More span-conditioned allomorphy: Voice morphology in Classical Greek *

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1.   Introduction

Classical Greek (CG) voice morphology (active vs. non-active (NAct); "middle") is expressed as portmanteau together with Tense (past vs. non-past, glossed NPAST) and Agreement morphology. A given verbal stem can normally take either active or non-active endings, depending on the syntactic context, cp. (1). I assume that verbal stem-forming morphology (*v*) forms a portmanteau with Asp, since each verbal stem is either imperfective ("present stem") or perfective ("aorist stem"). These morphemes are glossed ipfv/pfv below. CG voice morphology also combines with different moods, as illustrated for the present subjunctive and aorist optative in (1) (other possible combinations are left out here).

(1)   *Active vs. non-active in CG*

	active	non-active
pres.	loú-Ø-ō wash-IPFV-1SG.NPAST.ACT 'I wash (sth.)'	loú-o-mai wash-IPFV-1SG.NPAST.NACT 'I wash myself'
aor.	é-lou-s-a PAST- wash-PFV-1SG.PAST.ACT 'I washed (sth.)'	e-lou-sá-mēn PAST-wash-PFV-1SG.PAST.NACT 'I washed myself'
fut.	loú-s-ō wash-IPFV/PFV-1SG.NPAST.ACT 'I will wash (sth.)'	loú-so-mai wash-FUT-1SG.NPAST.NACT 'I will wash myself'
pres. subj.	loú-Ø-Ø-ō wash-IPFV-SUBJ-1SG.NPAST.ACT 'I may wash (sth.)'	loú-ō-mai wash-IPFV.SUBJ-1SG.NPAST.NACT 'I may wash myself'
aor. opt.	lou-s-ai-mi wash-PFV-OPT-1SG.NPAST.ACT 'I might have washed (sth.)'	lou-s-aí-mēn wash-PFV-OPT-1SG.PAST.NACT 'I might have washed myself'

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The non-active morphology in the categories in (1) is associated with the well-known range of functions (anticausative, reflexive, self-benefactive, (medio)passive, cp. Embick 1998, 2004, Alexiadou & Doron 2012, etc.). On the other hand, passive morphology that is distinct from non-active morphology only co-occurs with perfective aspect in CG. It is only found in the aorist and future and surfaces as a stem-forming suffix *-thē-*[1] rather than being part of the verbal endings, cp. (2). In the aorist, this suffix can combine with subjunctive and optative mood, but in the future it is only compatible with optative, not with subjunctive. This "stem-forming" suffix obligatorily co-occurs with active endings in the aorist passive, aorist subjunctive passive and aorist optative passive, (2a-c), but with non-active/"middle" morphology in the future passive and future optative passive, (2d-e).

(2)   *Passive in CG*

stem	passive	meaning
a. aor.	e-loú-thē-n	'I was washed'
	PAST-wash-PASS.PFV-1SG.PAST.**ACT**	
b. aor.subj.	lou-thô	'I may have been
	wash-PASS.PFV.SUBJ.1SG.NPAST.**ACT**	washed'
c. aor.opt.	lou-theíē-n	'I might have been
	wash-PASS.PFV.OPT-1SG.PAST.**ACT**	washed'
d. fut.	lou-thḗ-so-mai	'I will be washed'
	wash-PASS.PFV-FUT-1SG.NPAST.**NACT**	
e. fut.opt.	lou-thē-s-oí-mēn	'I might be washed'
	wash-PASS.PFV-FUT-OPT-1SG.PAST.**NACT**	

The problem of the CG passive is that it obligatorily triggers active morphology in combination with moods built to the aorist stem, but non-active morphology in moods of the future stem. As we have seen in (1), the aorist, future and various optatives and subjunctives by themselves can take either active or non-active morphology, so they alone cannot be held responsible for this odd distribution of voice morphology in the passive.

I propose that the obligatory active morphology in (2a-c) is rather a reflex of the fact that active endings in CG are default (elsewhere) morphology, while the non-active morphology in (2d-e) is triggered by a particular linearization of a *span* consisting of Asp and Mod. Span allomorphy has been argued to be sensitive to linearization properties of nodes elsewhere (see Merchant & Pavlou 2016 for an example from Cypriot Greek). I argue that the voice allomorphy in the Classical Greek passive shows that the phonological content of the span (crucially whether or not it is spelled out as portmanteau) can be a trigger of allomorphy.

