A voice allomorphy puzzle in the Classical Greek passive

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1 Introduction

- Classical Greek (CG) expresses active/non-active voice morphology on its verbal endings together with tense, person, and number (non-active traditionally called "middle")
  - (Greek dialects crash-course)
    - **Homeric Greek**: considered one of the most archaic varieties of 1st millenium Greek, 8th century BCE
    - **Classical Greek**: **Attic** Greek (Attic-Ionic dialect group), ca. 500–300 BCE
    - **Doric Greek**: **West Greek** dialect group, texts from ca. 700–200 BCE
- These combine with different verbal stems: present, aorist, perfect, future ... (+/- pfv)

(1) CG active/non-active endings

	"primary"/non-past						"secondary"/past					
	Active			Middle			Active			Middle		
	Sg.	Dual	Pl.	Sg.	Dual	Pl.	Sg.	Dual	Pl.	Sg.	Dual	Pl.
1	*-mi, -ō*	—	*-men, -mes*	*-mai*	—	*-metha*	*-n, -a*	—	*-(a)men*	*-(a)mēn*	—	*-(a)metha*
2	*-s(i), -eis*	*-ton*	*-te*	*-sai, -ēi*	*-sthon*	*-sthe*	*-s, -as*	*-(a)ton*	*-(a)te*	*-ou, -ō*	*-(a)sthon*	*-(a)sthe*
3	*-si/-ti, -ei*	*-ton*	*-(a)si, -ousi(n)*	*-tai*	*-sthon*	*-ntai*	*-e(n)*	*-(a)tēn*	*-(a)n*	*-(a)to*	*-(a)sthēn*	*-(a)nto*

All endings in (1) can occur with different stem-forming suffixes (NPAST = non-past, NACT = non-active; "middle"):

(2) Classical Greek: stem-formation + voice alternations

a. Present:
*loú-**Ø-ō*** : *loú-**o-mai***
wash-**PRES**-1SG.NPAST.**ACT** wash-**PRES**-1SG.NPAST.**NACT**
'I wash (sth.)' : 'I wash myself'

b. Aorist:
*é-lou-**s-a*** : *e-lou-**sá-mēn***
PAST-wash-**PFV**-1SG.PAST.**ACT** PAST-wash-**PFV**-1SG.PAST.**NACT**
'I washed (sth.)' : 'I washed myself'

c. Future:
*loú-**s-ō*** : *loú-**so-mai***
wash-**FUT**-1SG.NPAST.**ACT** wash-**FUT**-1SG.NPAST.**NACT**
'I will wash (sth.)' : 'I will wash myself'

Canonical functions of non-active morphology (cp. **?**, **?**, **?**, **?**, **?**, **?**, esp. on Modern Greek):

(3) a. (Some) Anticausatives[1]
b. Reflexives and reciprocals, including indirect reflexives (self-benefactives)
c. Dispositional/generic constructions
d. **(Medio)passives**

However, in *perfective stems* (aorist, future), the passive is *not* expressed via non-active morphology on the endings, but through a "passive suffix" ***-thē-*** (glossed as PFV.PASS), (4-a), which appears in the slot usually occupied by stem-forming suffixes next to the root, (4-b-c).

(4) *-thē-* alternates with stem-forming morphology (= *v*):
a. *e-dú-**thē**-n*
PAST-sink-**PASS.PFV**-1SG.ACT
'I was sunk'
b. *dú-**n**-ō*
sink-**PRES**-1SG.ACT
'I sink (sth.)'
c. *é-dū-**s**-a*
PAST-sink-**PFV**-1SG.ACT
'I sank (sth.)'

The puzzle: *-thē-* triggers obligatory *active* endings in the aorist (5-a-c), but obligatory *non-active* morphology in the future, (5-d-e).

(5) Classical Greek passives

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

The intervening future suffix *-so-/-s-* by itself can take either active or NAct morphology, (as in 2c), like most other stem-forming suffixes, (2a-b), so this alone cannot explain the odd variation.

- **Proposal**: The unexpected voice allomorphy in the CG passive is due to the "intervention" of the future suffix *-se/o-* between the pfv.pass. suffix *-thē-* (Asp) and the endings (Agr)
  - Either *span-conditioned allomorphy*: the morphosyntactic features PFV.PASS+FUT trigger non-active morphology
  - Or the intervention of a head with *phonological content* between *-thē-* and T/Agr (FUT in (5-d) and FUT+OPT in (5-e)
- T/Agr is sensitive to whether or not the *span* PFV.PASS+FUT is spelled out as portmanteau

[1] On different types of anticausatives in Greek see **?** and **?**.

