, yields also a bad result.

(106) a. O   Nikos   stenahorethike.
          the Nick.Nom sadden-MM.Past.3Sg
          'Nick got saddened.'
          → Cannot mean: Nick saddened himself.'
      b. *O   Nikos   aftostenahorithike.
           the Nick.Nom afto-sadden-MM.Past.3Sg
           'Nick saddened himself.'
      c. *O   Nikos   ke i   Ana alilostenahorithikan.
           the Nick.Nom and the Ana alilo-sadden-MM.Past.3Pl
           'Nick and Ana saddened themselves.'

Since reflexives and reciprocals emerge in the environment of a [v + VP] environment with the addition of a reflexivity or a reciprocity feature, it is predicted that when a [v + VP] environment is not available as in exclusively [v + [Cause + VP]] environments, reflexivization and reciprocalization will be impossible. A related question is if there are verbs which are always reflexives or reciprocals. This would mean that they would appear always middle-marked lacking an active counterpart. It is now widely accepted that such verbs exist and they constitute part of the larger class of deponent verbs[40](see Oikonomou 2011, Alexiadou & Zombolou 2013, Kalluli 2013).

First, there are verbs that clearly denote a reciprocal relation and appear always middle-marked, i.e. *antagonizome 'compete', sinusiazome 'intercourse with', tsakonome 'fight'*. However, in most of the cases there is an active counterpart but there is no one to one semantic correspondence between the two variants. Those are called semantic deponents in typological studies (see Genuisene 1987, Kemmer 1993). For example, *tsakono* roughly means to '*catch sth'* but the middle-marked variant *tsakonome*

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[40] The definition for deponent verbs varies. Initially, deponent verbs were called those verbs that appear only with Non-Active (Passive/Middle) morphology without having an active counterpart. In some cases, the term was used for verbs that have Non-Active morphology but Active morphology (see Embick 2000, Baerman 2007). Here I use the term extensively, covering all the verbs that only have a Non-Active form lacking an active counterpart.

means '*to fight, argue with someone*' and is clearly a reciprocal. Similarly, the active *troo* means '*eat*' but the middle-marked '*trogome*' (among other canonical and non-canonical readings) means '*quarrel*'.

There are also deponents which can be characterized as reflexive, usually referred to as inherently reflexives. For example, the verb *simperiferome* '*behave*' appears in many languages with reflexive marking (cf. English *behave oneself vs. *behave Mary*). Other than that, we find a small class of middle-marked verbs in Modern Greek which have a benefactive reading and so we can classify them as inherently reflexive, i.e. *ekmetalevome 'take advantage of/exploit, kapilevome 'use for my own benefit', karponome 'take for my own benefit'*. Crucially, all of those are transitive verbs with an overt internal argument and so the only place where we could think that a reflexivity feature can attach is a higher verbal head, probably an applicative head ala Pylkkänen, since we are talking about benefactives.

However, if we recall our discussion in 3.2.4. about the restrictions on passivization we can see why this is a bit problematic. We had shown that, similarly to passives, if an argument has inherent Dative or genitive case in Modern Greek, it cannot raise to subject position and thus reflexivization of dative ditarnsitives and benefactives is impossible. How do those inherently reflexive benefactives emerge? One possible answer is that those are fossilized forms from ancient Greek (where passivization of dative/genitive arguments was possible) and that there is no reflexivization process in Modern Greek. Those forms are simply irregular. Another possible answer is that since the benefactive argument never appears in its original position, is not assigned case and thus it can raise to subject position. In relation to this, consider two middle-marked verbs which have an active variant but their meaning, although obviously related, cannot be derived in any obvious way in our system as presented in table 2. These verbs are *simvulevome 'consult'* and *danizome 'borrow'*. Their active variants are *simvulevo 'advise'* and *danizo 'lend, loan'* respectively. Although in English two different verbs are used the semantic relation between each pair is obvious. The sentence in (107b) is impossible to be anaysed as a passivized version of (107a):

(107) a. O   Nikos   danise   ston   Giorgo to vivlio.
          The Nick.Nom lend   to-the George the book.Acc
          'Nick lend to George the book.'
    b. O   Giorgos   danistike   to   vivlio apo ton Niko.
          The George.Nom lend-MM.Past.3Sg the book from the Nick.
          'George borrowed the book from Nick.'
          '*George was lent the book by John.'

The subject of *danizome* (as in the case of *borrow*) is perceived of as an agent and not as the goal. For example, it can be used in Imperative whereas a real passive subject cannot:

(108) a. Danisu   to   vivlio apo ton Niko!
          Borrow-MM.Imper.2Sg the book from the Nick
          Borrow the book from Nick!
    b. *Kinigisu   apo ton Niko!
          chase-MM.Imper.2Sg   by   the Nick
          '*Be chased by Nick!'

These examples show that *danizome 'borrow'* can be best analysed as a benefactive reflexive, similarly to the inherently reflexive verbs above, where the subject is a derived benefactive argument and the external argument is existentially bound. If we treat these small set of verbs (there are some more verbs like these) as canonical reflexivized verbs, then we could argue in favor of the same analysis for the deponents expressing a benefactive reading.

Aside from reflexives and reciprocals, there seem to be more cases where a middle-marked verb lacks an active variant. Those are mostly psych change of state verbs that can be characterized as anticausatives since they are also intransitives, i.e. *herome 'be/become happy'* or, as noted in Zombolou & Alexiadou (2013), "anticausatives denoting a spontaneous or physical event", i.e. *ekrignime 'explode', fternizome 'sneeze', revome 'burp'*, etc. These cases can be characterized as regular anticausatives which simply lack an active variant. There are also some deponent verbs like *ntrepome 'I am ashamed', varieme 'I am bored', fovame 'I am afraid'* which can be also analysed as anticausatives, although they take can an accusative object, i.e.:

(109) i Ana   variete   ton Niko.
      the Ana.Nom bore-MM.Pres.3Sg the Nick.Acc.
      'Ana is bored of Nick.'

Based on our Imperative test we can show that these are not reflexives:

(110) a. *Varesu   ton Niko!
         bore-MM.Imper.2Sg the Nick.Acc
         'Get bored of Nick.'
      b. *Fovisu   ton Niko!
         fear-MM.Pres.2Sg   the Nick.Acc.
         'Fear Nick!'

We can interpret these verbs as inherently causative, in the sense that they always combine with a cause head which is also merged with a little-*v* head. The cause though remains always unspecified in the argument structure. The object is not a causer but the subject matter in Pesetsky (1995)'s terms. Consider the following:

(111) Varethika   ta mathimatika [me ton tropo pou didaski aftos o daskalos].
      bore-MM.Past.1Sg the math.Acc   with the way that   teaches this the teacher.Nom
      'I got bored with math with the way this teacher teaches it.'

The cause is expressed here with the PP "with the way…" and it is not the case that the object "math" can be understood here as the cause for getting bored. On the contrary this sentence could be said in a context where someone adores math "I adore math but I got bored of it with the way this prof teaches". We conclude that these verbs are irregular in that there is always a causing event and an initiator in this event understood but it can never be specified in the argument structure.

Finally, there are some cases of deponents which look very hard to be accommodated under any regular analysis of Middle Voice, i.e. *episkeptome 'visit', metahirizome 'use'*, etc. It goes beyond the

purposes of this paper to discuss this issue here but see Grestenberger (2014) for an extensive discussion. This small excursion to deponency and semantic deponency had the purpose of showing the variability of meanings which can be derived from a single verbal root and how middle-marking reflects these interpretations. It is exactly this variation in meaning that has led several researchers who work within a lexicalist framework to assume that Middle-marked verbs are formed in lexicon whereas Passives in languages, like English, which have a designated Passive form are formed in the syntax (see Horvath & Siloni 200X). In the following & last section, I will show that within a minimalist framework the difference between the Greek Middle and the English Passive receives a natural explanation without assuming a lexicon-syntax difference or a functional difference between the two.

