

‘To do or not to do’: Semi-lexical affixes in (post)classical Greek

Victoria Beatrix Fendel
University of Oxford

Abstract

The support verbs ποιέομαι *poieomai* ‘to do’ and τίθημι *tithēmi* ‘to put’ exist in bound and unbound forms from classical into medieval times, ποιέομαι *poieomai* ‘to do’ as ποιέομαι *poieomai* and -ποιέομαι *-poieomai*, τίθημι *tithēmi* ‘to put’ as τίθημι *tithēmi* and -θετέω *-tēteō*. They differ from auxiliaries, in that they are semi-lexical as they contribute to the event structure of the verb phrase. The article draws on the literary corpus of the *Thesaurus Linguae Graecae* and the documentary corpus of the *Duke Database of Documentary Papyri* to answer three research questions: (i) Are support verbs the unbound alternative of bound affixes? (ii) How do semi-lexical support verbs become semi-grammatical affixes? (iii) Why did -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-tēteō* ‘to put’ not become productive? It finds that the bound and unbound forms of the support verb differ in the semantics of the lexical unit and its pragmatic embedding. Through the univerbation of leader words and their subsequent reanalysis, a new word-formation pattern emerges, which never becomes productive but is available as a creative option especially in technical registers (akin to English *readable* alongside established *legible*) from the Ptolemaic/Roman periods onwards. This new word-formation pattern involves a semi-lexical affix, just like the unbound support verb.

Keywords: support-verb construction, boundedness, univerbation, productivity, technical register

1 Introduction

The verbs ποιέω *poieō* (active)/ποιέομαι *poieomai* (middle) ‘to do’ and τίθημι *tithēmi* (active)/τίθεμαι *tithēmai* (middle) ‘to put’¹ can be lexical, semi-lexical, or grammatical in (post)classical Greek. When the verbs function as lexical verbs, they fill the predicate slot of the sentence by themselves, e.g., *Paul made me a cake*. When they function as semi-lexical support verbs, they fill the predicate slot of a sentence in combination with

¹ The active / middle distinction, e.g., active ποιέω *poieō* vs. middle ποιέομαι *poieomai* is theoretically a distinction between a three-argument (causative) and a two-argument frame (active). However, verb lability is attested already in classical times such that we find instances of ‘to do’ with active morphology in two-argument frames (or even one-argument frames) (Lavidas 2009). In post-classical times, the distinction between active and middle morphology was apparently no longer determined semantico-syntactically but socio-pragmatically, i.e., a middle form would be used in higher-register contexts (Vives Cuesta & Acero 2022). This is similarly to what has been proposed for verbal complementation patterns (Bentein 2017).

a nominal predicative component, e.g., *Paul made a suggestion*.² When they function as grammatical auxiliaries, they fill the predicate slot of a sentence in combination with a verbal component, e.g., *Paul made me laugh*.

The present article argues that ποιέω *poieō* ‘to do’ and τίθημι *tithēmi* ‘to put’ when used as semi-lexical support verbs can become semi-lexical affixes, i.e., we witness a process from an unbound to a bound form. The battle in the literature is blazing as to whether support verbs become affixes due to grammaticalization. This article suggests an alternative pathway. However, rather than the transition from unbound to bound being a linear process, the bound and unbound forms co-exist over centuries with varying degrees of extensibility of the patterns (Barðdal 2008: 20; Baayen 2009) moderated by indexicality (Bentein 2019). The following three sub-sections introduce the reader briefly to (post)classical Greek, support-verb constructions, and the blazing battle over the grammaticalization of support verbs before presenting the research questions and the structure of the remaining article.

1.1 (Post)classical Greek

(Post)classical Greek is a morphology-rich stage of the language with a fully fledged compounding system lexically speaking and a fully fledged system of derivational morphology grammatically speaking. Against this background, the development of lexical and/or grammatical affixes is conceivable (as mechanisms are in place) but also raises the question of how the new item fits into the system. Redundancy in language does not exist from a variationist perspective.

The Greek language as a whole offers a diachronic depth of at least 3,000 years of written records, from the Homeric epics (ca. 9th / 8th c. BC) to the modern day. The present article is concerned with those about first 2,000 years of its history which are by now corpus varieties, i.e., varieties whose native speakers are the texts (Fleischman 2000: 34). The available diachronic depth allows us to observe developments over long periods of time. The fact that the stages of interest are corpus varieties challenges approaches to multi-word expressions developed for modern languages, specifically in Natural Language Processing. These draw on grammaticality statements and the reverse-engineering of syntactic configurations from attestations.

