

13. The perfect system in Ancient Greek

Robert Crellin (University of Cambridge)

Abstract

The present paper surveys the diachronic development of the Ancient Greek perfect in four periods: Mycenaean, Archaic, Classical and post-Classical. At each stage the semantic evaluation of perfect is assessed in the context of the semantics of its predicate. While generally confirming the standard picture of increasing anteriority and past reference in the perfect correlating with greater numbers of verbs able to form perfects, the present study contributes empirical data to support this assertion. The article traces the growing paradigmatisation of the perfect form throughout its history. However, this development is not linear. Instead in the post-Classical language we witness a bifurcation along diglossic lines, with the literary language remaining much more conservative in terms of the perfect's semantic range, while in lower-register material the perfect increasingly competes with the aorist to denote perfective semantics.

Keywords: perfect, anterior, event and argument structure, lexical aspect, resultative

1. Introduction

1.1 Morphology

Ancient Greek attests three tenses of the perfect: past (known as the 'pluperfect'), present (known as the 'perfect') and future (known as the 'future perfect'). The last of these is only attested in non-active formations, and is very rare. Accordingly, it will not be addressed here. The pluperfect serves in principle as the past of the perfect, that is, it sets the topic time¹ of the sentence prior to utterance time. Past tense is marked by the augment *e-*, which is prefixed to the reduplicated stem, and is also seen in the aorist and imperfect

¹For the term, see Klein (1992), equivalent to 'reference time' in other works.

Table 1. Perfect indicative, infinitive and participle formations

	Person	SG	PL
IND.ACT	1	<i>lé-loíp-a</i>	<i>le-loíp-amen</i>
	2	<i>lé-loíp-as</i>	<i>le-loíp-ate</i>
	3	<i>lé-loíp-e(n)</i>	<i>le-loíp-asi(n)</i>
IND.NACT	1	<i>lé-leim-mai</i>	<i>le-leím-met^ha</i>
	2	<i>lé-leíp-sai</i>	<i>lé-leíp^h-t^he</i>
	3	<i>lé-leíp-tai</i>	<i>le-leíp-atai</i>
			<i>le-leim-ménoi eisi(n)</i>
INF.ACT		<i>le-loíp-énai</i>	
INF.NACT		<i>le-leíp^h-t^hai</i>	
PTCP.ACT.NOM.M.SG		<i>le-loíp-ós</i>	
PTCP.NACT.NOM.M.SG		<i>le-leim-ménos</i>	

with the same signification. The pluperfect will not be treated separately in this analysis, since the semantics of the perfect as a category are transparent from the perfect and pluperfect together, once the difference in topic time is taken into account.

The Proto-Indo-European verbal adjective in **-tos* is present in Greek. However, it is not integrated into the verb system, and therefore falls outside of the scope of the present study.

Ancient Greek attests a number of periphrastic constructions with *eimí* “be” and *ék^hō* “have”, whose place within the verb system is a matter of debate. These will not be discussed here, but they are discussed in connection with medieval and modern Greek (see Horrocks, this volume). For a full treatment, the reader is directed to Bentein (2016).

The most common terminations of the perfect in Ancient Greek, formed to the verb *leípō* “leave”, are given in Table 1.²

1.2 Periodisation

Ancient Greek may be divided into the following periods:

- Mycenaean (1400–1200 BCE; cf. Ferrara 2010: 11)

²Based on information from Smyth (1920) and the TLG. Not all forms are necessarily directly attested. For full details of the morphological characteristics of the Archaic Greek perfect, see Willi (2018).

- Archaic (covering the epic poems of Homer, written down after the reintroduction of writing in C8/7th BCE, but stemming from a much older tradition of oral poetry going back into the Bronze Age; cf. Horrocks 2010: 44–49)
- Classical (C5th – C4th BCE; cf. Bentein 2016: 6)
- Post-Classical (C3rd BCE – C6th CE; cf. Bentein 2016: 6)³

The perfect is attested at each stage, and the purpose of this chapter is to trace the development of the syntax and semantics of the form through each of these stages.

1.3 The problem of the semantics of the Greek perfect

The Ancient Greek perfect, in all varieties and periods, except the documentary material, is striking for its apparent combination of pure state, resultative and anterior semantics in a single form, albeit that the difference is for the most part lexically determined. Thus compare the following forms from the *Iliad*:⁴

- (1) *taût’ ainôs deídoika katà p^hréna,*
DEM.ACC.N.PL terribly fear.PRF.IND.ACT.1SG in heart.ACC.SG
mè
NEG

“I **have** this terrible **fear** in my heart, that [the gods carry out this man’s threats]” (*Il.* 9.244, text Monro & Allen 1920)

³I treat the post-Classical period as one. For a more fine-grained approach, at least for periphrastic constructions, see Bentein (2016) who divides post-Classical Greek into early, middle and late periods.

⁴Texts and translations used are given in the references section. Texts were provided digitally by the *Perseus Digital Library* (<https://www.perseus.tufts.edu/hopper/>), the TLG (<https://stephanus.tlg.uci.edu/>), the *Chicago Homer* (<http://homer.library.northwestern.edu/>), the *Loeb Classical Library* (<https://www.loebclassics.com/>) and <https://www.papyri.info>, accessed between June 2017 and October 2018. Where not cited, translations are my own. Examples were found using my own Microsoft Access database, for more details of which see n. 18 below.

- (2) “So Hector picked up the stone and carried it straight against the timbers

haí r^ha púlas eírunto
REL.NOM.PL PTCL gate.F.ACC.PL defend.IPRF.IND.NACT.3PL
púka stibarôs araruías
solidly strongly join.PRF.PTCP.ACT.F.ACC.PL

that solidly defended the firmly **fitted** gates” (*Il.* 12.453–4, text Monro & Allen 1920)

- (3) *tó s’ aû nûn oíō*
PTCL PRON.F.ACC.SG again now think.PRS.IND.ACT.1SG
apotisémen hóssa m’
pay_back.AOR.INF.ACT REL.ACC.N.PL PRON.ACC.1SG
éorgas.
do.PRF.IND.ACT.2SG

“So now I am minded to pay you back for all **you have done** to me.” (*Il.* 21.399, text Monro & Allen 1920, translation based on Lattimore 1951)

On the one hand, (1) describes a present state for the speaker, while (3) clearly has anterior reference. Finally, the perfect in (2) describes the state at topic time resulting from an event finishing prior to reference, or topic, time.

In the earliest stages of Greek, the perfect is taken to denote the state of the syntactic subject, often but not always that resulting from an event completing prior to topic time (e.g. Haug 2004: 393–394; Gerö & von Stechow 2003: 268–270).⁵ In the Classical period the perfect is generally held to move towards prototypically denoting the state of the object (cf. the foundational studies of Wackernagel 1904 and Chantraine 1927), a shift which is accompanied by a concomitant move towards greater anteriority (cf. Gerö & von Stechow 2003: 268–270) and an increase in the number of lexical verbs which may form perfects. This is seen in turn as the necessary prerequisite for ‘aoristic’ perfects to emerge in lower register documents of the later Koine period (cf. Berrettoni 1972: 163), although other accounts have been given of the mechanism for the development (cf. Crellin 2016a; Haug 2004; Speyer 2003;

⁵For the view that the perfect in later stages of Greek has this denotation, see McKay (1965).

Gerö & von Stechow 2003). As an example of the ‘aoristic’ use of the perfect, consider:

- (4) “Having found [AOR.PTCP.ACT.M.SG] a pearl of great value
apelt^hōn *pépraken* *pánta*
 depart.AOR.PTCP.ACT.NOM.M.SG sell.PRF.IND.ACT.3SG all.ACC.N.PL
hósa *eîk^hen* *kai̇* *ēgórasen*
 REL.N.PL have.IPRF.IND.ACT.3SG and buy.AOR.IND.ACT.3SG
autón.
 PRON.ACC.M.3SG

he left, **sold** all he had and bought it.” (Matt. 13.46, text NA28)

That there is truth to this picture of the development is indicated by the undeniable increase in the number of verbs with perfect active stems in the Classical period, by the undoubted appearance of ‘aoristic’ perfects, and by the eventual demise of the perfect stem itself, whose function was for many centuries carried out by the aorist, before the eventual resurrection of the category in the medieval period (for which see Horrocks, this volume). However, we will see that the picture is more nuanced, with some surprising productivity of resultative readings in the literary post-Classical language. Not only this, but we will see that the key semantic developments necessary for the later expansion of the perfect are already in place in Homeric Greek.

2. Theoretical preliminaries

2.1 Homogeneity, state and change-of-state

For the purposes of this study, we will distinguish three main classes of eventuality: homogeneous, change-of-state (COS) and non-homogeneous non-change-of-state (NH NCOS). A homogeneous eventuality is one that may be infinitely subdivided into subeventualities of the same kind as the larger eventuality of which they are a part (for the term, see e.g. Tenny & Pustejovsky 2000 and Mourelatos 1978). States, such as ‘being red’, or ‘sitting’, are homogeneous because each instance of a state is also a state with the same description as the larger eventuality of which it is a part. By contrast, ‘building’ is non-homogeneous, since each instance of a building event may not necessarily be regarded as also a building event: it might be a sawing event or another kind of event that may not in and of itself be regarded as a building event. Activities, such as swimming, which are cyclical in

nature may be regarded as homogeneous down to a certain level of granularity (Ramchand 1997: 123–124), but for these purposes I am interested only in the ‘strong’ form of homogeneity.

A change of state, such as ‘water freezing’, is also as a whole non-homogeneous, insofar as it may, following Rappaport Hovav & Levin (1998: 104f.) and Kiparsky (2002: 115), be thought to consist of two subeventualities, an event of change, in this case going from water to ice, and a post-state, being in a frozen state, neither of which of themselves may be thought of as a change-of-state event of freezing. Note, however, that the post-state is homogeneous, insofar as it is a state. We will see that COS eventualities, in terms of the construal of the Greek perfect’s tense-aspect semantics, often behave like their stative counterparts.

2.2 Target (T) and Result (R) states

Important for discussion of the semantics of the Ancient Greek perfect has been Parsons’ (1990) introduction of the distinction between Target (T) and Result (R) states. These two different states refer to the post-situation described by a given predicate’s event schema. Parsons’ T-state refers to a change of state. Thus in an event of ‘freezing’, or ‘going to the cinema’, the relevant T-states are ‘being frozen’ and ‘being at the cinema’ respectively. By contrast, Parsons’ R-states are states which are not prescribed by a given predicate *per se* but which are a logical consequence of it. Thus in an event of ‘walking’, without stated goal, there is no T-state, but there is an R-state which follows once this event has terminated, namely ‘having walked’. However, this ‘state’ has a different character, since it is more abstract and derived from the semantics of the predicate, rather than defined by it. In event structural terms R- and T-states have the same properties: both are homogeneous and atelic. The difference lies in the level of abstraction from the semantics of the predicate, so that T-states are defined by the predicate itself, while R-states are derived secondarily.

One may furthermore distinguish different kinds of state for different participants in a given eventuality. This is important in the case of two-place predicates where the post-situation of the different participants is likely to be different. Thus in an event of ‘making a chair’, the chair enters the state of ‘having been made’, a T-state. By contrast, there is no T-state for the subject in this case. Rather, one may only derive an R-state, namely that of ‘having made a chair’, for the subject.

