

“Participle cycles” in the (pre-)history of Greek: losing and gaining functional structure

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Abstract

This article discusses two case studies of diachronic “voice flipping” in which the syntax of a participle changes from active to passive (Ancient Greek *-menos* to Modern Greek *-menos*) and from passive/stative to active (Proto-Indo-European **-nt-*; Hittite *-ant-* vs. Ancient Greek *-ōn*, *-ontos*). While the first type of change is the result of a diachronic reanalysis by which a functional head (VoiceP) is lost, the second type appears to *add* an active Voice head. Both changes are caused by the simultaneous availability of a stative and an eventive reading in deverbal adjectival forms and can be argued to belong to a larger “participle cycle”. However, unlike in other changes usually discussed under the label “cycle”, economy principles such as the Head Preference Principle and the Late Merge Principle do not apply in these cases, suggesting that structural reanalysis can take place independently of economy considerations.

Keywords: Participles, Voice morphology, passives, cyclic change, structural reanalysis, Ancient Greek, Modern Greek

1 Introduction

A growing body of literature supports the notion that (morpho)syntactic change is *cyclic*, in that functional categories are lost and renewed over time: “Cycles involve the disappearance of a particular word and its renewal by another” (van Gelderen 2016b: 3). As argued by van Gelderen and others in a number of studies (e.g., van Gelderen 2004, 2008, 2009a, 2009b, 2011, 2016a, etc.) this cyclicity is the result of two economy principles of the language faculty that come into play during language acquisition, the Head Preference Principle, (1), and the Late Merge Principle, (2).

- (1) Head Preference Principle (HPP):
Be a head, rather than a phrase
- (2) Late Merge Principle (LMP):
Merge as late as possible

While the HPP results in the reanalysis of phrasal material as heads and effectively reduces the “size” of a functional or lexical category, the LMP results in the reanalysis of material that is lower in the structure as being base-generated higher in the structure. The cyclic nature of (morpho)syntactic change is thereby effectively grounded in general economy principles of the language faculty in interaction with the mechanisms of language acquisition.

The goal of this paper is to discuss a potential morphosyntactic cycle which I will loosely refer to as “participle cycle”, and to use this “cycle” to argue that not all instances of morphosyntactic change can be accounted for by the HPP or the LMP. This is vacuously true of instances of loss (rather than reanalysis) of functional categories or projections, but also applies in cases in which functional material is *gained*. I discuss two case studies that arose in the history of Greek and appear to show “voice flipping” of a given participial form, either from active syntax to passive syntax, or vice versa. The first is a case of loss of functional material that leads to an apparent change of active syntax of a participle to passive syntax. The second case is a change of an (apparently) passive participle to an active participle, arguably by gaining additional functional material below the attachment site of the suffix (crucially, the projection VoiceP). In both cases, the “ambiguity of analysis” between stative and eventive readings in adjectival passives seems to be the relevant factor that triggers the change, rather than the economy principles discussed above.

This article is structured as follows. In the next section (section 2), I briefly discuss the theoretical background on participles and the properties of Voice in Greek and in the Greek passive participles. Section 3 contains case study I, the development of the participial suffix *-menos* from Ancient Greek (AG) to Modern Greek (MG). Section 4 discusses case study II, the development of Proto-Indo-European (PIE) **(o)nt-* to Hittite *-ant-* and AG *-(o)nt-*.¹ While this section relies to a certain extent on the comparative reconstruction of the original function of this suffix as “passive” (or “theme-oriented”), I also provide evidence for the same “voice flip” from passive to active from attested languages (Vedic Sanskrit to Classical Sanskrit). Section 5 contains the conclusion.

2 Background

2.1 Participles

Pretheoretically, participles can be defined as deverbal nominals² which are integrated in a verbal paradigm as non-finite verbal forms. Like other deverbal nominals, they combine “nominal” properties (such as nominal inflection and/or agreement with a head noun) with “verbal” properties (such as voice or verbal stem forming morphology and assignment of structural case).

Instead of trying to define the category of participles, I follow recent generative approaches in which the differences in participial syntax observed cross-linguistically and within partic-

¹This participle further developed into the MG gerund in *-ondas*, cf. Tsimpli 2000, Manolessou 2005.

²I use the terms “nominal” and “nominalization” more broadly than in much of the literature to include different types of event nominals and agent nouns as well as participles and other “adjectival” deverbal forms, based on the Latin grammatical tradition in which “noun” was used as a cover term with a subdivision into *nōmen substantīvum* ‘substantival noun’ and *nōmen adjectīvum* ‘adjectival noun’.

ular languages result from different attachment sites of the nominalizing affix (e.g., Anagnostopoulou 2003, 2014, Alexiadou et al. 2007, Alexiadou and Anagnostopoulou 2008, Baker and Vinokurova 2009, Baker 2011, Embick 1997, 2000, Embick 2004b, Harley 2009, etc.). More precisely, I assume (following Embick 2000, 2004b, Alexiadou and Anagnostopoulou 2008, Alexiadou et al. 2015, Bjorkman 2011, etc.) that the “nominalizing” affixes found in participles spell out different verbal functional heads when movement to a higher functional category is blocked (or agreement with it is impossible, in the version of Bjorkman 2011), rather than spelling out a designated nominal functional category. This solves the problem of having to decide on what exactly this category is (PtcpP, DP, nP, AdjP, etc.) and elegantly accounts for instances of suppletion of periphrastic verbal constructions in otherwise synthetic verbal paradigms (most famously in the Latin perfect passive, cf. Embick 2000).

Moreover, I assume that there are (at least) two different types of passive constructions, from a semantic point of view: adjectival or “stative” passives and verbal or “eventive” passives (cf. Kratzer 2001, Anagnostopoulou 2003, Embick 2004b), illustrated in (3) for English.³

- (3) a. Adjectival/stative passive: *The poems are well-written*
 b. Verbal/eventive passive: *The poems were written by me*

The difference between them, under the present approach, lies in the relative amount of functional structure included below the participial suffix, crucially the presence of a verbal-eventive *vP* and a VoiceP introducing the agent θ -role. In MG, as in many other languages, verbal/eventive passives are synthetic verbal constructions, while adjectival passives are analytic. The different types of passive participles used these adjectival passives are discussed below.

2.2 Modern Greek “passive” participles

MG has two types of adjectival “passive” participles, one that takes the suffix *-menos* and one that takes *-tos* (Holton et al. 1997: 234ff., Embick 1997: 134ff., Anagnostopoulou 2003, Alexiadou and Anagnostopoulou 2008, Papangeli and Lavidas 2009), cf. (4).