5. Synthetic vs. Analytic Passive: There is no Middle or Passive, simply synthetic vs. analytic Passive

In the preceding sections of this paper, I argued that it is possible to analyze all the instances of middle morphology in Greek as a functional morpheme that is responsible for the existential binding of the external argument. As already pointed out, this is taken to be the core property of Passive in English as well; as explicitly stated in the beginning, I used for the analysis of the Middle in Greek the existential binding approach proposed by Legate (2010) and Bruening (2013) among others for the Passive. An obvious question arises then. Since, as claimed, the reflexive/reciprocal interpretation is due to the reflexivity/reciprocity feature carried by the verb and the anticausative interpretation is due to the special status of the external argument of a causal event, then we would expect the same exact interpretations to arise under passivization, in the case of English naturally reflexive/reciprocal verbs (i.e. *wash, dress, kiss, hug*) as well as with verbs that can have an additional cause event argument (i.e. *tear, burn*, etc.). In other words, the question arises why the English verbal passive can only function as a prototypical passive whereas the Greek "passive" can yield additional readings if in both cases the Passive/Middle head has the same function (see Spathas et. al (to appear) and Alexiadou, Anagnostopoulou & Schaefer forthcoming for extensive discussion and for a different approach to this issue than the one proposed below).

If we look at the cross-linguistic picture, the question is relevant for a wide number of languages beyond Greek and English. From the very beginning of this paper it has been pointed out that Greek is not special in expressing Passive, Reflexives and Anticausatives via the same morphology. Many other languages share this characteristic property. Crucially, in all these languages the passive is expressed synthetically, i.e. via special voice morphology on the verb. The table below presents some of the languages where the morphology used in Passive structures appears in additional environments.

Table 3: Synthetic Passives cross-linguistically

Language	MM	Pass	Anticaus	Refl/Rec	Dep	Other	Source
Albanian	-he$_{infl}$-	√	√	√	√	√	Kallulli (2006)
Armenian	-v-	√	√	√	√	?	Dum-Tragut (2009)
Amharic	-tä-	√	√	√	√	√	Fufa (2009)
Shakkinoono/ Kafinoonoo	-e-	√	√	√	√	?	Fufa (2009)
PA Arabic	t-/in-	√	√	√	√	?	Laks (2010)
Turkish	-l- (-n)	√	√	(√)	√	?	Göksel & Kerslake (2005)
Quechua	ka(a)-	√	√	√	√	√	Shibatani (1985)
Swedish	-s	√	√	-/√	√	√	Lundquist (2013)
Russian	-sja	(√)	√	√	√	√	Siewierska (1988)
Zulu/ Kinyarwanda	-w-	√	?	-	√	√	Claire Halpert p.c. / Kimenyi (1988)
Latin	-or$_{infl}$	√	√	√	√	√	(Gestenberger 2014)

Albanian, Armenian, Amharic (and possibly Shakkinoono & Kafinoonoo) look quite like Greek because there is a single, unique morpheme that participates in all the environments under discussion

(*Passives, Reciflexives, Anticausatives, Deponents and even more*). Turkish is a bit different in that there is a distinction between Passives/Anticausatives and Reflexives; Passives and Anticausatives employ the morpheme -l- whereas in Reflexives the morpheme -n- is used. However the distinction is neutralized after -l- or a vowel, and both the passive and the reflexive are formed with the morpheme -n-. Quechua is similar to Turkish in that there seem to be two morphemes (at least in Ancash Quechua) - *-ku* for reflexives & *-kaa for Passives* - that in some environments seem to overlap (Molina Vital, 2012). As far as I understand from Molina-Vital (2012) and Shibatani (1985), in some Quechua dialects there is a unique morpheme –ka for passives, reflexives, anticaustaives, etc. Russian and Swedish are also special in that they have two ways to express Passives; Russian uses an analytic form (Aux + Partc) in Perfective Tenses and a synthetic form in Imperfective Tenses. Moreover, the synthetic form is used across all Tenses to express reflexives, reciprocals, anticausatives. In Swedish there is also an analytic form additionally to the synthetic *s*-passive but it is not very productive. The synthetic passive is also used in reciprocals and anticausatives. Finally, in the Bantu languages (Zulu & Kinyarwanda) there is a passive morpheme that cannot be used in reflexives (there is another specific morpheme for reflexives) but it is also found with deponents. Similarly, in Latin the Passive can be found with deponent verbs (and in some cases with reflexives & reciprocals as well).

Crucially, despite their internal differences, all of those languages share a common property; they employ inflectional morphology on the verb to encode the Passive and not an [AUXiliary + Participle] strategy. On the contrary, all the languages that use an AUX + Prtc strategy can only have the prototypical passive reading (cf. Anagnostopoulou 2014, p.18; footnote 7). It therefore seems that we are arriving at a broader distinction between languages that have a **synthetic Passive** and languages that have an **analytic Passive**, which correlates with the "Middle" (i.e. non-specific use) vs. "Passive" (i.e. use limited to the passive) distinction in an interesting way; (112) is a pure description of the cross-linguistic facts:

(112) Synthetic Passives can receive additional interpretations beyond the prototypical passive whereas Analytic Passives cannot.

Note that the generalization in (112) is quite weak, in the sense that it doesn't exclude the possibility of a synthetic passive only encoding a prototypical passive reading. Crucially, however, it excludes the possibility of an analytic passive having additional interpretations. On the other hand, we have so far only seen languages that pair together the prototypical Passive with Reflexives and Anticausatives. There are, however, cases, like Japanese, where the Passive pairs with other interpretations like the antipassive, the potential and the honorific (Shibatani 1985). It is beyond the purposes of this paper to account for these cases. What is important to note, though, is that, in these cases there are multiple readings as well, which go together with the presence of synthetic morphology.

Later in this section, I will look more carefully into some cross-linguistic facts about the distinction between synthetic vs. analytic passives but first I need to explain why there is this distinction cross-linguistically. Interestingly, this distinction seems to receive a natural explanation within the minimalist framework that makes use of the notion of phases (Chomsky 1995, 2000, 2001, 2005) and
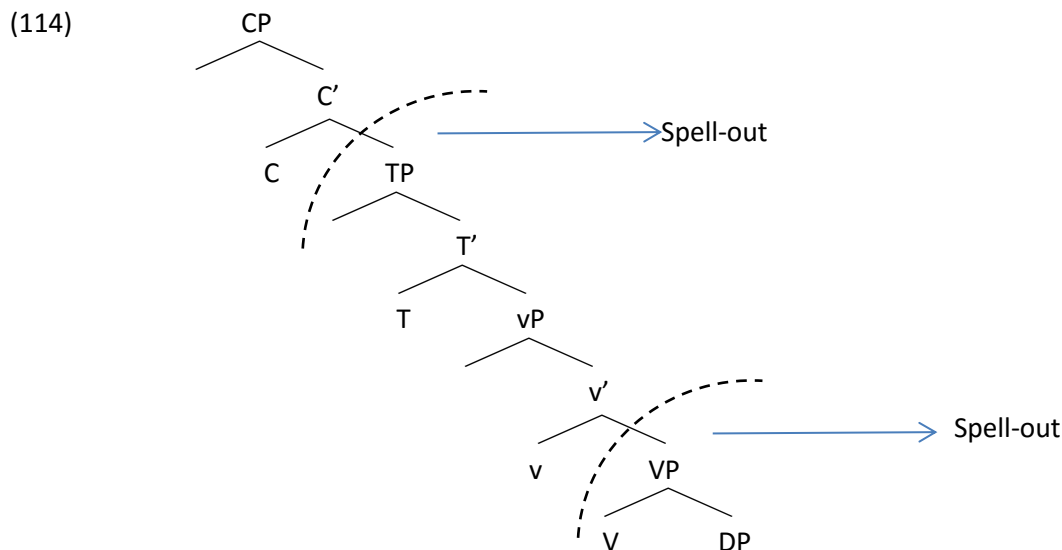
phase extension via head-movement (Den Dikken 2006 and related literature). In the next section, I will introduce the necessary theoretical framework which will be necessary for the discussion to follow.