2.3 Internal and external arguments

We will see that critical for the interpretation of the Greek perfect is whether or not the subject can describe an entity which has entered a state or not. Consequently, Williams' (1981) distinction between internal and external arguments will be important. The external argument is the argument which is "outside the maximal projection of the verb" (Tenny 1994: 9) and always becomes the syntactic subject if present. By contrast, the internal argument is governed by the verb at D-structure, and receives its thematic role from it (Tenny 1994: 9).

In COS eventualities, it is the internal argument which undergoes change. In unaccusative predicates this internal argument is realised as subject by default. In addition, through the causative alternation, the internal argument of causative COS predicates may be realised as subject if the external argument is not provided. Thus it is possible to say in English both 'I froze the water', and 'The water froze'. The internal argument in such cases may be referred to as an 'internal causer', that is, an internal argument actively involved, to some degree, in bringing about the final state. The internal causer may be distinguished from a patient, which only undergoes the action of the predicate, without contributing anything itself.

Telic non-homogeneous non-change-of-state events, such as 'building a house', have an event structure which is in some ways parallel to change-of-state eventualities, insofar as the house at the end of such an event has entered a state of existence. Crucially, however, as we will see, the perfect active in Greek cannot realise the internal argument of such predicates as subject, whereas the non-active may.⁶

3. Mycenaean

The earliest directly attested Greek is that found in the corpus of Mycenaean documents, written in a very archaic variety of Greek on clay tablets dating from the second half of the second millennium BCE. However, the contribution that Mycenaean is able to make to our understanding of the verb system is necessarily limited owing to the nature of the material, consisting as it does largely of economic material such as lists of agricultural produce in which (indicative) verbs are something of a rarity. For this reason the number of tokens is very limited, numbering only thirty three perfects (Bartoněk 2003: 336), of which a maximum of four are indicatives, the rest being

⁶For a fuller discussion of these phenomena in the context of the Greek perfect, see Crellin (2016b).

participles.⁷

The Mycenaean perfect attests two sets of terminations, which equate to the active and non-active forms of later periods. Consider the following text, where active and non-active terminations occur alongside one another. The following text includes both perfect active and non-active perfect participles describing a chariot:⁸

- (5) *i-qi-jo* *a-ja-me-no* *e-re-pa-te*
 chariot.NOM.DU inlay.PRF.PTCP.NACT.NOM.DU ivory.DAT.SG
a-ra-ṛo-mo-te-me-no *po-ni-ki[-jo]* |
 assemble.PRF.PTCP.NACT.NOM.DU red.NOM.DU
a-ra-ru-ja *a-ni-ja-pi* *wi-ri-ni-jo*
 fit.PRF.PTCP.ACT.NOM.PL rein.INS.PL leathern.INS.PL
o-po-qo *ke-ra-ja-pi* *o-pi-i-ja-pi*
 cheek_straps.INS.PL horn.INS.PL bit.INS.PL

“[Two] horse-(chariots without wheels) **inlaid** with ivory, (fully) **assembled**, (painted) crimson, **equipped** with bridles with leather cheek-straps (and) horn *bits*” (KN Sd 4401, text & translation based on Chadwick et al. 1990)

It is immediately striking that despite the difference in morphology, both ‘active’ and ‘non-active’ forms describe resultant states from events completing prior to reference / topic time and are intransitive. Furthermore, no transitive examples of the perfect active are attested in the Mycenaean corpus, and there are no active ~ non-active oppositions in the same verb. From the perspective of later Greek, the ‘active’ formations are detransitivising. Thus, *a-ra-ru-ja* is the perfect of the verb which in later Greek is attested in the present form as *ararískō*, meaning “fit, equip”, and is in active formations transitive.

The indicative only attests non-active forms, but where it occurs, it also describes resultant state. The following example is of the perfect non-active indicative, very clearly passive in sense, from the verb *epidatéomai* “distribute”:

⁷For a full survey of the perfect in Mycenaean Greek, see Chantraine (1967).

⁸Following convention Mycenaean texts are here given in transcription and are not normalised. Hyphens indicate division of characters in the Linear B script. The order of the lines of the text has been normalised.

- (6) *o-a₂ e-pi-de-da-to* | *pa-ra-we-wo wo-no*
 thus distribute.PRF.IND.NACT.3SG of_Pa-ra-we- wine.NOM.SG

“Thus the wine of *Pa-ra-we-* is / has been distributed” (PY Vn 20, text & translation Chadwick 1973)

There then follows a list of places where the wine has been distributed. It is unclear to what extent the prior event of distribution is directly related to topic time by the perfect in this example.

The two verbs attested in the perfect with active terminations but detransitivising sense in Mycenaean are also attested in the same set of terminations with detransitivising sense in later varieties of Greek. Since in later Greek the perfect active detransitivises certain causative change-of-state predicates, it is very possible that the same underlying rationale applies in Mycenaean. There is, however, insufficient data to be sure.

4. Archaic Greek

4.1 State and other homogeneous predicates

The active perfect is used to describe a state of the subject. It is frequently so used in the case of one-place mental state verbs:

- (7) “Just as arrow-shedding Artemis comes down from the mountain [...] and, along with her, nymphs [...] haunt the fields in play,
gégēthē *dé te p^hréna Lēto*
 rejoice.PRF.IND.ACT.3SG PTCL PTCL heart.ACC.SG Leto.NOM.SG

and Leto **rejoices** at heart [as she holds [*ék^hei* hold.PRS.IND.ACT.3SG] her head ... above them all]” (*Od.* 6.106, text Murray 1919, translation Huddleston 2006)

However, this treatment is not dependent on the predicate describing a state *per se*, but rather that the predicate describes a homogeneous eventuality. It is in this context that the present time reading of the perfect of noise predicates is to be understood, e.g.:⁹

⁹Cf. Chantraine (1927: 16–17), who attributes stative value to noise predicates headed by the perfect (cf. Berrettoni 1972: 26, 30–31, 147–148), and Gerö & von Stechow (2003: 266–267) for a relatively recent expression of the analysis of the perfect in these verbs, and some others, as carrying intensive value. For the suggestion that perfects heading such predicates are not to be seen as original perfects, and references, see Willi (2018: 238–239). Against this Willi points out that these perfects have normal

- (8) “Not even a lusty man could shoot an arrow with a bow from his hollow ship and reach into the hollow cave

ént^ha d’ enì Skúllē naíei
 there PTCL in Scylla.NOM.F.SG live.PRS.IND.ACT.3SG
deinòn lelakuîa
 terrible.ACC.N.SG howl.PRF.PTCP.ACT.NOM.F.SG

Scylla lives in there, **howling terribly**.” (*Od.* 12.85, text Murray 1919, translator Huddleston 2006)

The presence of a direct object does not automatically lead to a change in the semantics of the perfect, if the object does not alter the homogeneity of the predicate. Thus two-place state predicates in the perfect retain the same argument structure as if they were headed by non-perfect forms. Consider the following examples from $\sqrt{keut^h}$ “hide”:

- (9) “For as I detest the doorways of Death, I detest that man,

hòs k^h’ héteron mèn
 REL.NOM.M.SG PTCL one_of_two.ACC.M.SG PTCL
keút^hēi enì p^hresín, állo dè
 hide.PRS.SBJV.ACT.3SG in heart.DAT.PL other.ACC.N.SG PTCL
eípēi.
 say.AOR.SBJV.ACT.3SG

who **hides** one thing in the depths of his heart, and speaks forth another.” (*Il.* 9.312–13, text Monro & Allen 1920, translation Lattimore 1951)

- (10) “But come now, go straight to Nestor, the tamer of horses.

eídomen hēn tina
 see.PRF.SBJV.ACT.1PL REL.ACC.F.SG INDF.ACC.SG
mêtin enì stét^hessi kékeut^he.
 counsel.ACC.F.SG in chest.DAT.N.PL hide.PRF.IND.ACT.3SG

We want to know what counsel **he keeps hidden** in his heart.” (*Od.* 3.17–18, text Murray 1919, translation based on suggestions from S. Schumacher, p.c.)

reduplication for perfects, and have the perfect terminations, which are synchronically idiosyncratic.

4.2 Change-of-state predicates (non-causative)

- (12) “But come, he must also taste the point of our spear
óp^hra *ídōmai* *enì p^hresìn*
 in_order_that perceive.AOR.SBJV.NACT.1SG in mind.DAT.PL

that **I may perceive** in mind [and learn whether in like manner he will return from their, or the life-producing earth will detain him]” (*Il.* 21.60–61, text Monro & Allen 1920)

- (13) *eû gâr dè tóde* *ídmēn* *enì*
 well PTCL PTCL DEM.ACC.N.SG perceive.PRF.IND.ACT.1PL in
p^hresín, *estè* *dè pántes* *márturoi*
 mind.DAT.PL be.PRS.2SG PTCL all.NOM.PL witness.NOM.PL

“For we **know** well in our minds, and you are all witnesses” (*Il.* 2.301–302, text Monro & Allen 1920)

In (12) it is clear that *ídōmai* refers to mental perception, made explicit by the modification *enì p^hresìn* ‘in mind’. Suggestive of the aorist and perfect being seen as part of the same paradigm is that fact that this adverbial phrase is paralleled in (13). While, therefore, the perfect *oîda* is often treated as exceptional, there may be only a limited need to do so, viz. in respect of the semantic specialisation to a metaphorical sense, and, of course, the lack of augment. The tense-aspect semantics and interaction with argument structure are entirely as would be expected.

4.3 Causative COS predicates

Causative COS predicates demonstrate idiosyncratic interactions with a predicate’s argument structure. Specifically, active forms outside of the perfect head transitive two-place predicates, while perfect active forms head one-place predicates with the causer participant deleted and internal argument, i.e. undergoer of change, raised to subject position. This is to say that the perfect demonstrates lability with respect to other active forms in the verb system.

As an example, consider the following contrast of the present and perfect from **√welp* ‘hope, cause to hope’:¹¹

¹¹For an example of the pluperfect with the same semantics, *mutatis mutandis*, see e.g. *Il.* 19.328.