- (4) MG *-menos* vs. *-tos* participles

Verb	<i>-menos</i>	<i>-tos</i>	
<i>vrazo</i>	<i>vras-menos</i>	<i>vras-tos</i>	‘boiled’
<i>psino</i>	<i>psi-menos</i>	<i>psi-tos</i>	‘grilled’
<i>anigo</i>	<i>anig-menos</i>	<i>anich-tos</i>	‘opened; open’

As argued in detail by Anagnostopoulou and collaborators (Anagnostopoulou 2003, Alexiadou and Anagnostopoulou 2008, Alexiadou et al. 2015), the participles made by these suffixes are syntactically and semantically distinct in several respects. The suffix *-menos* has

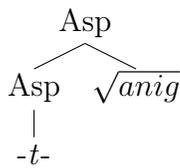
³This somewhat coarse distinction suffices for the purposes of this paper, but note that Embick 2004b distinguishes between eventive, resultative, and stative passives. Anagnostopoulou 2003’s distinction between target state and result state passives, based on Kratzer 2001, is discussed in section 2.2. See also Ramchand to appear for a decompositional approach to passive and perfect participles in English.

event implications, licenses manner adverbs, can license agent *by*-phrases, (6), and is used in periphrastic verbal constructions, while *-tos* can do none of those things.

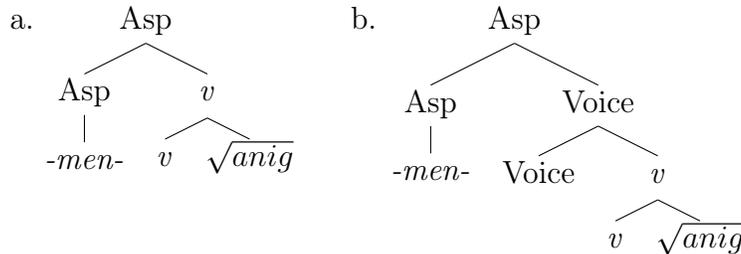
- (5) To thisavrofilakio itan anig-meno/*anich-to apo tin Maria
 the safe was opened-*menos*/open(ed)-*tos* by the Maria
 “The safe was opened by Maria”

These differences reflect different “attachment sites” of the nominalizing suffixes: *-tos* attaches directly to the root; *-menos* either selects *v* (“target state participles”) or *v*+Voice (“resultant state participles”), cf. (6) and (7) (based on the trees given in Alexiadou et al. 2015: 161).⁴

- (6) MG *tos*-participles: *anich-t(os)* ‘open’



- (7) MG *menos*-participles: *anig-men(os)* ‘opened’



While (6) and (7-a) are superficially “passive” participles because only the internal argument is included below the attachment site (accounting for the fact that these participles are incompatible with an agent *by*-phrase), (7-b) includes the projection Voice and is compatible with an agent *by*-phrase, as in canonical passives. This important distinction (between participles that are apparently passive as the result of the absence of VoiceP and participles that are passive because they include a “passive” VoiceP with a demoted agent) will be relevant for the analysis in sections 3 and 4.

2.3 Voice morphology

Both AG and MG distinguish between active and non-active (“middle”) voice endings, whose distribution has remained essentially unchanged. That is, the types of verb classes that can alternate between active and non-active morphology and its different functions are the same in AG and MG, as illustrated in (8) and (9).

⁴I use *-tos* and *-menos* as the citation forms; the exact decomposition into affix+agreement features is:

- (i) *-men/t-o-s*
 ASP-M-NOM.SG

(8) Voice alternations in AG:

Function	Non-active	Active
Anti-causative	<i>daío-mai</i> ‘burn, blaze’ (itr.)	<i>daí-ō</i> ‘burn sth.’
Reflexive	<i>loúo-mai</i> ‘wash myself’	<i>loú-ō</i> ‘wash sth.’
Self-benefactive	<i>phéro-mai</i> ‘carry (away) for myself’	<i>phér-ō</i> ‘carry, bear’
(Medio)passive	<i>theíno-mai</i> ‘am struck, killed’	<i>theín-ō</i> ‘kill, strike’

(9) Voice alternations in MG

Function	Non-active	Active
Anti-causative	<i>sikon-ome</i> ‘rise’	<i>sikon-o</i> ‘raise’
Reflexive	<i>plen-ome</i> ‘wash myself’	<i>plen-o</i> ‘wash’
Self-benefactive	<i>promithev-ome</i> ‘supply myself’	<i>promithev-o</i> ‘supply’
(Medio)passive	<i>skoton-ome</i> ‘am killed’	<i>skoton-o</i> ‘kill’

Ancient and MG display voice syncretism (see Embick 1998, 2004a), meaning that one and the same morphological exponent is found in different syntactic environments. The “canonical environments” for non-active morphology are anticausative, reflexive/reciprocal, selfbenefactive and passive/mediopassive⁵, illustrated above and discussed at length in Alexiadou and Doron 2012, Alexiadou 2013, Alexiadou et al. 2015, Zombolou 2004, etc. (on AG see Allan 2003). This morphology is “postsyntactic” and surfaces whenever VoiceP does not introduce an external argument DP (Embick 1998, 2004a, Alexiadou et al. 2015), formalized in (10).

- (10) Voice \rightarrow Voice[NonAct]/_ No DP specifier (Alexiadou et al. 2015: 102, after Embick 2004a: 150)

“Active” is elsewhere morphology and surfaces when Voice has a DP specifier or when it is missing completely (e.g., in unaccusatives).

The Spell-Out condition in (10) does not specify *why* there is no DP specifier. For example, it can be missing because the agent θ -role introduced by Voice has not been saturated, as in a canonical passive (“passive input Voice”, Bruening 2013, Schäfer 2017), or because Voice is semantically inert and does not introduce a θ -role, as in “marked anticausatives” (“expletive Voice”, Schäfer 2008, 2017, Alexiadou et al. 2015). In either case, Voice will surface as non-active by (10).

With this background in mind, we can now turn to the behavior of participles in Ancient and MG.

⁵On the distinction between passive and mediopassive see Alexiadou and Doron 2012, Alexiadou et al. 2015, Schäfer 2017. This distinction will not be relevant for the analysis developed below.

3 Case study I: active → passive

3.1 Ancient Greek *-menos*

The first case study treats the development of the participial suffix *-menos*. As we have seen in section 2.2, this participle has a passive reading in MG (but recall that Anagnostopoulou 2003 and passim has argued that they contain more verbal functional structure than the likewise passive participles in *-tos*).

AG *-menos*, on the other hand, is traditionally called a “middle” (or non-active) participle and is only formed to formally non-active finite verbs. To put it another way, any formally non-active finite verb, independent of its syntax (anticausative, passive, reflexive...) can form a *-menos*-participle, including transitive verbs with direct objects, such as self-benefactives, experiencer verbs, and deponents (on which see below).

In the following, these different functions are illustrated with some examples. (11) is an instance of a *menos*-participle with (indirect) reflexive use. The verb *títhēmi* means ‘put, place’ in the active and (among other uses) ‘put, place (sth.) for oneself’ when used with non-active morphology (*títhēmai* ‘I put, place (sth.) for myself’). Its non-active participle in (11) has the same meaning.