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[1]This suffix has a lexically conditioned allomorph *-ē-* with the same syntactic properties, but which (unlike *-thē-*) does not become a passive voice marker on the way to Modern Greek. Otherwise all generalizations for *-thē-* apply to *-ē-* as well. The prehistory of *-ē-* and *-thē-* is still debated, see Schwyzer 1939, 756ff. and Jasanoff 2004 for a discussion.

2. Background

Svenonius 2012, Merchant 2015 and Merchant & Pavlou 2016 argue that allomorphy is triggered by adjacent *spans*, sets of ordered terminal nodes of a given extended projection (where each terminal node itself is a span) rather than by strict node-adjacency. The following definition is that of Merchant 2015:

(3) Let T be an ordered n-tuple of terminal nodes $\langle t_1, ..., t_n \rangle$ such that for all $t \in T, t = t_1$ or t is an element of the extended projection of t_1.

    a.   For all $k = 1...n, t_k$ is a span. (Every node is a trivial span.)
    b.   For any $n > 0$, if t_k is a span, then $\langle t_k, ..., t_{k+n} \rangle$ is a span.

(4) Spanning Insertion Hypothesis: A span and only a span can be targeted for Vocabulary Insertion

    Merchant & Pavlou 2016 extend this definition of span by including "a contiguous string of elements after Linearization" (p. 12), thus including the possibility of spans across extended projections.

    The examples discussed in Merchant 2015 and Merchant & Pavlou 2016 are instances of *outward sensitivity*, where allomorphy is triggered by a structurally higher span (e.g., verbal stem allomorphy in Modern Greek, cp. also Embick 2010). Since this higher span has not been spelled out, only its *morphosyntactic content* (rather than its phonological content) is relevant for triggering allomorphy.

    On the other hand, *inward sensitivity* means that a structurally lower span conditions allomorphy in a higher span, and in this case both the phonological and the morphosyntactic content of the lower span is potentially relevant for triggering the allomorphy (cp. Embick 2012 on morphonologically triggered (though not span-conditioned) root allomorphy in Spanish). I propose that inward sensitivity to the morphonological features of a particular span can capture the odd behavior of the CG passive. Before going into my proposal, the next section provides some background on voice morphology in CG.

2.1 Voice in CG

Following Embick (1998), (2004), Kallulli (2007), (2013), I assume that non-active voice morphology in Greek is assigned postsyntactically to particular syntactic environments:

(5) Condition on non-active voice (Embick 2004, 150)
    $v \leftrightarrow v\text{-}\mathbf{X}/\_$ **No external argument**
    "Non-active voice is assigned when v does not introduce an external argument"

Here, "-X" is the morphological exponent of "non-active" in a given language (note that I use "Voice" for the projection "v" in (5)).

Under this view, "active" morphology is elsewhere morphology and inserted whenever condition (5) is not fulfilled. Since non-active morphology in T-Agr is sensitive to a property of Voice, active morphology also emerges as a default whenever this projection is missing, as in unaccusative and stative predicates (Kallulli 2013). This nicely accounts for unaccusative *activa tantum* ('active-only" verbs), like CG *eimí* 'I am', *mímnō* 'I stay', etc., whose argument structure would otherwise not lead one to expect active morphology.

While the CG Voice head can therefore be [+/-NAct], CG does not have a designated passive Voice head.[2] The order of nodes in the CG verb is $\sqrt{}$-*v*-Voice-Asp-(Mod)-T/Agr.

2.2 Proposal

In regular alternating presents and aorists as in (1), Vocabulary Insertion at the final node T/Agr must have access to the [NAct] feature on Voice across the intervening heads Asp and Mod, independent of the value of Asp (since both the present (imperfective) and the aorist (perfective) stem can occur with active and non-active morphology). I analyze *v*, Voice and Asp as a span realized as the theme vowel *-o-* (which has a morphologically conditioned allomorph *-e-* which is not discussed here), illustrated in (6) for the 1sg.pres.mid. (heads in **bold** form a span):

