

Selecting roots: the view from compounding*

Dimitris Michelioudakis (University of York)
Nikos Angelopoulos (UCLA)

Abstract

We investigate how saturation of different theta-roles by the non-head constituent correlates with derivational suffixes and, in turn, with the event structures compatible with those suffixes. We also investigate XP realisations of themes, causers and instruments in deverbal nominal and participial constructions and which \pm agentive and/or \pm process/episodic sub-readings allow which type of argument. It turns out that for each theta-role, the contexts that allow an XP realisation are exactly the complement of the contexts that would allow compounding of that same theta-role. We take this complementarity to be an indirect argument in favour of (i) divorcing argument licensing from argument selection and (ii) dissociating argument introduction from event-structure-related heads, which then potentially reaffirms the role of roots in (first phase) syntax.

1. Introduction

The question about the place of roots in syntax can be broken down into a number of related but not totally equivalent questions: do roots select complements/arguments and, therefore, project? do they license any arguments? do they release/determine any theta-roles, even partially? do they have any semantic content? If the answer to all of these questions turns out to be negative, or at least to the first three of them, then it is reasonable to conclude that roots are not “necessary syntactic constituents” (Borer 2014:344). Indeed, the exoskeletal/constructivist approach to argument structure associates different types of argument (and in fact most, if not all, types of argument) with different event-structure related heads (see Marantz 2013, Borer 2005, 2013, Wood & Marantz 2015). In such an approach, roots are not needed for the introduction of any arguments, and therefore need not project. Then their role can actually be quite peripheral, i.e. they can be just adjuncts and/or elements that are inserted quite late, at the end of the derivation.

An obvious challenge to this view comes from synthetic compounds, which can lack event-structure-related meanings typically associated with certain theta-roles and yet contain non-head constituents that appear to saturate such theta-roles. A solution proposed by Borer (2012) is to treat synthetic compounding like any other type of compounding, with no syntactic parallelism to any (apparently) corresponding non-compound, clausal or nominal, constructions. The thematic interpretation of non-heads in synthetic compounds is nothing but an implicature, rather than actually determined by the (syntactic) structure.

In this paper, we propose that the availability of compounding for certain thematic interpretations is determined by structural factors and not merely by the pragmatic plausibility of a given interpretation. Specifically, we investigate all the nominalising contexts in which non-theme arguments can be licensed, mainly causers, agent-phrases and instruments. It turns out that for each theta-role, the contexts that allow an XP realisation are exactly the complement of the contexts that would allow compounding of that same theta-role.

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Our proposal is that event-related functional structure is indeed crucial for argument XPs, in that it mediates/facilitates their formal licensing, but not for their selection or interpretation. Their formal licenser, typically a P, can only be merged as long as the respective verbal projection is present. It is clear that one selects the other, but in order to capture the complementarity observed, it is reasonable to assume that different Ps select different chunks of event/verbal structure, rather than the other way around. The apparent complement of the P is in fact attracted from within the verbal constituent, in the spirit of Kayne (2005). If P cannot be merged and Case on the nominal constituent cannot be licensed, compounding takes place as a last resort operation/repair strategy. In the case of theme arguments, this complementarity is partly obscured by the range of interpretations that adnominal genitive XPs can receive and the different licensing mechanisms of each. Once we control for this factor, taking into account only genitives licensed at a structural height comparable to that of non-locative Ps, an identical pattern reveals itself.

If the above line of thought is on the right track, then it is clear that no Voice/Aspect heads or heads corresponding to meanings such as *cause*, *become*, *do* etc. are indispensable for the selection, but also the thematic interpretation, of any arguments. In what follows, we start from non-theme argument roles and present all the configurations which lead to an XP realisation and the ones which force compounding. We discuss each argument role in turn, along with the corresponding nominalising contexts. We then extend the parallelism to themes and explain why the complementarity between XP-realisation and compounding is only suspended with genitives and (contentful/locative) Ps that are introduced after the highest nominalising head. Having established the importance of event-related structure for the licensing of arguments, but not their thematic interpretation, we focus on the question whether there is any other bit of functional structure which is indispensable for argument selection. We discuss the apparent pervasive need for verbalising morphology in the compounds in question, as suggested by the Greek data, as well as counterexamples. In the light of those observations we discuss argument selection and (partial or complete) theta-assignment as potentially distinct processes (both of which need to be kept distinct from argument licensing) and the implications for the role of roots in each process.

2. XP realisation vs. compounding

Our starting point is the following observation regarding synthetic compounds: there are certain theta-roles which are independently known to be compatible with certain predicates (e.g. *cure/treat*, which is the meaning of the root in (1), is compatible with instrument modifiers¹) but, when such theta-roles are saturated by the non-head constituent of a

¹ An anonymous reviewer asks if compounds with pure instruments really exist or whether the non-heads of such compounds are just instances of instrument-causers, in the sense of Kamp & Roßdeutscher (1994). It must be noted that the instruments discussed here are indeed instances of pure instruments rather than instrument-causers. The latter are instruments which can be conceived as acting on their own, once the agent has applied or introduced them" (Kamp and Roßdeutscher 1994:144). As such they can occur in subject position, replacing a causer argument. Crucially, *aktines* is not an instrument of this type, as it only shows up in agentive constructions and cannot become a subject.

(i) *I aktines therapefsan ton karkino/Jani
the X-rays cured the cancer/John.

Other examples of pure instrument non-heads can be found in compounds such as *anemo-jeni-tria* (wind-generator 'machine that generates electricity from wind'), *petro-chtis-t-os* (stone-built 'built with stones') etc.

compound, the corresponding non-compound does not allow an XP realization of that theta-role, as shown in the minimal pair (1b-c).

- (1) a. O proimos karkinos therapevete me aktines.
 The early cancer is-treated with rays
 ‘Early cancer is treated with rays.’
 b. aktino- therap- ef- tis
 √ray √treat vbz n.masc.sg
 ‘X-ray therapist’
 c. *therapeftis me aktines
 (adapted from Angelopoulos 2012)

We present four major types of argument, instruments, causers, agents and themes, in each of the following sub-sections and we correlate the realisation of each with different nominalising and (adjectival) participle affixes or, more precisely, the different event-structure interpretations correlating with each affix. The emerging generalisation is the one in (2).

(2) **The synthetic compounding generalisation:**

A theta-role can be saturated by the non-head constituent of a compound if and only if the formal licenser (P or another Case-related projection) of the corresponding XP cannot be merged below the highest non-verbal categoriser and the thematic interpretation is somehow independently available.