(11) Self-benefactive/reflexive, Hom. *Iliad* 10.34:

tòn d’ heūr’ amph’ ómoisi **tithé-men-on** éntea
him.ACC PART found around shoulders putting-PTCP-ACC.M armour.ACC
kalà
beautiful.ACC

“He found him **putting his beautiful armour** around his shoulders”

Like MG, AG has a number of verbs that obligatorily take non-active morphology, but can be considered canonical non-active verbs (*media tantum*, “middle only” verbs, cf. Zombolou and Alexiadou 2014). That is, their meaning corresponds to one of the verb classes for which non-active morphology is cross-linguistically expected. Certain verbs of motion fall into this class, notably *érkhomai* ‘come, walk’ (MG *erhome*). Its participle has the same meaning, (12).

(12) Intransitive, motion verbs: Hom., *Iliad* 4.514–16:

autàr Akhaioùs òrse (...) kudíst-ē Tritogéneia
but Achaeans.ACC urged most.glorious-NOM.F Tritogeneia.NOM.F
erkho-mén-ē **kath’ hómilon** (...)
walking-PTCP-NOM.F among crowd

“But (as for) the Achaeans; ... the most glorious Tritogeneia urged (them) on, **walking among the crowd ...**”

(13) illustrates a transitive self-benefactive participle. The verb *phérō* means ‘carry, bring (sth.)’ in the active, and ‘carry for oneself; win (for oneself)’ in the middle (*phéromai* ‘I win’),

as does its participle.

- (13) Hdt., *Histories*, 1.66.3: Transitive, self-benefactive:

hoi Lakedaimónioi, (...) hoì dē **pedās** **pheró-menoi**
the Lakedaemonian.NOM.PL they PART chains.ACC.PL carry-PTCP.NOM.PL
epì Tegeētās estrateúonto ...
on Tegeans.ACC.PL advance.3PL.IPF

“The Lakedaemonians, (...) they advanced on the Tegeans (with their army), **carrying chains** ...”

The chain-carrying event described in (13) did not happen for the benefit of the Tegeans, whom the Lakedaemonians were planning to enslave.

The finite non-active forms of *phérō* ‘carry’ can also occur with a (medio)passive reading, as expected in a language with voice syncretism.⁶ The passage in (14) shows that this reading is also possible for its participle.

- (14) Hdt., *Histories*, 2.29.2: (Medio)passive:

tò ploion oíkhetai **pheró-menon** **hupò iskhúos**
the.NOM.N boat.NOM.N goes.off carry-PTCP.NOM.SG.N by strength.GEN
toũ rhóou
the.GEN current.GEN

“... the boat gets lost, **carried off by the strength of the current.**”

AG *-menos* can combine with all tense/aspect stems (present, aorist, perfect, future), as opposed to its MG counterpart, which is formed from the passive perfective (a.k.a. “simple past”, Holton et al. 1997: 162ff.) stem. Finally, AG, like MG, also has a class of formally non-active verbs that are syntactically agentive transitive verbs and hence cannot be considered canonical non-active verbs. As I have argued elsewhere (Grestenberger 2014 and To appear a), these verbs should be considered deponents in the narrow sense of the term.⁷ Deponent verbs make *menos*-participles which are syntactically active and transitive, like the corresponding finite forms (see Grestenberger To appear b).

- (15) AG deponent: *dízēmai* ‘seek sth.’: ptcp. *dizémenos* ‘seeking’, Od.1.261-2:

oíkheto gàr kaī keīse thoēs epì nēos Odusseùs **phármakon**
went PART and there swift.GEN on ship.GEN Ulysses.NOM poison.ACC
androphónon **dizé-men-os**
man.slaying.ACC seeking-PTCP-NOM.M

⁶Cf. MG *plēnome*, usually reflexive ‘I wash myself’, but also passive ‘I am being washed’ given the right context (e.g., in a hospital).

⁷Defined as follows: “In an active–non-active voice system, a deponent is a verb with an agent subject that appears in a syntactically active context and is morphologically non-active.” (Grestenberger To appear a: 23).

“And then Ulysses went into his swift ship, **seeking (some) man-slaying poison.**”

3.2 Modern Greek *-menos*

As opposed to its AG counterpart, MG *-menos* forms exclusively *passive* participles that never take direct objects. That is, the self-benefactive, intransitive-unergative, and deponent participles discussed in section 3.2. are not possible for the productive use of MG *-menos*. This participle is called passive perfect participle in Holton et al. 1997, who state that they are generally “formed from transitive verbs which have both an active and a passive voice” (Holton et al. 1997: 236⁸).

MG *-menos* is moreover compatible with morphologically active and non-active finite verbs, while AG *-menos* is only formed from morphologically non-active finite verbs. Pretheoretically, one could say that MG *-menos* is sensitive to the valency of the base verb, while AG *-menos* is sensitive to the voice morphology of the base verb. Some examples are given in (16). Note that passive *-menos* is always accented on the suffix.

(16) MG *-menos*

	verb	meaning	participle	meaning
formally active	<i>agapo</i>	‘love’	<i>agapiménos</i>	‘loved’
	<i>deno</i>	‘tie’	<i>deménos</i>	‘tied’
	<i>kalo</i>	‘call’	<i>kalesménos</i>	‘called’
formally non-active	<i>metachirizome</i>	‘use’	<i>metachirisménos</i>	‘used’
	<i>varieme</i>	‘am bored’	<i>variestiménos</i>	‘bored’
	<i>ekmetalevome</i>	‘exploit’	<i>ekmetalevménos</i>	‘exploited’

MG *menos*-participles formally continue AG perfect and aorist participles after the semantic distinction between the aorist and the perfect had collapsed in Koiné Greek (cf. Schwyzer 1939: 779, Holton and Manolessou 2010). They are always built on the passive perfective stem (hence “passive perfect participle”; though often with morphological irregularities that reveals their mixed origin), and are used in periphrastic passive constructions, (17).

(17) To vivlio ine **gram-meno** apo tin Maria
the book is written by the Maria
“The book is written by Maria”

In MG, the *menos*-participles of deponent verbs are always *passive*, cf. *metachirisménos* and *ekmetalevménos* in (16). The following table summarizes the properties of AG vs. MG

⁸On the following page, the authors mention (*ine*) *perpatimenos* ‘(has) walked’ as a counterexample, that is, an intransitive-unergative verb with a non-passive *menos*-participle. I have not been able to find other counterexamples like this. Moreover, formally active stative or inchoative verbs like *germo* ‘grow old’, *efticho* ‘am happy’, *agripno* ‘stay awake’ also make regular result state *menos*-participles, e.g., *gerasménos* ‘aged’, *eftichisménos* ‘happy’, *agripnisménos* ‘awake’, see Holton et al. 1997: 164, even though they do not have finite passive forms. This is of course fully expected under the analysis of MG *-menos* discussed in section 2.2 and below.

-menos.