(6)   *Derivation of the 1sg.pres.mid.*:
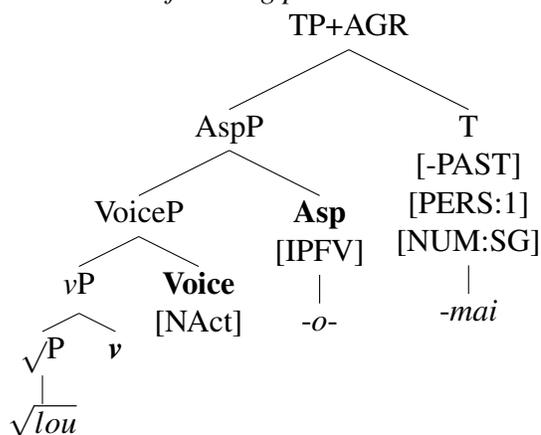
Additional evidence for the relevance of the *v*+Voice+Asp span comes from deponent verbs; verbs which are formally non-active, but which syntactically behave like agentive transitive verbs, cp. (7) and (8). In deponents, the [NAct] feature is a property of particular *verbal stems* that are lexically marked for having non-canonical agents (cp. Grestenberger 2014; with a lexical feature on the root: Embick 1998, 2000). Vocabulary insertion at the T/Agr node is again sensitive to the span *v*+Voice+Asp rather than just Asp (as would be expected under strict node-adjacency):

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[2]Cp. Alexiadou & Doron 2012's analysis of Modern Greek as having a middle Voice head μ, but not a passive Voice head π.

(7) [dízē]$_{v+\text{Voice}+\text{Asp}}$-mai
     seek.IPFV-1SG.NPAST.NACT
     'I seek (sth.)'

(8) [tínu]$_{v+\text{Voice}+\text{Asp}}$-mai
     punish.IPFV-1SG.PRES.NACT
     'I punish'

While this accounts for the "regular" distribution of active vs. non-active morphology, the "passive" suffix *-thē-* triggers obligatory insertion of default T-Agr morphology ("active") in the aorist, but non-active morphology in the future, see (2). This is neither expected under strict node adjacency nor under span adjacency.

3.   The CG aorist passive

I propose that the CG "passive Voice" head *-thē-* actually realizes *v*+Asp[pfv] in the absence of the external-argument introducing head Voice, as in (9).[3] This explains why *-thē-* is only found in perfective stems and predicts that it occurs only in contexts where Voice is missing and hence surfaces with default ("active") T/Agr morphology. This is exactly what we see in the aorist passive and its moods in (2).

(9)   *CG aorist passive*
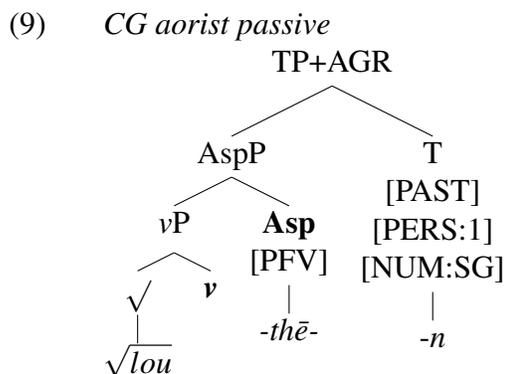
Evidence for this analysis comes from the diachrony of *-thē-*, which was originally a verbal stem forming suffix that made oppositional intransitive (sometimes unaccusative) verbal stems without specifically passive meaning (thus still in Homer), e.g.:

(10)   e-krúph-thē-n
       PAST-hide-PFV-1SG.PAST.ACT
       'I hid (myself)'

(11)   e-phobḗ-thē-n
       PAST-flee-PFV-1SG.PAST.ACT
       'I fled'

Moreover, *-thē-* is still synchronically in complementary distribution with other aorist stem-forming morphology, rather than with voice morphology:

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[3]Note that Merchant 2015 analyzes the Modern Greek continuant of this morpheme, *-th(i)-*, as "a realization of the nonactive voice head Voice[-Act] under Asp[+Perf]". This has interesting implications for the diachronic morphology of the Greek verb: at some point, acquirers seem to have "misanalyzed" *-thē-* as realizing a different span than that of the parent generation. This must be left to future research.

(12)   *Alternation with stem-forming morphology*
    a.   é-dū-s-a
          PAST-sink-PFV-1SG.PAST.ACT
          'I sank sth.'
    b.   é-traph-o-n
          PAST-be.nourished-PFV-1SG.PAST.ACT
          'I was nourished'
    c.   e-dú-thē-n
          PAST-sink-PFV.PASS-1SG.PAST.ACT
          'I was sunk'

Finally, while *thē*-verbs can occur with agent *by*-phrases, so can certain non-passive, formally active verbs (Kulikov & Lavidas 2013, 105), making this an unreliable diagnostic.