2 Background

2.1 Spans

?, **?**, **?**: allomorphy is triggered by adjacent **spans** (= sets of ordered terminal nodes of a given extended projection; each terminal node itself is a span), *not* by strict node adjacency

(6) Definition of "span", **?**:
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 Vocabulary Insertion

Span-conditioned allomorphy:

- **Outward sensitivity**: allomorphy is triggered by a structurally higher span; only the *morphosyntactic content* of the higher span is relevant (**?**, **?**; vs. **?**: outward sensitive allomorphy can be sensitive to phonology)
- **Inward sensitivity**: a structurally lower span conditions allomorphy in a higher span

Prediction: For inward sensitivity, both the phonological & the morphosyntactic content of the lower span can become relevant (**?**) → linearization matters again.

- So does the Greek future passive show phonologically or morphosyntactically conditioned inward sensitivity?

2.2 Background: Voice in CG

In "Greek-type languages", "a Voice head is spelled out with non-active morphology [...] if it lacks a specifier." (**?** based on **?**, **?**).

(8) Spell-Out condition on non-active morphology (**?**: 101–2)
Voice → Voice[NonAct]/_ No DP specifier

"For the morphological realization of Voice, the non-projection of the external argument as a specifier is a necessary and sufficient condition to yield a non-active form, independently of whether Voice has semantic impact or not." (**?**: 101–2)

- (Non-)active morphology = portmanteau with T/Agr, sensitive to Voice[+/-ext.arg.]
- active morphology = "elsewhere"
- ... and therefore conveniently also emerges when Voice is missing, e.g., in unaccusatives & statives (**?**)

(9) Distribution of active vs. non-active morphology in a Greek-type voice system (cp. **?**: 349):

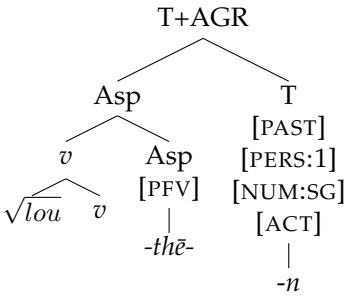
	+ext.arg.	-ext.arg.
Voice	ACT	NONACT
Ø	n/a	ACT

3 Analysis

3.1 Deriving active voice in the aorist

If CG *-thē-* realizes $v \frown$Asp[pfv] in the absence of Voice (cp. **?** for Modern Greek), it is predicted to occur only when Voice is missing & to co-occur with default ("act.") T/Agr morphology → aorist passive

(10) CG aorist passive



Evidence for analysis of *-thē-* (*not* a Voice head!):

- *-thē-* (& older allomorph *-ē-*, not productive in CG) developed diachronically from a verbalizing suffix that made stative/itr. verbal stems, *not* passives; thus still in Homer:

(11) Non-passive Homeric *thē*-aorists:

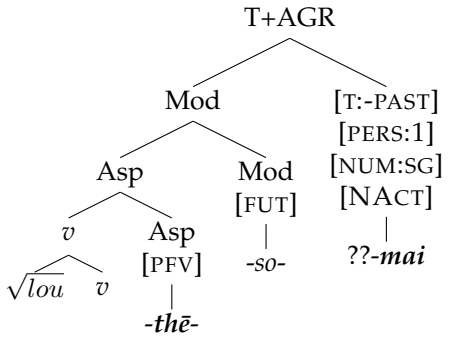
a. *e-krúph-thē-n*
PAST-hide-PFV-1SG.PAST.ACT
'I hid (myself)'

b. *e-phobḗ-thē-n*
PAST-flee-PFV-1SG.PAST.ACT
'I fled'

3.2 The problem: obligatory non-active in the future

Given our analysis of the aorist passive, the voice morphology of the future passive is now unexpected because *-thē-* should *not* co-occur with non-active morphology:

(12) CG future passive



- *-thē-* spells out *v*⌢Asp[PFV] in the absence of Voice in the future (like in the aorist) → The **future passive** is always perfective (**?**, **?**)
- the future marker *-se/o-* realizes Mod (e.g., **?**; fut. & subj. cannot co-occur → different values of epistemic Mod, cp. **?**)
- Opt. = deontic mod., can co-occur with future modality

3.3 Diachrony of *-se/o-*

- The future marker *-se/o-* goes back to a desiderative/ipfv. stem-forming suffix and developed into a modal suffix through a diachronic reanalysis (original use attested in closely related languages).[2]
- It is originally formed independently of the present or aorist stem and (at the oldest attested stages) tends to take *non-active* morphology, even if the corresponding present, aorist or perfect is active (**?**):

[2]The reconstruction varies between **(h₁)se/o-*, **-s-* and **-sé/ó* with reduplication (**?**, **?**).