2.1. Instruments

Starting from the contrast in (1), we need to specify the licensing conditions of *me* ‘with’. Another relevant paradigm is the following:

- (3) I eksetasi tu asthenus me aktines (process nominal)
 the examination the.GEN patient.GEN with rays
 ‘the examination of the patient with X-rays’
 (4) O asthenis parelave [tin eksetasi (*me aktines)] (result nominal)
 The patient received the examination with rays
 ‘the patient received the examination with X-rays’

Given (1) and (3-4) the crucial factor seems to be the availability of an event entailment. Process nominals contain all the v-structure needed for an eventive interpretation, while result nominals arguably lack it, following Grimshaw’s (1990) distinction. This is independently supported by the compatibility of the former but not the latter with aspectual modification, e.g. *epi/kathe tris mines* ‘for/every three months’. A question that arises then is how much v-structure and which layer of structure exactly gives rise to the relevant interpretation. While vP is the minimal piece of structure needed to differentiate result nominals from eventive ones (see Alexiadou 2001 for a detailed discussion), (3) must also include (agentive) Voice, given its compatibility with agent-oriented modification, e.g. purpose/rationale expression such as *me skopo tin therapia tu* ‘with the aim/purpose of curing him’. In fact, as an anonymous reviewer also points out to us, Bruening (2013) makes a detailed argument as to why instrument modification is related to Voice. Therefore, we can safely conclude that both vP and VoiceP are necessary for instrument PP modification. What has not been established is whether their presence is also sufficient.

Going back to the contrast in (1b-c), animate *-er* nominals clearly have an agentive reading; in fact, the nominal itself denotes the agent. In other words, the R-argument (in the sense of Williams 1981²) binds the agent theta-role, therefore it is reasonable to assume that a Voice projection is always present, as Baker & Vinokurova (2009) and Alexiadou & Schäfer (2010) also argue. Assuming that the presense of a VoiceP layer always entails that a vP layer is also present, vP cannot be the projection determining the licensing of *me*. Another relevant distinction is the one that Alexiadou & Schäfer (2010) draw between episodic and dispositional *-er* nominals, of which only the former entail that a related event must have taken place. Crucially, predicates that allow instrument XPs in nominalising contexts such as (1a) form *-er* nominals in Greek which can only be interpreted as dispositional. As such, they typically name a profession or a device. In the former case, they denote a person who has been trained to do what the root means, e.g. to be a therapist etc., but has not necessarily put that expertise to use yet. Then, following Alexiadou & Schäfer (2010), what is crucial is the aspectual layer which selects VoiceP, with “episodic” and “dispositional” being the two possible types. It is only the former type of AspP that correlates with *me*. Asp_{Episodic} is available in process nominals that allow an episodic interpretation, as in (3), and in certain types of *-er* nominals in English (see below) but not in Greek agent nominals. This explains the incompatibility of the latter with instrument PPs superficially headed by *me*.

The necessity of an episodic reading is also evident in the following paradigm, which is otherwise an apparent exception to our generalisation about the complementary distribution of compounding and XP realisation. Again, argument-supporting process nominals must be assumed to have an Asp_{EPISOD}P layer that result and simple event nominals lack (cf. again Grimshaw’s 1990 distinction). Such nominals are formed with the suffixes *-ia*, *-si* and *-ma/simo* in Greek. All of them equally resist aspectual modification in the case of instrument compounding.

- (5) a. aktino- therap- ia
vray vtreat nmz
‘X-ray therapy’
b. radio- anixn- ef- si
vradio vprobe vbz nmz
‘remote sensing with radiometers’
- (6) a. *aktino- therap- ia tu karkinu se tris mines
vray vtreat nmz the cancer.GEN in three months
‘X-ray therapy of cancer in three months’
b. *radio - anixn- ef- si tu metalu se pende lepta
vradio vprobe- vbz nmz the metal.GEN in five minutes
‘remote sensing of the metal with a radiometer in five minutes’
- (7) a. therap- ia tu karkinu me aktines se tris mines
vtreat nmz the cancer.GEN with rays in three months
‘the cure of cancer with X-rays in three months’
b. anixn- ef- si tu metalu me radio/radiometro se pende lepta
vprobe vbz nmz the metal.GEN with radio(meter) in five minutes
‘remote sensing of the metal with a radiometer in five minutes’

² According to Williams (1981), nouns have an external non-thematic argument (R-argument, where R stands for ‘referential’) which expresses the variable contributed by the noun and is saturated either by whatever the noun is predicated of or a determiner.

As already said, the complementarity of the two realisations is best captured if we assume that it is P that selects a corresponding event-structure-related projection rather than the opposite. It is not clear how the opposite would account for the fact that the instrument theta-role is available to be saturated regardless of event structure and that the non-PP realisation is available just in case the necessary v-projection is not there for the merger of PP. So, *me* ‘with’ in particular selects $\text{Asp}_{\text{EPISOD}}\text{P}^3$ and attracts instruments from within. The mechanism must be akin to Kayne’s (2005) proposal about *à* in French and non-contentful prepositions more generally. *Me*, just like *à*, is merged with AspP (8a), attracts the closest nominal to its Spec (8b)⁴. The output of these steps is illustrated in Figure 1. The preposition *me* itself is dominated by a functional, Agr/Case-related layer (or, perhaps equivalently, a pP) and has to raise to the immediately higher head (8c). This is all followed by remnant movement of AspP to the Spec of that high head (8d) and the constituent formed can be merged with *n* (8e), to form nominals as in (7), see also Figure 2, or with inflectional heads to form inflected verbs/clausal constituents as in (1a).