- (14) *pántas mén r^h’ élpei*
 all.ACC.M.PL PTCL PTCL make_hope.PRS.IND.ACT.3SG
 “She **causes** all **to hope**” (*Od.* 2.91, text Murray 1919)

- (15) *nûn dê nôï g’ éolpa*
 now PTCL PRON.ACC.1DU PTCL make_hope.PRF.IND.ACT.1SG
 [...] *oísest^hai méga kûdos*
 carry.FUT.INF.NACT great.ACC.N.SG glory.ACC.N.SG
Ak^haioîsi protî nêas
 Achaean.DAT.M.PL to ship.ACC.F.PL

“**I have hope** now [...] that we two at least will bring back to the ships great glory for the Achaeans” (*Il.* 22.216–217, text Monro & Allen 1920)

Notice how in each case the perfect stem appears to carry little if any reference to the event of change. Although predicates describing the acquisition of a mental state are prominent in this group, it is not restricted to them. We see the same characteristics, for example, in perfects from the roots $\sqrt{steH_2}$ ‘stand, make to stand’ and $\sqrt{H_2er}$ ‘(cause to) fit together’:

- (16) *en dê pít^hoi oínoio [...] héstasan*
 in PTCL jar.NOM.PL wine.GEN.SG set_up.PRF.PST.IND.ACT.3PL
 [...] *exeíēs potî toîk^hon arērótes*
 in_order against wall.ACC.SG fit.PRF.PTCP.ACT.NOM.PL

“There, too, **stood** great jars of wine [...] **ranged** in order along the wall” (*Od.* 2.340–342, text & translation Murray 1919)

Finally, in extent predicates, there need be no indication of any prior event. Indeed, such an interpretation is often impossible. Consider the following example involving the perfect active of *anatrék^hō* ‘run up’, where similarly there can be no presupposition of a prior event:

- (17) “Round the whole (of Aeolus’ floating island) is an impregnable
 bronze wall,
lissē d’ anadédrome pétrē.
 sheer.NOM.F.SG PTCL run_up.PRF.IND.ACT.3SG rock.NOM.F.SG
 and a sheer rock **runs up**.” (*Od.* 10.3–4, text Murray 1919)

Similar examples can be found in the literary post-Classical material (for which see §6.2). The lack of event implication has been analysed under an extent predicate framework.¹² According to this view, all predicates may be understood at a very general level to be predicates of space-time, with the semantics of the elements involved ultimately determining whether the predicate is one of space or time alone, or both. Accordingly, the perfect in (17) may be understood to presuppose a spatial ‘eventuality’, with all the entailments inherent in the perfect’s semantics preserved, namely that the subject exists at or beyond the terminal point of an eventuality schema, in this case such that the sheer rock traces a path to a high place, but without any entailment that that situation is predicated on an event terminating prior to topic time.

4.4 Two-place verbs introducing non-homogeneous non-COS predicates

If the perfect in Homer denotes a past event, this is often seen as secondary to denoting the ensuing state (cf. Bentein 2016: 112 n. 30; Chantraine 1927: 13; Sicking & Stork 1996: 161). However, the perfect active of verbs introducing non-COS non-homogeneous two-place predicates can generally be seen to carry anterior denotation. Consider the following example, in addition to (3) above:¹³

¹²For discussion of extent predicates in general, see Koontz-Garboden (2010) and references there. For application in the context of the literary post-Classical Greek material, see Crellin (2016b: 199–216). Nedjalkov & Jaxontov (1988: 14) refer to such constructions without implication of a prior event taking place as “quasi-resultatives”. These are discussed by Perel’muter in reference to Homeric Greek (1988: 285).

¹³Examples like this are sometimes taken differently. For the view that the stem *peplēg-* should be analysed as having iterative semantics, see McKay (1965: 1), Wackernagel (1904: 5), and Tichy (1983: 66, 71), who discusses this example. Chantraine (1927: 14–15), cf. McKay (1965: 1), sees here a contamination with the aorist system. Willi (2018: 216–217), however, takes the perfect participle from this root as a perfect. The existence in general of perfects with anterior denotation in Homer is sometimes minimised, e.g. Gerö & von Stechow (2003: 268, 270–271). However, for their existence see Kümmel (2000: 73–74), Bentein (2016: 111–112) and Berrettoni (1972: 158–159). For an Extended Now analysis of perfects of this kind, although applied in the context of Classical, Hellenistic and Greco-Roman Greek, see Gerö & von Stechow (2003: 274–283).

- (18) “Father Zeus, will you be at all angry with me
aí ken Árēa | *ligrôs peplēguîa*
 if PTCL Ares.ACC.SG banefully strike.PRF.PTCP.ACT.F.NOM.SG
mák^hēs exapodíōmai?
 battle.F.GEN.SG chase.AOR.SBJV.ACT.1SG
 if, when **I have** banefully **struck Ares**, I chase him out of the battle?”
 (*Il.* 5.762–3, text Monro & Allen 1920)

Here I take the verb *pléssō* “strike” to mean “hit so as to wound”. This eventuality is neither homogeneous, nor does it describe a change of state, but rather a situation which is predicated on a previous event. Anteriority in examples of this kind is generated through the interaction of the semantics of the perfect with those of the predicate in each case. The perfect then ascribes a homogeneous atelic eventuality to the subject following from the predicate, which in these cases is the very minimal eventualities of ‘being someone who struck Ares / did something’ respectively. It follows that the perfect characterises the subject in virtue of the event. In many cases this means that the perfect-headed predicate refers to a series of past acts, as in (3), since it is easier to characterise the subject if there are several events of the same kind to refer to. However, that this is not a requirement, and thus not part of the semantics of the perfect, is shown by the highly event-specific example in (18) (cf. differently Willi 2018: 228–231).

Predicates of this kind do not participate in the causative alternation because they do not engender a new state in the internal argument, and it is only where the internal argument enters a new state that labiality occurs. In these cases, to suppress the external argument and raise the internal argument to subject position, non-active morphology is used. Although oppositional active ~ non-active pairs are rare in Homer, it is attested for *√ed* “eat”.¹⁴

- (19) “he himself went up [on the chariot] bloody as to his feet and hands
 above

¹⁴Greek *√ed* “eat” is sometimes taken as heading a COS predicate when construed with an object that changes, so that the perfect would come to mean something like ‘be sated (as to something)’. It may be logically true that once one has eaten one may be sated. However, at least in these examples this is not linguistically relevant, and does not affect the tense-aspect interpretation, not least given the presence of an internal argument. Here anteriority in the perfect necessarily follows from the fact that the predicate describes an eventuality of change, viz. the progressive eating of the bull, so that the bull ends up being consumed, and the characterisation of the subject following this eventuality.

hós tís te léōn katà taûron
as INDF.NOM.SG PTCL lion.NOM.SG completely bull.ACC.SG
edēdós.
eat.PRF.PTCP.ACT.NOM.SG

just as a lion which **has devoured** a bull.” (*Il.* 17.542, text Monro & Allen 1920)

- (20) “Then after this we, making amends throughout the land,

hóssa toi ekpépotai kai
REL.N.PL PTCL drink.PRF.IND.NACT.3SG CONJ
edēdotai en megároisi
eat.PRF.IND.NACT.3SG in place.DAT.PL

for whatever **has been eaten** and drunk in the palace” (*Od.* 22.56, text Murray 1919)

Parallel is the following pair of examples involving the pluperfect active of *bállō*, again here with the meaning “strike, hit”:¹⁵

- (21) “Immediately he unwrapped [*esúla* strip_off.IPRF.IND.ACT.3SG] his bow, of the polished horn from a running wild goat which he himself had once shot [*tuk^hésas* hit.AOR.PTCP.NOM.SG] in the chest, as he had lain in wait [*dedegménos* await.PRF.PTCP.NACT.NOM.SG] in a covert as the goat stepped down [*ekbaínonta* come_down.PRS.PTCP.ACC.SG] from the rock and

beblékei pròs stêth^hos
throw.PRF.PST.IND.ACT.3SG towards chest.N.ACC.SG

had hit [it] in the chest” (*Il.* 4.105–8, text Monro & Allen 1920, translation based on Murray 1924–1925)

¹⁵Although Haug (2008: 299) states that “[t]he combination of a middle perfect and an active pluperfect does not seem to occur”, these examples involving *bállō* seem to be a case of this. Chantraine (1927: 15–16) sees the pluperfect here as a contamination between aorist and perfect systems.

The interpretation of the tense-aspect semantics of the perfect in Archaic Greek in a given case bears a relationship to the event-structure semantics of the predicate introduced by it as well as its interactions with argument structure. In verbs heading homogeneous atelic predicates, the perfect simply derives another homogeneous atelic predicate from it. By contrast, verbs heading change-of-state predicates, whether causative or not, the perfect describes the property of the subject as newly configured. This is to say that in causative COS predicates the perfect is detransitivising.

Notice that the Parsons T-state reading is primary: the perfect active of causative COS verbs is detransitivising because the internal argument can be realised as subject. Only when realisation of this participant as subject is blocked can the R-state reading arise. Furthermore, the perfect of atelic predicates apparently carries no reference to any event terminating prior to reference (or topic) time. This suggests the priority of pure-state readings of the perfect.¹⁶

¹⁶For similar conclusions, see Crellin (2012: 279–295) and Willi (2018: 284).

¹⁷For the mechanisms of derivation, including ‘event realisation’ (Bohnenmeyer & Swift

The perfect derives a homogeneous atelic eventuality from a predicate, predicates this eventuality of the subject, and includes the eventuality in topic time.

We should note, however, that although the perfect is in theory compatible with a wide range of predicate types in Archaic Greek, the great majority of instances head state predicates. This may be seen from Table 2, which gives the top twenty perfect actives in Homer and their semantic types.¹⁸ This is further supported by the presentation of the results in Table 3, which gives the distribution of instances and mean rank of the top twenty perfect actives in Homer.¹⁹ Strikingly, non-homogeneous non-COS verbs make up only 2% of instances of the perfect. This offers an explanation for the perfect’s very stative ‘feel’ in this period.

A final indication of the overriding stativity of the perfect in this period is the fact that when agent-with-passive constructions occur, they are marked with the dative, as though as an affected participant, rather than an outright agent:²⁰

- (23) *érk^homai* *eí tí* *toi*
 come.PRS.IND.NACT.1SG if INDF.NOM.N.SG PRON.DAT.2SG
eínk^hos *enì klisíēisi* *léleiptai* |
 spear.NOM.N.SG in tent.DAT.F.PL leave.PRF.IND.NACT.3SG
oisómenos
 carry.FUT.PTCP.NACT.M.NOM.SG

“I am going to get a spear, if one **has been left by you** in the tents.”
 (Il. 13.256–7, text Monro & Allen 1920)

2004) and negation, see Haug (2004: 409–410) and Crellin (2016b: 229).

¹⁸COS = Change-of-state; cCOS = causative change-of-state; Df = Defective, i.e. without full paradigm; NH NCOS = non-homogeneous non-COS; S = State. Data for quantitative analyses provided both here and below derive from the database built for Crellin (2012), using XML texts provided by the *Perseus Digital Library*. Instances were initially located using software written by the author on the basis of morphological analyses provided in the Diogenes software package (<https://community.dur.ac.uk/p.j.heslin/Software/Diogenes/>), analyses which were in turn provided by the *Perseus Digital Library*. These instances were then manually checked for parsing accuracy.

¹⁹The mean rank is a figure for the mean rank of a given semantic group according to the ranked frequency table. In the case of Homer, these ranks are given in Table 2.

²⁰For a full analysis of agent expression in Ancient Greek, see George (2005). For the linking of the use of the dative to denote the agent of a perfect predicate in Archaic Greek with its stative value, see George (2005: 78).

