Voice allomorphy and Voice syncretism in Ancient and Modern Greek passives

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BCGL 12: Suppletion, allomorphy, and syncretism,
Brussels, December 16–17, 2019

1 Introduction

1.1 Locality and allomorphy

- An ongoing debate concerning **locality conditions on allomorphy**: is allomorphy conditioned by strict node adjacency (+pruning, etc., Embick 2010, 2012, ...) or by **spans** of ordered terminal nodes (e.g., Svenonius 2012, 2016)?
- ... in **Distributed Morphology (DM)**: word formation = syntactic head movement + postsyntactic linearization & Vocabulary Insertion (VI), cf. Halle and Marantz 1993, Marantz 1997, Harley and Noyer 1999, Embick and Noyer 2007, Embick 2010, 2015, etc.
- Stem/root allomorphy in the MG verb has been used to argue *for* (Merchant 2015) and *against* (Christopoulos and Petrosino 2018) span-conditioned allomorphy:
  - Merchant 2015: stem allomorphy is triggered by a combination of features of the higher heads Voice and Asp, therefore operating with "spans" becomes necessary. The MG passive(/)perfective suffix *-th-* spells out the nonactive Voice head Voice[-act] in the context Asp[+pfv]; together these heads trigger "stem" allomorphy of the root+v, (1a).
  - Christopoulos and Petrosino 2018: MG *-th-* spells out a *fused* Voice/Asp head; phonologically empty heads like v in (1) are "pruned"; strict linear adjacency is sufficient to account for MG root allomorphy, (1b).

(1) MG *sirthike* 'was dragged' (3sg.pfv.pass. of *serno* 'I drag')
  a. Merchant 2015: $\textbf{sir}_{\sqrt{+v}}\textbf{-th}_{\text{Voice[-act]}}\textbf{-ik}_{\text{Asp[+pfv]}}\textbf{-e}_{\text{T[3sg,+past]}}$
  b. Christopoulos and Petrosino 2018: $\textbf{sir}_{\sqrt{}}\textbf{-th}_{\text{Voice[-act],Asp[+pfv]}}\textbf{-ik}_{\text{T[+past]}}\textbf{-e}_{\text{AGR[3sg]}}$

- Problem: both accounts fail to derive the fact that act./nonact. Voice morphology is also expressed on the *endings* in MG verbs like (1), and that these verbs moreover select the *active* set of endings, i.e., the set of endings that is usually found in the context [-nonact]/[+act].
- The status/expression of the categories of the "verbal spine" in MG, crucially v, Voice, and Asp, remains at issue (on v/Voice in MG cf. also Alexiadou and Anagnostopoulou 2004, Alexiadou 2010, Alexiadou et al. 2015, Panagiotidis et al. 2017).

1.2 Today's goals

- Approach the locality problem from the perspective of Ancient Greek verbal morphology, especially the different passivization types in AG & what they tell us about the realization of v, Voice, and Asp.
- Propose a uniform exponence of Voice in AG finite and nonfinite verbal forms.
- Address problematic categories such as the future passive and (semi)deponents.
- Discuss implications for MG.

1.3 Voice and stem allomorphy in MG

1.3.1 Merchant 2015

MG stem allomorphy as in (3) appears to be triggered by a combination of features on the adjacent heads Voice and Asp; this violates **node adjacency**, (2) (Bobaljik 2000, 2012, Embick 2010, 2012).

(2) Insertion & node adjacency (Merchant 2015, based on Embick 2012)

a. Insertion proceeds from the inside-out.
b. Contextual allomorphy requires concatenation (linear adjacency).

(3) Stem suppletion in the MG suppletive verb *troo* 'I eat' (modified from Merchant 2015: 277; segmentation based on Rivero 1990, Holton et al. 1997, Spyropoulos and Revithiadou 2009.)

a. ACTIVE.IMPERFECTIVE.NONPAST
1sg **tró**-o 1lp **tró**-me

b. NONACTIVE.IMPERFECTIVE.NONPAST
1sg **tróγ**-ome 1lp **troγ**-ómaste

c. ACTIVE.IMPERFECTIVE.PAST
1sg é-**tróγ**-a 1lp **tróγ**-ame

d. NONACTIVE.IMPERFECTIVE.PAST
1sg **troγ**-ómun 1lp **troγ**-ómastan

e. ACTIVE.PERFECTIVE.NONPAST
1sg *fá*-o 1pl *fá*-me

f. NONACTIVE.PERFECTIVE.NONPAST
1sg faγo-θ-ó 1pl faγo-θ-úme

g. ACTIVE.PERFECTIVE.PAST
1sg é-*faγ*-a 1pl *fáγ*-ame

h. NONACTIVE.PERFECTIVE.PAST
1sg faγó-θ-ik-a 1pl faγo-θ-ík-ame

(4) Apparent VI rules for (3)

a. $\sqrt{EAT}$ → fa(γ) / _ Voice[+act] Asp[+perf]
b. $\sqrt{EAT}$ → faγo / _ Voice[-act] Asp[+perf]
c. $\sqrt{EAT}$ → tro(γ)

→ violates node adjacency, assuming the standard order of functional projections in (5).

(5) $\sqrt{}$–*v*–Voice–Asp—T/Agr

Merchant's solution: **spans** of adjacent terminal nodes (see, e.g., Svenonius 2012, 2016)

(6) Definition of "span", Merchant 2015:
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.

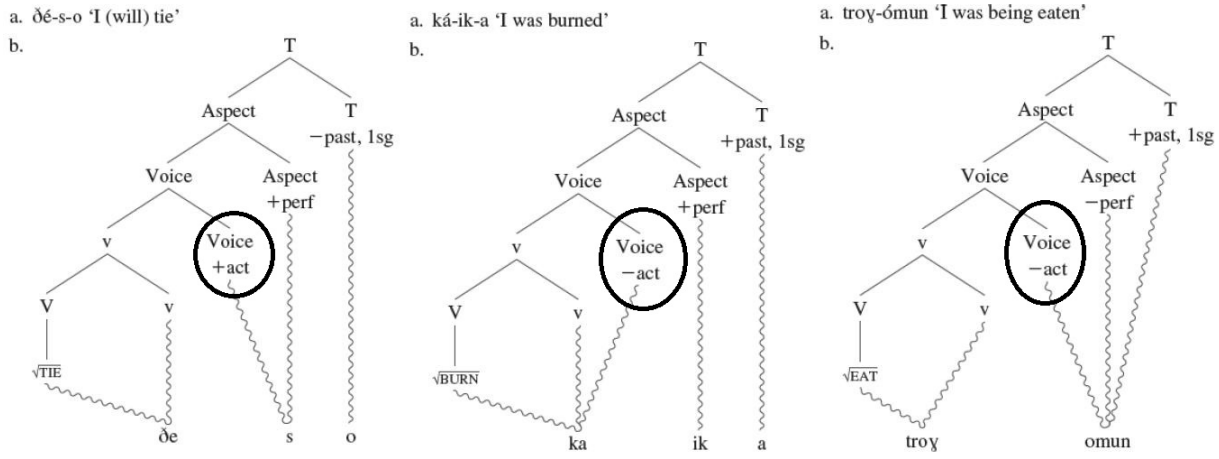
(7) **Spanning Insertion Hypothesis**: A span and only a span can be targeted for VI

(8) **Span Adjacency Hypothesis**: Allomorphy is conditioned only by an adjacent span.