- (8) a. [*me* [$\text{Asp}_{\text{EPISOD}}\text{P}$ [$\text{Asp}_{\text{EPISOD}}$ [VoiceP [Voice [vP ... *aktines* ...]]]]]]
 b. [*aktines* [*me* [$\text{Asp}_{\text{EPISOD}}\text{P}$ [$\text{Asp}_{\text{EPISOD}}$ [VoiceP [Voice [vP ... *aktines* ...]]]]]]]]
 c. [*me-p* [*aktines* [*me* [$\text{Asp}_{\text{EPISOD}}\text{P}$ [$\text{Asp}_{\text{EPISOD}}$ [VoiceP [Voice [vP ... *aktines* ...]]]]]]]]
 d. [$\text{Asp}_{\text{EPISOD}}\text{P}$ [*me-p* [*aktines* [*me* [$\text{Asp}_{\text{EPISOD}}\text{P}$]]]]]
 e. [*n/T* [$\text{Asp}_{\text{EPISOD}}\text{P}$ [*me-p* [*aktines* [*me* [$\text{Asp}_{\text{EPISOD}}\text{P}$]]]]]]]

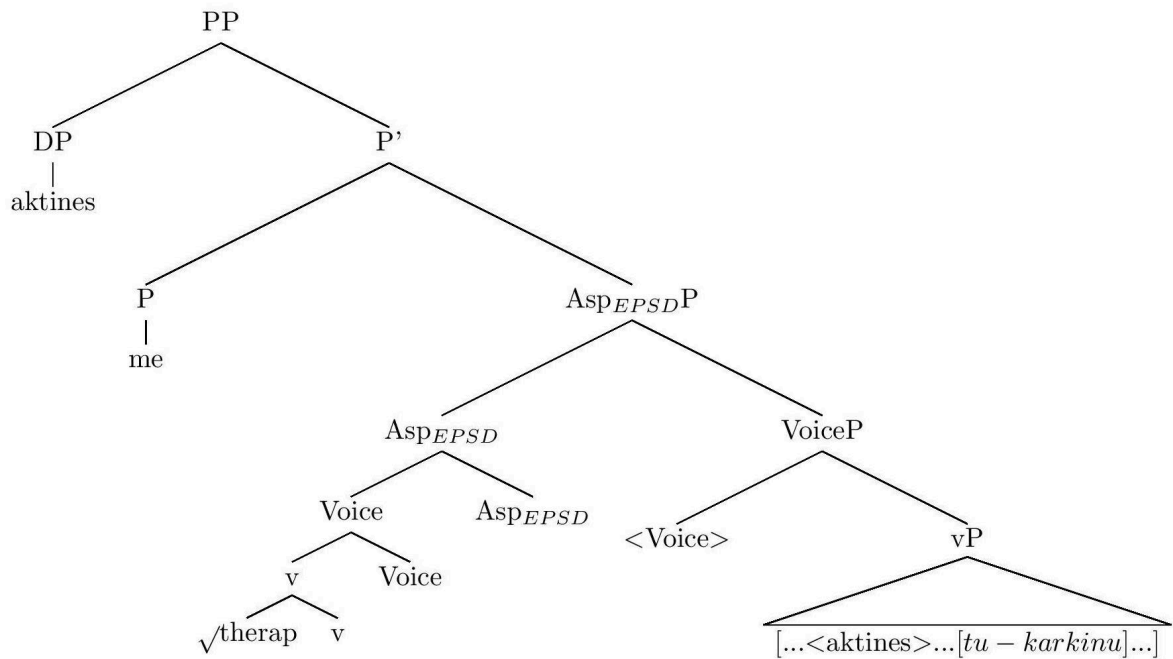


Figure 1

³ Apart from such a selectional feature, to the extent that the episodic/dispositional distinction is also relevant for non-agentive event nominals, i.e. to the extent that this type of AspP can be projected without a VoiceP complement, one can assume that *me* also has an uninterpretable feature that needs to be matched by Voice via Agree (which we can provisionally call [uVoice]).

⁴ An anonymous reviewer asks how *aktines* moves above the genitive argument, which has to be present in argument supporting nominals like the one derived here. If, as suggested below, *aktines* is a vP adjunct, then the internal argument DP too would have to be introduced within vP, making sure that *aktines* is the highest nominal. If instead such non-core arguments are vP-adjuncts, then we can either maintain the idea that internal arguments are introduced by v or still assume that they are externally merged vP-internally.

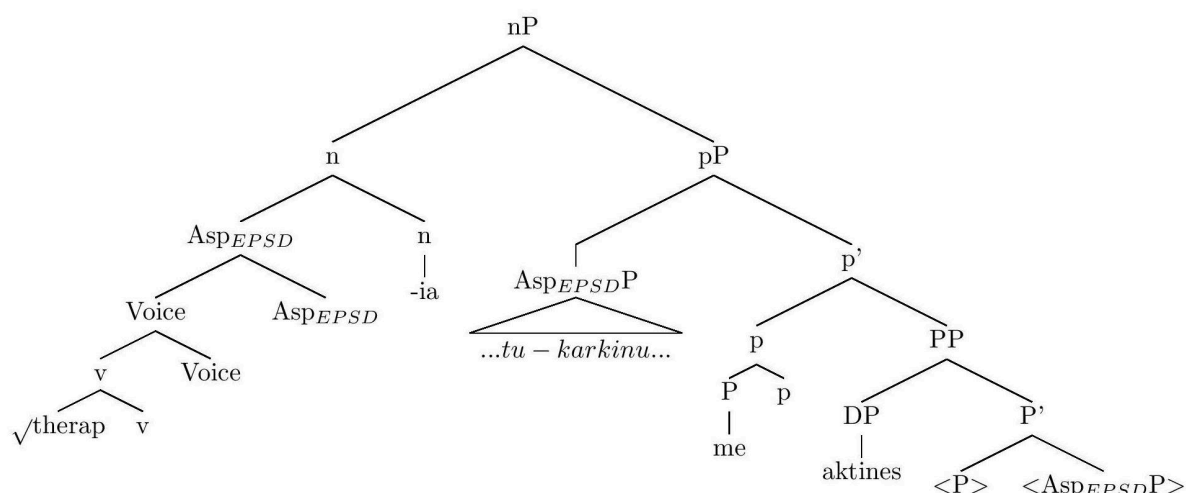


Figure 2

This derives the correct word order and predicts that *me* and what surfaces on its right do not actually form a constituent. Rather, *me* serves as a Case assigner which is itself external to the constituent containing its assignee⁵, much like in ECM configurations. Another case in which *me* seems to play the same role and to be equally non-contentful is absolute constructions in which *me* is merged with small clauses⁶:

- (9) Me [ti Maria arosti], den borusame na pame puthena.
 With the Mary ill not could.1PL Subj. go.1PL anywhere
 ‘With Mary ill, we could not go anywhere.’