(Post)classical Greek word order is not syntactically but information-structurally driven. Thus, unlike in languages such as modern English or French in which the support verb and the predicative noun have to appear in a specific order due to syntactic pressures, (post)classical Greek allows for any order as long as there is an information-structural reason or the elements in question are functionally linked. This functional link surfaces in languages such as modern English in the form of constraints on discontinuity and modi-

² Standard grammar of (post)classical Greek label ‘predicative’ adjectives and nouns in combination with the copular verb ‘to be’ (εἶναι *einai* or especially in the perfect / aorist / pluperfect γίγνομαι *gignomai*). These adjectives or nouns complete the predication as the copula alone is not a full predicate. Similarly, the support verb by itself is not a full predicate but the predication needs to be completed by a predicative element. Formally, the predicative adjectives and nouns with copular verbs appear in the same case as the subject component of the copula; conversely, predicative nouns with support verbs appear in the verb’s object slot (see however also Tronci 2016; Tronci 2017a). In both constructions, multiple elements form the complex predicate functionally and constitute a verbal multi-word expression formally. Gross (1998) would accept the verb ‘to be’ as a support verb and Jiménez López (2021) suggests that the copular verb acts as the lexical passive in support-verb constructions.

fiability, e.g., *Paul took heart* but not **Paul heart took* or **Paul took great heart* (see further Fendel 2024).

For reasons of accessibility, one-word translations of Greek terms are provided in the running text. These should not be taken as more than guidance. As regards support-verb constructions, standard dictionaries are a minefield. Three cases are discussed in detail in Fendel (2024) with suggestions for the improvement of dictionary entries. In short, dictionaries do not consider support-verb constructions except when they form non-compositional lexical units, thus overall inconsistently. Some members of a support-verb-construction family around a predicative noun may be non-compositional, whereas others may not be.³ Furthermore, standard dictionaries, such as Liddell-Scott-Jones (LSJ), are reductionist in that they view support-verb constructions when listed as the equivalent to a simplex verb derived from the same root as the predicative noun in the support-verb construction (e.g. LSJ s.v. χάρις *k^haris* III.1.a (‘favour’) χ. δοῦναι *k^h[arin] dounai* = χαρίζεσθαι *k^harizesthai* ‘to do a favour’). They thus often omit patterns and associated meanings. Finally, if listed, support-verb constructions are labelled ‘prose phrases’ indicating a stylistic nuance. However, they are not limited to prose texts nor are all support-verb construction variants of simplex verbs, neither semantically nor pragmatically. Research in modern languages has amply shown this (Wittenberg & Levy 2017; Wittenberg & Snedeker 2014; Wittenberg & Trotzke 2021).

1.2 Support-verb constructions

Support-verb constructions⁴ (SVCs) consist of a verbal and a nominal component that together fill the predicate slot, as *made the suggestion* in *I made the suggestion that he join*. The nominal component, the predicative noun, must be eventive. The article takes a broad approach in that it accepts any noun that can be reconceptualised as eventive, whether formally related to a verb (by derivational morphology) or not, including items with a primarily concrete meaning that need reconceptualising, e.g., *picture* in *to take a picture* (Radimský 2011), and items whose meaning undergoes metaphorical extension, e.g., *heart* in *to take heart* (Sheinfux et al. 2019). This entails several exclusions,

³ An anonymous reviewer pointed out BGU.3.941 (Herakleopolis, AD 376–377 (EBG), receipt), 13–14 ὁμολογῶ ἐντεῦθεν μηδένα λόγον ἔχειν πρὸς σὲ μηδὲ ἐπελθεῖν σοι *^homologō enteu^hen mēdena logon ek^hein pros se mēde epelt^hein soi* ‘I thus agree not to have any charge against you nor proceed against you’ as an example of a support-verb construction in an idiomatic phrase in the papyri. Support-verb constructions appear in many idiomatic phrases in the papyri and otherwise, e.g., ἐξουσίαν ἔχω *exousian ek^hō* ‘to have power (over)’ in wills (Fendel 2023a; Fendel 2025). An example with ποιέομαι *poieomai* ‘to do’ is expressions of origin, such as P.Grenf.2.78 (Kysis, AD 307–308, petition), l. 15 τὴν ὀρμὴν ποιούμενος *tēn^hormēn poioumenos* ‘coming from’ (Zilliaccus 1956).

⁴ Structures, such as *to make a remark*, have been dealt with in three major research traditions. Each has its own terminology. Primarily in studies on German, we find the term *Funktionsverbgefüge* ‘function-verb construction’ (von Polenz 1963; Kamber 2008; Storrer 2009; De Knop & Hermann 2020). Originating in Jespersen’s (1954) *Modern English Grammar on Historical Principles*, we find the term light-verb construction. This was adopted in language-contact studies (e.g., Bakker 2003: 132; Myers-Scotton 2002: 134–139) and Natural Language Processing frameworks (e.g., PARSEME). Originating in the Lexicon-Grammar framework of the *Laboratoire d’Automatique Documentaire et Linguistique* (e.g., Gross 1998), we find the term support-verb construction (*construction à verbe support*). The latter term is adopted in line with Jiménez López’ (2016) seminal article on the structures in classical Greek and because the support-verb-construction tradition includes structures in which the support verb contributes to the event structure in the form of voice, *aktionsart*, polarity, and register (e.g., Vivès 1983; Gross 1989). Thus, the verb is neither purely a ‘function’ word nor fully semantically ‘light’.

i.e., items referring to (i) human beings (professions, kinship terms, etc.), e.g., τέκνον *teknon* ‘child’, (ii) concrete locations (place names, references to places), e.g., ἀγορά *agora* ‘market square’, along with (iii) syntactic nominalisation, including nominalised adjectives, e.g., (τὸ) ἀσφαλές (to) *asp^hales* ‘safe’, and (iv) nouns that cannot through reconceptualization or metaphorical extension adopt an eventive meaning.