→ (4) can now be formalized: the allomorphs of the stem $\sqrt{}$+*v* are conditioned by (features of) the higher span Voice+Asp. The cost: Merchant is forced assume that Voice is realized in at least four different ways:

- as *-th-* in the context Asp[+pfv]: in the nonactive perfective past, e.g., *faγó-θ-ik-a* in (3).
- span $\sqrt{}$+*v*+Voice OR Voice[+act]+Asp[+pfv]: act. ppfv. nonpast, e.g., *dé-s-o* 'I will tie', (9).
- span $\sqrt{}$+*v*+Voice[-act]: nonact. pfv. past of "athetic verbs", e.g., *ká-ik-a* 'was burned', (9).
- span Voice+Asp+T/Agr: nonact. ipfv. past, e.g., *troγ-omun* 'I was being eaten', (9).

(9) Exponence of Voice in MG (from Merchant 2015)



> "Allomorphy is indeed conditioned locally, but not, as the Node Adjacency Hypothesis had it, only by feature of adjacent nodes; rather, it is conditioned by features in adjacent spans, whether or not those spans are themselves lexicalized by Vocabulary items." (Merchant 2015: 294)

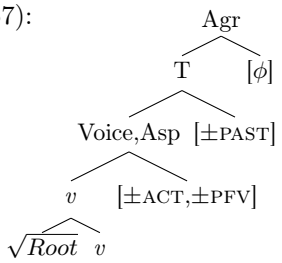
1.3.2 Christopoulos and Petrosino 2018

Christopoulos and Petrosino 2018 argue that Merchant's account misses a crucial generalization, formulated in (10) (based on Calabrese 2015, Calabrese Forthcoming):

(10) Verbalizer/Root-Allomorphy generalization
If a verbal form shows root-allomorphy, the form lacks a verbalizer.

They propose a language-wide, postsyntactic **rebracketing** of the nodes Voice and Asp (independent of their features), (11).

(11) Rebracketing (Christopoulos & Petrosino 2018: 157):



They moreover argue that *-th-* realizes the fused node [+PFV,-ACT], while *-ik-* realizes [+PAST] in the context [-ACT,+PFV].

- Motivation for segmentation *-th-ik-* in the nonactive perfective past: both morphemes occur independently, *-th-* in the nonactive perfective nonpast (cf. *faγo-th-ó* in (5)), *-ik-* in the nonactive perfective past of so-called "athetic" passive verbs, e.g., *ka-ik-a* 'was burned', *straf-ik-a* 'was turned', *traf-ik-a* 'was nourished', *vrax-ik-a* 'became wet', etc.

(12) *serno* 'I drag' (Christopoulos and Petrosino 2018: 158)

	+ACT		-ACT	
3SG	-PFV	+PFV	-PFV	+PFV
-PAST	**ser**-n-i	**sir**-i	**ser**-n-ete	**sir**-th-i
+PAST	e-**ser**-n-e	e-**sir**-e	**ser**-n-otan	**sir**-th-ik-e

(13) a. $\sqrt{DRAG} \leftrightarrow$ *sir-* / _ [+PFV] b. $\sqrt{DRAG} \leftrightarrow$ *ser-*

Problems:

- Neither account explicitly addresses/derives the expression of Voice on the *endings*, e.g., in the nonperfective active/nonactive forms in (3)—in fact, both Merchant and Christopoulos & Petrosino seem to predict *nonactive* endings in the *-th-*forms because of the [-ACT] feature on Voice
- ... and the distribution of endings really suggests that the "active" endings (1sg. present *-o*, past *-a* in (3)) are the "elsewhere" set.
  - Merchant assumes that nonactive is part of a portmanteaux suffix expressing Voice,Asp,T, cf. *troγ-ómun* in (9)—Christopoulos and Petrosino 2018 argue that the nonperfective nonactive endings may actually be segmentable (e.g., *-n* for [+PAST]).
- Deriving the root allomorphy in (13) works equally well assuming *ser-* is conditioned by whatever *-n-* is (*v* or Asp[-pfv]) and taking *sir-* as elsewhere → verbalizer/root-allomorphy generalization?

1.4 Summary

- Conditions on root/stem allomorphy, status of the active/nonactive endings (exponence of Voice?), status of pass.pfv. *-thika* etc. ... an ongoing debate.
- ... comparison with Ancient Greek could shed light on these issues.

2 Passive and Voice in Ancient Greek

2.1 Verbal stems & voice morphology

- Voice in AG is expressed on the finite verbal endings together with Person, Number, and Tense [±past].
- These endings combine with different **verbal stems**: present [-pfv, ±past], aorist [+pfv, +past], perfect [?pfv, ±past], future [±pfv, -past] and **moods** (subjunctive, optative, indicative, imperative).
  - I'll ignore the augment in the following—analyzed as T[+past] prefix by Reed (2014); on the augment in MG see Spyropoulos and Revithiadou 2009.
  - Perfect is analyzed as Asp[-aor, +perf] by Reed (2014), but a compositional solution (type of v + type of Asp) seems preferable.
- **Voice allomorphy**: endings are either **active** (ACT) or **nonactive** (NACT; a.k.a. **middle**).

(14) AG **active** ind. & nonfinite forms of *lū́ō* 'release' (dual, pluperf., imperatives excluded); preliminary segmentation.