If *me* cannot be merged, due to the absence of $\text{Asp}_{\text{EPISOD}}P$, the instrument cannot be assigned Case and some other means of licensing, akin to incorporation, must be employed. The actual mechanics of compounding is orthogonal to the discussion, e.g. whether the instrument-root sequence within the compound is the result of some process (for instance incorporation or m-merger) that forms a new head, which then undergoes head-movement up to *n* (see Figure 3, cf. Harley 2009, Michelioudakis & Angelopoulos 2013a, Alexiadou 2017), or whether it is the result of their spellout in their original positions, within a constituent that undergoes roll-up movement up to *nP* (see Figure 4, cf. Ntelitheos 2012, Koopman 2017). However, if the above line of reasoning is on the right track, it is clear that compounding is triggered/determined in narrow syntax and (at least part of) word formation has to take place in syntax.

⁵ In both Figure 1 and Figure 2 the instrument nominal is conventionally represented as DP. However, bare nominals of this sort may not necessarily be DPs, as Alexopoulou, Folli & Tsoulas (2013) also suggest, and may in fact be just nPs. Thus, there would be no asymmetry between the derivation here and the derivation of compounds (on which, see below and end of section §2.3) up to the point such constituents are merged. In either case, in order for the derivation to converge, the nominal constituent’s licensing needs must be satisfied, either through Case (assuming that all [+N] elements require Case, not just DPs) or via incorporation.

⁶ Thanks to Jason Merchant for pointing this out to us.

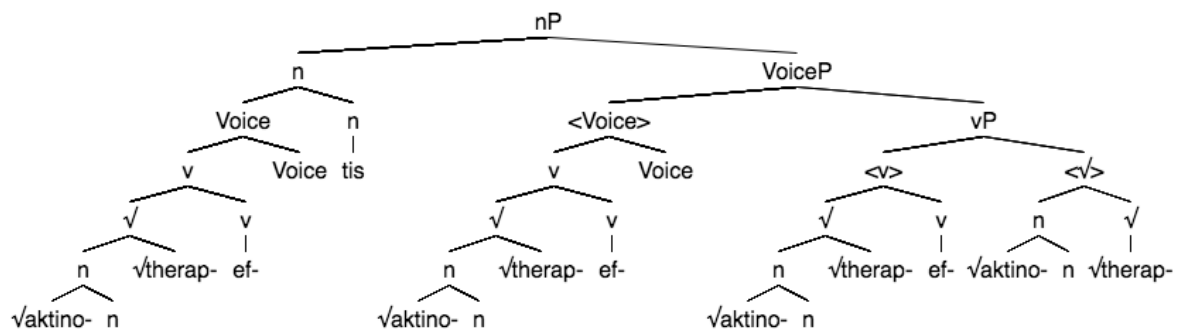


Figure 3

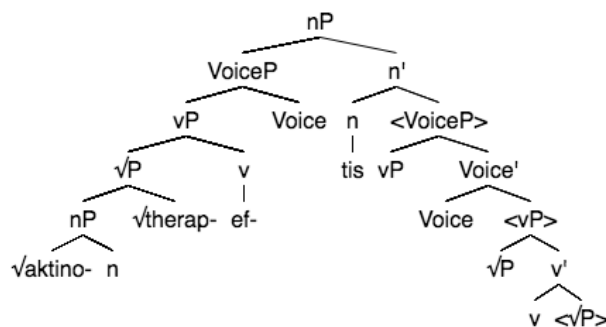


Figure 4

Furthermore, as an anonymous reviewer correctly points out, the contrasts in (5-7) are reminiscent of a First Sister Principle effect (Roeper & Siegel 1978). Indeed, our generalisation and the derivations proposed predict that compounding of non-core arguments is only possible in those constructions where (more direct) internal arguments cannot be licensed, thus also deriving many of the restrictions predicted by the First Sister Principle.

2.2. Causers and agents

Causers constitute another common type of non-theme argument that can appear as the non-head constituent of synthetic compounds. When realised as PPs, causers are expected to be possible in the absence of agentive readings, i.e. in the absence of VoiceP (cf. Alexiadou, Anagnostopoulou & Schäfer 2015, according to whom agents are related to Voice, and causers to vP). Thus, PP causers are expected to be possible with anticausative predicates of various types and the respective nominalisations, but not with causatives (either active or passivised) or other agentive predicates. Following Alexiadou, Anagnostopoulou & Schäfer (2015), among others, the latter constructions involve a VoiceP layer, with Voice being understood as the head introducing volitional external arguments. If VoiceP excludes causer PPs, then causer compounding is expected to be possible exactly when VoiceP is part of the structure, according to our generalisation in (2).

The prediction cannot easily be tested with most nominalising affixes, as they can combine with verbal constituents of different sizes to form argument supporting nominals, which either include Voice, thus blocking causer PPs, or do not, thus allowing them. Thus, predicates that can display causative alternations do not lend themselves as diagnostics of complementarity. Additionally, predicates which are indeed incompatible with Voice are also predicates that denote meanings, e.g. internally-caused change of state, which are typically incompatible with causer modification altogether.

Adjectival participles offer a better testing ground in this respect. A crucial distinction is the one drawn by Kratzer (2000) between participles denoting potentially reversible states and irreversible state, which Parsons (1992) calls *target* and *resultant* states respectively. Anagnostopoulou (2003) and Anagnostopoulou & Samioti (2013) show that Greek participles formed with the suffix *–men(os)* can be either target state participles or resultant state participles and that the two types differ both semantically and syntactically. Target state participles, i.e. participles denoting potentially reversible states, are not compatible with agent-oriented modification, such as agent and instrument PPs or agentive adverbials (10). Anagnostopoulou & Samioti take this to be evidence for the absence for a Voice layer in their structure. On the contrary, result state participles are compatible with the aforementioned diagnostics of agentivity, on the basis of which it is concluded that such participles do contain Voice.

- (10) a. Ta pedja ine (akoma) krimena {*me prosoxi/*me pani/*apo esena.
The kids are still hidden with care/with a cloth/by you.
b. O tixos ine (*akoma) xtismenos {me prosoxi/me mistri/apo ergates.
The wall is still built with care with trowel by workers.
(adapted from Anagnostopoulou & Samioti 2013:225-226)

We then observe that, unsurprisingly, target state participles may be incompatible with agent PPs but are compatible with causer PPs, i.e. non-volitional initiators/elements naming the causing event. Resultant state participles do exactly the opposite (11). Our generalisation in (2) then predicts that only resultant state participles should be compatible with causer compounding, while target state ones should resist it. Indeed, the only attested examples of *–men(os)* participles with causer compounding all involve predicates that form resultant state participles (12), while all examples of target state participles known to us⁷ may form compounds of some other type but not compounds where the non-head is the causer (13).