5.1. On the phasehood of vP and phase-extension

Within the minimalist program as introduced by Chomsky (1995) and largely developed in subsequent work (Chomsky 2000, 2001, 2005) the key notion for deriving cyclicity is the **phase** which is defined as a propositional "syntactic object" that is send both to LF and PF and, once this has happened, it is no longer available for the syntactic and semantic computation (Phase Impenetrability Condition). There is still disagreement as to which exactly syntactic units qualify as phases. Chomsky (2001, 2005) argues that v*P (where v*P stands for transitive vPs) and CP are phases (and leaves the discussion open for DPs and PPs). Legate (2003), on the other hand, and others following her, argue that even passive and unaccusative vPs are phases (see also Marantz 2007, Kratzer & Selkirk 2007, Bobaljik & Wurmbrand 2013 for discussion). Crucially, what is sent to spell out is not the entire phase but rather the complement of the phase head. Thus the Phase Impenetrability Condition (PIC) is stated as follows:

(113) PIC: In phase α with the head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations" (Chomsky 2000; 108)

This principle, together with the definition of phases, to the schema below:

(114)

As I mentioned above, there is a discussion as to which syntactic units constitute a phase. The question that is relevant here is whereas all vPs are phases or just the transitive (thus excluding unaccusatives & Passives). This distinction between transitive and intransitive predicates has been criticized in the literature and it has been proposed that all vPs are phases (Legate 2003, Marantz 2007,

Kratzer & Selkirk 2007, Bobaljik & Wurmbrand 2013)[41]. Here, following this literature, I will take it as given that all vPs are phases, including Passive *v*Ps[42]. I refer to the work cited above for independent evidence that this is true as well as for circumventing the problem of the Agree relation between T and the internal argument (see especially Marantz (2007) on the latter issue).

Having defined what is a phase and what does it mean to be a phase, I now proceed to the next crucial step which is the idea discussed by den Dikken, and others, that head movement results in the extension of a phase. The idea that head movement extends domains is not new; Baker (1988) proposes the Government Transparency Principle, according to which a complex head inherits certain properties of the incorporated head in derived structures (see Roberts (2000) for an overview on head-movement). In his paper on "Phase extension" (2006) den Dikken, building on independent evidence, translates this idea into the minimalist framework and he proposes a dynamic model of phases, where phases can be extended if head movement occurs:

(115) **Phase Extension**
Syntactic movement of the head H of a phase α up to the head X of the node β dominating α extends the phase up from α to β; a loses its phasehood in the process, and any constituent on the edge of α ends up in the domain of the derived phase β as a result of Phase Extension

According to den Dikken (2006), the fact that head movement can extend the phase is motivated by independent facts like predicate inversion, various instances of A'-movement, object shift in Icelandic as well as the fact that TP seems to be a phase in many cases. Crucially, under this account if a **α** is the head of a phase, its complement is not sent to spell-out immediately; It waits until the next head **β** is merged and if **α** doesn't move to the next head (**β**), then its complement is immediately sent to spell-out. If **α** moves to the next head (**β**) then the phase is extended and consequently the complement of **β** is not spelled-out until the next head is merged and so on.

The dynamic approach to phases seems to gain more & more ground in Minimalism Literature. Wumbrand (2013) and Bobaljik & Wurmbrand (2013) propose that a domain can be suspended if this domain depends on the next head for its interpretation and they provide evidence from Tense dependencies and QR. As I will propose below, under such a dynamic approach the difference between analytic vs. synthetic passives can receive a straightforward explanation.
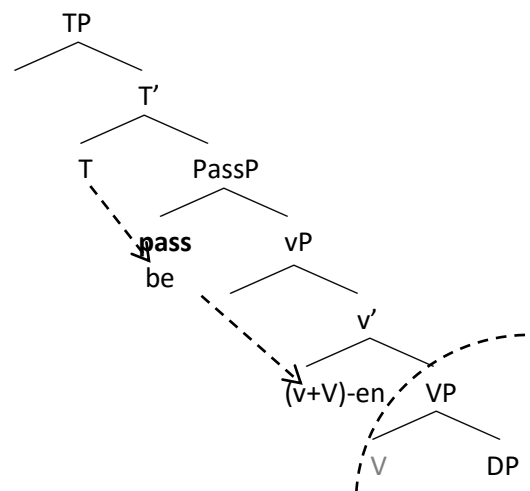
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[41] As always, a note on what we mean by little *v* is necessary. According to Chomsky little *v* is taken to be both a verbalizer and the introducer of the external argument. However, there is plenty of evidence that the verbalizer is lower than the head that introduces the external argument (Pylkkänen 2002, Alexiadou & Anagnostopoulou 2003, Ramchand 2008, Harley 2012). This is the position I've taken throughout the paper; the little *v* in the structures I have presented stands always for the head that introduces the external argument (what is called Voice in Kratzer 1996 and Harley 2012). Under this analysis of little *v*, the question which arises is if the unaccusative verbs have such a head. I have argued above that unaccusatives lack a little *v* head that introduces an external argument, but crucially they have a verbalizer head.

[42] According to den Dikken (2006) any predicative head creates a phase. In this sense, he claims that the *v*P in unaccusatives verbs is not phasal because it doesn't introduce a subject. However, if we take the internal argument to be introduced in syntax by a predicative head ala Ramchand, then an unaccusative VP aslo contains predication and so it should be considered a phase (p.c. with Marcel den Dikken).

5.2 Analytic vs. Synthetic Passives: Head- vs. non-head movement

So far, I haven't expanded on the morphological realization of passive voice in English other than saying that it consists of the auxiliary '*be*' and a passive participle. I will analyse the morphology of the English passive adopting Bjorkman (2011)'s analysis according to which "inflectional feature values can be passed downward to (or fail to be passed downward) from functional heads onto the main verb" (Bjorkman 2011; 3) via an AGREE relation. Based on this schema, Passive Voice agrees with the Verb (that has moved to little *v* (the head responsible for the introduction of the external argument)) and the *–en* morpheme appears on the verb (see also Bruening 2013; 23 and the references therein). The auxiliary 'be' is inserted under Passive Voice because of an AGREE relation with the higher inflectional head (Tense or Aspect). Crucially, under this system there is no movement of the verb to the Passive head in English. This means that *v*P is a phase and thus the complement of little *v* must be sent to spell-out.

(116)

On the contrary, in a language like Greek the Passive morpheme is realized on the verb and no auxiliary needs to appear below Passive Head. The verb raises to Passive Voice head. Therefore, by the Phase Extension principle, a new phase is created, the PassP and thus it is the complement of the Passive head that will be send to spell-out[43].

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[43] Of course, under den Dikken's analysis the phase will be extended as long as there is head movement and in Greek there is verb movement to T (Alexiadou & Anagnostopoulou 1998, 2001 and many others), but no matter how much the phase is extended is not relevant here. The crucial part is that whatever is send to spell-out will include *v*P.

(117)

Therefore, the basic difference between the English analytic and the Greek synthetic Passive is the head-movement in the latter and the absence of head movement in English. However, this minor difference has under the Phase extension hypothesis an important impact on the syntactic derivation. In English, the VP will be send to PF and LF and thus its components will be no longer available in the course of the derivation whereas in Greek, the phase is extended and thus all the components of the VP are available as the syntactic computation proceeds.