While this analysis sorts out the aorist "passive" by explaining its active endings as elsewhere morphology, extra assumptions are needed for the future passive, since here the expected default morphology does not surface. Rather, it is the span Asp+Mod that triggers non-active morphology.
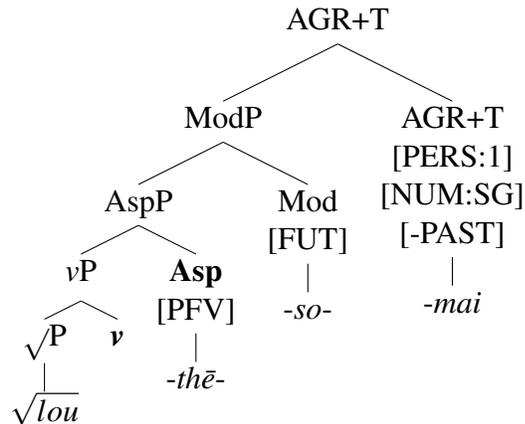
4.   The CG future passive

The future passive is perfective, while the future middle is imperfective (Smyth & Messing 1956, Allan 2003), making it likely that *-thē-* also realizes *v*+Asp[pfv] in the absence of Voice in the future passive (like in the aorist passive above):

(13)   *CG future passive vs. middle (from Smyth & Messing 1956, 395)*
    a.   tīmḗ-so-mai   (future middle)
          honor$_v$-FUT-1SG.NPAST.NACT
          'I shall enjoy honor' (imperfective)
    b.   tīmē-thḗ-so-mai   (future passive)
          honor$_v$-PFV.PASS-FUT-1SG.NPAST.NACT
          'I shall be honored' (on a particular occasion; perfective)

The future marker *-se/o-* realizes Mod (cp. Giannakidou 2014 for an analysis of future as modality rather than tense). This is the result of a diachronic reanalysis: *-se/o-* still behaves like a desiderative (imperfective) stem-forming suffix in closely related languages like Sanskrit and Avestan, where it is in complementary distribution with verbal stem-forming morphology (unlike in CG).

(14)   *Future passive*

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                        AGR+T
                       /      \
                    ModP       AGR+T
                   /    \      [PERS:1]
                AspP     Mod   [NUM:SG]
               /   \    [FUT]  [-PAST]
             vP     Asp    |       |
            /  \   [PFV]  -so-    -mai
         √P     v    |
          |         -thē-
         √lou
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The problem that arises in the future passive is that the span (*v*+)Asp+Mod appears to trigger non-active rather than the expected default morphology. Mod alone is compatible with active and non-active morphology (see (1)), so it cannot be the trigger for obligatory non-active morphology in the future passive. The trigger rather seems to be the *span* Asp[pfv]+Mod, spelled out as *-thē-so-*.[4] This is an instance of *inward sensitivity* in which a higher span is sensitive to both morphosyntactic and phonological features of a lower span.

Crucially, the morphosyntactic feature content of the lower heads alone cannot be the trigger for obligatory non-active voice morphology, since *-thē-* should trigger active morphology and *-se/o-* by itself is compatible with either active or non-active. It rather seems that the phonological content of Mod acts as an intervener between T/Agr and Asp[pfv], so that T-Agr cannot directly access the features of *v*+Asp because another node *with phonological content* intervenes (unlike in the present, aorist and future active and middle and the aorist passive). Therefore the expected "active" morphology does not surface.

Some evidence for phonological intervention may come from CG semi-deponents, which are morphologically active in the present but unexpectedly non-active in the future. The morpheme *-se/o-* appears to be responsible for the non-active voice morphology (note that this morpheme also triggers stem allomorphy, cp. (15)).

(15)   *CG semi-deponents*

Pres.: act.	Fut.: NAct	Meaning
aeíd-ō	*aeí-so-mai*	'(will) sing'
akoú-ō	*akoú-so-mai*	'(will) hear'
hamartán-ō	*hamartḗ-so-mai*	'(will) miss, fail'
baín-ō	*bḗ-so-mai*	'(will) walk, go'
plé-ō	*pleú-so-mai*	'(will) sail'

Kemmer 1993, 79ff. provides evidence that inherently desiderative or volitional verbs ('want', 'will', etc.) tend to take non-active morphology cross-linguistically (displaying

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[4]Note that the span that triggers allomorphy does not need to be spelled out as portmanteau (Merchant 2015), so Asp[pfv] and Mod can be realized separately.