- (11) a. To pani ine (akoma) fuskomeno apo ton anemo.
The sail is still pumped-up from the wind
b. To potami ine (akoma) fuskomeno apo ta nera tis vroxis.
The river is still swollen from the water the rain.GEN
'The river is still swollen due to the rain.'
c. Ta vuna ine (akoma) krimena apo tin omixli.
The mountains are still hidden from the fog/mist
'The mountains are still hidden due to the fog.'
- (12) *To parathiro ine prosektika anigmeno apo ton anemo.
The window is carefully opened from the wind
- (13) a. thalaso-dar-men-os *akoma darmenos
vsea-vbeat-PTCP-M.SG (sea-tossed) still beaten up
b. anemo-dar-men-os *akoma darmenos
vwind-vbeat-PTCP-M.SG (wind-battered) still beaten up
c. eroto-xtipi-men-os *akoma xtipimenos
vlove-vhit-PTCL-M.SG (lovestruck) still hit
d. *anemo-fusk-o-men-os akoma fuskomenos
vwind-vpump-vbz-PTCP-M.SG still pumped-up

⁷ All our compounds were taken from Anastasiadi-Symeonidi's (2002) *Reverse Dictionary of Modern Greek*.

In line with our treatment of instruments, it must be concluded that causer-taking Ps (*apo* in Greek) in fact select constituents, presumably vPs, that do not contain a VoiceP, and attract the causer argument in a manner exactly analogous to the one described above (14). When VoiceP is present, as in resultant state participles (15), if any causer arguments are present in the numeration/derivation, they are forced to appear as the non-head constituent of a compound. This also explains the (limited) availability of causer compounding with nominalising suffixes that can optionally combine with VoiceP (e.g. *-si*, *-ia* and *-ma* in Greek, cf. *thermopliksia* ‘heatstroke’).

- (14) a. [*apo* [_{VP} ... *causer* Root-v ...]]
 b. [*causer* [*apo* [_{VP} ... ~~*causer*~~ Root-v ...]]]
 c. [*apo-p* [*causer* [~~*apo*~~ [_{VP} ... ~~*causer*~~ Root-v ...]]]]]
 d. [_{VP} ~~*causer*~~ Root-v] [*apo-p* [*causer* [_{VP}]]]]
 e. [_{AspP} *-men(os)* [_{VP} ~~*causer*~~ Root-v] [*apo-p* [*causer* [_{VP}]]]]]
 f. [_{AspP} Root-v-*men(os)* [_{VP} ~~*causer*~~ Root-v] [*apo-p* [*causer* [_{VP}]]]]]
 (15) [_{AspP} *-men(os)* [_{VoiceP} Voice [_{VP} v Root]]] (cf. Anagnostopoulou 2003)

It is however worth noting that agent phrases too contain the preposition *apo* (at the surface level, at least). As implied above, in the discussion of resultant state participles, such *apo*-PPs correlate with the presence of VoiceP. One has to postulate that the two uses of *apo* are in fact instantiations of two different homophonous prepositions. This homonymy is historically explicable but not synchronically relevant⁸. Then, *apo_{agent}* selects VoiceP, as opposed to *apo_{cause}*. Therefore, when VoiceP is present, agent-compounding is not available, even though an agentive interpretation is otherwise available (16). On the other hand, in the absence of potential agentivity, neither realisation of agents (XP or compounding) is possible.

- (16) a. dosmenos apo to theo
 given by the God
 ‘given by God’
 b. *theo- dos- men- os
 vGod vgive Asp M.SG
 ‘God-given’⁹

With respect to this last observation, an interesting apparent exception comes from another type of adjectival participle in Greek, namely participles in *-t(os)*, which are typically purely stative, i.e. not resultative. Even though all *-men(os)* participles disallow agent compounding, there are quite a few such cases with *-t(os)* (17). This affix can be shown (cf. Anagnostopoulou & Samioti 2013, Michelioudakis & Angelopoulos 2013b) to combine with verbal constituents of various sizes. It is then possible that it also combines with a projection which contains an agent but not the projection that *apo_{agent}* selects. If this is on the right track, then even agents are not first-merged in VoiceP, but rather attracted there (from some other

⁸ Otherwise, in the spirit of much recent work by R. Kayne, it could be said that there is just one *apo*, which however combines with different silent elements in each case, one associated with agentivity and one with non-intentional/non-volitional causation. It is those elements that select a different verbal constituent each.

⁹ We suggest that the English *by* is not like Greek *apo-* ‘by’: *by* is indeed (in) Voice, triggering a smuggling derivation à la Collins (2005). Like in verbal passives, *by* is optional, allowing for implicit agents (which Greek arguably lacks in episodic passives). In adjectival passives, in the absence of a smuggling derivation, an overt agent may be merged but *by* is not, hence the agent may incorporate.

position introducing external arguments, e.g. some type of active v)¹⁰, which is in fact also assumed in analyses that propose an identical structural representation for agents in both active and passive constructions, e.g. Collins (2005).

- (17) a. angelo- stol- is- t- os
 √angel √decorate vbz PTCP M.SG
 ‘decorated by angel(s)’
 b. theos- do- t- os
 God √give PTCP M.Sg
 ‘God-given’
 c. drako-/theo- fylax- t- os
 √dragon/god guard PTCP M.Sg
 ‘guarded/protected by god(s)/dragon(s)’
 d. Are:i- fa- t- os (Ancient Greek)
 √Ares √kill PTCP M.Sg
 ‘killed by Ares/Mars’

2.3 Themes

Theme compounding presents us with more difficulties, as compounding and a genitive realisation of themes appear to alternate almost freely (18).

- (18) a. thirio- dhamas- tis
 √beast √tame -er.M.SG
 ‘beast tamer’
 b. dhamastis thirion
 tamer beasts.GEN

It can however be argued that such cases do not really constitute an exception to our generalisation in (2), especially the part specifying that competition arises below the highest non-verbal categoriser. Genitives can realise a range of thematic roles, including internal arguments and external arguments in deverbal (eventive/process) nominals, as well as a series of pragmatically recoverable relationships between the head noun and an individual, most typically possession/ownership, but also authorship and other contextually plausible interpretations (cf. Barker 2008). Among the many pragmatically derivable meanings, genitives can also take up interpretations that resemble roles which are assigned in the respective verbal realisations, even when the nominal is in fact a result nominal, i.e. non-eventive. E.g. in the phrase “Picasso’s painting (*of Guernica) on the wall”, *Picasso* has an interpretation akin to the interpretation it would receive in “Picasso painted Guernica”. However, it is clear that in result nominals, genitives are introduced higher than nP and are in fact compatible with any of the aforementioned pragmatically recoverable relationships (Picasso could also be the owner/seller etc. of the painting, as well as the person depicted).