Table 2. Top twenty perfect active stems by lexical verb in Homer

Rank	Lemma	Gloss	Sem. Type	Instances
1	<i>oîda</i>	“know”	Ste (Df)	317
2	<i>ánōga</i>	“command”	NH NCOS (Noise)	135
3	<i>éoiika</i>	“be like, look like”	Ste (Df)	125
4	<i>mémaa</i>	“intend”	Ste (Df)	115
5	<i>hístēmi</i>	“set up”	cCOS	102
6	<i>t^hnēskō</i>	“die”	COS	57
7	<i>ararískō</i>	“fit”	cCOS	52
8	<i>dédoika</i>	“fear”	Ste (Df)	44
=	<i>baínw</i>	“go”	COS	44
10	<i>órnumi</i>	‘raise’	cCOS	43
11	<i>peít^hō</i>	“persuade”	cCOS	39
12	<i>érk^homai</i>	“come”	COS	32
13	<i>katat^hnēskō</i>	“die”	COS	22
=	<i>tláō</i>	“endure, be(come) bold”	COS	22
15	<i>gégōna</i>	“shout”	NH NCOS (Noise)	17
16	<i>gígnomai</i>	“become”	COS	15
=	<i>mélō</i>	“be an object of care”	Ste	15
=	<i>ep^hístēmi</i>	“set upon”	cCOS	15
19	<i>bállō</i>	“throw”	NH NCOS	13
20	<i>emmémaa</i>	“be eager”	Ste (Df)	12
=	<i>élpō</i>	“cause to hope”	cCOS	12
=	<i>érdō</i>	“do”	NH NCOS	12
=	<i>epéoiika</i>	“be like, suit”	Ste (Df)	12
=	<i>p^húō</i>	“produce, bring forth”	cCOS	12

Table 3. Distribution of the top twenty perfect actives by lexical semantic type: Homer

Sem. Type	Sum	%	Mean Rank
Ste (Df)	625	49	9.3
cCOS	275	22	12.7
COS	192	15	11.3
NH NCOS	25	2	19.5
NH NCOS (Noise)	152	12	8.5
Sum	1269		

5. Classical

5.1 Continuity with Archaic Greek

The Classical Greek perfect demonstrates considerable continuity and consistency with respect to the perfect in Archaic Greek. As in Archaic Greek, perfects heading one-place homogeneous atelic predicates in Classical Greek describe situations holding at topic time without any necessary reference to a prior state of affairs. The following examples concern such predicates headed by the perfects of *lám̐ō* “shine” and *r^húō* “flow” respectively:

- (24) *oud’ éti pûr epibómion en Troi|ai*
 nor yet fire.NOM.N.SG on_the_altar.NOM.N.SG in Troy
th^heoîsin lélam|pen kapnôî
 god.DAT.PL shine.PRF.IND.ACT.3SG smoke.M.DAT.SG
th^huódei.
 fragrant.M.DAT.SG

“[a]nd no more **does** the fire **gleam** on the altars of the gods in Troy with its fragrant incense.” (Eur. *Andr.* 1025–27, text Diggle 1984, translation based on Kovacs 1995)

- (25) “But, again, we surely are aware that when in a man the desires incline strongly to any one thing, they are weakened for other things. It is as if the stream had been diverted into another channel [...]

hôi *ḍē* *pròs* *tà* *mat^hémata*
 ART.M.NOM.PL PTCL towards ART.ACC.N.PL learning.ACC.N.PL
kai *pân* *tò* *toioûton*
 CONJ all.ACC.N.SG ART.ACC.N.SG such.ACC.N.SG
erruékasin, *perì* *tèn* *tês*
 flow.PRF.IND.ACT.3PL about ART.ACC.F.SG ART.GEN.F.SG
psuk^hês, *oîmai,* *hēdonèn*
 soul.GEN.F.SG think.PRS.IND.ACT.1SG pleasure.F.ACC.SG
autês *kat^h,* *hautèn* *eîen*
 PRON.F.GEN.SG according_to self.F.ACC.SG be.PRS.OPT.3PL
án
 PTCL

For the one whose [desires] **are in flow** towards learning and all that kind of thing, I believe they will be concerned for the pleasures of the soul for itself” (Pl. *Rep.* 6 485d, text Slings 2003, translation based on Shorey 1969–1970)

Similarly, the perfect of mental state verb *nomízō* “consider, hold, believe” describes a state:

- (26) (In a discussion of why the Nile floods in summer)

hou̓tō *tòn* *hélion* *nenómika*
 so ART.M.ACC.SG sun.M.ACC.SG consider.PRF.IND.ACT.1SG
toútōn *aítion* *eînai.*
 this.GEN.PL responsible.NOM.N.SG be.INF

“**I am convinced**, therefore, that the sun is the cause of this phenomenon.” (Hdt. 2.26.1, text & translation Godley 1920–1925)

As in Archaic Greek, the presence of a direct object does not necessarily change the temporal denotation of the predicate, provided that the predicate still describes an atelic and homogeneous situation:

- (27) *stégai* *kekeúth^has'* *haíde*
dwelling.NOM.F.PL hide.PRF.IND.ACT.3PL DEM.NOM.F.PL
Troiádōn *ók^hlon.*
Trojan__woman.GEN.F.PL crowd.ACC.M.SG

“These tents **keep hidden** a crowd of Trojan women.” (Eur. *Hec.* 880, text Diggle 1984, translation based on suggestions from S. Schumacher, p.c.)

Causative COS predicates headed by perfects behave much as they do in Archaic Greek, heading anticausative predicates often without any apparent reference to any prior event of change by which the state comes about. In the following example the perfect describes the sense of surprise felt on listening, not on any prior event that might have lead to that:

- (28) “so that I myself, Menexenus, when thus praised by them feel mightily ennobled
kaì hekástote exéstēka
and every_time amaze.PRF.IND.ACT.1SG
akroómenos
listen.PRS.PTCP.NACT.M.NOM.SG

and every time **I am amazed** as I listen” (Pl. *Menex.* 235a–b, text Bury 1929, translation based on Bury)

By contrast, where the perfect heads non-homogeneous non-COS predicates the perfect carries anterior denotation in the active, much as it would in Archaic Greek. Consider the following examples from verbs that we have seen there:

- (29) cf. (18)
kaì nē Dí' andreíōn ge
and by Zeus.ACC.M.SG courageous.ACC.M.SG PTCL
pánu nomízomen, hōs àn
very consider.PRS.IND.ACT.1PL REL.NOM.M.SG PTCL
peplégēi tòn patéra
strike.PRF.SBJV.ACT.3SG ART.ACC.M.SG father.ACC.M.SG
neottòs ón.
chick.NOM.M.SG be.PRS.PTCP.NOM.SG

“And by Zeus we consider anyone very courageous, who **has struck his father** while still a chick.” (Ar. *Av.* 1349–50, text Hall & Geldart 1907)

(30) cf. (3)

<i>hòs</i>	<i>ōp^hélēse</i>	<i>mén</i>	<i>kō</i>	<i>Pérsas</i>
REL.NOM.M.SG	help.AOR.IND.ACT.3SG	PTCL	yet	
<i>oudén,</i>	<i>kakà</i>	<i>dè</i>	<i>megála</i>	
Persian.ACC.M.SG	in_no_way	evil.ACC.N.PL	PTCL	
<i>éorge</i>				
great.ACC.N.PL				

“who has not to this point helped the Persians in any way, but **has wrought** great evils” (Hdt. 3.127, text Godley 1920–1925)

Finally, as in the earlier stage of the language, the non-active is often indeterminate between resultative and anterior denotation:

(31) cf. (20)

<i>ómoi</i>	<i>péplēgmai</i>	<i>kairían</i>	<i>plēgèn</i>
alas	strike.PRF.IND.NACT.1SG	mortal.ACC.F.SG	blow.ACC.F.SG
<i>ésō</i>			
inside			

“**I am / have been struck** deep with a mortal blow!” (Aesch. *Ag.* 1343, text Page 1972, translation based on Smyth 1926)

Despite these similarities, there are some important developments in this period, including:

- Expansion of the perfect and paradigmatisation of the active ~ non-active opposition;
- The development of specialised transitivising and detransitivising perfect active stems;
- Participation of the perfect of certain verbs in the causative alternation;
- Change in the felicity conditions of the perfect.

5.2 Paradigmatisation: expansion of the active ~ non-active opposition in the perfect

A major difference between the perfect in epic and in the Classical language lies simply in the number and type of verbs to which the perfect active

may be formed: the Classical period witnesses an expansion of the perfect active, especially in transitive accomplishment and achievement predicates (Bentein 2016: 115, citing Haspelmath 1992: 212–213). A comparison of the distribution of the perfect active by lexical semantic type in Homer (Table 2 above) with that in Classical Greek (Table 4), comprising data from the historians Herodotus, Thucydides and Xenophon, demonstrates that the perfect in this period has undergone significant change.²¹ In particular, it is striking that verbs introducing non-homogeneous non-COS predicates figure more prominently in the top twenty most frequently occurring perfect actives. In Homer only two such verbs occurred in the top twenty, at places 19 and 20=²² (the noise verbs *ánōga*²³ “command” and *gégōna* “shout” should be regarded separately, for the reasons already given at 4.1). By contrast, in the Classical language three such verbs occur in the top twenty, at places 10, 14, and 17=. This development may be seen clearly by considering Table 7: while the mean rank of cCOS and COS verbs remains broadly the same between the Archaic and Classical periods, non-homogeneous non-COS verbs move from 19.5 to 14.5, a considerable jump.²⁴

The development seems, however, not to have greatly affected the weighting of perfects among verbs of different semantic type. Table 6, which looks at the overall distribution of perfect actives by lexical semantic type, reveals that there is relatively little change between Homer and the Classical period. The exception is again in the case of non-homogeneous non-COS verbs, which in Homer comprise only 2% of the instances of the top twenty perfects, while in the Classical period this has climbed to 8%, a strongly statistically significant change.²⁵

It is in this stage of the language normal for e.g. a verb introducing an accomplishment verb to have both active and non-active perfects, and for this opposition to denote the active ~ passive opposition.²⁶ Consider the following pair of examples involving *oikodoméo* “build”.

²¹Figures do not include the perfect imperative.

²²i.e. ‘equal twentieth place.’

²³All forms that formally matched the perfect or pluperfect active of this verb were taken as such, cf., differently, Willi (2018: 223, 238).

²⁴It is interesting that defective state verbs also see a rise in mean rank, from 9.3 to 5.6, although it is not immediately apparent what might have brought this about.

²⁵Yielding a chi-squared value, from a 2x2 contingency table of non-homogeneous non-COS vs. other verbs, of 45.577 with 1 degree of freedom. P-value < 0.0001, using R’s chi-squared function (R Core Team 2018).

²⁶On the role of paradigmaticity in the semantic change of the Greek perfect, see Haug (2008).