5.3 Additional readings can be derived only within a single domain

We showed in the first part of this paper that the interpretation of a passive *v*P in Greek depends on the components contained inside *v*-head's complement. Having shown that in English the complement of *v*-head's is always sent to spell-out, we can explain why in English these components are not transparent for further operations, thus blocking additional interpretations. Let's take the cases one by one:
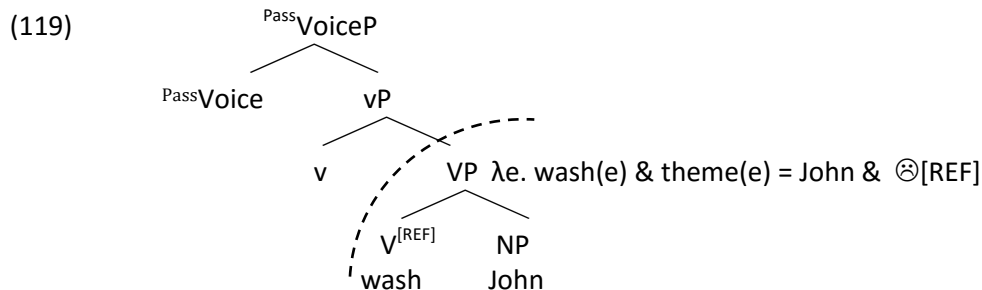
5.3.1. Verbal Reflexives (& Reciprocals)

In the case of the reflexives and the reciprocals it was proposed that there is a reflexivizing and reciprocalizing feature respectively, carried by the verbal root. We said that when this feature is interpreted it gives us the meaning in (118) (repeated from 31):

(118) $\llbracket \text{Refl} \rrbracket = \lambda f_{<e,st>}. \lambda x_e. \lambda e_s. f(x,e) \ \& \ \text{initiator}(e) = x$

Crucially, as it was argued in Section 3.2.2., the reflexivizing feature can be interpreted only if there is an initiator in the same interpretation domain. Now, that we have phases, we can translate this requirement into a requirement of checking the [Ref]-feature by the *v*-head that introduces the external argument. As soon as, the reflexivity feature is checked, it can be interpreted thus deriving a reflexive interpretation. On the contrary, if the reflexivity feature is not checked by the little-*v* head, the feature cannot be interpreted and thus the derivation will crash.

In Greek there is no problem. Since there is *v*-to-PassVoice movement, the phase is extended and the reflexivizing feature ends up in the same spell-out domain with the little-*v* head. The reflexivizing feature is checked by little-*v* and it is interpretable. On the contrary, in English, when PassVoice is merged, there is no head-movement and thus (after merging of PassVoice) the complement of little *v* is sent to spell-out. In this spell-out domain there is no little-*v* to check the reflexivizing feature and thus, it cannot be interpreted[44]. The fact that little-*v* is merged is not relevant, because it must be in the same spell-out domain in order to check the reflexivity feature. The derivation crashes as shown in (119):

(119) ^{Pass}VoiceP

^{Pass}Voice   vP

v   VP λe. wash(e) & theme(e) = John & ☹[REF]

V$^{[REF]}$ NP
wash   John

⟦*wash*⟧=λy. λe. f(e) & theme(e) = y

☹⟦*Refl*⟧(⟦*wash*⟧) : *The [Ref]-feature is not checked and thus it is not interpretable.*

Thus, in English the interpretation of the Passive will be always disjoint whereas in Greek it will be possible to derive a reflexive (or similarly a reciprocal) reading if the verb is accompanied by a reflexive (or reciprocal feature).

Let me add a final note on the disjointness of the English Passive (cf. Spathas et al., forthcoming, Anagnostopoulou (2014) for discussion). Except from the unavailability of a reflexive interpretation in English short Passives it has been noted already in Roberts (1987) that the *by*-phrase cannot be a reflexive pronoun bound by the moved subject. For example, the following example is judged as "??" in Roberts (1987):

(120) ??The man was seen by himself in the mirror.

[Roberts 1987; p. 126, ex.(191)]

Since then, the incompatibility of the reflexive pronouns with the Passive is treated on a par with the unavailability of the reflexive reading in short passives. In Roberts (1987) (see also Baker, Johnson and Roberts 1989), the marginality of a *by*-anaphor phrase and the non-availability of a reflexive reading in short passives like "*John was washed*" are both explained under the assumption that there is a condition on chain formation which prevents the reflexive pronoun or/and the –*en* (which is

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[44]I would like to thank Elena Anagnostopoulou, Irene Heim, Ken Wexler and for discussing and helping me formulating and expressing this idea.

treated as an argument clitic) to be bound by the surface subject which is required to bind also its trace in the θ-position that originates.

Notice that Roberts (1987) and BJ&R (1989) treat similarly raising constructions where the subject raises past a reflexive pronoun:

(121) ??They$_i$ seem to themselves$_i$ t$_i$ to like John.

[Roberts 1987; p. 134, ex.(215)]

However, the ungrammaticality of sentences like both (120) and (121) has been disputed in the literature (see a.o. Fox (1999) for binding in raising constructions and Bowers (2010), Storoshenko (2011) for binding in passives). It is widely accepted that binding in raising is possible but also passive sentences like (120) are judged as acceptable by native speakers (or at least not much worse than the raising examples containing a bound anaphor). In the right context, especially when we want to focus that the agent was the same as the patient, a *by-anaphor* phrase seems to be perfectly licensed. The example in (122) is taken from the internet and it's also judged as natural by native speakers.

(122) Arvind Kejriwal has been assaulted yet again, this time by himself.

Under the proposed analysis the unavailability of a reflexive reading in short passives cannot be treated on a par with the marginality of sentences that contain a *by*-phrase with a reflexive pronoun, simply because there is no external argument DP under our approach, there is only existential binding, so there is no way to say that the chain condition is violated. What I propose is that the restrictions on having the *by*-phrases bound by the derived subject stem from restrictions on chain formation as proposed in Roberts (1987) and BJ&R (1989) which however can be obviated under certain conditions. On the contrary, the unavailability of a reflexive interpretation with the naturally reflexive verbs is due to the creation of two different domains that separate the external argument variable from the VP.

This distinction predicts that in a language like Greek, despite the availability of reflexive readings in short passives, a passive with a *by*-phrase containing an anaphor will be as marginal just like in English. Indeed, this expectation is born out. Sentences like the following are considered degraded by native speakers[45]:

(123) ??i   Ana   katigorite   apo ton eafto tis.
          the Ana.Nom   accuse-MM.Pres.3sg by the self   her
          'Ana is (being) accused by herself.'

Crucially, however, if we want to stress the fact that Ana accuses herself as an unexpected fact we can have the *by*-phrase bound by the derived subject, similarly to the English example in (122). The fact that the *by*-phrase is stressed becomes evident from the use of *idios 'same'* which in this case has the same function like the English anaphor in phrases like "by John himself":

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[45] Natural reflexive verbs are even worse with a reflexive *by*-phrase because as we saw when a reflexive anaphor is used with naturally reflexive verbs (even in active sentences) there must be a special readind (i.e. statue reading, etc. see example (27), p. 17 above)

(124) i   Ana   katigorite   apo ton idio   tis   ton eafto.
        the Ana.Nom   accuse-MM.Pres.3sg   by   the same her the self
        'Ana is (being) accused [by herself]_F.'

Thus, we conclude that the unavailability of a reflexive reading in short passives must be teased apart from the restriction in bound *by*-phrases by the derived subject.

5.3.2. Anticausatives

Middle-marked anticausatives in Modern Greek were analyzed as involving existential binding of the external argument over the cause head. I distinguished two cases of marked anticausatives based on their properties i) those where the external argument is interpreted as identical to the causing event (i.e. *tear, burn, dirty*) and ii) those for which, by virtue of their lexical meaning, the external argument is interpreted as the initiator of the causing event (i.e. *kill, destroy*). At first place, there is nothing that should prevent merge of the passive head above [v + [Cause + [VP]]] in English. Indeed, this is the case for most change of state verbs in English. The passive variant is ambiguous between an anticausative and prototypical passive reading. As noted in AA&S (2006) the English Passive can be modified by PPs expressing an agent, a cause, or an instrument:

(125) a. The window was broken by John / by the storm / with a stone.
      b. The window was shattered by Will's banging.

                                                                    [AA&S (2006); 182, ex. (21-22)]

Moreover, verbs that lack an unmarked anticausative variant but can take a Causer as their external argument can appear in the Passive with a *by*-phrase encoding the causer:

(126) a. The earthquake killed many people.
      b. Many people were killed by the earthquake.