¹⁰ Here, one could take advantage of the distinction between v_E (eventive) and v_C (categoriser) that Anagnostopoulou & Samioti make. Even though it is not clear that a categorising v is always present in $-t(os)$ compounds, such compounds, as opposed to their non-compound $-t(os)$ counterparts, always require that an event of the type denoted must have taken place at least once. The presence of such an event entailment may suggest that v_E is always present in $-t(os)$ compounds and it is v_E that introduces external arguments, which have to be realised as non-heads in the absence of Voice.

In English, Saxon ('s) genitives allow the full range of interpretations, just like inflected genitives in Greek, but interestingly *of*-genitives resist purely pragmatic interpretations, beyond those related to (alienable/inalienable) possession (Barker 2008). So, when denoting roles corresponding to internal and external arguments, they cannot be external to the nP, owing their theme- or agent- like interpretation to pragmatics, but have to originate within it, arguably within its verbal structure. Crucially, such genitives cannot appear with dispositional *-er* nominals, as Alexiadou & Schäfer (2010) observe. If realised as *of*-genitives, they necessarily give rise to an episodic interpretation. Nevertheless, those same (potential) themes can appear as the non-head constituent of the corresponding compounds, which receive a dispositional reading (19).

- (19) a. fire-fighter, life-saver
 (educated but not necessarily experienced)
 b. fighter of the fire, saver of lives
 (necessarily experienced in action)
 (from Alexiadou & Schäfer 2010:11)

On our account, this receives a straightforward explanation. The formal/Case licenser of the argument in this case, namely *of*, is merged below *n* (cf. Kayne 2000) and selects, among other things, a verbal constituent with event entailments or/and an episodic reading (possibly $\text{Asp}_{\text{EPISODP}}$, exactly like *with*). The argument in question is an argument introduced within this verbal constituent¹¹. However, *of* is unable to combine with dispositional Aspect. Thus, theme compounding is only made possible in *-er* nominals containing the latter type of AspP .

Here, a note is in order regarding the categorial status of the non-head constituent. It has been argued that such elements can only be roots (cf. Ralli 2013: 133-134, as well as Alexiadou 2017), mainly because of what Ralli calls the 'bare stem constraint', i.e. the claim that non-heads in synthetic compounds disallow both derivational and inflectional suffixes. The claim is wrong as far as derivational material is concerned, as e.g. *pexn-id-o-xalas-tis* 'toy-breaker', *math-i-t-o-prostatis* 'student protector' (modelled on the attested *math-i-t-o-pateras* 'teacher who is popular with students, lit. student father') are possible and perfectly well-formed words, even though they contain a diminutive (*-id-*) and a nominalising morpheme (*-t-*) respectively. Thus, we assume that the argument is always merged already categorised by *n*, and as such it requires some sort of formal licensing, either through Case or through 'incorporation'. The fact that synthetic compounds in Greek are not root-root compounds (see also Figures 3 and 4 above) may also be reflected in the following difference from English, which arguably involves real root-root compounding as Borer (2012) suggests: root-root synthetic compounds can still take DPs that saturate the internal theta-role (e.g. 'to babysit Mary'), while theme non-heads in Greek fully saturate the internal theta-role, cf. *xarto-peks-ia* (**pokas*) 'card-playing of poker'.

2.4 Other apparent exceptions

In order to factor out genitive/compounding alternations in some cases of (apparent) themes, we appealed to the generalisation that compounding is blocked only as long as a Case licenser is not merged before the ultimate categoriser is merged. This is presumably due to the fact

¹¹ We assume that themes are externally merged either as complements of the Root or in Spec-v, rather than as adjuncts (see also fn. 4).

that if the formal/Case licenser/probe of the argument is merged higher than a [+N] categoriser (i.e. *n* or *a*), then that [+N] element itself would be a more local goal/intervener for the probe. This condition appears to also explain other apparent exceptions to the complementarity between compounding and XP realisation.

The first type of exception concerns examples such as the following: *oksigonokolisi* ‘oxygen-welding’ can receive an eventive and, in fact, agentive interpretation in Greek, despite being a case of instrument-compounding.

- (20) oksigono- koli- si tis portas (me prosoxi)
 √oxygen √stick nmz the door.GEN with care
 ‘careful oxygen-welding of the door’

Nevertheless, it must be noted that, as opposed to the compounds discussed in the above sections, this compound also has a corresponding compound verb, namely *oksino-kol-o*. Following Alexiadou (2017), Greek in fact has two types of synthetic compounds, the type discussed so far and real de-verbal compounds, and the analysis for the latter, also following Iordachioaia et al. (2017), the (verbal) root is first categorised as a verb and combines with the non-head only after categorisation. Since *v* can be the ultimate categoriser, the issue of licensing (either via Case or ‘incorporation’) of the argument does not arise before that. In other words, an argument such as an instrument does not run the risk of getting stuck without Case, if *P* is not merged before a nominalising head. Then, arguably, compounding need not be a last-resort solution in such cases. So, merger of a Case licenser (*P* in the case of instruments) or compounding (though with very limited productivity as Alexiadou (2017) Iordachioaia et al. (2017) note) are both in principle possible. Any nominalisations such as (20) simply build on verb formations in which compounding has already taken place.

Another obvious type of exception is the absence of any complementarity between the two realisations in non-eventive and in fact non-deverbal nominals.

- (21) a. a textbook on/about linguistics ~ a linguistics textbook
 b. a book with poems/poetry ~ a poetry book

Such cases all involve contentful prepositions with a literal or metaphorical locative interpretation. It seems reasonable to assume that in those cases, *Ps* do form a constituent with their surface complement and are merged higher than *nP*, as the form/type of *P* largely depends on the categoriser rather than the Root, as Merchant (2017) also shows. Therefore, no competition between the two realisations arises below the categoriser level.