Table 4. Top twenty perfect active stems by lexical verb in Classical historians Herodotus, Thucydides and Xenophon

Rank	Lemma	Gloss	Sem. Type	Instances
1	<i>oîda</i>	“know”	Ste (Df)	335
2	<i>éoika</i>	“be like, seem”	Ste (Df)	211
3	<i>gígnomai</i>	“become”	COS	150
4	<i>kat^hístēmi</i>	“set up, establish”	Ste (Df)	88
5	<i>hístēmi</i>	“set up”	cCOS	75
6	<i>dédoika</i>	“fear”	Ste (Df)	72
7	<i>éot^ha</i>	“be accustomed”	Ste (Df)	69
8	<i>t^hnēskō</i>	“die”	COS	63
9	<i>ap^hístēmi</i>	“set apart from”	cCOS	49
10	<i>poiéo</i>	“do”	NH NCOS	39
11	<i>pásk^hō</i>	“suffer”	NH NCOS / Ste	31
12	<i>proístēmi</i>	“set before”	cCOS	26
=	<i>súnoida</i>	“be conscious, aware”	Ste (Df)	26
14	<i>nikáō</i>	“defeat”	NH NCOS	25
=	<i>sunístēmi</i>	“set up”	cCOS	25
16	<i>phúō</i>	“cause to grow”	cCOS	24
17	<i>akoúō</i>	“hear”	NH NCOS / Ste	22
=	<i>légō</i>	“say”	NH NCOS	22
19	<i>halískomai</i>	“be caught”	COS	21
20	<i>apóllumi (root)</i>	“destroy; lose”	cCOS	20

Table 5. Distribution of the top twenty perfect actives by lexical semantic type: Classical historians Herodotus, Thucydides and Xenophon

Sem. Type	Sum	%	Mean Rank
Ste (Df)	713	51	5.6
cCOS	307	22	11.4
COS	234	17	10.0
NH NCOS	108	8	14.5
NH NCOS / Ste	31	2	11.0
Sum	1393		

Table 6. Distribution of instances of the top twenty perfect actives by lexical semantic type: Archaic (A) and Classical (C) Greek

Sem. Type	A (%)	C (%)
Ste (Df)	49	51
cCOS	22	22
COS	15	17
NH NCOS	2	8
NH NCOS (Noise)	12	-
NH NCOS / Ste	-	2

Table 7. Mean rank of the top twenty perfect active by lexical semantic type: Archaic (A) and Classical (C) Greek

Sem. Type	A	C
Ste (Df)	9.3	5.6
cCOS	12.7	11.4
COS	11.3	10.0
NH NCOS	19.5	14.5
NH NCOS (Noise)	8.5	-
NH NCOS / Ste	-	11.0

- (32) “In what, then, consist his splendor, his public services and his lordly expenditure? I cannot for the life of me see, unless one fixes one’s attention on these facts.

oikían *ōikodómēken* *Eleusîni*
 house.ACC.F.SG build.PRF.IND.ACT.3SG Eleusis.DAT.SG
tosaútēn
 so__great.ACC.F.SG

He has built at Eleusis **a mansion** huge enough [to overshadow his neighbours]” (Dem. 21.158, text Butcher & Rennie 1907–1931, translation Vince 1935)

Not only this, but while in Homer the number of verbs with a paradigmatic opposition between active and non-active perfects is very low, in Classical Greek this becomes much more normal (Haug 2008). Thus the perfect active of *oikodoméō* in (32) is paradigmatically opposed to medio-passive (i.e. non-active), e.g.:

- (33) “I decided first to show [my wife] the possibilities of our house. For it contains few elaborate decorations, Socrates;

allà tà *oikémata* *ōikodómētai* *pròs*
 but ART.NOM.N.PL room.NOM.N.PL build.PRF.IND.NACT.3SG for
autò *toûto* *eskemména*
 PRON.ACC.N.SG DEM.ACC.N.SG consider.PRF.PTCP.NACT.NOM.N.PL

but the rooms **are** / **have been built** with consideration for exactly this [namely ...]” (Xen. *Oec.* 9.2, text Marchant 1971[1921], translation based on Marchant 1979[1923])

It is primarily the expansion of the perfect among verbs of this kind that gives rise to the overall different ‘feel’ of the perfect in this period, which in many cases accords closely with the sense of the NEng perfect.

Nevertheless, the process of paradigmatisation is not complete in this period, with suppletion playing a role in some verbs. Thus *apokteínō* “kill” is not attested with a perfect medio-passive until Polybius (7.7.4) and the Septuagint (1 Maccabees 5.51; 2 Maccabees 4.36), according to a search of the TLG. In literary sources of the Classical period, at least, the perfect of the 1-place verb *thnēiskō* “die” provides the perfect passive:

- (34) “If the man had died immediately of his wounds,
hup’ emoû mèn dikaíos d’ an etet^hnékei.
 by my PTCL justly PTCL PTCL die.PRF.PST.IND.ACT.3SG
 he would **have been** justly **killed** by me [*lit.* died at my hand].”
 (Antiph. *3rd Tetralogy* II.3, text Maidment 1941)

5.3 Specialised transitivising and detransitivising perfect active stems

For the most part Classical Greek follows Archaic Greek in only according anticausative sense to the perfect active of verbs introducing causative COS predicates, e.g. *hístēmi* “I set up”, *héstēka* “I am set up”. There is for these verbs no causative perfect active stem, although some such verbs show lability in the active (for which see next subsection). In the post-Classical literary language, as we shall see, there develops for a certain class of these verbs which do not demonstrate full lability a dedicated causative stem separate from the historic perfect active stem which is used for the anticausative. While in Classical Greek this system has not yet developed, at least two verbs, namely *apóllumi* “lose, destroy” and *peít^hō* “persuade” do show two perfect active stems, one transitivising, the other detransitivising, as well as a non-active stem:

- (35) a. “[S]ome thought they would get the right to challenge [the charge of treason],
kai ðē k^hrémasi epepoít^hesan
 and indeed money.DAT.PL persuade.PRF.PST.IND.ACT.3PL
diōt^héesthai
 repulse.PRS.INF.NACT
 and indeed they **were confident** that they would escape it through bribery” (Hdt. 9.88.1, text Godley 1920–1925)
- b. “And some dared to say that Xenophon, wanting to settle the area,
pépeike tòn mántin
 persuade.PRF.IND.ACT.3SG ART.M.SG.ACC seer.ACC.M.SG
légein
 say.PRS.INF.ACT
had persuaded the seer to say” (Xen. *Anab.* 6.4.14, text Marchant 1961[1904])

- c. *toùs* *gàr* *Boiōtoùs*
 ART.ACC.M.PL PTCL Boeotian.M.ACC.PL
ōíonto ***pepeîst^hai***
 think.IPRF.IND.NACT.3PL persuade.PRF.INF.NACT
hupò Lakedaimoníōn
 by Spartan.M.GEN.PL

“They thought that the Boeotians **had been persuaded by the Spartans**” (Thu. 5.40.2, text Jones & Powell 1942)

Note that in (35c) the non-active stem presents the subject as undergoing an action performed by an external argument, optionally reintroduced with the *hupó* phrase. By contrast, in the case of the detransitivising root active stem in (35a) there is no third party in view, and the action is presented as arising from the subject participants themselves, although not through a fully conscious process.²⁷

5.4 Lability in the perfect system

The Classical language witnesses the rise of fully labile COS predicates headed by perfects, as elsewhere in the verb system.²⁸ Compounds of *bállō* “throw”, e.g. *metabállō* “change” are particularly notable in this behaviour. Consider the following pair of examples:

- (36) a. *k^hōlòs* *dè* *kaì* *ho* *tanantía*
 lame.NOM.M.SG PTCL also ART.NOM.M.SG opposite.N.PL
toútou ***metabeblēkòs*** *tēn*
 DEM.GEN.SG change.PRF.PTCP.ACT.NOM.M.SG ART.ACC.F.SG
p^hiloponían.
 love_of_industry.ACC.F.SG

“He is also lame who, in the opposite way, **has switched round** his love of industry [i.e. so that he loves learning, but hates physical pursuits].” (Pl. *Rep.* 7 535d, text Slings 2003)

²⁷Some perfect actives change diathetical orientation from detransitivising to transitivity in the Classical period. Thus *diép^hthōra* from *diap^hthēirō* “destroy” is detransitivising in Archaic Greek, “(have) be(en) destroyed”, but transitivity in the Classical period, “have destroyed”. Haug (2008) has argued this to be a result of paradigmatisation whereby each active form is increasingly matched by a non-active form. However, the fact that in the post-Classical literary language the role of the detransitivising active form is expanded (on which see below), shows that this tendency is at least paused in some varieties.

²⁸For this lability outside the perfect, see Lavidas (2009: 92).

- b. “In the past they would depose tyrants [...]
nûn dè tosoûton metablêkasin, hôte
 now PTCL such.ACC.N.SG change.PRF.IND.ACT.3PL so_that
taîs mèn politeíais
 ART.DAT.F.PL PTCL republican_government.DAT.F.PL
polemoûsin
 wage_war.PRS.IND.ACT.3PL

but now **they have changed** to such a point that they wage war against republican government” (Isoc. 4.125, text Norlin 1928)

The non-active, where it exists,²⁹ is used with the same argument structure, but describes a situation with more active participation on the part of the subject, as in the case of this verb, the sense of “to change one’s mind”:

- (37) *epeidè d’ hupò tôn parà toutōn*
 since PTCL under ART.GEN.PL from DEM.GEN.PL
lōgōn metablêsthai moi tines
 word.GEN.PL change.PRF.INF.NACT PRON.DAT.1SG INDF.NOM.PL
dokoûsin
 seem.PRS.IND.ACT.3PL

“But since some seem **to have changed [their minds]** on the strength of the words of these men” (Dem. *Exord.* 34.3, text Butcher & Rennie 1907–1931)

On occasion, however, the non-active is used in a resultative sense that is not far from a passive interpretation:

- (38) “Concerning sleep, just as it is customary by nature, we should sleep during the day, and sleep at night.
én dè eíē touto
 if PTCL be.PRS.OPT.ACT.3SG DEM.NOM.N.SG
metablēménon, kakíon
 change.PRF.PTCP.NACT.NOM.N.SG worse.NOM.N.SG

But if this [pattern] **should be changed**, it is for the worse.” (Hipp. *Prognosticon* 10.3, text Littré 1840)

²⁹The perfect of *eisbállō* is not attested in the non-active until well into the medieval period, according to a search of the TLG.

Nevertheless, at least for these verbs, it is difficult to find instances of straight passive interpretation. This is a development which is seen in the post-Classical language.

5.5 Felicity conditions

In English the perfect is well known to be infelicitous with no-longer-living animate subjects, as well as definite time adverbial modification. Unlike its modern English counterpart, however, the Greek perfect is felicitous with human subjects who have passed away:³⁰

- (39) *ou mèn oudè barbárous eíreke*
 NEG PTCL not_even barbarian.ACC.M.PL say.PRF.IND.ACT.3SG
 “(Homer) **did / does not say** [*lit.* has not said] even ‘barbarian’”
 (Thu. 1.3, text Jones & Powell 1942)

However, for the most part the Classical Greek perfect functions similarly to the NEng perfect in rejecting definite time adverbial modification. There are, however, isolated examples towards the end of the period which appear to test this (cf. Gerö & von Stechow 2003: 271–272). In the following example, the perfect is modified by a past definite time adverbial, albeit broadly in the temporal frame of ‘now’ by virtue of the deictic *taútēs* (for example see also Bentein 2016: 40):

- (40) *tekmaíromai dè ék tinos enupníou*
 judge.PRS.IND.ACT.1SG PTCL from INDF.GEN.SG dream.GEN.N.SG
hò heóraka olígon próteron taútēs
 REL.N.SG see.PRF.IND.ACT.1SG a_little earlier DEM.GEN.F.SG
tēs nuktós
 ART.GEN.F.SG night.GEN.F.SG

“I make this judgement (namely that the ship will not come into today, but tomorrow) on the basis of a dream which **I saw a little earlier this night**” (Pl. *Crito* 44a, text Burnet 1967[1900])

In the next example, the adverbial modification is most definitely in a past temporal frame:

³⁰It is possible that there is a felicity condition in this example that although the subject may no longer be living, the result of their action (in this case Homer’s poem) must be extant or accessible. This, however, needs further investigation to establish.