(13) Homeric future stems

present	aorist	future	meaning
khand-án-ō	*é-khad-o-n*	***kheí-so-mai***	'take in, hold'
tunkh-án-ō	*é-tukh-o-n*	***teúk-so-mai***	'prepare'
klú-ō	*é-klu-o-n*	***kleú-so-mai***	'hear'

- In Classical Greek, the future tends to have the same root allomorph as the present and the aorist and *alternates* between active and non-active morphology (cp. *lou-ō* 'wash' in (2))
- So if *-se/o-* by itself alternates in CG, why does v⌢Asp[thē]⌢Mod[so] trigger NACT?

3.4 Inward sensitivity

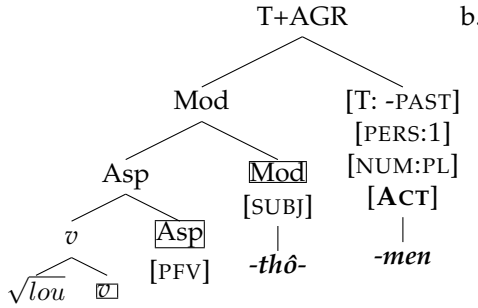
Observation: default act. morphology surfaces in the passive whenever (v+)Asp+Mod form a *portmanteau* (or Mod is missing → aor.pass.), (14-a–c). NAct surfaces when Asp & Mod are spelled out separately, (14-d–e) (illustrated with 1pl.).

(14) Spell Out of Mod

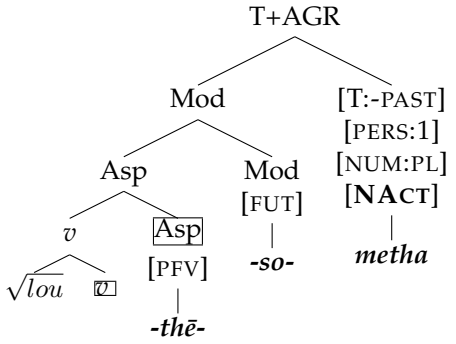
a.	1pl.aor.pass	*-thē-men*	-pfv.pass-1pl.past.act
b.	1pl.aor.subj.pass	*-thô-men*	-pfv.pass.subj-1pl.nonpast.act
c.	1pl.aor.opt.pass	*-theī-men*	-pfv.pass.opt-1pl.past.act
d.	1pl.fut.pass	*-thē-só-metha*	-pfv.pass-fut-1pl.nonpast.**NAct**
e.	1pl.fut.opt.pass	*-thē-soí-metha*	-pfv.pass-fut.opt-1pl.past.**NAct**

(15) Structure for (14-b) & (14-d.): nodes that have fused are boxed.

a.



b.



(16) Linearization for (15-a) vs. (15-b):

a. $\sqrt{lou}$⌢v.Asp.Mod[thô]⌢Agr[-men] (v.Asp+Mod: portmanteau)

b. $\sqrt{lou}$⌢v.Asp[thē]⌢Mod[so]⌢Agr[-metha] (v.Asp+ Mod: no portmanteau)

(17) Fusion (**?**):
"The morphosyntactic analysis motivates two distinct morphemes, X and Y. In some particular combination(s) of feature values for X and Y, though, there are not two distinct exponents realizing X and Y on the surface. Rather, there appears to be a "portmanteau" realization instead of the expected individual realizations of X and Y. ⇒ This case motivates Fusion"

Why (16-b)? → The future also triggers NAct morphology in many verbs that are otherwise active → **semi-deponents**: active in the present/aor., but non-active in the future → cp. the Homeric futures in (13).