3. Implications for roots and the architecture of argument licensing

In the previous sections, we tried to establish that aspectual and other event-related projections are crucial for the licensing of certain types of argument but cannot be considered indispensable for the availability of the corresponding thematic relationships. It turns out that identical thematic relationships can be established also in the absence of such functional structure, within thematic compounds. What has not yet been shown is that argument selection/assignment of thematic interpretations can take place in the absence of *any* functional structure.

One should not fail to observe the pervasive presence of verbalising morphology in most of the derived nominals and participles discussed above. Every time a root forms verbal stems which are decomposable, containing an overt/distinguishable verbalising morpheme which is not present in other words containing that root, then this morpheme is indeed

necessarily present in all the synthetic compounds considered so far¹². If this requirement is indeed exceptionless, then *v* can be taken to be indispensable for argument selection and even responsible for it, even though other functional heads of the verbal extended projection are not. Even if this is the case, this already undermines the role of functional structure in argument licensing. Instead of special functional heads, each of which specialises in the selection of one particular type of argument, we are forced to postulate that they are all introduced by one and the same functional head. Then the question that immediately arises is what is responsible for the differentiation of the potential thematic interpretations. One possibility is that the root indeed contributes (at the stage of argument selection, i.e. in syntax) in determining which thematic relationships are licit and which are not. Another possibility is that this differentiation takes place post-syntactically, indeed mediated by the meaning of the root, but as a result of a pragmatic inference, in which case the role of roots is not really syntactic.

However, the requirement for a *v* in synthetic compounds is not without exceptions. For instance, alongside (22a), which clearly contains a verbaliser, (22c) also exists, as a dialectal form, with an interpretation identical to the one of (22a).

- (22) a. nifo- stol- iz- ma
 vbride vdecorate vbz nmz
 ‘bride decoration’
 b. stol- iz- o
 vdecorate vbz 1.Sg.Present
 ‘decorate’
 c. nifo- stol- i
 vbride vdecorate nmz
 d. stol- id- i
 vdecorate DIM nmz
 ‘ornament’

Being a dialectal form, (23c) cannot be considered to be the best piece of evidence, as it is not clear what the corresponding verb would look like in a dialect that forms it naturally. On the other hand, even in Standard Greek one can find occasional examples of synthetic compounds which lack a verbaliser, even though the corresponding verb does have an overt and distinguishable verbalising morpheme. Crucially, nominalisations both with and without the verbaliser co-exist in the language and they can both have eventive interpretations. Likewise, the corresponding compounds can have a simple event interpretation, with or without a verbaliser. Thus, for example, (23a) co-exists with (23b) and (24a) co-exists with

¹² *Therap-ia* in (5-7) could be an exception, but for the sake of the argument we will take it to be just an apparent exception, since it may indeed have an underlying representation in which an allomorph of the verbaliser *-ev-* occurs between the root and the nominaliser, most probably *-e-* which is assimilated and then elided. Orthographically, *e* is represented in the written form of the word and it is clear that etymologically it derives from *therap-ev-o*. Furthermore, all *-ia* nominalisations associated with verbs in *-ev-o* display exactly the same pattern. Panagiotidis & al. 2017 argue that *v* can be present even in the absence of overt morphology. For this reason we only consider cases where the verbalizer is always overt in clearly verbal categories (e.g. the corresponding verbs), rather than cases where even the verb superficially comprises just the root and inflectional morphology, so that the absence of overt verbalising morphology is always indicative of structures without *v*.

(24b), also allowing for the compounds in (23c-d) and (24d) respectively.¹³ The simple event reading of non-compounds and compounds without *v* is shown by their compatibility with a durative interpretation, in (25a) and (25b) respectively.

- (23) a. *pal-* *i*
 vfight *nmz*
 b. *pal-* *e-* *ma* (from: *pal-ev-o* ‘to fight’)
 vfight *vbz* *nmz*
 c. {*xiro-* /*psicho-*} *pal-* *i*
 vhand /*vsoul* *vfight* *nmz*
 ‘hand fighting/dying (=literally ‘soul fighting’)
 d. *xero-* *pal-* *e-* *ma*
 vhand *vfight* *vbz* *nmz*
- (24) a. *pazar-* *i*
 vbargain *nmz*
 ‘bargaining (also: bazaar)’
 b. *pazar-* *e-* *ma* (from: *pazar-ev-o* ‘to bargain’)
 vbargain *vbz* *nmz*
 ‘bargaining’
 c. *nifo-* *pazar-* *o*
 vbride *vbargain* *nmz*
 ‘lit. bride-bargaining (=gathering of women looking for a partner)’
- (25) a. *to pazari/pazarema ja to chreos kratai chronja*
 the bargaining forthe debt goes-on years
 ‘the bargaining/negotiations about the debt have been going on for years’
 b. *Arxise to nifo- pazar- o, pu kratai panta*
 started.3Sg the *vbride* *vbargain* *nmz* that lasts always
 merikes ores.
 a few hours.
 ‘the “bride-bargaining” has started, which always lasts a few hours.’’

What these cases have in common is that they both involve roots which can form simple event nominals without the need for a verbaliser. In other words, it may be true that certain roots are not totally underspecified and come with a specification that they mainly/potentially denote (kinds of) events. Thus, one would have to follow a distinction such as the one proposed by Harley (2005), according to which roots, even before their categorisation, can be mapped onto one of the basic ontological types in (25).

- (26) a. Events b. Things c. States

¹³ An anonymous reviewer asks whether the forms with verbalizers and the forms without differ in meaning. Alexiadou (2009) argued that they do and this is indeed what one expects when the root is not intrinsically eventive. However, presumably no relevant meaning difference arises when the root is already eventive, regardless of its categoriser. Any meaning differences between forms with and without the verbaliser in (23-24) have nothing to do with the eventive interpretation or the structure/type of the event, but are rather differences of register, conventionally associated with each lexical item (e.g. *pali* tends to be indicative of high register, e.g. *pali/#palema ton takseon* fight of-the classes ‘class warfare/struggle’).

Eventive roots, then, do not need the support of a *v* in order to form nominals denoting (at least simple) events¹⁴. As a consequence, the presence of *v* is only indispensable in terms of ontological mapping, when the root itself is not already eventive¹⁵, not in terms of argument selection.