The first question we have to answer is what is, from the present perspective, the difference between the passive in (125a) and the anticausative in (127)? Do marked and unmarked anticausatives share common properties in English as in Greek?

(127) The window broke from the storm.

The answer is clearly no. First, as it has been observed in AA&S (2006), English Passives of anticausative verbs cannot combine with the *by*-itself phrase (which was our basic evidence for Greek marked anticausatives patterning with the unmarked ones):
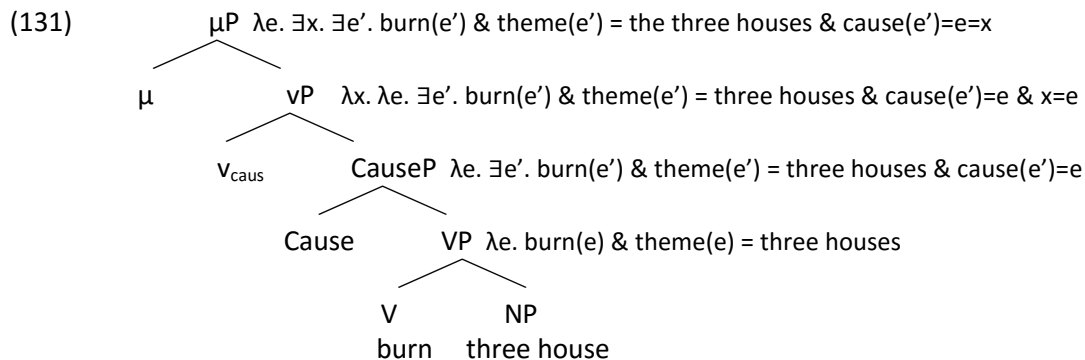
(128) a. The window broke by itself.
      b. *The window was broken by itself.

Secondly, English (as opposed to Greek) allows a Passive with causer *by*-phrase for the majority of the verbs that can form unmarked anticausatives (i.e. *break, burn, tear, shatter,* etc.):

(129) a. The houses burnt by the fire.
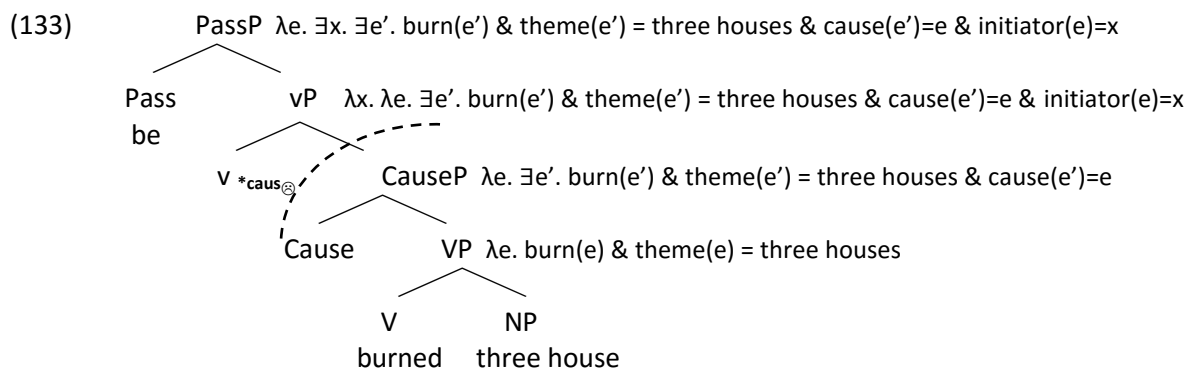   b. The houses were burnt by the fire.

The incompatibility with the *by-itself* phrase and the compatibility with *causer by*-phrases suggests that all passive verbs in English that involve a cause head behave like the *kill* and *destroy* verbs in Greek. In other words, it seems that the little-*v* head in the English Passive cannot just identify the causing event when it merges above CauseP (as it does in Greek marked anticausatives) but it introduces the initiator of this event. The question is why the corresponding verbs in English (ie. *burn, tear*) behave differently than in Greek. I would like to suggest that the difference is again due to the difference between the synthetic and the analytic passive. In Greek, the verb moves to Passive head and thus the little-*v* and the cause-head are spelled-out together. Thus, the little-*v* head can be interpreted as the causing event itself because it is in the same interpretation domain with the cause head as shown for clarity in (130) below:

(130)   a. tria   spitia   kaikan   apo ti   fotia.
            three houses burn-MM.Past.3Pl   from the fire
            'three housed burnt from the fire.'

(131)   μP λe. ∃x. ∃e'. burn(e') & theme(e') = the three houses & cause(e')=e=x

         μ   vP   λx. λe. ∃e'. burn(e') & theme(e') = three houses & cause(e')=e & x=e

              v$_{caus}$ CauseP λe. ∃e'. burn(e') & theme(e') = three houses & cause(e')=e

                     Cause   VP λe. burn(e) & theme(e) = three houses

                            V   NP
                          burn   three house

On the contrary, in English there is no *v*-to-*Pass* movement and thus **the cause head** and **the little-*v* head** are sent to **different spell-out domains**. The little-*v* head cannot get the semantics that the little-*v* head gets in Greek (identifying the external argument as the causing event), repeated below, because it is in a different interpretation domain from the cause head. Thus, the only option for little-*v* is to be interpreted as usually, simply introducing the initiator of the causing event:

(132) Three housed were burned by the fire.

(133)   PassP λe. ∃x. ∃e'. burn(e') & theme(e') = three houses & cause(e')=e & initiator(e)=x

         Pass   vP   λx. λe. ∃e'. burn(e') & theme(e') = three houses & cause(e')=e & initiator(e)=x
         be
              v $_{*caus⊗}$ CauseP λe. ∃e'. burn(e') & theme(e') = three houses & cause(e')=e

                     Cause   VP λe. burn(e) & theme(e) = three houses

                            V   NP
                          burned   three house

Crucially, contrary to what happens with reflexives above, the derivation in (133) is interpretable; the external argument can be still understood as the initiator in the causing event. Therefore, the passive is not agentive since the effect of the cause head is still present in English passives but the external argument cannot be reduced on the basis of its equivalence with the causing event. This should explain why English is more tolerant with the co-existence of unmarked anticausatives and passives with external arguments understood as causers; because they are not as similar as unmarked and marked anticausatives in Greek. On the other hand, we have seen that for a small set verbs in Modern Greek (i.e. *tsalakono 'crumple', dialio 'disperse', lerono 'dirty', etc.*), this co-existence is attested as well, which signals that in these cases the little-*v* can have the general function of introducing an initiator to the causing event and not identifying the causing event with the external argument.

5.3.3. Deponents & Semantic deponents

In this section, I argued that additional readings cannot be derived in the English Passive because the participial form of the verb cannot raise to the Passive Voice head and thus the complement of little-*v* is not available for further semantic interaction with the external argument. It is a well-known fact that English lacks deponents as well; there are no Passive forms that do not have an active counterpart. Based on the analysis of deponency in Greek outlined in section *3.4.*, I can now explain why English lacks deponents.

As said, a large set of deponent verbs in Modern Greek can be analyzed as inherently reciprocals (i.e. *antagonizome 'compete', tsakonome 'fight',* etc.) or inherently reflexives (either indirect or direct reflexives, i.e. *ekmetalevome 'take advantage of', karponome 'take for oneself', simperiferome 'behave', etc.*). Since it is not possible to derive a reflexive or reciprocal reading in English passives, it follows that it will lack deponents of this sort (i.e. a passive form interpreted as inherently reflexive or reciprocal) as well.

Another class of deponents that was discussed was verbs that can be interpreted as anticausatives that always have an unspecified cause. Many of those verbs do not even have a verbal counterpart in English but they are translated with adjectives, i.e. *herome 'I'm happy/glad', lipame 'I'm sorry', efthinome 'I'm responsible', perifanevome 'I'm proud',* etc. Other verbs of this class, however, do have a verbal counterpart in English but it never forms a verbal passive, these are object experiencer verbs like *bore – I'm bored* or they only have an adjectival passive like *ashamed* (see Pesetsky 1995 for discussion). In this case we can say that since the English Passive cannot be reduced to an anticausative, it is also predicted that there will not be deponents of this sort.