	(a) pres.	(b) ipf.	(c) pres.subj.	(d) pres.opt.	(e) aor.	(f) aor.subj.	(g) aor.opt.	(h) perf.
1sg	lū́-ō	é-lū-on	lū́-ō	lū́-oi-mi	é-lū-s-a	lū́-s-ō	lū́-s-ai-mi	lé-lu-k-a
2sg	lū́-eis	é-lū-es	lū́-ēis	lū́-oi-s	é-lū-s-as	lū́-s-ēis	lū́-s-ai-s	lé-lu-k-as
3sg	lū́-ei	é-lū-e	lū́-ēi	lū́-oi	é-lū-s-e	lū́-s-ēi	lū́-s-ai	lé-lu-k-e
1pl	lū́-omen	e-lū́-omen	lū́-ōmen	lū́-oi-men	e-lū́-s-amen	lū́-s-ōmen	lū́-s-ai-men	le-lú-k-amen
2pl	lū́-ete	e-lū́-ete	lū́-ēte	lū́-oi-te	e-lū́-s-ate	lū́-s-ēte	lū́-s-ai-te	le-lú-k-ate
3pl	lū́-ousi	é-lū-on	lū́-ōsi	lū́-oi-en	é-lū-s-an	lū́-s-ōsi	lū́-s-ai-en	le-lú-k-āsi
Ptcp.	lū́-ōn m., lū́-ousa f., lū̃-on n.				lū́-s-ās m., lū́-s-āsa f., lū̃s-an n.			le-lu-k-ós, etc.
Inf.	lū́-ein				lū̃-s-ai			le-lu-k-énai

(15) AG **nonactive** ind. & nonfinite forms of *lū́omai* 'release for myself; deliver, redeem'.

	(a) pres.	(b) ipf.	(c) pres.subj.	(d) pres.opt.	(e) aor.	(f) aor.subj.	(g) aor.opt.	(h) perf.
1sg	lū́-omai	e-lū-ómēn	lū́-ōmai	lū-oí-mēn	e-lū-s-ámēn	lū́-s-ōmai	lū-s-aí-mēn	lé-lu-mai
2sg	lū́-ēi	e-lū́-ou	lū́-ēi	lū́-oi-o	e-lū́-s-ō	lū́-s-ēi	lū́-s-ai-o	lé-lu-sai
3sg	lū́-etai	e-lū́-eto	lū́-ētai	lū́-oi-to	e-lū́-s-ato	lū́-s-ētai	lū́-s-ai-to	lé-lu-tai
1pl	lu-ómetha	e-lū-ómetha	lū-ómetha	lū-oí-metha	e-lū-s-ámetha	lū-s-ómetha	lū-s-aí-metha	le-lú-metha
2pl	lū́-esthe	e-lū́-esthe	lū́-ēsthe	lū́-oi-sthe	e-lū́-s-asthe	lū́-s-ēsthe	lū́-s-ai-sthe	lé-lu-sthe
3pl	lū́-ontai	e-lū́-onto	lū́-ōntai	lū́-oi-nto	e-lū́-s-anto	lū́-s-ōntai	lū́-s-ai-nto	lé-lu-ntai
Ptcp.	lū-ómen-os m., lū-omén-ē f., lū-ómen-on n.				lū-s-ámen-os m., -ē f., -on n.			le-lu-mén-os, etc.
Inf.	lū́-esthai				lū́-s-asthai			le-lú-sthai

- Goal: a consistent/uniform analysis of exponence of v & Voice.

2.2 Voice

- AG nonactive expresses typologically well-attested range of functions of nonactive/"reflexive"/"middle" morphology, cf. Geniušienė 1987, Klaiman 1991, Kemmer 1993, Kaufmann 2007, Alexiadou & Doron 2012.
- On AG, cf. Bakker 1994, Allan 2003, Grestenberger 2016, 2018, Forthcoming; on MG Embick 1998, 2004, Manney 2000, Zombolou 2004, Alexiadou and Anagnostopoulou 2004, Alexiadou 2010, 2013, 2018b, 2018a, Alexiadou et al. 2015, Zombolou and Alexiadou 2014; similarly in Modern Albanian: Rivero 1990, Kallulli 1999, 2006, 2007, Manzini et al. 2016, etc.

(16) Canonical contexts of nonactive morphology in AG & MG (ipfv.)

	a. Ancient Greek		b. Modern Greek	
	nonactive	active	nonactive	active
anticausative	*trépho-mai* 'am nourished, grow'	*tréph-ō*	*keome* 'burn' (itr.)	*keo*
refl./recip.	*loúo-mai* 'wash myself, bathe'	*loú-ō*	*plenome* 'wash myself'	*pleno*
selfbenefact.	*phéro-mai* 'carry for myself; win'	*pher-ō*	*promithevome* 'supply myself (with)'	*promithevo*
passive	*bállo-mai* 'am/get struck, hit'	*báll-ō*	*skotonome* 'am/get killed'	*skotono*

Passive = a canonical context/syntactic environment for nonactive morphology. But AG famously has an apparent "third voice" in the aorist, the *thĕ*-aorist ("passive aorist") → **voice suppletion**?

(17) AG aorist active, middle, passive of *lū́ō* 'release' (A = augment)

a. aorist act.	b. aorist mid./non-act.	c. **aorist pass.**
é-lū-s-a	*e-lū-sá-mēn*	*e-lú-thē-n*
A-release-PFV-1SG.PAST.ACT	A-release-PFV-1SG.PAST.NACT	A-release-PASS.PFV-1SG.PAST.ACT
"I released (sth./sbdy.)"	"I released for myself"	"I was released"

(18) Two types of passive: "inflectional" vs. "derivational" passive (Grestenberger Forthcoming):

a. Inflectional (present)	b. Derivational (aorist)
*lū́-o**mai***	*e-lú-**thē-n***
release-1SG.PRES.**NACT**	A-release-PFV.**PASS**-1SG.PAST.**ACT**
"I am/get released"	"I was released"

Relationship between inflectional and derivational passive apparently suppletive in the perfective stem forms (cf. Schwyzer 1939, Jankuhn 1969, Allan 2003, Rijksbaron 2006, van Emde Boas et al. 2019, etc.). → why?

2.3 Background: *v* and Voice

- **Voice**: introduces the external argument and its theta-role (agent; Kratzer 1996, Harley 2013, 2017, Alexiadou et al. 2015, Schäfer 2017, etc.).
- ***v***: categorizes roots as verbs ("verbalizer") and determines their aspectual semantics (inchoative, causative, stative, activity ...; Folli and Harley 2004, Harley 2011, 2013, 2017, Panagiotidis et al. 2017, Alexiadou and Lohndal 2017 etc.)