- (41) “You aren’t even going to get near the gods. They’re gone;
ek^ht^hés eisin exōikisménoi
yesterday be.PRS.IND.ACT.3PL move_out.PRF.PTCP.NACT.M.NOM.PL
they **moved out yesterday**.” (Ar. *Pax* 195–197, text & translation
provided from Bentein 2016: 145)

As we will see from the post-Classical documentary material, it is definite past time adverbial modification that is the first sign of the gradual encroachment of the perfect on the semantic space of the aorist, denoting the past perfective.

5.6 Summary of the semantics of the perfect in Classical Greek

The perfect in Classical Greek may be described in functional and semantic terms in much the same way as that in Archaic Greek (see above §4.5). This is to say that the perfect continues to derive a homogeneous atelic eventuality from a predicate and ascribe this to the subject. The main development is not in terms of the semantics but rather in the level of paradigmatisation and integration of the perfect into the rest of the verbal paradigm: many more verbal roots accept perfects in this period, and the paradigmatic opposition between active and non-active is regularised. This said, there are indications that the system lacks stability, given the attestation of definite past time adverbial modification, something that becomes frequent in the post-Classical documentary material.

6. Post-Classical Greek

6.1 Overview

It is commonly suggested that after the Classical period, the perfect as a category starts to disintegrate, in advance of its eventual merger with the aorist (perfective) and subsequent disappearance,³¹ fitting into a broader narrative of the simplification of the verb system as a whole (e.g. Bentein 2016: 153, citing Dickey 2009: 154–157; Evans 2001: 54). While the fact of this development is not in doubt, the exact date when it occurred has been the subject of some controversy, with proposals for the start of this development ranging from the Classical period to as late as C4th or C5th CE

³¹Thus Haug (2008: 302) states that, “the category does not have a unified semantics in fourth century Greek”.

(see Bentein 2016: 153 for overview and references). The disagreement may be in part due to the increasingly diglossic nature of Greek in this period (for which see Horrocks 2010: 135). As such in the perfect we see a bifurcation in its function and semantics along diglossic lines, whereby the perfect in lower-register varieties does indeed show clear signs of merging with the aorist from at least the early Hellenistic period. By contrast, the perfect in the literary language shows some of these developments, but for the most part demonstrates continuity and even productivity and complexification of the perfect category with respect to that seen in the Classical period.³² This is consistent with the view that the literary language of the post-Classical period, especially in the Roman period, is best seen as a “learned, and learned, ‘living’ language” (Horrocks 2010: 141) as opposed to a dead one based entirely on Classical models, one of whose hallmarks is the use of the monolectic perfect in stative/present as opposed to perfective senses (Horrocks 2010: 138). In the first subsection we survey the use of the perfect in the literary language, before looking at lower-register material in the section following.

6.2 Literary language: Distributional trends with respect to earlier periods

The overview given in Tables 10 and 11 allow comparison in the distribution of instances of the perfect among the different semantic groups across different periods. Here we may see that the perfect in literary post-Classical Greek demonstrates considerable continuity with that in the Classical language. This is shown by the similarity in the most common verbs forming perfects in post-Classical historians by comparison with their Classical counterparts (cf. Table 8).³³ Table 11 shows a broadly similar mean rank for the four main semantic groups. Non-homogeneous non-COS verbs have a marginally higher mean rank vis-à-vis their Classical counterparts (13.4 vs. 14.5), continuing the trend seen between Archaic and Classical varieties, while Ste (Df) and cCOS verbs have a marginally lower ranking. COS verbs appear to increase in mean rank, although is due entirely to the prominence of *gígnomai* “become”, a development which deserves its own investigation. Once is taken out of the equation, COS verbs are broadly flat with respect to the Classical language.

³²This represents a counterpoint to the view that the original ‘secondary’ function of the perfect, i.e. to denote anteriority, straightforwardly became primary (Berrettoni 1972: 166). Cf. also Goldberg’s (1997) analysis of the perfect in Menander.

³³For the exact corpus used from Polybius, Josephus and Plutarch, see Crellin (2012: 72) or Crellin (2016b: 19).

These trends in mean rank are echoed in the proportional data. Thus non-homogeneous non-COS perfects increase as a proportion of perfect instances, now making up 12% of the top twenty perfect actives, compared to 8% in the Classical period. The biggest change, however, is apparently in the distribution of predicates involving states: defective state verbs are much less frequent, down to 34% from 51%, as are causative COS verbs. By contrast COS verbs are much more frequent. This is almost entirely due to the aforementioned dramatic increase in the use of the perfect active of *gígnomai*. Once the effects of this are stripped out, as seen in the far right column of Table 10, however, the important change remaining is the increase in the proportion of non-homogeneous non-COS perfect actives, on this measure up to 16%, matched by a concomitant decrease in causative COS verbs.³⁴ This picture fits well with the pattern of increasing paradigmatisation and grammaticalisation of the perfect that we saw starting in the Classical period.

6.3 Semantic continuity with earlier periods

As in the Classical language, the perfect active heading accomplishment predicates carries anterior denotation, while the medio-passive has resultative or anterior force. Compare the following with (32) above:

- (42) a. *hóti nèn Díā tās stoàs*
because by Zeus.ACC.SG ART.ACC.F.PL colonnade.ACC.F.PL
epì tōn t^hermôn ōikodómēka kai
over ART.GEN.PL bath.GEN.PL build.PRF.IND.ACT.1SG and
ergastéria
shop.ACC.N.PL

“For **I have** by Zeus **built** a colonnade over the hot baths as well as shops” (Dio Chrys. *Orat.* 46.9, text von Arnim 1962[1891–1896])

- b. “In that place stands Zeus called the deliverer [...]
stoà dè ópist^hen ōikodómētai
colonnade.NOM.F.SG PTCL opposite build.PRF.IND.ACT.3SG

And opposite a colonnade **has been built**” (Paus. 1.3.3, text Spiro 1903)

³⁴The difference between the Classical and Post-Classical periods is again strongly statistically significant: chi-squared figure of 51.063 with 1 degree of freedom. $P < 0.0001$. using R’s chi-squared function (R Core Team 2018).

Table 8. Top twenty perfect active stems by lexical verb in post-Classical historians Polybius, Plutarch and Josephus

Rank	Lemma	Gloss	Sem. Type	Instances
1	<i>gígnomai</i>	“become”	COS	606
2	<i>oîda</i>	“know”	Ste (Df)	267
3	<i>éoi̯ka</i>	“be like, seem”	Ste (Df)	217
4	<i>déd̥oika</i>	“fear”	Ste (Df)	175
5	<i>tʰn̥eskō</i>	“die”	COS	103
6	<i>sumbaínō</i>	“happen, come to pass”	COS	95
7	<i>apóllumi (root)</i>	“destroy; lose”	cCOS	83
8	<i>proístēmi</i>	“set before”	cCOS	69
9	<i>poiéō</i>	“do, make”	NH NCOS	67
10	<i>páskʰō</i>	“suffer”	NH NCOS / Ste	63
11	<i>éōtʰa</i>	“be accustomed”	Ste (Df)	55
12	<i>dēlōō</i>	“show, make clear”	NH NCOS	54
13	<i>légō</i>	“say”	NH NCOS	51
14	<i>lambánō</i>	“take”	COS	50
15	<i>prolégō</i>	“say previously”	NH NCOS	49
16	<i>súnoida</i>	“be aware, conscious”	Ste (Df)	47
17	<i>diagignōskō</i>	“decide; discern”	COS	45
18	<i>dídōmi</i>	“give”	NH NCOS	44
19	<i>enístēmi</i>	“set in”	cCOS	42
20	<i>peítʰō</i>	“persuade”	cCOS	36

Table 9. Mean rank of the top twenty perfect actives by lexical semantic type: Post-Classical historians Polybius, Josephus and Plutarch

Sem. Type	Sum	%	Mean Rank
Ste (Df)	761	34	7.2
cCOS	230	10	13.5
COS	899	41	10.5
NH NCOS	265	12	13.4
NH NCOS / Ste	63	3	10.0
Sum	2218		

Table 10. Distribution of instances of the top twenty perfect actives by lexical semantic type: Archaic (A), Classical (C) and Post-Classical (PC) Greek

Sem. Type	A (%)	C (%)	PC (%)	PC (%) (no <i>gígnomai</i>)
Ste (Df)	49	51	34	47
cCOS	22	22	10	14
COS	15	17	41	18
NH NCOS	2	8	12	16
NH NCOS (Noise)	12	-	-	-
NH NCOS / Ste	-	2	3	4

Table 11. Mean rank of the perfect active by lexical semantic type in Archaic (A), Classical (C) and Post-Classical (PC) Greek

Sem. Type	A	C	PC	PC (no <i>gígnomai</i>)
Ste (Df)	9.3	5.6	7.2	6.2
cCOS	12.7	11.4	13.5	12.5
COS	11.3	10.0	8.6	9.5
NH NCOS	19.5	14.5	13.4	12.4
NH NCOS (Noise)	8.5	-	-	-
NH NCOS / Ste	-	11.0	10.0	9.0

Also as in the Classical language, the perfect of this kind of verb may be predicated of subjects no longer alive at utterance time:

- (43) *hèn* *gàr* *ho* *tês*
 PRON.ACC.F.SG PTCL ART.NOM.M.SG ART.GEN.F.SG
Thēseĩdos *poiētēs* *Amazónōn*
 Theseid.GEN.SG author.NOM.M.SG Amazon.GEN.PL
epanástasin **gégraph^he**
 insurrection.ACC.F.SG write.PRF.IND.ACT.3SG

“For the author of the Theseid **wrote** [*lit.* has written] *The insurrection of the Amazons*” (Plu. *Thes.* 28.1, text & translation provided from Crellin 2016b)

Finally, we noted above at §4.3 that in Homer not all predicates need be predicates of time, but may be predicates of extent, in which case there is no denotation or implication of an event terminating prior to reference / topic time. Rather the perfect simply expresses a logical relation of distance. This use is paralleled in the literary Koine material, e.g.:

- (44) *tòn* *Rhíazona* [...] *polismátion* [...]
 ART.ACC.M.SG Rhizon.ACC.M.SG town.ACC.N.SG
anakek^hōrēkòs *mèn* *apò* *tês*
 withdraw.PRF.PTCP.ACT.ACC.N.SG PTCL from ART.GEN.F.SG
th^haláttēs
 sea.F.GEN.SG

“Rhizon [...] a small town [...] **withdrawn** from the sea” (Plb. 2.11.16, text Büttner-Wobst 1962–1967)

The semantics of the perfect in literary post-Classical Greek are not exactly the same as those seen in the Classical language, however. Notable developments include the following, which will be discussed in turn:

- Systematisation of the perfect vis-a-vis the rest of the verbal paradigm deepens in this period, with:
 - Full lability extended in the perfect active system for verbs describing conscious changes of state or position;
 - The opening up of a full three-way opposition causative ~ anticausative ~ non-active/passive opens up in causative COS predicates describing non-conscious processes;

- The perfect is seen heading bounded, that is, in aspectual terms arbitrarily delimited, homogeneous atelic predicates.