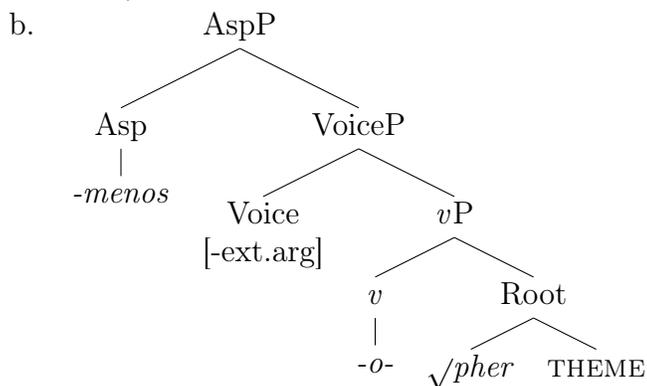
(18) Properties of *-menos* in AG vs. MG

	AG	MG
transitive, ACC-object	✓	✗
periphrastic passives	(✓)	✓
deponent <i>-menos</i>	active syntax	passive syntax
sensitive to finite verb voice morphology	✓	✗
sensitive to valency	✗	✓
passive	✓	✓
<i>by</i> -agent	✓	✓

3.3 Analysis

As we have seen, AG *menos*-participles can be transitive, have the same range of functions as finite non-active forms (“voice syncretism”), and are compatible with manner-, event- and agent-oriented adverbs. This suggests that they must have contained VoiceP and *v*P, much like their finite counterparts, and that *-menos* spells out Voice in the absence of an external argument when the verb cannot move to T.

- (19) a. *pher-ó-men-o-s* ‘carrying (for one’s own benefit)’
 carry-V-PTCP.NACT-M-NOM.SG



The active participle suffix *-(o/a)nt-* and the non-active suffix *-menos* are allomorphs of Asp when the verb does not move to T, along the lines of Embick 2000’s analysis of the Latin perfect participles in *-tus*. The Spell-Out rules for the Greek participal suffixes are given in (20) (see Grestenberger To appear a for more details).

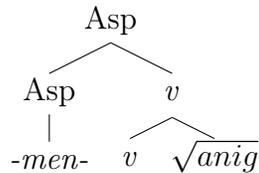
- (20) Spell-Out rules for AG participles:
- a. Asp: *-menos* ↔ Voice[-ext.arg]
 - b. Asp: *-(e/o/a)-nt-* ↔ elsewhere

As discussed in section 2.3, VoiceP is the projection that is spelled out with active or non-active morphology depending on the syntactic context. Therefore participles containing

VoiceP are expected to show the same voice syncretism and the same range of syntactic functions as the finite forms, which is indeed the case in AG. Furthermore, deponency in the narrow sense is also caused by VoiceP (in a particular configuration with a lower functional projection, see Grestenberger 2014 and To appear a). The presence of VoiceP below the attachment site of the participial suffix will therefore cause deponent behavior to be preserved in participles, which we saw in ex. (15).

MG target state *menos*-participles, on the other hand, have the structure in (21), with the participial suffix selecting *v*P (cf. section 2.2).

(21) MG *menos*-participles: *anig-menos* ‘opened’ :



The crucial change that occurred in the development of this suffix from AG to MG was therefore the loss of VoiceP below its attachment site. Losing VoiceP effectively meant losing the “middle” properties that this suffix had in AG, such as the ability to occur in transitive (self-benefactive, etc.) contexts with an accusative object and the ability to be formed to deponent verbs.

Target state “passive” interpretation remained of course available; with the apparently passive interpretation arising from the fact that only (eventive) *v* and the internal argument are included in the nominalization. That this passive differs from canonical passives, which do include VoiceP, is shown by the fact that target state participles do not license agent arguments in MG. Anagnostopoulou 2003, Alexiadou and Anagnostopoulou 2008 and Alexiadou et al. 2015 show that target state participles are compatible with the adverb *akoma* ‘still’, as in (22) (from Alexiadou et al. 2015: 157), while result state participles are incompatible with it.

(22) ta lasticha ine akoma fuskomena
the tires are still pumped.up

On the other hand, adding an agent *by*-phrase to (22) forces the result state reading, which means that *akoma* now causes the sentence to be ungrammatical, (23) (from Alexiadou et al. 2015: 158).

(23) ta lasticha ina (*akoma) fuskomena apo tin Maria
the tires are (still) inflated by the Maria
‘The tires are still inflated by Mary’

This suggests that VoiceP was well and truly lost in target state participles, but that result state participles can still select a particular type of VoiceP, namely exclusively VoiceP without a specifier, but with an implicit external argument variable that can be expressed by the adjunct *by*-phrase (“thematic non-active Voice” in Alexiadou et al. 2015, “thematic passive Voice” or “passive input Voice” in Schäfer 2017; see also Bruening 2013 on *by*-phrases in passives). Other types of Voice (“expletive Voice”, “thematic active Voice”) cannot be

selected in MG, since in that case we would expect to see the full range of “middle” meanings of *menos*-participles that we see in AG.⁹

This scenario suggests that the starting point for the loss of the syntactically “active” uses of *-menos* were (medio)passive contexts in which an eventive/result state *menos*-participle could be misinterpreted as a target state participle. As Anagnostopoulou 2003 and passim has shown, there are a number of MG *menos*-participles that are *synchronically* ambiguous between the two readings, but can be distinguished through a number of syntactic and semantic tests. If the same ambiguity already existed in the (medio)passive reading of the *menos*-participle in AG, we can surmise that VoiceP failed to be acquired during L1 acquisition in these contexts at some point. This development seems to have started in *menos*-participles from AG oppositional non-active perfects of transitive verbs, which are very often syntactically passive already in Homeric Greek (cf. Chantraine 1926: 7ff., Schwyzer and Debrunner 1950: 237), although the passive reading of *-menos* is of course also found with other stems, cf. (24). Moreover, perfect participles in *-menos* are the only *menos*-participles used in periphrastic constructions in AG, namely in the non-active perfect subjunctive, optative and (partially) indicative, cf. (25).

(24) Hdt., *Histories*, 1.9.2.:

ó pisthē tēs anoigo-mén-ēs thúres
 behind the.GEN.F **open.pres-PTCP.NACT-GEN.F** **door.GEN.F**

“behind the open(ed) door”

(25) Hdt., *Histories*, 6.98.3:

kaì en khrēsmōi ēn gegram-mén-on perì autēs hōde: ...
 and in oracle was **write.PERF-PTCP.NACT-NOM.N** about self.GEN thus

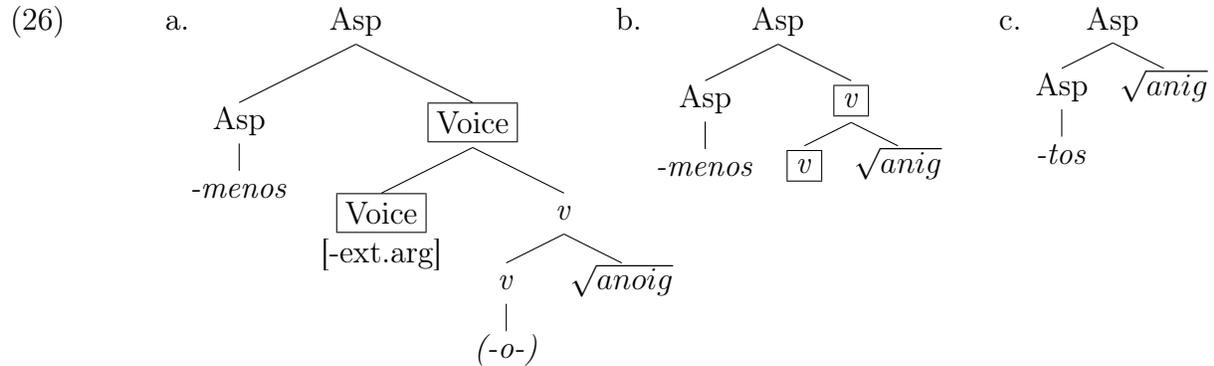
“And in the oracle thus **(it) was written** about it(self) (the island Delos): ...”