An interesting observation is that if we can find a verb which requires an agent but this agent must always be unspecified, then we would expect it to be a "deponent" in English. Nicely, there is one such example; the verb *rumour* can only be used in the Passive and this is not an adjectival passive as the presence of the progressive '*being*' shows:

(134) a. Guess who is being rumoured to join the X-factor2014 judging panel.
       b. It is being rumoured that Angelina Jolie will join the X-factor judging panel.

Similarly, to what happens in English, it is predicted that all languages which have an analytic passive will lack deponents (to the extent that they are not passive deponents, like the exceptional *rumour* above). This expectation is born out; to my knowledge, only languages that have a synthetic passive have deponents (see also Weisser (2012)).

5.4 Some apparent counterexamples: English Get-Passives & Passive Voice in Hebrew

So far I have presented the distinction between synthetic and analytic Passive through the comparison between the Greek Middle and the English Passive. As I said from the very beginning, the different names Middle & Passive do not correspond to different functions (as they both instantiate existential binding) but they simply convey the fact that the English Passive is designated for the prototypical passive reading whereas the Greek Middle conveys additional readings depending on the properties of the predicates it selects. Table 3, above, shows that, cross-linguistically, languages which have synthetic passives share properties with the Greek Middle (they have at least one of the additional readings). Moreover, we know from the other Germanic and Romance Languages that the analytical passive of the form [Aux + Prtcp] is destined to convey only the prototypical passive reading. In this section, I will investigate two cases that look like counterexamples to the generalization in (112) (pointed out in Anagnostopoulou 2014 footnote 7, drawing on Alexiadou, Anagnostopoulou & Scahefer, forthcoming). I will argue that not only they do not constitute counterexamples to the generalization (112), but that, under certain assumptions, they also provide further evidence for it. The first case are *get*-passives and the second the passive voice in Hebrew.

5.4.1. Get-Passives

The motivation for discussing *get*-passives in this paper comes from the observation made by Alexiadou (2012) that *get*-passives have the same function like the Middle Voice in Modern Greek. As it is noticed in Alexiadou (2012) (see also Fox & Grozinsky, 1998), *get*-passives differ from the prototypical *be*-passives in English in that they there is no implicit external argument understood. First, *get*-passives can have an anticausative interpretation. To mention only some of the examples that Alexiadou (2012) provides, in (135) an instrumental PP is not licensed with a *get*-passive and in (136) the *get*-passive can combine with the *by*-itself phrase which, as we saw, is incompatible with a prototypical passive reading:

(135) a. John was killed with a gun.
      b. #John got killed with a gun.

(136) a. a. The only way you can have an ipod replaced was if it got damaged by itself.
      b. *The only way you can have an ipod replaced was if it was damaged by itself.
<div align="right">[Alexiadou (2012); 1085]</div>

Secondly, *get*-Passives are compatible with a reflexive interpretation (though not productively with all naturally reflexive verbs like in Greek, compare (137a,b) to (137c), p.c. with David Pesetsky):

(137) a. I got dressed (by my mother or by myself).
       b. I was dressed (only by my mother).   [Alexiadou (2012); 1085]

       c. I got washed. [Reflexive reading is not available]

The question that we are interested to answer here is whether indeed the behavior of *get*-Passives contradicts the generalization proposed in (112) about the difference between synthetic and analytic passives. Based on the analysis of Middle Voice in A&D (2012), Alexiadou (2012) proposes that "get" in *get*-passives is a semi-lexical verb which selects a Middle Voice Phrase (μP) realized as a participle (see Alexiadou (2012); 1098 for the details of the analysis). Thus, Alexiadou's analysis of *get*-passives as Middles does not contradict the generalization in (112), because "get" is not taken to realize the Middle or Passive Voice head but rather a semi-lexical aspectual head above Middle Voice.

The question then switches to the status of the complement of "get" and consequently to the status of adjectival participles with respect to the availability of an external argument. This question has received much attention in the literature of adjectival passives (see Anagnostopoulou 2014 for a recent discussion) and it would get us too far to get into the details here. However, it is important to mention that although there is positive evidence for the presence of an external argument in some adjectival passives, it is argued that there is no separate Passive head that existentially binds it. For example, Anagnostopoulou (2014) analyses adjectival passive in (138) as containing a Voice head (little-*v* head in our terms) that is also performing existential binding of the external argument, but crucially not a distinct Passive head as described within our system[46]:

(138) The letter is written with a pencil.

The distinction proposed in A&D (2012) between a thematic Middle Voice (which simply modifies the verbal root with respect to its requirement for an external argument) and a functional Passive Voice which is merged above the head that introduces the external argument, has led to the idea that Adjectival Passives both in Greek and in English contain this thematic Middle Voice (Anagnostopoulou 2014) as opposed to the Passive head in English verbal passives. The two proposals share the same insight. In Anagnostopoulou (2014) & AAS (forthcoming) the difference between the two constructions is made through the postulation of two separate heads (Middle and Passive). In the proposal outlined here, the difference is attributed to verb movment (whether it moves above the little-*v* or not).

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[46] Notice that if we translate Anagnostopoulou's proposal into our system we can account for the differences between verbal and adjectival passives in English by arguing that the verb raises higher in adjectival passives, thus above vP and so the entire vP is sent to spell-out, making it possible for the reflexive and anticausative readings to be derived (see also Bruening (2014) for an analysis of Adjectival Passives as raising higher than the verbal passives).

As a result of head-movement we can derive the differences between the Middle Voice in Greek and the Passive Voice in English based on the mechanics of phase extension and not by assuming a different function. Probably, the Voice head in Adjectival Passives has exactly the properties discussed in Anagnostopoulou (2014) and it has exactly these properties cross-linguistically **only** when it is selected by an Adjectival head (and possibly also by a noun head?) both in English and in Greek. In other words, it could be argued that an AdjP or a NP can only select for a "defective" Voice/v head. Other than that, there is a unique Voice/v head cross-linguistically which introduces the external argument and it can either merge with an actual NP to saturate it or with Passive Voice head to existentially bind it. I leave the question of the "defective" Voice head in Adjectival Passives open here for further consideration and I turn to another apparent counterexample for the synthetic vs. analytic generalization in (112).

5.4.2. Passive in Hebrew

Hebrew is presented in A&D (2012) as an example of a language that has both a Middle and Passive form. More specifically, Hebrew has three verbal templates in Active Voice, the simple, the intensive and the causative[47]. The simple template has only Middle Voice which is similar to the Greek Middle in that it can give rise to passive, reflexive/reciprocal and anticausative interpretations. The intensive template has additionally to the Middle form, a passive form which is instantiated by the [u-a] template. Finally the Causative template only has a Passive form and no Middle. The table below taken from A&D (2012) summarizes this picture:

Table 4: Verbal Templates of Hebrew

Agency / Voice	Simple	Intensive	Causative
Active	a-a	i-e	h + i-i
Passive	-	u-a	h + u-a
Middle	n + i-a	t + i-a	

[from A&D (2012), p.6, Table 1]

The function of the Middle in the Simple template is perfectly expected under the system proposed here. What is problematic is the presence of a distinct verbal Passive in the intensive and causative template which seems to be synthetic in its morphology but has only the prototypical passive function. As shown in A&D (2012), the passive intensive template cannot receive an anticausative interpretation; the *by-itself* phrase is not licensed in (139b):

(139) a. ha-gader porqa   al-yedey ha-mafginim
           the wall dismantle-Intns-Pass by   the demonstrators
           'The wall was dismantled by the demonstrators.'
       b. *ha-gader porqa   me-acma
            the wall   dismantle-Intns-Pass from itself
            'The wall was dismantled by itself.'   [A&D 2012; p.11 ex. (16)]

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[47] For a discussion about the function of those templates and their differences see Doron (2003).