"subject affectedness"), and this could be the reason why the CG "future" is susceptible to taking non-active morphology. Given that future and subjunctive morphology cannot co-occur, they may be different values of epistemic Mod ("high Mod", Cinque 1999). If Mod$_{FUT}$ selects Voice without an external argument and introduces a volitional (or "affected" argument), the condition on non-active morphology applies and we expect obligatory non-active morphology in the future, which is exactly what the semi-deponents in (15) instantiate.

5.   Implications

Returning to the problem of span-triggered allomorphy, the core observation is that default (active) morphology surfaces in the passive whenever (*v*+)Asp+Mod form a portmanteau (or Mod is missing, as in the aorist passive), (16a–c)). Non-active surfaces when Asp and Mod are spelled out separately, (16d–e) (illustrated with 1pl. verbs):

(16)   *Spell-Out of Mod in CG*:

a.	1pl.aor.pass.	*-thē-men*
		-PFV.PASS-1PL.PAST.ACT
b.	1pl.aor.subj.pass.	*-thô-men*
		-PFV.PASS.SUBJ-1PL.NONPAST.ACT
c.	1pl.aor.opt.pass.	*-theĩ-men*
		-PFV.PASS.OPT-1PL.PAST.ACT
d.	1pl.fut.pass.	*-thē-só-metha*
		-PFV.PASS-FUT-1PL.NONPAST.**NACT**
e.	1pl.fut.opt.pass.	*-thē-soí-metha*
		-PFV.PASS-FUT.OPT-1PL.PAST.**NACT**

I illustrate the proposed linearization of (16b) vs. (16e) in (17):

(17)   a. $\sqrt{lou}$—*v*.Asp.Mod[thô]—T/Agr[-men]
         b. $\sqrt{lou}$—*v*.Asp[thē]—Mod[so]—T/Agr[-metha]

In (17a), the span *v*+Asp+Mod (realized as portmanteau [thô] throughout the subjunctive passive paradigm) and the node T/Agr[1pl] are spelled out as [*-thô-men*]. *v*+Asp+Mod are realized as portmanteau, and the T/Agr node is formally active. Given that we have seen evidence that the passive morpheme triggers default morphology, this is not very surprising.

However, when the nodes (*v*+)Asp, Mod and T/Agr[1pl] are realized separately, as in the 1pl. future passive (where they surface as [*-thē-so-metha*], not a portmanteau, (17b)), T/Agr is realized as non-active, parallel to Mod[so]—T/Agr[1pl] by itself in the future middle, which is realized as *-so-metha* (1sg. *-so-mai*) in the future middle semi-deponents in (13).

This observation suggests that linearization of nodes with phonological content affects Spell-Out of higher nodes, at least for inwards-looking allomorphy, similarly to what Embick 2012 has argued for English past tense allomorphy. According to Embick, T must be concatenated with the root to be spelled out as irregular past tense allomorph, which is possible because *v* is phonologically empty and has been "pruned". Empty or "pruned" nodes cannot intervene and are irrelevant to vocabulary insertion. In contrast, in (16d–e), pruning is not possible in the future passive, since Mod has phonological content and intervenes between Asp[*thē*] and T/Agr. Descriptively, it is this intervention of a node with phonological content that appears to block the realization of active voice morphology on T/Agr that would otherwise be expected. This suggests that inward-looking allomorphy is indeed sensitive to morphonological properties of lower spans that have been spelled out, and that Mod_{FUT} in CG may be a phase boundary for Spell-out that prevents higher nodes from "looking past" it.

6.   Conclusion

I have argued that voice allomorphy in the CG passive is an instance of inward-looking span-allomorphy, and that the unexpected non-active morphology of the future passive can be analyzed as a phonological linearization effect on the realization of a higher node.

If this analysis is on the right track, strict node adjacency may still be relevant for inward-looking allomorphy, since voice morphology in CG appears to be sensitive to local heads with phonological content, at least if such heads are a boundary for Spell-Out.