6.3.1 Further paradigmatisation: COS predicates

We saw earlier that verbs introducing causative COS predicates show lability in two different ways. On the one hand at §5.3 we saw that some verbs, e.g. *apóllumi* “lose, destroy” and *peíthō* “persuade” have two active stems, one transitivity, the other detransitivising, and one non-active stem. On the other hand at 5.4 we saw that some perfect active stems are fully labile in the Classical period, with transitive and intransitive meanings both expressed by a single form.

While formerly the presence of the detransitivising active stem has been seen largely as the mere persistence of an archaism (e.g. Chantraine 1927: 106–118), we can instead see their persistence into the post-Classical literary language as part of a principled distinction between two kinds of COS predicates: those on the one hand describing eventualities where the internal argument, realised as subject in intransitive constructions, may be seen to cause the event consciously or independently (type *metabállō* “change”), and on the other those where the event might arise spontaneously from the internal argument, but without that event necessarily being controlled by the internal argument (type *peíthō* “persuade”). The former are labile throughout the verb system, including in the perfect, and have one active and one medio-passive stem, while the latter show a three-way alternation: two active stems, one with active-transitive semantics, the other with intransitive internal cause semantics, and one medio-passive stem with passive semantics (for discussion see Crellin 2016b: 134–156).

As an example of the first type, consider the verb *katalúō* “dismantle”, which is first attested participating in the causative alternation in the post-Classical language.³⁵ Without changing the morphology, the perfect active of this verb may denote either causative or anticausative, as illustrated in the following pair of examples:

³⁵A search of TLG reveals that the active perfect of *katalúō* is only attested as transitive in Classical Greek.

- (45) *korín^hioi* ***katalelukótes***
 Corinthian.NOM.M.PL disband.PRF.PTCP.ACT.NOM.M.PL
tèn *en Surakoúsais* *turannída*
 ART.ACC.F.SG in Syracuse.DAT.PL tyranny.ACC.F.SG
- “the Corinthians, **having overthrown** the tyranny in Syracuse” (Plu. *Timoleon* 23, text & translation provided from Crellin 2016b: 136–137)

- (46) *disk^hilioi* *mèn tôn* *hup^h’ hēródēi*
 two_thousand.NOM.M.PL PTCL ART.GEN.PL under Herod.M.DAT.SG
potè strateusaménōn *kaī édē*
 once serve_in_the_army.AOR.PTCP.NACT.GEN.PL and already
katalelukótes
 disband.PRF.IND.ACT.NOM.M.PL
- “[T]wo thousand of those who had once served under Herod, and **who had** already **disbanded**” (Jos. *A.J.* 17.270, text & translation provided from Crellin 2016b: 137)

Verbs where this is the case, and where the perfect active is fully labile, include the following:³⁶

- *metabállō* ~ *metabéblēka* “change”
- *prosbállō* ~ *prosbéblēka* “throw at” ~ “put in” (of a boat)
- *hupostéllō* ~ *hupéstalka* “hide”
- *anastrép^hō* ~ *anéstrop^ha* “overturn” ~ “return”

It is this characteristic of the possibility of spontaneous action, that is, without the need of a genuinely external causer, that in principle separates the group of verbs without specialised anticausative stems from those with specialised active stems deriving the anticausative sense.

The following examples give active-transitive and anticausative instances, respectively, of the perfect of *pléssō* “strike”:

³⁶For more details and discussion, see Crellin (2016b: 135–138).

- (47) *ekdikeíst^hō* *tautòn*
 avenge.PRS.IMP.NACT.3SG same.ACC.N.SG
pat^hóntos *toû*
 suffer.AOR.PTCP.ACT.GEN.M.SG ART.GEN.SG
peplēk^hótos
 strike.PRF.PTCP.ACT.GEN.M.SG

“let him be avenged by the one **who has done the striking** suffering in the same way” (Jos. *A.J.* 4.277, text provided from Crellin 2016b: 139)

- (48) *toû* *Nikíou* [...] *ák^hei* *kai*
 ART.GEN.M.SG Nikias.GEN.M.SG distress.DAT.SG and
th^haúmati ***peplēgótos***
 wonder.DAT.SG strike.PRF.PTCP.ACT.GEN.M.SG

“while Nikias [...] **was struck** with distress and wonder” (Plu. *Nic.* 10.6, text & translation provided from Crellin 2016b: 141)

Comparison of these examples with (29) and (31) above shows that a realignment has taken place, with the newly formed stem in *peplēk^h-* taking over the active-transitive function of the root stem *peplēg-*, with this stem now reserved for active-anticausative function.

In the case of both classes of verb, passive sense, that is, where the subject is a patient rather than an internal causer, is rendered by the morphological non-active:³⁷

- (49) *kai oudèn* ***katalélutai*** *dià*
 and in_no_way break.PRF.IND.NACT.3SG because_of
tèn *emèn* *epieíkeian* *óute*
 ART.ACC.F.SG my.ACC.F.SG fairness.ACC.F.SG neither
nómos *out^h' hórkos;*
 law.M.NOM.SG nor oath.NOM.M.SG

“And in no way **has** either law or oath **been broken** on account of my fairness.” (Dion. Hal. *Ant. Rom.* 5.10.4, text Jacoby 1967[1885–1905])

- (50) *áp^hnō* *dè* *hósper* *hupó* *tinós* *plēgēs*
suddenly PTCL as_if by INDF.GEN.SG blow.GEN.F.SG
isk^hurâs ***peplēgménos***
strong.GEN.F.SG strike.PRF.PTCP.NACT.NOM.M.SG

“[H]e suddenly let out a groan as if **he had been struck** by a hefty blow” (Diod. Sic. 17.117.2, text provided from Crellin 2016b: 154, translation based on Crellin)

6.3.2 Bounded homogeneous atelic predicates

A significant change is seen in the handling of atelic state / homogeneous predicates. On the one hand, the perfect continues to be able to derive secondary pure state predicates from predicates of this kind. Consider the following example:

- (51) “Mariam [...] was grieved by the fact that,
mēd’ *ei* *pásk^hoi* *tí*
not_even if suffer.AOR.OPT.ACT.3SG INDF.ACC.N.SG
deinòn *ekeinós* ***elpída*** *toû*
terrible.ACC.N.SG DEM.NOM.M.SG hope.ACC.SG ART.GEN.N.SG
biōsesth^hai *dí’* *autòn* ***esk^hēkénai***
live.FUT.INF.NACT through PRON.ACC.M.SG have.PRF.INF.ACT

even if he should suffer some terrible thing, **she did not have the hope** of living through him” (Jos. A.J. 15.204, text provided from Crellin 2016b: 52, translation based on Crellin)

Indeed, this type interaction of the perfect with its predicate appears to be productive on the basis that a stative perfect is developed for the verb *elpízō* “hope” in this period (see e.g. 1 Timothy 6.17).³⁸ However, a key development is the capacity of the perfect to head arbitrarily bounded homogeneous predicates. Compare (51) with the following example:

³⁷For discussion, see Crellin (2016b: 148–156). Comparable to *katalélutai* in (49) is Strabo 9.5.10 *metabēblēménas* [change.PRF.PTCP.NACT.F.PL], describing administrative divisions (*diatáxeis*), (text per Jones 1927) which, insofar as they are products of human institutions, perform a patient role in this context. It should be noted that (49) does not include explicit marking of the agent, unlike (50). It is difficult to find explicit agent marking for the perfect of verbs describing entirely spontaneous action.

³⁸For discussion, see Crellin (2014).

- (52) “In addition to these Phregellai [...] which is now a village, but was once an important city and

<i>tàs</i>	<i>pollàs</i>	<i>tôn</i>	<i>árti</i>
ART.ACC.F.PL	many.ACC.F.PL	ART.GEN.PL	just_now
<i>lek^ht^heisôn</i>	<i>perioikídas</i>	<i>próteron</i>	
say.AOR.PTCP.NACT.GEN.PL	dependent_town.ACC.PL	previously	
<i>esk^hēkuîa</i>			
have.PRF.PTCP.NOM.F.SG			

previously **had** the majority of the places just mentioned as dependent towns” (Strabo 5.3.10, text Jones 1923, translation based on Crellin 2016b: 236)

For possible derivations of such results, see Haug 2004: 409–410 and Crellin 2016b: 235–237.

Although much has been made in the literature of the importance of the growth of active transitive perfects for the presumed merger with the aorist and subsequent category loss, the capacity to be indeterminate regarding the boundedness of homogeneous predicates may be a critical development, since it is this capacity which is crucially shared with the aorist qua perfective (cf. Haug 2004: 410; Speyer 2003). There is also evidence that bounded interpretations become available for causative COS predicates (for which see Crellin 2016b: 238–239). This development has the potential to account for the ‘aoristic’ use of the perfect of e.g. state verbs such as *ék^hō* “have” in documentary texts of this period (see below).

6.4 Documentary texts

6.4.1 Continuity with earlier stages and the literary language

Despite the fact that the perfect in documentary Greek in the Post-Classical period shows considerable divergences from earlier usage, as well as from the contemporary usage in the literary language, elements of residual continuity may be found. Resultative / stative perfects of causative change of state perfects may be found apparently displaying very similar semantics to those seen elsewhere. Consider the following example of *pépoitha*, from *peít^hō* “persuade”, comparing with, e.g., (35) above:³⁹

³⁹Abbreviations of papyri are standard abbreviations for the publications cited for each source. For more information, see <http://papyri.info/docs/checklist>.

Many of these stative uses of the perfect in the documentary texts have the hallmarks of fossilised / lexicalised expressions. Given the preceding, it is clear that the stative semantics have a derivation which is clear from a historical perspective. As another example, the standard expression for ‘being well’ is denoted by *érrōmai*, non-active perfect of *r^hōnnumi* “strengthen” in the papyri, e.g. P.Petr. 2.11, 260-246 BCE. However, it is unclear how productive this process of derivation was for the writers concerned (cf. the situation for writers of literary material). Doubt is particularly sown by examples of the perfect of stative and COS predicates, which in earlier and contemporary literary writing refer to reference / topic time, but which in the documentary texts function as past tense forms, for which see subsections immediately below.

- Paradigm loss, whereby the function of the detransitivising perfect active stem is taken over by the non-active paradigm;
- Competition with the aorist in terms of :
 - Collocation with definite past time adverbials;
 - Use of the perfect in past narrative.

6.4.2 Paradigm loss: expression of the anticausative by non-active morphology

At 6.3.1 above we saw that in literary varieties a three-way opposition opens up in some verbs between active-causative, active-anticausative and passive.

In the papyri, however, the causative and anticausative distinction appears to be lost.⁴⁰

- (54) *epei oûn kinduneúō toû* |
 since therefore run_risk.PRS.IND.ACT.1SG ART.GEN.SG
bíou hoîs [i.e. haîs] péplēga
 life.GEN.SG PRON.M/N.PL PRON.F.PL strike.PRF.IND.ACT.1SG
plēgaîs
 blow.DAT.F.PL

“As therefore my life is in danger owing to [*lit.* by] **the blows** with which I was struck” (P.Tebt. 3.1.798.23–24, C2nd BCE, translation based on APIS)

- (55) “one held his hands, another hit my son with a stone, another kicked (him).
hólon tò sôma
 whole.NOM.N.SG ART.NOM.N.SG body.NOM.N.SG
peplēgménon estîn.
 strike.PRF.PTCP.NACT.NOM.N.SG be.PRS.IND.ACT.3SG

The whole body **is/was beaten.**” (P.Lips. 1.40.3.3, C4th CE)

While in the literary language, the active root formation is reserved for forms of being struck in which the subject acts as an internal cause, i.e. “being struck (mentally)”, here it is used in a physical sense, and as such does not contrast with the non-active.