Similarly, when there is a corresponding Passive form, the intensive middle template cannot have the proptotypical passive reading. In (140a) the intensive middle template cannot combine with the *by*-phrase:

(140) a. *ha-gader hitparqa   al-yedey   ha-mafginim
            the wall   dismantle-Intns-Mid by   the demonstrators
           'The wall fell apart by the demonstrators.'
      b. ha-gader hitparqa me-acma
         the wall dismantle-Intns-Mid from itself
         'The wall fell apart by itself.'

[A&D 2012; p.11 ex. (17)]

Crucially, however there are verbs in the intensive template which lack a passive form and for those verbs the intensive middle template can be used as passive:

(141) a. *qibel* receive-Intns.Act   →   *hitqabel al-yedey*... receive-Intns.Mid by...
      b. *biqeš* request-Intns.Act   →   *hitbaqeš al-yedey*... ask-Intns.Mid by...
      c. *biser* announce-Intns.Act   →   *hitbaser al-yedey…* announce-Intns.Mid by...
      d. *gila* discover-Intns.Act   →   *hitgala al-yedey*...discover-Intns.Mid by...

[A&D 2012; p.12 ex. (18)]

Two questions arise. The first one is why the intensive middle cannot be interpreted as a Passive when there is a corresponding Passive form. A possible way to approach this question is the Elsewhere Principle, according to which the more specific morphological marker blocks the more general one (Anderson 1968, Kiparsky 1973). This principle doesn't seem to apply in all languages (for example in Swedish an analytic Passive co-exists with the synthetic s-passive, that is the one doesn't block the other), but at least it provides an explanation for the asymmetry between intensive verbs that have a specific passive template vs. those that don't have one.

The second and more important question is why the Passive in (139), although looks synthetic, cannot have any other interpretation except for the prototypical passive. However, we will see that it is possible to analyze the Hebrew Passive not as synthetic but as analytic, involving a covert copula and a participial form.

First of all, the verbal passive in Present Tense is homonymous with the adjectival passive. The example below is from Doron (2013), and it shows that verbal passives in Present Tense and Adjectival Passives are real homonyms. Notice that the copula is phonologically null in the Present Tense in Hebrew:

(142) a. ha-mismak   mešuxzar
         the-document reconstructed (A)/reconstruct-INTNS-PASS-PART (V)
         'The document is reconstructed (A)/ is being reconstructed.

      b. ha-kise   muzaz
         the-chair moved (A) / move-CAUS-PASS-PART (V)
         'The chair is moved (A) / is being moved.'   [Doron 2013; p.4, ex. (6)]

Crucially, the Middle is unambiguously verbal as the following example shows:

(143) a. ha-šá'ar sagur /   nisgar
          the-gate closed (A) / close-SIMPL-MID-PART (V)
          'The gate is closed/ is closing.'
      b. ha-xalon   šabur /   nišbar
          the-window broken (A) / break-SIMPL-MID-PART (V)
          'The window is broken/ is breaking.'   [Doron 2013; p.4, ex. (7)]

Notice that the active forms in the present tense are also homonymous with the active participle. The following example from Shlonsky (1997) shows that the same form '*kotev*' is used in (144a) where there is an auxiliary "be" to express Past Tense and in (144b) where there is no auxiliary:

(144) a. Dani haya   kotev   sipurim.
          Dani be-Past.3ms write-(BENONI)-ms   stories
          'Dani was writing / used to write stories.'
      b. Dani   kotev   sipurim.
          Dani   write-(BENONI)-ms   stories
          'Dani writes / is writing stories.'

[Shlonsky 1997; p.25, ex.(2-1)]

These forms, which can instantiate both a participle and a present tense form, are called "***Benoni***" forms. Shlonsky (1997) provides an account for these forms as always being participial with a covert auxiliary. Namely, he shows that the Present Tense Benoni Verb is really a participle without Tense specification and that there is a covert auxiliary which carries Present Tense. The idea that there is a covert auxiliary "be" in Present Tense is motivated by the fact that the present tense copula "be" is always null in Hebrew as shown in (145c):

(145) a. hu haya šamen.
          he was fat
      b. hu y-hye   šamen.
          he   will be fat
      c. hu šamen.
          he fat   [Shlonsky 1997; 39, ex. (2-47)]

Shlonsky (1997) presents a series of arguments that sentences like in (139) and (134b) involve a covert auxiliary "be". Under this hypothesis, the fact that the Hebrew Passive cannot have additional readings is not a counterexample to the generalization in (112) but rather it seems to provide further evidence for it.

Of course, some additional assumptions are necessary in order to accommodate Shlonsky's proposal for the "*benoni*" forms within the framework posited in this paper. Shlonsky concentrates on the Active "*benoni*" forms and proposes that the covert auxiliary like the overt one in Past & Future tenses originates under Tense. Although, he implies that a similar analysis could be proposed for the Passive Present Tense, he doesn't specifically discuss the structure of Passives. As becomes clear from the analysis of the analytic English Passive above, the additional readings are blocked only if the verb cannot raise to the Passive Voice head. This means that we should postulate an analysis for Hebrew

similar to the analysis of English passives, where the auxiliary "be" originates under the passive head to realize a Tense or Aspect feature and then it can move higher to C through T, etc. A more in depth analysis of the Tense and Aspectual layers in Hebrew is necessary to before we are able to reach a safe conclusion whether the right analysis for the Hebrew Passive is as in (146) below based on Bjorkman's analysis of auxiliary system.

(146) a. ha-ʕugot   hay-u mugašot   ʕal yedei robotim
          the-cakes   were serve(*PASSIVE BENONI*)-FPL   by   robots
          'The cakes were served / used to be served by robots.'
      b. ha-ʕugot   mugašot   ʕal yedei robotim
          the-cakes   serve(*PASSIVE BENONI*)-FPL   by   robots
          'The cakes are served by robots.'

Let me finish this section by drawing attention to two puzzling facts concerning Hebrew Passives. First, Shlonsky discusses that the "*benoni*" form can under certain conditions move as high as T (see Chapter 3, pp.43-57). If head-movement is crucial for phase extension, as proposed in section *5.1.* of this paper following den Dikken, then whenever the "benoni" moves it should be possible to have the additional readings except the prototypical Passive. Obviously, this is not the case. The Passive template always has the prototypical passive interpretation.

Secondly, the Simple Past & Future tenses are unambiguously verbal passives. For example, the verbal form in (139) is not ambiguous between a verbal and adjectival passive. It is unambiguously a verbal Passive. Similarly, the sentences in (147) are unambiguously verbal Passives:

(147) a. ha-yalda sorka   ('al-yedey 'ima shel-a)
          the-girl   combed-pass (by mother of-her)
          'the girl was combed by her mother.'
      b. ha-yalda tesorak ('al-yedey 'ima shel-_)
          the-girl will-comb-pass. (by mother ol-her)
          'the girl will be combed by her mother'   [Borer & Wexler (1987); 136, ex.9]

The fact that Tense marking is realized on the verb doesn't allow us to hypothesize that there is a covert auxiliary, similarly to what happens in the Present Tense. How can we explain, why additional readings are not possible in a synthetic passive involving head movement? The question cannot be answered here, as it requires sufficient understanding of the temporal and aspectual system in Modern Hebrew, which I don't have. However, I would like to point to a possible way to explain this behavior under the system I argued for.

It is possible that the crucial factor in this case is whether there is a specific passive morpheme under the Passive head that will **require** *v*-to-*Pass* movement for word formation. If there is no such morpheme, then there will only be a downward agree relation from the Passive head to the verb. **As long as, the Passive head is merged and the verb doesn't move to it, its complement is sent to spell-out** and thus it is not available anymore for further computations. **However, *v* is still available for further movement if there is need to**. For example, if an aspectual head merges with a designated

aspectual morpheme that needs to form a word with the verb. The details and the validity of such a hypothesis are yet to be explored.