Several problems remain, however. The most puzzling one is that T/Agr evidently has access to the [+/-NAct] feature on Voice in the future, since this can be formally active or middle (for non-semi-deponents), cp. (1c), but does not "see" that Voice is missing in the future passive (as indicated by the morpheme *-thē-*, which spells out Asp in the absence of Voice in this analysis), which should trigger default morphology. I have proposed that this is because of a phonological intervention effect triggered by the Spell-Out of Mod when it is not concatenated with another node. The Mod head *-se/o-* blocks Agr from accessing "lower" heads and their features, forcing it to be spelled out with non-active morphology, parallel to semi-deponents where the trigger of non-active morphology is likewise the Mod head. The question is why Mod should have this "blocking effect", since the claim that the span *-thē-so-* triggers non-active morphology in the future passive is exactly the kind of "Anything Goes" approach that Embick 2012, 27 rejects with good reason. However, there is other research that suggests that linearization influences the realization of morphosyntactic features, including agreement and allomorphy (e.g., Arregi & Nevins 2012, Merchant & Pavlou 2016 and Marušič et al. To appear), and I believe that future research can find further arguments that show that Mod_{FUT} marks a phase head for Spell-Out in CG.

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References

Alexiadou, Artemis, & Edit Doron. 2012. The syntactic construction of two non-active voices: passive and middle. *Journal of Linguistics* 48:1–34.

Allan, Rutger J. 2003. *The Middle Voice in Ancient Greek*. Amsterdam: Gieben.

Arregi, Karlos, & Andrew Nevins. 2012. *Morphotactics: Basque auxiliaries and the structure of Spellout*. Berlin: Springer.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: a cross-linguistic perspective*. Oxford University Press.

Embick, David. 1998. Voice systems and the syntax/morphology interface. In *Papers from the UPenn/MIT Roundtable on Argument Structure and Aspect*, ed. H. Harley, 41–72. MIT Working Papers in Linguistics 32.

Embick, David. 2000. Features, syntax, and categories in the Latin perfect. *Linguistic Inquiry* 31/2:185–230.

Embick, David. 2004. Unaccusative syntax and verbal alternations. In *The Unaccusativity Puzzle*, ed. A. Alexiadou, E. Anagnostopoulou, & M. Everaert, 137–58. Oxford University Press.

Embick, David. 2010. *Localism versus Globalism in Morphology and Phonology*. Cambridge, Mass.: MIT Press.

Embick, David. 2012. Contextual conditions on stem alternations: Illustrations from the Spanish conjugation. In *Romance Languages and Linguistic Theory 2010. Selected papers from 'Going Romance', Leiden 2010*, ed. I. Franco, S. Lusini, & A. Saab, 21–40. John Benjamins.

Giannakidou, Anastasia. 2014. The futurity of the present and the modality of the future: a commentary on Broekhuis and Verkuyl. *NLLT* 32/3:1011–32.

Grestenberger, Laura. 2014. Feature Mismatch: Deponency in Indo-European. Doctoral dissertation, Harvard University.

Jasanoff, Jay. 2004. "Stative" *-ē- revisited. *Die Sprache* 43 (2002-03 [2004]):127–170.

Kallulli, Dalina. 2007. Rethinking the passive/anticausative distinction. *Linguistic Inquiry* 38/4:770–80.

Kallulli, Dalina. 2013. (Non-)canonical passives and reflexives: deponents and their like. In *Non-Canonical Passives*, ed. A. Alexiadou & F. Schäfer, 337–58. Amsterdam/Philadelphia: John Benjamins.

Kemmer, Suzanne. 1993. *The Middle Voice*. Amsterdam: John Benjamins.

Kulikov, Leonid, & Nikolaos Lavidas. 2013. Reconstructing passive and voice in Proto-Indo-European. *Journal of Historical Linguistics* 3/1:98–121.

Marušič, Franc, Jana Willer Gold, Boban Arsenijević, & Andrew Nevins. To appear. Can agreement with the linearly closest conjunct be derived in syntax proper? In *Proceedings of NELS 2015, Concordia University, October 16 - 18, 2015. Montreal, Canada*.

Merchant, Jason. 2015. How much context is enough? Two cases of span-conditioned stem allomorphy. *Linguistic Inquiry* 46/2:273–303.

Merchant, Jason, & Natalia Pavlou. 2016. A surprising allomorphic span in Cypriot Greek. Ms., University of Chicago.

Schwyzer, Eduard. 1939. *Griechische Grammatik*, volume I. München: Beck.

Smyth, Herbert W., & Gordon M. Messing. 1956. *Greek Grammar*. Cambridge, Mass.: Harvard University Press.

Svenonius, Peter. 2012. Spanning. Ms., CASTL, University of Tromsø.