(19) Spell-Out condition on nonactive morphology (Alexiadou et al. 2015 based on Embick 2004)
Voice → Voice[Nonact]/_ No DP specifier

Formalized as a feature [±D] on (different types of) Voice[1]:

(20) Alexiadou et al. 2015, Schäfer 2017: Typology of Voice (modified):

a. Active Voice: {$\lambda x \lambda e$[agent(e, x)], +D} (active)
   - Canonical active (transitive verb), active morph. in Greek-type languages

b. **Medio-passive Voice: {$\lambda e \exists x$[agent(e, x)], -D}**
   - Morphologically non-active "short passive" in Greek-type languages
   - "unsaturated Voice": introduces an agent θ-role, but no external argument DP to saturate that role → agent = existentially bound

c. **Medio-marked expletive Voice: {Ø, -D}**
   - Morphologically non-active anticausatives in Greek-type languages

d. **Passive input Voice: {$\lambda x \lambda e$[agent(e, x)], -D}**
   - "unsaturated Voice": introduces an agent θ-role, but no external argument DP
   - → input for "high passive" Voice head (Bruening 2013) with an adjoined agent *by*-phrase which saturates the agent θ-role (Schäfer 2017, Bruening 2013)

(21) Spell-Out condition on nonactive morphology, revising (19):
T[ϕ,±past, Q] ↔ T[ϕ,±past,NONACT]/Voice[-D](...)⌢_

Q = placeholder variable for phonological exponence (Embick 2015); NONACT = nonactive allomorphs of T/Agr.

- (21) is now a context-sensitive insertion rule—but which version of locality applies?
- Crucially, **active morphology = elsewhere**, inserted when (21) does not apply.
  - In transitive causative and agentive verbs (because they have an external argument/are [+D])
  - In unaccusatives without a Voice layer, cf. (22) (on this type see also Alexiadou and Anagnostopoulou 2004, Schäfer 2008, Alexiadou 2010, etc.)

[1] Alexiadou et al. 2015 and Schäfer 2017 use a privative feature D, but in order to formalize (19) correctly as a context-sensitive Spell-Out rule, the feature has to be binary, thus Voice[-D].

(22) Active unaccusatives in Ancient and Modern Greek (*activa tantum*):
   a. AG: *eĩmi* 'go', *zṓō* 'live', *mímnō* 'stay', *rhéō* 'flow', etc.
   b. MG: *asprizo* 'whiten' (tr./itr.), *plateno* 'widen' (tr./itr.), *reo* 'flow', *meno* 'stay', etc.

2.4 Nonalternating nonactive verbs (*media tantum*)

In addition to *activa tantum*, AG, like MG, also has a large class of verbs that do not alternate and take only nonactive morphology (*media tantum*). These mostly belong to the canonical classes in (16) and the nonalternating classes in (23) (cf. Zombolou and Alexiadou 2014 for MG).

(23) Nonalternating nonactive verbs
   a. Experiencer/psych verbs
   b. Stative verbs
   c. (Some) verbs of motion
   d. Deadjectival and denominal stative and inchoative verbs
   e. (Some) verbs of speech and communication[2]
   f. **Deponents**: agentive, mostly transitive verbs with nonactive morphology → **form-function mismatch**, cf. Alexiadou 2013, Kallulli 2013, Grestenberger 2014, 2018, 2019.

- Captured by (21) assuming (some version of) Schäfer's **expletive Voice** (Voice[Ø, -D]).
- For deponents, agent is introduced *noncanonically* below Voice[-D]; selection of nonactive allomorphs of T/Agr proceeds just like in regular verbs.

2.5 Passive

Given our previous assumptions, nonactive morphology should canonically appear in (short and long) passives in AG, and this is indeed the case:

(24) Hom., *Il.* 6.56–7:

ἦ̃	soì	**árista**	**pepoíē-tai**	katà	oĩkon	**pròs Trṓōn**
PTCL	you.DAT	best.NOM.PL.N	do.PF-3SG.PRS.NACT	towards	house.ACC	by Trojans.GEN

"(So) were the best things done to you in your house by the Trojans?"

- **Problem #1**: Variation w.r.t. to the expression of the demoted agent in AG: different prepositions + GEN or DAT, e.g., *hupó* + gen. 'from, under', *apó* + gen. 'from', *ek* + gen. 'out of', *pará* + gen. 'from', *prós* + gen., dat. 'from, by', etc., cf. Schwyzer 1943, Luraghi 2003, George 2005, Lavidas 2012, Grestenberger Forthcoming.
- **Problem #2**: Certain formally active unaccusative verbs like *(apo)thnḗ(i)skō* 'die' can occur with demoted agents, (s. e.g., George 2005, Anagnostopoulou and Sevdali 2015) → This has led to a certain skepticism as to whether agent adjuncts can be used to diagnose passive structures in AG.

2.6 Two types of passive?

In addition to passivization via nonactive morphology, AG also uses another strategy for passivization, which is restricted to the aorist/perfective stem (passivization via nonactive is unrestricted), cf. (25).

- The "passive aorist"/"**derivational passive** is formed with the **root-adjacent** suffix -*thĕ̄*-.

(25) Passive aorist forms of *lū́ō* 'release'

	(a) aor.	(b) aor.subj.	(c) aor.opt.	(d) aor.fut.	(e) aor.fut.opt.
1sg	e-lú-thē̄-n	lu-th-ṍ	lu-the-íē̄-n	lu-thḗ-s-omai	lu-thē̄-s-oí-mēn
2sg	e-lú-thē̄-s	lu-th-ē̃is	lu-the-íē̄-s	lu-thḗ-s-ēi	lu-thḗ-s-oi-o
3sg	e-lú-thē̄	lu-th-ē̃i	lu-the-íē̄	lu-thḗ-s-etai	lu-thḗ-s-oi-to
1pl	e-lú-thē̄-men	lu-th-ṍmen	lu-the-ĩ-men/lu-the-íē̄-men	lu-thē̄-s-ómetha	lu-thē̄-s-oí-metha
2pl	e-lú-thē̄-te	lu-th-ē̃te	lu-the-ĩ-te/lu-the-íē̄-te	lu-thḗ-s-esthe	lu-thḗ-s-oi-sthe
3pl	e-lú-thē̄-san (H. -th-en)	lu-th-ṍsi	lu-the-ĩ-en/lu-the-íē̄-san	lu-thḗ-s-ontai	lu-thḗ-s-oi-nto
Ptcp	lu-th-eís, lu-th-eĩsa, lu-thén			lu-thē̄-s-ómen-os, -ē̄, -on	
Inf	lu-thē̃nai			lu-thḗ-s-esthai	

[2]Generalizations w.r.t. canonical voice morphology are difficult for this class, cf. Kemmer 1993: 134, Grestenberger 2014 (for AG, e.g., act. *aitéō* 'beg, demand', *phēmí* 'say', *kaléō* 'summon', etc.; nonact. *líssomai* 'beg', *eúkhomai* 'praise', *eíromai* 'ask', *kélomai* 'urge', etc.).