6.4.3 Competition with the aorist: definite past time adverbial modification and use of the perfect in past narrative

It is in the post-Classical language of the documentary texts that we see the clearest signs of competition with the aorist, in advance of the perfect’s eventual elimination and loss. Definite past time adverbial modification is in earlier stages of the language the preserve of the aorist. However, we saw that in the later stages of the Classical language occasional examples of definite past time adverbial modification with the perfect. It is difficult to find collocation of the perfect with definite past time adverbials in literary

⁴⁰In this example, the pronoun *hoîs* is irregular, with the expected form following in square brackets.

Koine Greek, but in the documentary material examples are relatively easy to come by. Indeed they start early, the earliest cited by Mandilaras being from 221 BCE. The following example is from 113 BCE:⁴¹

(56)	<i>têi</i>	<i>κ</i>	<i>toû</i>	<i>Ph^haôp^hi</i>	<i>toû</i>
	ART.DAT.F.SG	20	ART.GEN.SG	Phaophi	ART.GEN.SG
	<i>ε (étous)</i>		<i>Níkōnos</i>	<i>toû</i>	
	5 year.GEN.N.SG		Nikon.NOM.M.SG	ART.M.GEN.SG	
	<i>Amennéōs</i>	[...]	<i>t[â]</i>	<i>en têi</i>	
	Amenneus.GEN.SG		ART.ACC.N.PL	in	ART.DAT.F.SG
	<i>heautoû</i>	<i>gêi</i>	<i>húdata</i>		
	self.GEN.M.SG	land.F.DAT.SG	water.N.ACC.PL		
	<i>katakékluken</i>	<i>apò</i>	<i>tês</i>		
	flood.PRF.IND.ACT.3SG	from	ART.F.GEN.SG		
	<i>hupark^housēs</i>	<i>moi</i>	<i>basilikês</i>		
	belong.PRS.PTCP.ACT.GEN.F.SG	PRON.DAT.1SG	royal.GEN.F.SG		
	<i>gês</i>	<i>eis (arouras)</i>	<i>β δ'</i>		
	land.GEN.F.SG	to	aroura.ACC.F.PL	2 1/4	

“On the 20th of Phaophi in the 5th year Nikon son of Amenneus [...] let out the water on his own land and **flooded** 2 1/4 arouras of the Crown land belonging to me” (P.Tebt. 1.49.4–10, 113 BCE, translation APIS)

Another prime indicator of encroachment on the semantic territory of the aorist is the use of the perfect in narrative sequences. Examples of this start a little later than those with definite past time adverbial modification, but occur with some regularity from the Roman period, and as Mandilaras (1973) notes, become particularly frequent in letters of C2nd CE. Consider one such example from early in that century, along with (4) given above in the introduction:⁴²

⁴¹This example is discussed by McKay (1980: 31). For discussion of the occurrence of definite past time adverbials in the literary post-Classical language, see Crellin (2016b: 240–45). For a framework for understanding why this restriction exists in the perfect, see Klein (1992).

⁴²This example is discussed by McKay (1980: 33).

- (57) *[ka]ì kat[é]bēn* *is [Al]exán[d]reian*
 and go_down.AOR.IND.ACT.1SG to Alexandria.ACC.F.SG
metà [to]û huioû mou.
 with ART.GEN.M.SG son.GEN.M.SG PRON.GEN.1SG
[toú]tou k^há[r]in m[a]nía autòn
 DEM.GEN.N.SG because_of madness.NOM.SG PRON.ACC.M.SG
[és]k^hēken
 have.PRF.IND.ACT.3SG

“And I went down to Alexandria with my son. For this reason a madness **took hold** of him” (P.Mich. 8.473.19–20, translation APIS)

After this date perfects in narrative become easy to find. The following example comes from late C4th:⁴³

- (58) “Very late one evening I heard [*ékousa* hear.AOR.IND.ACT.1SG] a noise as I happened to come to my house
kai épempsa *toûs paîdás*
 and send.aor.ind.act.1sg ART.ACC.M.PL child.ACC.PL
mou hóste gnônai tèn
 PRON.GEN.1SG so_that know.AOR.INF.ACT ART.ACC.F.SG
aitían. éxēl^hon kai
 reason.ACC.F.SG come.AOR.IND.ACT.3PL and
heurékasi *toûton <tòn>*
 find.PRF.IND.ACT.3PL DEM.ACC.SG ART.ACC.M.SG
Asunkrítion
 Asunkritios.ACC.M.SG
 and I sent my children to find out the cause. They came out and **found** this man, Asunkritios” (P.Lips. 1.40.2.9–11)

A particularly interesting example is the following, where *exéstēka*, formally a perfect of the kind from Plato seen above at (28), not only occurs in narrative, but also in a transitive context, as opposed to the anticausative seen in the Plato example.

⁴³Parallel from a similar kind of narrative: *heurékamen* P.Haun. 2.25, from C4th or C5th CE, <http://papyri.info/ddbdp/p.haun;2;25> (Accessed June 18, 2018).

- (59) “But others came [*êlt^han* come.AOR.IND.ACT.3PL] to me saying, ‘We are going to the field to sit until you bring forth the word today straightaway.’

<i>akoúsas</i>	<i>taûta</i>		
hear.AOR.PTCP.ACT.M.SG	this.DEM.ACC.N.PL		
<i>exéstēka</i>	<i>toûs</i>		<i>ant^hrópous</i> <i>kai</i>
surprise.PRF.IND.ACT.1SG	ART.ACC.M.PL		person.ACC.M.PL and
<i>exêlt^hon</i>	<i>dian.....</i>		<i>ergázesthai</i> <i>en tōi</i>
go_out.AOR.IND.ACT.1SG			work.PRS.INF.ACT in the
<i>klérōi</i> .			
field.DAT.SG			

When I heard this **I surprised** the people and went out ... to work in the field.” (PSI 7.822.10-16, 130–199 CE)

Nevertheless, it is still possible to find uses of the perfect at a very late stage that apparently correspond well to the literary Koine as well as Classical usages. The following example C4th CE:

- (60) “don’t make the morsels,
- | | | | |
|-----------------------------|------------|--------------------------|-----------------|
| <i>ep[e]ì</i> | <i>gàr</i> | <i>heurékamen</i> | <i>hōde</i> |
| for | PTCL | find.PRF.IND.ACT.1PL | here |
| <i>pepoiēmēna</i> | | | <i>psōmía</i> |
| make.PRF.PTCP.NACT.ACC.N.PL | | | morsel.ACC.N.PL |

for **we have found** morsels [already] made here” (P.Oxy. 12 1591.4–7)

However, in the absence of a comprehensive study of the aorist ~ perfect opposition in these very late documents, it is *a priori* difficult to determine whether the perfect in these examples is simply being used as a perfective, with anterior implicatures arising from its use in context, or with a distinct value. This awaits future research.

The fact that the perfect occurs with definite past time adverbial modification before it occurs in narrative suggests a rationale for the development, namely progressively weakening semantic association between the post-situation and topic time (cf. Crellin 2016a: 453; McKay 1965: 11). This is to say that in early and Classical Greek, and in the literary post-Classical material, the perfect strongly encodes that the post-situation described by the predicate holds at topic time, so that it is infelicitous to collocate a definite past time adverbial with the perfect. In the Hellenistic post-Classical documentary texts, this has weakened to an implicature, so that while the perfect implies

that the post-situation holds at topic time, this may be cancelled by the explicit denotation of a definite past time adverbial. By the Roman period this has weakened further, so that there is no implicature that the post-situation holds at topic time, and the perfect is able to collocate with aorists in narrative sequences. It is interesting to note, however, as Haug (2008) points out, also in the context of the Greek perfect, but regarding a slightly earlier stage in the development, that this direction of development goes against Traugott & Dasher's (2005) proposal that all semantic change is motivated by strengthening, not weakening implicatures.

6.5 Semantics of the perfect in post-Classical Greek

We have seen that the picture of the function and semantics of the perfect in the post-Classical period is somewhat more complicated than is often supposed. On the one hand, the consistency of the use in literary post-Classical Greek shows that at least for some speakers (and writers) the perfect had a well defined and productive semantic value until at least C3rd CE, one not far removed from the definition given for early and Classical Greek. For some writers of the documentary material the same must have been the case. However, for most writers of low-register varieties, the perfect's original denotation that a homogeneous atelic eventuality derived from the predicate holds at topic time was progressively weakened, first collocating with definite time adverbials by C3rd BCE before being used in full-blown narrative by C2nd CE. The result was increasing overlap with the aorist, and the consequent eventual demise of the perfect.

7. Conclusion

For the Greek perfect in all periods except in low-register post-Classical material, where functional merger with the aorist (functionally perfective) is underway, the tense-aspect of the perfect can be seen to behave as follows.

1. If the predicate describes a telic event of change, whether a change of state or some other kind of change, whereby it is the subject which changes, the predicate will likely be read as resultative, via the causative alternation if describing a causative COS eventuality.
2. On the other hand, if no change is described, i.e. the predicate describes a state, the perfect will simply to derive another atelic homogeneous eventuality from the predicate. In the post-Classical language the perfect additionally has the option of being interpreted as an anterior.

3. If the predicate describes a non-COS non-homogeneous eventuality, the perfect derives a secondary homogeneous atelic eventuality which follows from the event having run to completion, and predicates this of the subject.

This behaviour may be captured under the following general definition:⁴⁴

The Greek perfect derives a homogeneous atelic eventuality from a predicate, predicates this eventuality of the subject, and includes the eventuality in topic time.

Within the documentary post-Classical material there are writers who use the perfect in a similar way. However, in general, the function and semantics of the perfect in this material is quite different, so that by the end of the period it is difficult to detect the semantic or functional difference with the aorist. Notable features of overlap include:

1. Felicitous modification by definite past time adverbial phrases;
2. Formerly detransitivising active stem forms are used as transitives;
3. The capacity of the perfect to head bounded homogeneous atelic predicates;
4. Felicitous collocation with the aorist in narrative.

It may be important that modification by definite past time adverbials occurs before collocation with the aorist in narrative, in that it could indicate a process of a weakening in the perfect's denotation that the post-situation is included in topic time.

Abbreviations

A	Archaic
APIS	Advanced Papyrological Information System
C	Classical
NA28	Nestle et al. (2012)
PC	Post-Classical
PSI 7	Vitelli & Norsa 1925
P.Haun. 2	Bülow-Jacobsen (1981)
P.Herm. 8	Rees (1964)

⁴⁴Formulation adapted from Crellin (2016b: 252).

P.Lips. 1	Mitteis (1906)
P.Mich. 8	Youtie & Winter (1951)
P.Oxy. 12	Grenfell & Hunt (1916)
P.Petr. 2	Mahaffy (1893)
P.Tebt. 1	Grenfell, Hunt & Smyly (1902)
P.Tebt. 3	Hunt & Smyly (1933)
TLG	<i>Thesaurus Linguae Graecae® Digital Library</i> , see Pantella (ed.)

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