4. Conclusion

In this paper we discussed parallels and asymmetries between the ways in which a constituent can receive a theta-role in syntactic structure and as the non-head of a compound. In particular, where there is an impediment to licensing/case-assignment of an instrument, causer, or theme XP in what might be considered a more traditional syntactic configuration, then compounding can save the derivation as a last resort operation, while involving identical first-merge/thematic positions. We argued that this is a genuine case of theta-saturation, therefore the event- or aspect-related projections needed for the licensing of the corresponding XPs have nothing to do with theta-saturation. We then discussed if the presence of *v* is an irreducible requirement for argument introduction. The availability of at least some synthetic compounds alternating between forms with and without an overt verbaliser seems to suggest that *v* may not be needed and that Roots may be the only element which is required, and is therefore an essential/indispensable part of first phase syntax, for at least some arguments.

References

- Alexiadou, A. (2001). *Functional structure in nominals: nominalization and ergativity*. John Benjamins.
- Alexiadou, A. (2009). On the role of syntactic locality in morphological processes: the case of (Greek) derived nominals. In A. Giannakidou & M. Rathert (eds.) *Quantification, Definiteness and Nominalization*. Oxford University Press, 253-280.
- Alexiadou, A. (2017). On the complex relationship between deverbal compounds and argument supporting nominals. In Bloch-Trojnar, M., & Malicka-Kleparska, A. (eds.) *Aspect and Valency in Nominals*, 134, 1. Berlin/Boston: De Gruyter.
- Alexiadou, A., Anagnostopoulou, E. & F. Schäfer. (2015). *External arguments in transitivity alternations: A layering approach* (Vol. 55). Oxford Studies in Theoretical Linguistics.
- Alexiadou, A., & Schäfer, F. (2010). On the syntax of episodic vs. dispositional-er nominals. *The syntax of nominalizations across languages and frameworks*, 9-38.
- Alexopoulou, T., Folli, R., & G. Tsoulas. (2013). Bare number. In R. Folli, C. Sevdali, & R. Truswell (eds.). *Syntax and its Limits*. Oxford: Oxford University Press.
- Anagnostopoulou, E. (2003). Participles and voice. *Perfect explorations*, 1-36.
- Anagnostopoulou, E. & Y. Samioti. 2013. Allosemy, Idioms, and their Domains: Evidence from Adjectival Participles. In R. Folli, C. Sevdali & R. Truswell (eds.) *Syntax and its Limits*. Oxford : Oxford University Press, 218-250.
- Angelopoulos, N. (2012). *The Morphosyntax of Deverbal Compounds in Greek*. MPhil Thesis, Cambridge.
- Baker, M. C. & N. Vinokurova. (2009). On agent nominalizations and why they are not like event nominalizations. *Language*, 85(3), 517-556.
- Borer, H. (2005). *The normal course of events* (Vol. 2). Oxford University Press on Demand.
- Borer, H. (2012). In the Event of a Nominal. *The Theta System. Argument Structure at the Interface*, 103-149.
- Borer, H. (2013). *Structuring Sense: Volume III: Taking Form*(Vol. 3). Oxford University Press.

¹⁴ The claim that eventive roots do not need verbalizers has also been made for participles by Anagnostopoulou & Samioti (2013).

¹⁵ Or if it cannot be considered eventive at all. *vPal* for instance is clearly eventive and *vpazar* can also be considered eventive, in fact it can be either a Root_{event} or a Root_{thing}.

- Borer, H. (2014). Wherefore roots?. *Theoretical Linguistics*, 40(3-4), 343-359.
- Collins, C. (2005). A smuggling approach to raising in English. *Linguistic Inquiry*, 36(2), 289-298.
- Grimshaw, J. (1990). *Argument structure*. the MIT Press.
- Harley, H. (2005). One-replacement, unaccusativity, acategorical roots, and Bare Phrase Structure. *Harvard Working Papers in Linguistics*, 11, 59-78.
- Harley, H. (2009). "Compounding in DM." *The Oxford handbook of compounding*. Oxford: OUP.
- lordăchioaia, G., Alexiadou, A., & Pairamidis, A. (2017). Morphosyntactic sources for nominal synthetic compounds in English and Greek. *Zeitschrift für Wortbildung/Journal of Word Formation*, 1(1), 47-72.
- Kamp, H. & A. Roßdeutscher. (1994). Remarks on lexical structure and DRS construction. *Theoretical linguistics*, 20(2-3), 97-164.
- Kayne, R. S. (2000). *Parameters and universals*. Oxford University Press on Demand.
- Kayne, R. S. (2005). *Movement and silence*. Vol. 36. Oxford University Press.
- Koopman, H. 2017. A note on Huave Morpheme Ordering: Local Dislocation or Generalized U20?. In Gautam Sengupta, Shruti Sircar, Gayatri Raman, and Rahul Balusu (eds), *Perspectives on the Architecture and Acquisition of Syntax: Essays in Honour of R. Amritavalli*. Springer.
- Kratzer, A. (2001). "Building Statives." *Proceedings of the Berkeley Linguistics Society* 26.
- Marantz, A. (2013). Verbal argument structure: Events and participants. *Lingua*, 130, 152-168.
- Merchant, J. (2017). Roots don't select, categorial heads do: I-selection of PPs may vary by category. Paper presented at *Roots V*, QMUL/UCL, London, 17 June 2017.
- Michelioudakis, D. & N. Angelopoulos. (2013a). "The Syntactic status of N-incorporation in Deverbal Compounds." *Studies in Greek Linguistics* 33.
- Michelioudakis, D. & N. Angelopoulos. (2013b). Correlating event and argument structure in synthetic compounds. Paper presented at *ISTAL*, Aristotle University of Thessaloniki, April 2013.
- Ntelitheos, D. (2012). A syntactic analysis of synthetic and phrasal compound formation in Greek. *Issues in Mediterranean Syntax*.
- Panagiotidis, P., A. Revithiadou & V. Spiropoulos. (2017). Little v as a categorizing verbal head: Evidence from Greek. In Roberta D'Alessandro, Irene Franco and Ángel Gallego (eds.) *The verbal domain*. Oxford: Oxford University Press, 29-48
- Parsons, T. (1990). *Events in the Semantics of English* (Vol. 5). Cambridge, MA: MIT Press.
- Ralli, A. (2013). Compounding and its locus of realization: Evidence from Greek and Turkish. *Word Structure*, 6(2), 181-200.
- Roeper, T. & D. Siegel. (1978). A Lexical Transformation for Verbal Compounds, *Linguistic Inquiry* 9, pp. 199-260
- Williams, E. (1981). Argument structure and morphology. *The linguistic review*, 1(1), 81-114.
- Wood, J. & A. Marantz. (2015). The interpretation of external arguments. Ms. Yale and NYU.