- **-*thē*- obligatorily cooccurs with the *active* set of endings**, (25a–c)
  - ... *except* in the (post-Homeric) future passive, (25d–e), on which more below.
- Its allomorph -*ĕ*- becomes obsolete in Classical Greek/Koiné; in Homer it's primarily found with inchoative/anticausative verbs rather than with passives, cf. Tronci 2005, García Ramón 2014 (though some passive uses do occur). Some verbs can take both -*ē*- and -*thē*-, (26).

(26) AG verbs with -*ē*-/-*thē*-aorists

present		-*ē*-aor. (> MG "athetic passives")	-*thē*-aor.
kaí-ō	(< **kāw-jō*) 'burn, kindle'	e-káē (Hom.) 'burned' (itr.)	e-kaú-thē (Hdt.) 'burned' (itr.)
klépt-ō	'steal'	e-kláp-ē-n 'was stolen' (Pl., Xen.)	e-kléph-thē-n (Hdt.) 'was stolen'
stréph-ō	'turn'	e-straph-ē-n (Pl., Soph.) 'turned'	e-streph-thē-n (Hom.) 'turned'
tréph-ō	'grow, nourish'	e-tráph-ē-n (Hom.) 'grew' (itr.)	e-thréph-thē-n (Hes.) 'grew' (itr.)
trép-ō	'turn'	e-tráp-ē-n (Hdt.) 'turned' (itr.)	e-tráph-thē-n (Hom.) 'turned' (itr.)
brékh-ō	'become wet, drenched'	e-brákh-ē-n (Anacr.)	e-brékh-thē-n (Xen., Eur.)

- Inflectional & derivational passive cannot have the same type of Voice head, since the voice allomorphy (active/nonactive endings) is a result of different features on Voice (or the absence of Voice) in the approach outlined above (section 2.2).
- ... and if this is true, we would expect the "two types of passive" to behave slightly differently w.r.t. passivization diagnostics such as compatibility with demoted agents, control clauses, agent-oriented adverbs, maybe case on the subject, etc.

... but this does not seem to be the case: like the inflectional passive, the derivational passive occurs with demoted agents, (27); both behave the same w.r.t. promotion to subject (ACC, GEN, DAT objects → NOM subjects, cf. Anagnostopoulou and Sevdali 2015).

(27) Passive aorist with overt agent adjuncts (cf. (24) for the inflectional passive) Hdt., *Hist.* 1.87.1:

eí **tí** hoi **kekharisménon eks autoũ e-dōré-thē ...**
if anything.NOM.N him.DAT pleasing.NOM of self.GEN A-give-V.PASS.3SG.PAST.NACT

"If anything pleasing had (ever) been given to him$_i$ by him$_j$ ..." (i = Apollo, j = Croesus of Lydia)

(28) Properties of inflectional & derivational passives in AG (Grestenberger Forthcoming)

Properties	infl.	deriv.
(Acc.)theme → nom.subj.	✔	✔
Demoted agent → dat.; prep. + gen./dat. case	?	?
Eventive	✔	✔
Subject-initial	✔	(✔)
Subject controls into infinitives	✔	✔
Subject controls reflexives	(✔?)	(✔?)

3 Analysis

3.1 Finite/nonfinite active/nonactive forms

- Goal: a uniform exponence of Voice across categories
- Assumptions:
  - Some version of (29) applies in AG (just like in MG), s. above:

    (29) Spell-Out condition on nonactive morphology:
    T[ϕ,±past,Q] ↔ T[ϕ,±past,NONACT]/Voice[-D](...)⌢_

  - Order of functional projections: $\sqrt{}$–v–Voice–Asp–(Mod$_{\text{FUT}}$?)–(Mod$_{\text{OPT}}$)–T/Agr

– v+Voice = a **span**.

– The aorist, present, perfect "stem-forming" suffixes of AG (*-e/o-*, *-s(a)-*, *-n-*, *-nŭ̄-*, etc.) are, despite their designations as "aorist" and "present" suffixes, realizations of the span v+Voice.

– they are licensed in the context of either Asp[+pfv] ("aorist stem") or Asp[-pfv] ("present" or "imperfective" stem). This accounts for their behavior as "low" verbalizers on the one hand (including their ability to trigger root allomorphy), and their relation to syntactic aspect on the other hand.

– The **theme vowel** is also analyzed as v-element (or adjoined to v, cf. Oltra-Massuet 1999).

∗ In complementary distribution with other verbalizers, (30a); triggers root allomorphy, (30b).

∗ Acts as a "default verbalizer" for denominal verbs and contract verbs (provided the contract verbs can/should be analyzed as synchronically denominal), (30c).

∗ allows for a (fairly) uniform segmentation of "thematic" and "athematic" endings → Appendix.

(30) a. Theme vowel & verbalizers

	-nŭ̄-	pres.RED	perf.	*-s(a)*-aor.	theme vowel
1pl	*deík-**nu**-men*	*tí*$_{\text{RED}}$*the-Ø-men*	*le*$_{\text{RED}}$*lú-**ka**-men*	*(e)lū́-**sa**-men*	*lū́-**o**-men*
	'show'	'set, place'	'release'	'release'	'release'

b. Theme vowel and root allomorphy

	pres	aor	perf	
1pl	*stéll-**o**-men*	*(e)steíl-a-men*	*e-stál-**ka**-men*	'send'
1pl	*derk-**ó**-metha*	*(e)drák-**o**-men*	*de*$_{\text{RED}}$*dórk-**a**-men*	'see'

c. Denominal verbs

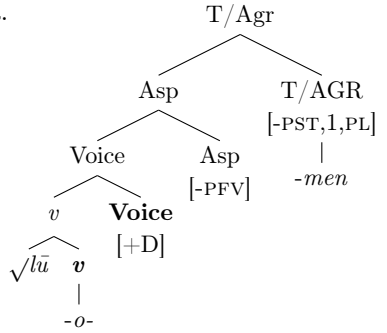
	base				base		
1pl	*basileú*$_n$*-**o**-men*	*basil-eú-s*	'king'	1pl	*poimaín*$_n$*-**o**-men*	*poiḿēn*	'shepherd'
1pl	*timō̃-men* < *tīma*$_n$*-**o**-men*	*tīmá-, -é*	'esteem'	1pl	*salpíz*$_n$*-**o**-men*	*sálpi(n)g-*	'trumpet'

- Spyropoulos et al. 2015 and Panagiotidis et al. 2017 analyze MG *-ev-*, *-en-*, *-iz-*, etc. as verbalizers, as well as the "theme vowels" of verbs like *aγapó* 'love', which are historically contract verbs. This is not incompatible with the account of (30) as synchronically denominal—rather, it suggests that the nominal suffixes in forms like (30) were reanalyzed as verbalizers on the way to MG.
- Problem: "complex thematic" suffixes like *-n-e/o-* (*temnō* 'cut', *kamnō* 'work, toil', *pínō* 'drink', etc.), *-an-e/o-* (*harmartánō* 'miss, err', *lambánō* 'grasp, take', etc.), *-(i)sk-e/o-* (*gēráskō* 'grow old', *heurískō* 'find', etc.).