What I hope to have shown in this part is that the Hebrew Passive is not necessarily a counterexample to the generalization in (112) and that, it at least in the Present Tense can be viewed as providing further evidence for the synthetic vs. analytic distinction. More research is necessary in order to understand if Hebrew can be accommodated under the present analysis and how the behavior of Simple Past & Future Tenses can be explained.

6. Concluding remarks & open questions

The initial goal of this study was to put forth the analysis for the Middle Voice in Greek in all the environments that it occurs as a functional head that existentially binds the external argument. I argued that this analysis can uniformly account for the interpretation and the properties of Middle marked verbs as Passives, Reflexives or Reciprocals and Anticausatives. The reflexive and reciprocal interpretation was derived as an effect of a reflexivizing and reciprocalizing feature that can be covert in naturally reflexive & reciprocal verbs or overt (*afto-* & *alilo-*) in non-naturally reflexive verbs. Middle-marked anticausatives were analyzed as always involving a cause head that prevents the external argument from being interpreted as the intitiator of the main event. I argued furthermore that middle-marked anticausatives differ minimally from unmarked anticausatives because of the ability of the little-*v* head that selects a causeP to introduce an argument that is identified as the causing event itself. Furthermore, I discussed middle-marked verbs that are three-way ambiguous between a passive, reflexive/reciprocal and anticausative reading or two way ambiguous either between a passive and a reflexive/reciprocal reading or between a passive and an anticausative reading. It was demonstrated that a set of the, so-called, deponent verbs can be analyzed as either inherently reflexive or reciprocal or, in some cases, as verbs that always involve a cause head and for some reason have lost their transitive counterpart (inherently anticausatives).

The availability of all these readings for the Greek Middle is in sharp contrast with the English Passive, which can only have the prototypical passive reading. The second goal of this paper was to show that this contrast can be explained without postulating a different function for the English Passive (or the Greek Middle) head (cf. Alexiadou & Doron 2012, Alexiadou 2013) or resorting to a lexicon – syntax distinction (cf. Horvath & Siloni, 2008). Namely, it was pointed out that the Greek – English contrast holds for a much larger set of languages that have synthetic Passive vs. languages that have an analytic passive. This observation led to the proposal that the different morphology reflects a difference in syntactic structure. Based on Bjorkman's analysis of English Passives, it was proposed that the basic difference between an analytic and a synthetic passive is that in the former, the verb doesn't raise to the Passive voice head whereas in the latter it does.

Based on den Dikken's approach of phase extension by head-movement, it was argued that this parameterization with respect to verb-movement is the main reason for the unavailability of additional

readings in analytic passives and their generation in synthetic passives. More specifically, it was proposed that, the VP belongs to a different spell-out domain from the little-*v* which introduces the external argument in the English Passive, and so any identification of the external argument with the internal argument (in naturally reflexive/reciprocal verbs) or with the causing event (in anticausatives) is impossible. On the contrary, in the Greek Middle, the verb raises to the Middle Voice head, the phase is extended and thus the VP and the little-*v* head will always be spelled out together, allowing for the identification of the external argument with the internal argument or the causing event.

The data so far suggest that this is a general difference between the analytic vs. the synthetic passives, but it remains as a question whether all synthetic passives can have an additional reading or not. In principle, it is possible to find a language that will have a synthetic passive, meaning that the verb raises to the Passive head, and yet will have no other readings except for the prototypical passive (for example, if there are designated morphemes for reflexives, anticausatives, they will possibly block the generation of those readings in the environment of the Passive). The opposite however, i.e. finding a language where the verb doesn't raise to the Passive head and can have additional readings, should be impossible to find based on this analysis.

I would like to finish this paper by tackling a theoretical debate concerning the question of whether the lexicon is active, and certain operations can take place within it vs. the strong syntactic approach according to which all the operations take place in syntax. Under the analysis proposed here, all operations occur in syntax both English and Greek. However, there is a sense in which the lexicalist approach is correct in positing a lexicon vs. syntax distinction. By moving the verb to the Passive head in synthetic languages we extend the phase thereby creating a larger domain where meaning is generated: this extension results in ambiguities since more components are allowed to interact with one other. Perhaps, what is called "lexicon" then can be accommodated in a syntactic approach as the first phase syntax (adopting Ramchand's terminology). This idea is strongly reminiscent of Marantz's (2007) paper on "*phases and words*" (and see also Marantz (2013)) which suggests that a root which merges with a functional morpheme can generate various meanings because it constitutes a phase, but if a functional head merges with a constituent that is already a phase (a non-root according to Marantz), then it cannot interact with it to derive additional readings. Of course, in the case of the Greek Middle, the Middle voice doesn't combine with a root (there is an overt verbalizer and the internal argument has already been introduced), but we could probably argue for different phase layers where different types of ambiguities emerge (i.e. lexical ambiguities, "functional" ambiguities, scope ambiguities and so forth).

Certainly, there is much more to be said about argument structure alternations and verb meanings. In this paper, I chose to focus on the function of the Middle/Passive Voice setting aside many important issues that relate to this topic. For example, the status of adjectival passives and whether they have a voice head or not was barely touched upon here, but it is highly relevant for the analysis here since, as has been noticed in many places (see Anagnostopoulou 2014 drawing on Kratzer's 1994, 1996 seminal work), adjectival passives can get additional readings even in English. Another issue that deserves attention is the behavior of lexical causatives across languages. If the analysis proposed here is

correct, then we might expect to find ambiguities in causatives that involve obligatory movement of the verb to the causative head vs. no ambiguities in analytic causatives. Finally, it would be interesting to see whether there is any interaction between aspect and Voice, and in which way. Is it possible that head-movement from Passive to Aspect could create a larger domain where further computations would be possible?

Crosslinguistically, the existence of a set of languages which in parallel with an analytic passive employ a clitic strategy to convey anticausatives and reflexives, and, moreover, the fact that in some languages (i.e. Russian, Swedish) this clitic has diachronically turned into a suffix on the verb which can partly convey a passive reading as well, raises many further questions about whether this should be seen as a "synthetic" construction akin to the Greek Middle and an interesting diachronic question for these languages, concerning the function of this clitic and its diachronic evolution possibly to a functional head (for a discussion for Icelandic see Wood 2012 and for Swedish Lundquist (2013)). From the acquisition point of view, it would be interesting to examine in languages like Greek if there is a difference in the acquisition of Middle depending on the environment it appears (see Tsimpli 2005, Fotiadou & Tsimpli 2010, Zombolou & Alexiadou 2012). For example, a simple hypothesis would be that the passive reading is acquired first because it is the default case. However, it is possible that children will form a passive structure only when there is an independent factor that foregrounds the passive formation (and this would be, for example, a reflexive or reciprocal feature).

What is important for future research on passivization and on argument structure alternations is to have a crystal analysis of verb structure and an understanding of the differences and the similarities between i) **structures within a language that employ the same morphology** (i.e. Middle Voice in Greek used for passives, reflexives and anticausatives, clitic *se* in Romance used in Reflexives, anticausatives and Generic Middles) and ii) **structures that cross-linguistically convey similar interpretations using different mechanisms** (i.e. Synthetic Passive in Greek vs. clitic *se* in Romance for anticausatives/reflexives, Synthetic Passive in Greek vs. Analytic Passive in English & French for proptotypical passives). This line of research (see Chierchia 1989/2004, Levin and Rappaport-Hovav 1995/2011, Reinhart 2002, Reinhart & Siloni 2005, Embick 1998/2004, Alexiadou & Anagnostopoulou 2004, AA&S 2006, Schäfer 2008, Horvath & Siloni 2008, A&D 2012, Wood 2012 a.o.) independently of the theoretical framework that it has been developed, has been proven very helpful into our understanding of how verb structure is built and interpreted. The next step could be to investigate if there is any key-factor that determines the mechanism (synthetic vs. analytic passive, synthetic passive vs. bound variables) used in every language or if we can find any correlation between the mechanism used in a language α and an independent phenomenon that characterizes language α (as opposed to language β), but there is probably much to be done before we are able to address this question.

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