(25) shows an example of the passive use of the perfect non-active participle of *gráphō* ‘write’ in Herodotus. In the same work, we find the present non-active participle *graphómenos* and the aorist non-active participle *grapsámenos* used as syntactically active, transitive participles.

The proposed reanalysis is sketched out in (26-a-b), with the boxed material being lost through “structural reanalysis” (see section 4.1.) of resultant state passive participles as

⁹Remnants of this use seem to be preserved in the MG (*ó*)*menos*-participle, in which the stress falls on the (stem-forming) vowel before the participial suffix, e.g., *-ómenos* instead of *-ménos*. The *ómenos*-participle type has been described as belonging to Katharevousa Greek (Holton et al. 1997: 235ff.), and its productivity appears to be limited. However, *-ómenos* is interesting in that it preserves the mismatch when formed to deponent verbs. Thus *metahirizómenos* means ‘using’ while *metahirisménos* means ‘used’, and likewise *epitithémenos/epitithómenos* ‘attacking’, *ekmetalevómenos* ‘taking advantage of, exploiting’, *dehómenos* ‘accepting’, etc. These participles have the same active, transitive syntax as the finite forms. Thus it seems that while the productive suffix *-menos* does not include VoiceP in (target state) deponent participles, the suffix *-ómenos* does. This seems to be an archaizing feature of Katharevousa Greek and therefore no counterevidence to the analysis presented above for *-menos* (cf. also Grestenberger To appear a).

target state participles. I use AG *anoigómenos* ‘opened’ and MG *anigménos* ‘opened’ as (somewhat idealized,¹⁰ but representative) examples. (26-a) illustrates an AG passive/MG result state *menos*-participle, (26-b) a MG target state *menos*-participle, and (26-c) a MG *tos*-participle.



I include (26-c) here as a possible conjecture concerning the future development of *-menos*, namely that there is a diachronic trajectory for participles by which functional categories of the “verbal spine” are successively lost below the participial suffix. That is, the loss of the boxed projection in (26-b) would result in a “verbal adjective structure”, (26-c), for *-menos*.

3.4 Summary

In this section, we have traced the development of the participial suffix *-menos* from AG, where it obligatorily included (different types of) VoiceP below its attachment site, to MG, where it includes only *v*P (except in resultant state participles, where passive VoiceP only is included). I have argued that the active syntax of AG *-menos*, as exemplified by its ability to occur with direct objects in self-benefactives, its compatibility with intransitive unergative verbs, and its active syntax when formed to deponent verbs, is a diagnostic for the presence of VoiceP (more precisely, for the types of VoiceP for which the Spell-Out condition in (10) applies). This ability to select (different kinds of) VoiceP was lost on the way to MG (but cf. footnote 9). The starting point for the loss of this projection was the ambiguity between target and resultant state interpretation of AG *menos*-participles with a passive reading, especially the perfect participle.

4 Case study II: passive/stative → active

4.1 Losing and gaining functional projections

Case study I appears to be an example of structural reanalysis (or “structural simplification”¹¹), cf. Roberts and Roussou 2003, Roberts 2007, etc., by which the functional projections of a given constructions are reduced. As Roberts and Roussou 2003: 16 put it,

¹⁰That is, the MG form is not directly descended from the AG form.

¹¹I prefer the former term, since even if there were some sort of universally accepted simplicity metric for evaluating structural complexity, it would not work for cases like that of *-nt-* discussed below, in which functional structure is added, making the resulting form/phrase arguably more “complex”. See also Hale

structural simplification “... results in recategorising a class of lexical elements as inflectional items; (...) Another kind of structural simplification involves reanalysis of an XP, a category with a certain amount of internal syntactic structure, as a simple head X, a category with no internal syntactic structure.” However, it is clear that case study I does not involve recategorization of a lexical element as inflectional, and while “internal syntactic structure” along the verbal spine is indeed reanalyzed, this does not seem to involve reanalysis of a phrase or XP as head. Similarly, Roberts 2007 definition of reanalysis as targeting lexical categories and turning them into functional categories does not apply: the morphosyntactic category (“participle”) does not change, only its selectional properties do. A broader definition of reanalysis is provided by Walkden 2014: 39, which I adopt here.

“Another definition of reanalysis (...) is as a process whereby the hearer assigns a parse to the input that does not match the structure assigned by the speaker.” (...) Reanalysis here is a ‘mechanism’ in that it is a descriptive term for both process, misparsing, and results, instances of misparsing: it has no independent existence psychologically or genetically, nor is it causal, except in the very limited sense that the reanalysis ‘causes’ the hearer to update his syntactic lexicon (...). Reanalysis does not cause syntactic change, it *is* syntactic change.”

The driving mechanism behind this reanalysis, as we have seen, was “structural ambiguity”, in the sense that the same surface string was ambiguous between two (possibly synchronically co-occurring) underlying structural analyses. However, it is not necessary to assume that these two analyses were directly competing from the language acquirer’s perspective (cf. Hale 2007, Walkden 2014: 40), merely that the language acquirer(s) at some point made a different choice than the previous generation. In the case of *-menos* in MG, this may in principle be due to some sort of bias towards a simpler or “more economic” structure (but see Hale 2007 for criticism of “economy of derivation” approaches in diachronic syntax). However, this cannot be the only possible development for participles, since new participial forms arise constantly, often from adjectival forms that arguably contained *less* functional structure than the resulting participle, as will be shown in the following sections. So the question is, *how* do new participles arise? How is it possible to *gain* functional structure, in addition to losing it?

If we take structural reanalysis as a mechanism of language change seriously, ending up with *more* functional structure than the previous generation should in principle be possible, since in a “structural ambiguity” situation without a strong bias in either direction, children might be expected to chose either structural option, possibly as a result of some change in the “triggering experience”/the PLD (cf. Lightfoot 2006). Whatever the ultimate cause of the change in the parse, “causal explanation is not a prerequisite for successful reconstruction” (Walkden 2014: 38).

In the following, I discuss an example of a reanalysis that results in the addition of functional structure: the development of the AG (present) active participle in *-ōn*, *-ont-* and its Indo-European cognates from their Proto-Indo-European predecessor, the suffix **-nt-*.