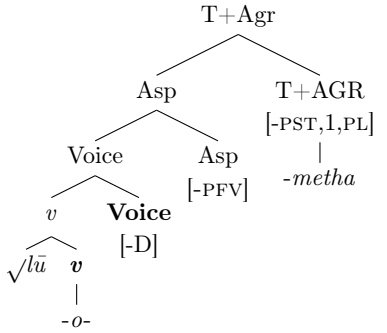
→ Given these assumptions, the present, aorist, and perfect active & nonact. will have the structures in (31).

(31) a. 1pl.pres.act. *lū́omen* 'we release', b. 1pl.pres.nonact. *lūometha* 'we release for ourselves/are released'

a.



b.



(32) Partial paradigm of AG *lū́ō* 'release' (augment excluded), nonactive = NAct

stem	structure & exponence
a. pr.act.	**lū**$_{\sqrt{}}$**-o**$_{v\frown\text{Voice[+D]}}$-Ø$_{\text{Asp[-pfv]}}$-**ō**$_{\text{T/Agr[1sg,-past]}}$ 'I release' [lū́ō]
b. aor.act.	**lū**$_{\sqrt{}}$**-s(a)**$_{v\frown\text{Voice[+D]}}$-Ø$_{\text{Asp[+pfv]}}$-**a**$_{\text{T/Agr[1sg,+past]}}$ 'I released' [(e)lūsa]
c. aor.NAct.	**lū**$_{\sqrt{}}$**-s(a)**$_{v\frown\text{Voice[-D]}}$-Ø$_{\text{Asp[+pfv]}}$-**mēn**$_{\text{T/Agr[1sg,+NAct,+past]}}$ '... for myself'
d. pr.subj.NAct.	**lū**$_{\sqrt{}}$**-o**$_{v\frown\text{Voice[-D]}}$-Ø$_{\text{Asp[-pfv]}}$-**o**$_{\text{Mod[subj]}}$-**mai**$_{\text{T/Agr[1sg,+NAct,-past]}}$ 'shall ...'

- T/Agr-exponence is conditioned by lower *span* (size can vary, see below).

3.2 The passive aorist

- AG *-thē-* does not realize Voice, but *v* in the context of Asp[+pfv], cf. Grestenberger 2016, Forthcoming. Evidence:
  - *-thē-* co-occurs with active endings—even assuming these are default/ elsewhere endings, this is incompatible with having Voice[+nonact]/Voice[-act]/Voice[-D] in the structure.
  - It is in complementary distribution with other *v*-elements/verbalizers, (34). Even if these were to be analyzed as exponents of Asp, this distribution would not be predicted.
  - It is only licensed in a particular aspectual environment (+PFV), like other verbalizers, but *unlike* Voice morphology on the endings, which is compatible with all "tense-aspect" stems.
  - If structures with *-(th)ē-* lacked Voice, we straightforwardly derive the obligatory active endings as elsewhere endings (cf. the active unaccusatives, section 3.2.)
  - Confirmed by origin/diachrony of *-(th)ē-*: Homeric *-thē-* and especially its (older) allomorph *-ē-* form mostly non-passive, usually stative or inchoative, aorists, (33).

(33) Non-passive *(th)ē*-aorists:

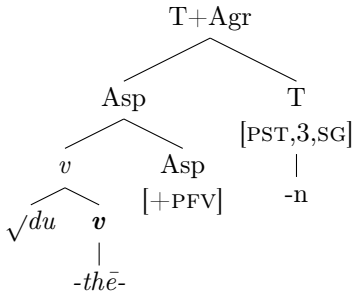
a. *e-rrú-**ē**-n* 'flowed, streamed' b. *e-pág-**ē**-n* 'became fixed' c. *e-krúph-**thē**-n* 'hid, became hidden'
A-flow-**V/PFV**-1SG.PST.ACT A-fix-**V/PFV**-1SG.PST.ACT A-hide-**V/PFV**-1SG.PST.ACT

(34) *-thē-* in complementary distribution with other *v*'s:

a. *dű-**n**-ō* 'sink' (sth.) b. *é-dū-**s**-a* 'sank' (sth.) c. *e-dú-**thē**-n* 'was sunk'
sink-**V.IPFV**-1SG.PRS.ACT A-sink-**V.PFV**-1SG.PST.ACT A-sink-**PASS.PFV**-1SG.PST.ACT

→ *edúthēn* instead of **edűsthēn* suggests a structure as in (35), with *-(th)ē-* spelling out *v*/_ Asp[+pfv].

(35) AG 1sg. passive aor. *edúthēn* 'I was sunk'



- What makes CG *-thē-* special is that it realizes *only* *v*, while other verbalizers realize a span *v*⌢Voice (irrespective of whether Voice has an external argument or not, i.e., [+D] or [-D]).
- → correctly predicts the aorist passive indicative, subjunctive, and optative in *-thē-*, (36), to surface with active endings.

(36) Partial paradigm of AG *-thē-*forms

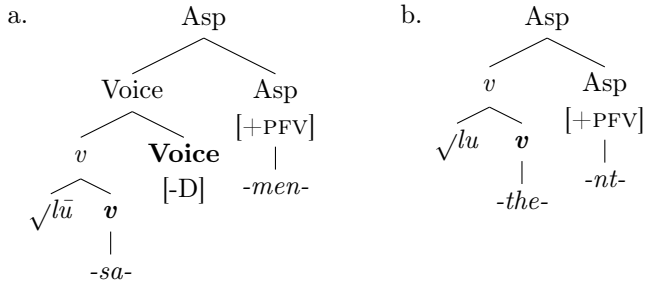
stem	structure & exponence
a. aor.pass.	**lu**$_{\surd}$-**th$\breve{\text{e}}$**$_{v}$-Ø$_{\text{Asp[+pfv]}}$-**n**$_{\text{T/Agr[1sg,+past]}}$ 'was released'
b. aor.pass.subj.	**lu**$_{\surd}$-**th$\breve{\text{e}}$**$_{v}$-Ø$_{\text{Asp[+pfv]}}$-**o**$_{\text{Mod[subj]}}$-**$\bar{\text{o}}$**$_{\text{T/Agr[1sg, -past]}}$ 'may have been released' [luthō]
c. aor.pass.opt.	**lu**$_{\surd}$-**th$\breve{\text{e}}$**$_{v}$-Ø$_{\text{Asp[+pfv]}}$-**i$\bar{\text{e}}$**$_{\text{Mod[opt]}}$-**n**$_{\text{T/Agr[1sg,+past]}}$ 'might have been released'

3.3 The participles

This analysis also derives various nonfinite forms of the AG verb. Assumptions:

- Participial suffixes like act./nonact. *-nt-* and *-men(os)* realize Asp when movement to/agreement with higher verbal functional projections is blocked (cf. Embick 2000, Bjorkman 2011, Alexiadou and Anagnostopoulou 2008, Alexiadou et al. 2015).
- The selection of the act./nonact. allomorphs of the participial suffixes is conditioned by the presence of Voice([±D]), like in the finite forms, accounting for their parallelism in aspectual semantics and valence (cf. Grestenberger 2017, 2018, based on Embick 2000).