(18) CG semi-deponents

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

- **?**: (inherently) desiderative & volitional verbs take NAct morphology cross-linguistically
- Mod_{FUT} selects Voice without an external argument → condition on non-active voice applies (ex. 3), obligatory NAct in the future
- **Semi-deponents** suggest that Mod[FUT]⌢Agr = *always* Mod[*so*]-Agr[NACT] → even if there is a lower *-thē-*.

Two possible approaches:

- **Phonologically conditioned inward sensitive allomorphy**: Mod has phonological content and has not fused with *v*.Asp to a portmanteau → Mod *intervenes*, inward-sensitive, local allomorphy
  - Why would vocabulary insertion be sensitive to whether or not lower spans are portmanteau or not?
  - Possible evidence from Doric Greek (below)
- **Morphosyntactically conditioned inward-sensitive allomorphy**: the feature content of the *span* *v*⌢Asp[PFV]⌢Mod[FUT] triggers voice allomorphy → inward-sensitive, span-conditioned
  - Problem: in this case insertion of non-active morphology would be triggered by a completely arbitrary feature combination, not derivable from anything else — This is exactly the kind of "Anything Goes" approach that **?** explicitly rejects.

3.5 Additional evidence: the Doric future

In **Doric Greek**, the future passive = ACT → as predicted by the assumptions in sections 2.2. & 3.1.

- Doric = West Greek variety, some archaic features compared to Attic-Ionic
- The "Doric future": a theme vowel intervenes between *-se/o-* and the endings

(19) Doric future

	Doric	Attic-Ionic
fut.	lou-**s-é-ō** wash-FUT-THEME-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-THEME-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. CG (= Attic-Ionic) future passive is actually the exception.
- Fut & Agr not directly adjacent in Doric: Mod[*so*]-THEME-Agr → future passive does not trigger obligatory NAct in Doric. Why?
- Hypothesis: there are no or only a few semi-deponents in Doric (that is, no or few verbs such as (13), (18)) → speakers never got the idea that Mod[FUT]⌢Agr should *always* undergo vocabulary insertion as Mod[*so*]-Agr[NACT]

- This needs further study, but **?**: 782 suggests that non-active future verbs (semi-deponents) are indeed predominantly found in Attic, and less in other dialects.[3]
  - Cursory review of **?** shows that there are at least some future middles in Doric that correspond to semi-deponents in Attic, e.g., a 3pl. *lēp-sō-ntai* (Thera; cp. Attic *lḗp-so-ntai*, 1sg. *lḗp-so-mai* in ex. (18)), so status of the generalization is unclear.

Final problem: if *-se/o-* is an intervener, why do regular CG futures (2c) alternate? Are we dealing with different Spell-Out domains/cycles?

- **?**, **?**, **?**: "dynamic" approach to cycles: "functional heads that categorize roots are potentially cyclic, but define a cyclic domain only if they constitute the highest in a particular sequence of projections."
- In the simple CG future (2c), nothing intervenes between the root and Mod → both act. & non-active morphology are possible
- In the future passive, Asp[PFV] intervenes → creating a different cyclic domain? Suddenly only non-active morphology is available
- ... but then *semi-deponents* become a problem. More study needed.[4]

4 Implications

- It's been argued recently that linearization influences the realization of morphosyntactic features, including agreement and allomorphy (e.g., **?**, **?**, **?**)
- The CG passive suggests that linearization (or even "strict" adjacency) also plays a role in inward sensitive allomorphy, when lower nodes have been linearized and have phonological content
- In the CG future passive, it is the combination of Asp[pfv]+Mod that causes NAct morphology to surface on T/Agr, since neither node by itself obligatorily demands NAct.
- And this in turn (together with the evidence from Doric Greek) suggests that the trigger for the unexpected non-active morphology in the future passive is the phonological, rather than morphosyntactic content of the lower span (provisional conclusion)

Acknowledgments

Many thanks to Yohei Oseki, the McGill/UQAM Word Structure Research Group and the audience at NELS 47 for comments and suggestions.

[3] "Das Fut. Med. ist besonders häufig und zäh im Attischen, fehlt aber auch in andern Dialekten nicht", Schwyzer, loc.cit. [*The middle future is particularly common and persistent in Attic, though it is not absent in the other dialects, either."* My translation.]

[4] Different cyclic domains have been proposed for Turkish verbs as well, and in this case phonological domains mirror syntactic domains for stress assignment (**?**, **?**). Unfortunately, stress assignment cannot be used as a diagnostic in CG.