2007: 156ff. for a critical discussion of simplicity in syntactic change.

4.2 PIE *-nt-

The suffix *-nt- is found as a synchronic active participle suffix in most of the attested older Indo-European languages, notably in the Indo-Iranian, Greek, Italic, and Germanic branches (and with some modifications in Tocharian, see Fellner 2014). In all these languages, whether a verb can form an active *nt*-participle depends on whether its finite forms are formally active. That is, the valency of the verb is not important, but the presence of a morphologically *active* finite paradigm is (much like we saw with AG *-menos* and formally non-active finite forms in section 3). Some examples are given in (27).

(27) -nt- in Indo-European

	Act.	NAct.	Ptcp.
Skt.	<i>bhár-a-ti</i> ‘carries’ <i>é-ti</i> ‘goes’, 3pl. <i>y-ánti</i>	<i>bhár-a-te</i> ‘carries for oneself’ —	<i>bhár-a-nt-</i> ‘carrying’ <i>y-ánt-</i> ‘going’
AG	<i>phér-ō</i> ‘carry’ <i>eĩ-mi</i> ‘go’	<i>phér-o-mai</i> ‘carry for myself’ —	<i>phér-o-nt-</i> ‘carrying’ <i>i-ónt-</i> ‘going’
Lat.	<i>fer-ō</i> ‘carry’ <i>e-ō</i> ‘go’	<i>fer-or</i> ‘am carried’ —	<i>fer-ent-</i> ‘carrying’ <i>eu-nt-</i> ‘going’

This pattern suggests that the same Spell-Out rule that governs the distribution of active and non-active morphology in the finite forms in these languages, (10), also governs the distribution of their voice-marked participial forms (at least in Greek and Sanskrit).

This contrasts markedly with the use of the suffix *-nt-* in the Anatolian branch of Indo-European and its best-attested language, Hittite, which is generally considered the “first to branch off” the common Indo-European proto-language (cf. Melchert 1998, To appear a). There is no trace of the “middle” participial suffix (reconstructed as *-*mh₁no-*, cf. AG *-menos*) in Anatolian,¹² and the descendant of *-*nt-*, Hittite *-(a)nt-*, is *passive* rather than active like in the other older Indo-European languages. Given that there are independent reasons to think that Anatolian left first, this looks like a classic case of a shared innovation, by which the post-Anatolian Indo-European languages innovated the active participle use of *-*nt-*. In this section, I provide additional arguments for why it is more likely that the active use innovated from what we see in Anatolian, rather than the other way around. I begin by describing the synchronic uses of Hittite *--ant-* in the next section.

4.3 Hittite -ant-

Hittite *-ant-* (nom.sg.c. *-anza*) makes “adjectival passive participles” (or verbal adjectives) functionally similar to MG (target state) *-menos*. It is built on the present stem and used in periphrastic passive and perfect/pluperfect constructions. Like MG *-menos*, it can be formed to morphologically active or non-active finite verbs (that is, valency is important, not voice morphology). Some representative examples are given in (28) (for a more detailed discussion of the properties of *-ant-* and its origins see Hoffner and Melchert 2008, Frotscher 2013, Melchert To appear b, Oettinger To appear, Fellner and Grestenberger To appear).

¹²See Melchert 2014, Melchert To appear a, Fellner and Grestenberger To appear.

(28) Hittite *-ant*-formations

active verb		ptcp.	non-active verb	ptcp.
<i>ēp-zi</i> , 3pl. <i>app-anzi</i> ‘seize’		<i>app-ant-</i> ‘seized’	<i>paršiy-a(ri)</i> ‘breaks’	<i>paršiy-ant-</i> ‘broken’
<i>pāi</i> , 3pl. <i>piy-anzi</i> ‘give’		<i>piy-ant-</i> ‘given’	<i>huett(i)-a(ri)</i> ‘pulls’	<i>huetti-ant-</i> ‘pulled’
<i>pai-zzi</i> , 3pl. <i>pā-nzi</i> ‘go’		<i>pā-nt-</i> ‘gone’	<i>kiš-a(ri)</i> , pl. <i>kiš-</i> ‘happen’	<i>kiš-ant-</i> ‘happened’

ant-participles can occur with agent *by*-phrases, as in (29).

(29) Adjectival passive with *by*-phrase: KUB 26.84 ii 7:

k|uit IŠTU^{LŪ} KŪR arḫa warnuw-anza
because by enemy up burned-PTCP.NOM.C

“because he was **burned up by the enemy**”

(30) illustrates the use of the *ant*-participle in a periphrastic pluperfect construction. The periphrastic perfect and pluperfect are formed using the finite present and preterit forms of *ḫark-* ‘hold, have’, respectively, plus the *ant*-participle.

(30) Pluperfect: KBo 5.8 i 23–25:

nu=mu ištamašš-an kuit ḫark-er ...
PART=me.DAT-ACC hear-PTCP.NOM.N because hold-3PL.PRET ...

“Because **they had heard** about me ...”

(31) illustrates the attributive use of the *ant*-participle.

(31) Attributive use, KBo 15.10 ii 8-10:

... GIŠGIDRU ŪL walḫantan UDU-un šipantahḫun
stick.INSTR NEG beat.PTCP.ACC sheep-ACC sacrifice.1SG.PRET.ACT

“I sacrificed the sheep (that has) not beaten with a stick”

Finally, *ant*-participles formed to deponent verbs have a “passive” reading, illustrated in (32), much like the *menos*-participles formed to MG deponents (cf. section 3.3), and unlike the syntactically active, transitive AG deponent participles discussed in section 3.2.

(32) Deponent *paršiya(ri)* ‘breaks’: KUB 10.52 vi 8–9 (Hoffner and Melchert 2008: 339):

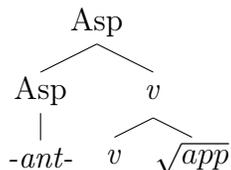
ḫarkišš=a NINDA ḫaršiš karū paršiy-anza
white=and Ḫarši-bread already broken-PTCP.NOM.C

“And the white *Ḫarši*-bread **was already broken** (into pieces).”

4.4 Analysis

Given its properties, the Hittite participles in *-ant-* functionally correspond fairly closely to the MG “passive participle” in *-menos*. This suggests that they have the following structure, with *v* included.

(33) Hitt. *app-ant-* ‘seized’



However, its AG (and Sanskrit, Latin, etc.) cognate, the synchronic *active* participle in *-ōn*, *-ont-* must contain active VoiceP, since this is syntactically active, transitive rather than passive when formed to transitive verbs, and sensitive to the morphological distinction between active and non-active morphology on Voice. That is, the active participial suffix only surfaces in the right conditions as specified by the Spell-Out rules in (20), repeated in (34) for convenience.

(34) Spell-Out rules for AG participles:

- a. Asp: *-menos* ↔ Voice[-ext.arg]
- b. Asp: *-(e/o/a)-nt-* ↔ elsewhere

Some representative examples from AG are given below. (35) illustrates the active (present) participles of *phérō* ‘bring’, which means ‘bringing’ (contrast this with Hittite *piy-ant-* ‘given’, not ‘giving’, in (28)); (36) is an example of the active participle of *eīmi* ‘go’, which means ‘going’ (contrast this with Hittite *pānt-* ‘gone’, not ‘going’, in (28)).