(37) Participles of *lū̃ō̄*: a. aor.nonact. *lū̃sámen(os)* 'releasing for oneself/having released for oneself', b. pass.aor.ptcp. *lu-thé-nt-* (*lutheís*, *lutheĩsa*, etc.) 'released'



(38) Vocabulary Items for AG participles (excl. perfect active):

a. Asp ↔ *-men-*/Voice[-D]⌢_
b. Asp ↔ *-(e/o/a)-nt-*: elsewhere

- Crucially, we can maintain a consistent realization of *v*/Voice across finite and nonfinite environments with these assumptions (i.e., that Asp = Ø in the finite forms).

4 Open issues: a problematic future (passive)

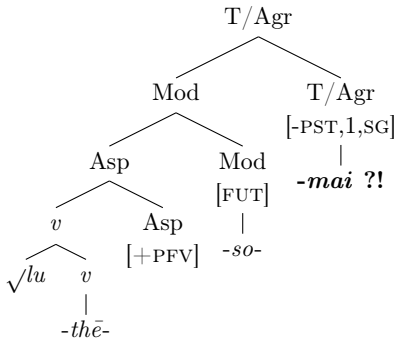
- In the future passive and future optative passive, we find obligatory nonactive morphology, (39e–f). This is neither expected under strict node adjacency nor under span adjacency.
- Moreover, this cannot be a property of the future suffix itself, which alternates between active and nonactive like other "tense-aspect" stem-forming suffixes, cf. (39a–d)

(39) AG future paradigm of *lū̃ō̄* 'release' (pluperf. & ipv. excluded)

	(a) act.	(b) nonact.	(c) opt.act.	(d) opt.nonact.	(e) pass.	(f) opt.pass.
1sg	lū̃-s-ō̄	lū̃-s-omai	lū̃-s-oi-mi	lū̄-s-oí-mēn	lu-thḗ-s-**omai**	lu-thē̄-s-oí-**mēn**
2sg	lū̃-s-eis	lū̃-s-ēi	lū̃-s-oi-s	lū̃-s-oi-o	lu-thḗ-s-**ēi**	lu-thḗ-s-oi-**o**
3sg	lū̃-s-ei	lū̃-s-etai	lū̃-s-oi	lū̃-s-oi-to	lu-thḗ-s-**etai**	lu-thḗ-s-oi-**to**
1pl	lū̃-s-omen	lū̄-s-ómetha	lū̃-s-oi-men	lū̄-s-oí-metha	lu-thē̄-s-**ómetha**	lu-thē̄-s-oí-**metha**
2pl	lū̃-s-ete	lū̃-s-esthe	lū̃-s-oi-te	lū̃-s-oi-sthe	lu-thḗ-s-**esthe**	lu-thḗ-s-oi-**sthe**
3pl	lū̃-s-ousi	lū̃-s-ontai	lū̃-s-oi-en	lū̃-s-oi-nto	lu-thḗ-s-**ontai**	lu-thḗ-s-oi-**nto**
Ptcp	lū̃-s-ōn, -ousa, -on		lū̄-s-ómen-os, -ē̄, -on		lu-thē̄-só-**men-os, -ē̄, -on**	
Inf	lū̃-s-ein		lū̃-s-ethai		lu-thḗ-s-**esthai**	

- The future passive is perfective (future middle = imperfective, Smyth and Messing 1956, Allan 2003), suggesting that *-thē̄-* also realizes *v*/_ Asp[+pfv] in the future passive (like in the aorist passive).
- The future marker *-se/o-* probably realizes (epistemic?) Mod (it is in complementary distribution with subj. markers, cf., e.g., Giannakidou 2014, Giannakidou and Mari 2018 for an analysis of future as modality), but its position in the structure is unexpected—too low for Mod.

(40) Future pass. *luthḗsomai* 'I will have been released'



- The morphosyntactic feature content of the lower heads alone cannot be the trigger for obligatory nonactive morphology in (40), since *-thē̄-* should trigger active morphology and *-se/o-* by itself is compatible with either active or non-active.

- Is the *phonological* content of Mod responsible? Inward-sensitive span-conditioned allomorphy that occurs only when **-thĕ**$_{v}$-Ø$_{\text{Asp[+pfv]}}$-**so**$_{\text{Mod[fut]}}$ are adjacent? (Cf. Embick 2012)
- Possible evidence: **semi-deponents**: morphologically active in the present but nonactive in the future; somewhat productive pattern in Attic (unlike purely lexically idiosyncratic deponents).

(41) AG semi-deponents

pres.: act.	fut.: nonact	meaning
aeíd-ō	*aeí-so-mai*	'(will) sing'
akoú-ō	*akoú-so-mai*	'(will) hear'
baín-ō	*bḗ-so-mai*	'(will) walk, go'
plé-ō	*pleú-so-mai*	'(will) sail'

- Kemmer 1993: 79ff.: inherently desiderative or volitional verbs ('want', 'will', etc.) tend to take nonactive morphology cross-linguistically, so maybe Mod$_{\text{FUT}}$ selects Voice without an external argument and introduces a volitional (or "affected" argument) ...(?) → we expect nonactive endings.
- → So maybe those speakers/varieties who had grammars in which (41) was obligatory in the future generalized this to *all* instances of the future suffix, synchronically describable as inward sensitive allomorphy on T/Agr.

Possibly corroborating evidence: the **Doric future**: in Doric Greek, the future passive = ACT → as predicted by the analysis of *-thē-* in 4.2 above.

- Doric = West Greek variety, some archaic features compared to Attic-Ionic.

(42) The "Doric future": adds an additional theme vowel between the future marker and the endings.