(35) Hdt., *Histories* 4.133.2:

ándres Íōnes, **eleutheriēn** hékomen **humīn**
 men.PL Ionian.PL freedom.ACC be.present.1PL.ACT you.DAT.PL
phéro-nt-es
 bring.PRES-PTCP.ACT-NOM.PL

“Ionians, we are here to bring you freedom/**bringing you freedom**”

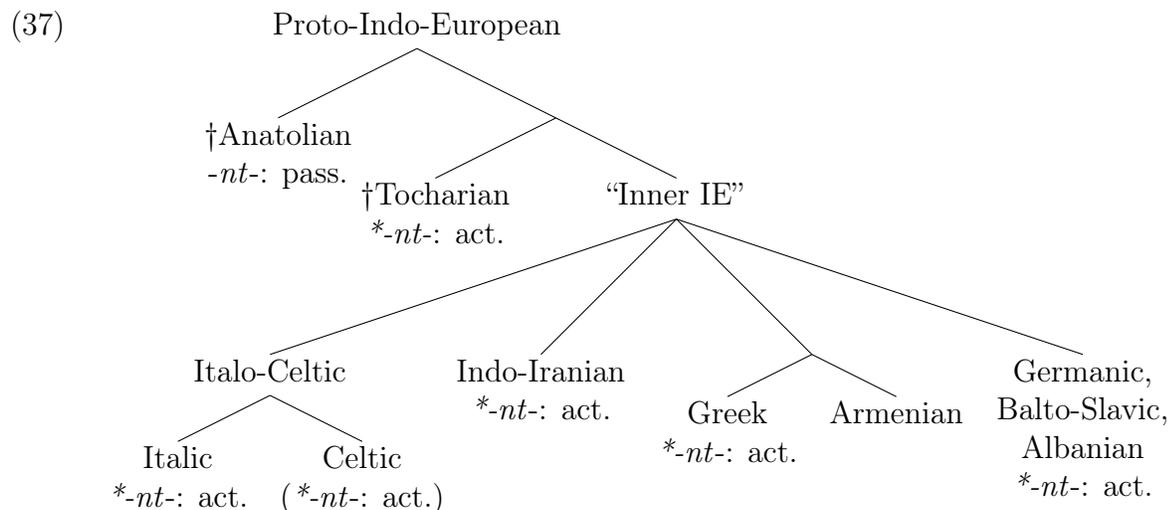
(36) Hdt., *Histories* 1.9.3:

soì melétō tò entheūten hókōs mē se
 you.DAT take.care.3SG.IPV thereupon such.that NEG you.ACC
 ópsetai **i-ónt-a** **dià** **thuréōn**
 see.3SG.NACT.FUT go-PTCP.ACT-ACC through doors.GEN

“Take care thereupon so that she does not see you **going through the door**.”

We are faced with an interesting problem of comparative reconstruction: while the Hittite

(Anatolian) reflexes of **-nt-* are “passive” (\approx equivalent of target state *-menos* in MG¹³), they are syntactically active in Tocharian, AG, Sanskrit, etc. As already mentioned, it is commonly assumed that Anatolian branched off first. The following tree illustrates the functions of **-nt-*, correlated with the commonly assumed “split-off dates” for the different branches.¹⁴



There are several reasons to assume that the Tocharian and “Inner IE” active participle represents a shared innovation. First, these branches share other innovations to the exclusion of Anatolian (notably primary thematic presents, the optative, the **eh₂*-feminine, etc., cf. Jasanoff 2017). Second, there are several exact equations between active participles in these branches. Finally, while there is a possible grammaticalization path from the Anatolian or pre-Anatolian “passive” use of **-nt-* to its active use, there is no obvious path from the active use of the post-Anatolian languages to a passive use. That is, it is unclear how L1 learners might ever have reanalyzed active participles such as the ones in (35) and (36) as passive, while there is a reasonable (and paralleled) path for the reanalysis of stative (passive) participles as eventive, active ones—specifically, a reanalysis path by which **-nt-* changed from selecting (minimally) *vP* to selecting (active) VoiceP.

Hittite itself provides evidence for the starting point of such a reanalysis. As noted by Frotscher (2013), Hittite *-ant-* is ambiguous between a stative and an eventive/“processual” interpretation for certain verb classes, crucially stative-intransitive verbs, cf. (38).

- (38)
- a. *ā-nt-* 1. ‘hot’ (state), 2. ‘being hot’ (event/process) ↔ *āri* ‘is hot’
 - b. *šaš-ant-* 1. ‘asleep’ (state), 2. ‘sleeping’ (event/process) ↔ *šašzi* ‘sleeps’
 - c. *kardimiy(aw)-ant-* 1. ‘angry’ (state), 2. ‘being angry’ (event/process) ↔ *kar-timiyattari* ‘is angry’

This suggests that a participle like (38-c), *kardimiy(aw)ant-* had two possible interpretations: a (target) state ‘angry’ including *vP*, and an event of ‘being angry’ including some version of active VoiceP with an agent-like subject,¹⁵ supplying the ingredients for a “struc-

¹³Note that a resultant state structure may be evidenced in examples like (29), with an agent *by*-phrase.

¹⁴This tree and the analysis in this section are based on that of Fellner and Grestenberger To appear.

¹⁵Cf. the agentive uses of Engl. *hate*, as in “X is hating on sbdy.,” “X is a hater”, etc.”

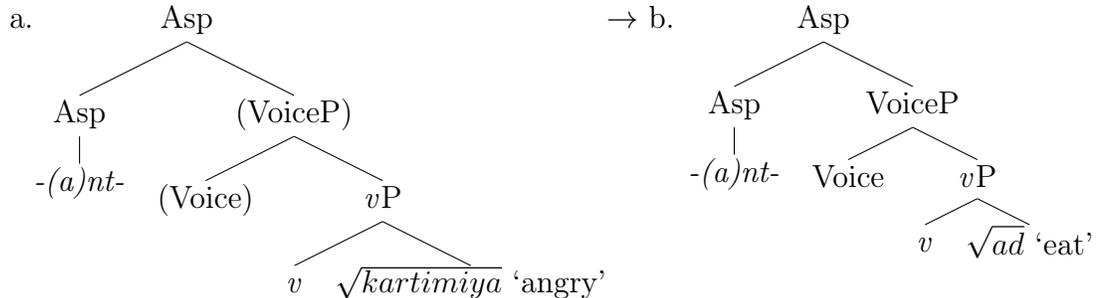
tural reanalysis” scenario. In this case, the structural reanalysis would result in obligatorily including active VoiceP not only in stative-intransitive verbs like ‘stand’, ‘be angry’, etc., but in *all* verbs, including agentive-transitive ones. That is, starting from verbs like (38), post-Anatolian L1 learners generalized the ‘processual’/VoiceP structure to *all* verbs, effectively resulting in active participles. There is actually some evidence for such a generalization in Hittite itself: some verbs, including *ēd-/ad-* ‘eat’ and *šākk-/šakk-* ‘know’ have apparently active participles, e.g., *ad-ant-* ‘having eaten’ (besides expected ‘eaten’) and *šakk-ant-* ‘knowing’ (besides expected ‘known’), cf. Hoffner and Melchert 2008: 339.

This “voice switching” is usually framed as “proportional analogy”, cf. (39).

- (39) a. *kartimiyattari* ‘is angry’ : *kartimiy-ant-* ‘(being) angry’ →
 b. *šākk-i* ‘knows’ : x, x = *šakk-ant-* ‘knowing’ (besides expected ‘known’) →
 c. *ēd-zi* ‘eats’ (*ad-anzi* ‘they eat’) : x, x = *ad-ant-* ‘eating’ (besides expected ‘eaten’)

However, assuming such a “proportional” analogy is not strictly necessary. All we need is to assume that the selectional properties of **-nt-* changed during L1 acquisition based on verbs like (38), and that **-nt-* was therefore able to select active VoiceP, independent of the type of verb in question. This would naturally lead to agentive transitive verbs surfacing with “active participles”, rather than (target state) passive ones. This reanalysis is sketched out in (40).

- (40) Reanalysis



In other words, the selectional criteria of **-nt-* changed from selecting *vP* to selecting VoiceP. For transitive verbs, this resulted in a quite dramatic surface change from transitive object or “theme” orientedness to “subject” orientedness.

While this development happened sporadically in Hittite, it was much more general after Anatolian left the family, resulting in the active *nt-* participles of AG, Latin, Sanskrit, etc., which are by then consistently associated with finite *active* paradigms.

However, some remnants of the older stative-intransitive, non-VoiceP use of **-nt-* are found in AG and other Indo-European languages. Examples are given in (41): (41-a-b) are *-(o)nt-* forms which are not associated with a finite active verbal paradigm (and comparative reconstruction suggests that no such verbal paradigm existed in the first place), (41-c) is an example of an *-nt-* participle that is diachronically associated with a finite *non-active* verbal paradigm, reminiscent of the Hittite situation but otherwise excluded in Greek.

- (41) AG ‘stative’ *-nt-*

adjectives as in (42), many of which denote property concepts. These are often described as “possessive adjectives” in the Indo-Europeanist literature, the intuition being that the adjectival suffix contributes possessive meaning to the derivative. To give some (idealized) examples, a Vedic *nt*-form like *dvīṣ-ánt-* from *dvīṣ-* ‘hatred’ would originally have meant ‘having hatred; hateful’, *śuc-ánt-* from *śúc-* ‘shine, glow’ originally meant ‘having shine, shiny’, etc., before being reanalyzed as atelic, deverbal statives. This scenario fits well with the typological survey provided by Haspelmath 1994, who argues that adjectival derivational suffixes are one of the main sources of participles diachronically. Parallels for the development from denominal-possessive suffix to verbal-eventive participial suffix abound in the older Indo-European languages, cf. the Sanskrit suffix *-ín-*, which originally formed possessive adjectives (e.g., *áśva-* ‘horse’ → *aśv-ín-* ‘having horses/a horse’, *vájra-* ‘mace’ → *vajr-ín-* ‘having a mace’), but later on acts as a deverbal adjectival, quasi-participial suffix (e.g., *ay-/e-/i-* ‘go’ → *-ay-ín-* ‘going’, *yaj-* ‘sacrifice’ → *yāj-ín-* ‘sacrificing’). It is especially noteworthy that some of these forms appear to have both an active and a passive interpretation, betraying their denominal origin, e.g., Vedic Sanskrit *ukth-ín-* ‘praising’ and ‘praised’ < *‘having praise’ (derived from *ukthá-* ‘song of praise’). This “structural ambiguity” of denominal adjectives is exactly what led to the split in the development of **-nt-* to a passive participle in Hittite, but an active participle in AG and the other older Indo-European languages.

5 Conclusion

The two case studies discussed in this article illustrate the diachrony of the loss and addition of functional projections in the structure of two different participial suffixes, (PIE) *(*)-nt-* and (Ancient/Modern) Greek *-menos*. In both cases, the ambiguity of interpretation found in deverbal participles and adjectives (between target and result states, or stative and eventive participles) was crucial to explaining the reanalyses that took place. The question is whether these changes are part of a “cycle”. At first glance, the answer seems to be “no”, since neither the HPP nor the LMP apply in the changes discussed in sections 3 and 4. Rather, we seem to be dealing with structural reanalysis (cf. section 4.1.), by which functional structure is lost or gained during language acquisition because language learners acquire a different underlying representation than the previous generation.

Viewed from this perspective, adding functional structure should be no more difficult than losing it, given the right kind of “ambiguity of input”, and there are plenty of additional possible instances that seem to show addition of functional structure, but that cannot be discussed here for reasons of space.¹⁸

However, although the HPP and LMP are not involved in the changes discussed here, these case studies can be subsumed under cyclical change in the broad sense in that cycles “involve the disappearance of a particular word and its renewal by another” (van Gelderen 2016b: 3). If we extend this to “a particular suffix”, this arguably holds for the case studies described above in that the older functions of the suffixes *-menos* and **-nt-* disappeared, but were at least to a certain extent replaced by other suffixes. For example, when PIE **(o)nt-*

¹⁸E.g., the Sanskrit suffix *-ín-* briefly mentioned in section 4.4. or the development of the PIE suffix **-to-* (cf. AG/MG *-tós*) to Latin *-tus*, which can appear in transitive constructions with accusative objects when formed to deponents, unlike its AG and Sanskrit cognates.

changed from a (stative passive) adjective to an active participle after Anatolian had left the family, new adjectival passive suffixes developed in the other Indo-European languages, such as *-to- (Skt. -tá-, e.g., *kr-tá-* ‘made’, AG -tó-, e.g., *the-tó-s* ‘placed’, Latin -tus, e.g., *fac-tus* ‘made’, etc.), *-no- (Skt., -na-, e.g., *pūr-ṇá-* ‘filled; full’, OCS -нѣ, e.g., *o-dě-nѣ* ‘done’, cf. OHG (*gi)tā-n* ‘done’, Engl. *done*, etc.), and *-lo- (Arm. *gerc-al* ‘caught’, OCS -лѣ, e.g., *nes-lѣ* ‘carried’, etc.). I therefore believe that future work should continue to explore these changes as part of a broader, cyclic renewal of adjectival and participial morphology.

Finally, it must be emphasized that the “participle cycle” is, at each step, constrained by the synchronic properties of the input grammar(s), just as in any other instance of language change (be it phonological, morphological, or syntactic change). That is, participles do not arbitrarily flip from active to passive or vice versa, but develop via a series of subsequent re-analyses, each of which is grounded in the structural possibilities of the preceding synchronic stage.

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