	Doric	Attic-Ionic
fut.	lou-**s-é-ō** wash-FUT-TH-1SG.**ACT** 'I will wash (sth.)'	loú-**s-ō** wash-FUT-1SG.**ACT** 'I will wash (sth.)'
fut.pass.	lou-**thē-s-e-ō** wash-PFV.PASS-FUT-TH-1SG.**ACT** 'I will be washed'	lou-**thē-so-mai** wash-PFV.PASS-FUT-1SG.**NACT** 'I will be washed'

- Additional evidence that the prediction w.r.t. to *-thē-* is correct: → triggers obligatory *active* morphology. Attic-Ionic future passive is actually the exception.
- Hypothesis: there are no or only a few semi-deponents in Doric → speakers never got the idea that Mod[FUT]⌢Agr should *always* undergo vocabulary insertion as Mod[*so*]-Agr[NACT]
  - Schwyzer 1939: 782 suggests that nonactive future verbs (semi-deponents) are indeed predominantly found in Attic, and less in other dialects → further corroboration needed.

5 Conclusion & Implications

5.1 On the plus side ...

- The account presented here operates with a uniform exponence of Voice in AG and a single, locally restricted environment for the "passive" suffix *-thē-* (and other "verbalizers").
- It explains the properties and distribution of *-thē-* through the behavior of verbal stem-forming suffixes more generally: they all appear low in the structure, but are only licensed in particular aspectual environments
- Asp = Ø in the finite forms, but realized by participial suffixes → uniform exponence of v & Voice across finite and nonfinite environments.
- Both root allomorphy (e.g., *lū*/*lu*, etc.) and Voice allomorphy on the endings are conditioned locally—assuming the spanning version of locality.
- ... spans are also necessary to account for the behavior of the (Att.-Ion.) future passive, and (maybe) certain other modal forms.

- To constrain use of spanning *for purposes of insertion*, maybe it should be treated as a last resort mechanism for synchronically "opaque" forms, e.g., through sound change (cf. Pomino & Remberger Forthcoming).

5.2 Open issues

- The AG future passive (and its participle!) & optative are problematic and require special assumptions—but this probably has something to do with the nature of the future suffix and its position in the structure, which requires further study.
- The syntactic behavior of the inflectional and derivational passive ...? If they are structurally different, should they also differ syntactically? How did they end up in a quasi-suppletive relationship?

5.3 Implications for MG

- Assuming the Spell-Out condition on active/nonactive endings proposed by Embick, Alexiadou et al., and others holds for MG, *-th-* should not be analyzed as exponent of Voice[-act] (or: Voice[nonact]).
- ... but this obviously creates problems, given that MG *-th-* does not act as a verbalizer (and is in fact compatible with overt *v*'s, cf. Christopoulos and Petrosino 2018, Alexiadou 2018b) and is in a suppletive relationship with the nonperfective nonactive forms, where Voice seems to be realized on the endings.
- Compatible with an "upwards" reanalysis account of *n* as *v* (*-ev-*, *-iz-*, etc.) and *v* as Asp (*-sa-*, *-k(a)-* ... *-thē-*/*-thi-*?).
- Alexiadou 2018b, following Christopoulos and Petrosino 2018, assumes "rebracketing" of [Voice,Asp] and argues that this may render the requirement on Voice void → active as default inflection in MG *-th-*forms.
- ... in which case a span may not be necessary for the nonperfective nonactive forms (contra Merchant 2015)—same mechanism/spell-out rule as in AG?
- Segmentation of *-thik-*: The argument goes: *-th-* and *-ik-* occur independently.
  - ... but *-ik-* only occurs in the so-called "athetic" perfective passive, e.g., *kaika* 'was burned' (καηκα), where a segmentation *-i-k-a* seems legitimate for diachronic reasons.
  - ... giving us *-thi-k-*, with *-th-* as a conditioned allomorph in the nonactive perfective, and *-i-* as lexically conditioned allomorph of "athetic verbs".

Appendix

(43) (Preliminary) list of Vocabulary Items for T/Agr from most to least specified (TV = theme vowel)

NONACTIVE, NONPAST			
T[1,SG,-PAST]	↔	-mai	/v⌢Voice[-D](⌢Asp...)⌢_
T[2,SG,-PAST]	↔	-ěi	/v_{TV}⌢Voice[-D](⌢Asp...)⌢_
		-sai	/v⌢Voice[-D](⌢Asp...)⌢_
T[3,SG,-PAST]	↔	-tai	/v⌢Voice[-D](⌢Asp...)⌢_
T[3,PL,-PAST]	↔	-ntai/-atai*	/v⌢Voice[-D](⌢Asp...)⌢_
NONACTIVE, PAST			
T[1,SG]	↔	-mēn	/v⌢Voice[-D](⌢Asp...)⌢_
T[2,SG]	↔	-ou	/v_{TV}⌢Voice[-D](⌢Asp...)⌢_
		-so	/v⌢Voice[-D](⌢Asp...)⌢_
T[3,SG]	↔	-to	/v⌢Voice[-D](⌢Asp...)⌢_
T[1,PL]	↔	-metha	/v⌢Voice[-D](⌢Asp...)⌢_
T[2,PL]	↔	-sthe	/v⌢Voice[-D](⌢Asp...)⌢_
T[3,PL]	↔	-nto/-ato*	/v⌢Voice[-D](⌢Asp...)⌢_
ACTIVE, NONPAST			
T[1,SG,-PAST]	↔	-ō	/v_{TV}(⌢Voice⌢Asp...)⌢_
	↔	-mi	
T[2,SG,-PAST]	↔	-is	/v_{TV}(⌢Voice⌢Asp...)⌢_
	↔	-s(i)	
T[3,SG,-PAST]	↔	-i	/v_{TV}(⌢Voice⌢Asp...)⌢_
	↔	-si/-ti	

T[3,PL,-PAST]	↔	-nti/-nsi	/v_{TV}(⌢Voice⌢Asp...)⌢_
	↔	-asi	
ACTIVE, PAST			
T[1,SG]	↔	-n/-a*	
T[2,SG]	↔	-stha	/List
		-s	
T[3,SG]	↔	-Ø	
T[1,PL]	↔	-men	
T[2,PL]	↔	-te	
T[3,PL]	↔	-n/-en(*)/-san	(/List)

- * = phonologically conditioned allomorphy.
- "Theme vowel-sensitive" Vocabulary Items can probably be reduced to the 1sg & 3sg active nonpast (everything else = "morpheme/morpheme readjustments", Embick 2012)
- Further segmentation may be possible, e.g., *m-* ↔ 1, *-i* ↔ [-past], etc., but this gets tricky.
- Makes the correct predictions except for the active sg. perfect, where we expect [-past] endings.

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