The verbal component, the support verb, plays a supporting role. The support verb is morphosyntactically marked for tense, aspect, and mood (1). Through lexical substitution, it can also indicate *aktionsart* (2), polarity (3), and voice (4) (cf. Collins 2018):

- | | | | | | | | |
|-----|-------------------|--|----------------------------------|--------------------------------------|---------------------|---------------------|-------------------------------|
| (1) | <i>He</i>
he.s | <i>made</i>
make.PST.3SG | ART
<i>the</i> | <i>suggestion</i>
suggestion.PN | <i>that</i>
CONJ | <i>she</i>
she.s | <i>join</i> .
join.PRS.3SG |
| (2) | <i>He</i>
he.s | <i>has</i>
have.PRS.3SG | ART
<i>a</i> | <i>suggestion</i> .
suggestion.PN | | | |
| (3) | <i>He</i>
he.s | <i>lacks</i>
lack.PRS.3SG | <i>patience</i> .
patience.PN | | | | |
| (4) | <i>He</i>
he.s | <i>got</i>
get.PST.1SG | <i>word</i>
word.PN | <i>yesterday</i> .
yesterday | | | |

Support verbs differ from auxiliary verbs, in that (i) they contribute to the event structure of the support-verb construction (Butt 2010), (ii) they are never phonetically reduced (Loporcaro 2022), (iii) they are not fully productive but selected based on the collocational field of the predicative noun (Kamber 2008; Bonami 2015). Auxiliaries are grammatical function words, support verbs are not.

The support verb in support-verb constructions profiles lexical aspect (Vendler 1967), recipient passive (Fendel 2024), negation of intensity as opposed to contrast (Fendel 2023b), and allows for semantic (external, i.e. with the support-verb construction) and syntactic (internal, i.e. with the predicative noun or the support verb) agreement with the support-verb construction (Fendel 2023a; Janse 2023). This sets support verbs apart from auxiliaries, which indicate grammatical aspect and patient passive and do not allow for internal agreement.

Boye (2023) offers a distinction between lexical and grammatical items that is based on discursively primary and secondary status. Lexical items are discursively primary; grammatical items are discursively secondary. This is tested through the permissibility of being (i) focussed, (ii) addressed in subsequent discourse, (iii) modified, and (iv) of standing alone in an utterance. (5) to (7) test English *to make a suggestion*:

- (5) *It is a **suggestion** that I made, **not a plan**.*
- (6) *I made a suggestion. The others liked **my suggestion** and implemented it.*
- (7) a. *I made a **quick** suggestion.*
 b. *I **quickly** made a suggestion.*

Focalisation (contrastive focus) is shown in (5). This is possible for the predicative noun and sometimes the support verb. Lexical anaphora is shown in (6); morphosyntactic anaphora by means of pronominalisation is equally applicable to the predicative noun (*it* instead of *my suggestion*). The support verb cannot be anaphorically resumed, neither lexically nor morphosyntactically. Finally, (7) illustrates external vs internal modification in support-verb constructions. An attributive phrase qualifies the predicative noun; an adverb applies to the support-verb construction rather than just the support verb. The support verb *to make* cannot stand on its own in any of these utterances.

(8) to (10) apply the observations to Greek examples from the classical literary Attic sample:

(8) CG Plato, *Republic*, 337e⁵

ἄλλου	δ'	ἀποκρινομένου	λαμβάνη
<i>allou</i>	<i>d'</i>	<i>apokrinomenou</i>	<i>lambanē</i>
other.GEN.SG.M	PRT	answer.PRS.PTCP.MID.GEN.SG.M	take.PRS.SBJV.ACT.3SG
λόγον	καὶ	ἐλέγχει.	
<i>logon</i>	<i>kai</i>	<i>elegk^hē</i>	
word.ACC.SG.M	and	refute.PRS.SBJV.ACT.3SG	
		‘(such that) when someone else gives an answer he listens and rejects (it)’	

In (8), two support verbs are contrasted, compare (5).

(9) CG Plato, *Gorgias*, 484d

τῶν	λόγων	οἷς
<i>tōn</i>	<i>logōn</i>	<i>hois</i>
the.GEN.PL.M	word.GEN.PL.M	which.DAT.PL.M
δεῖ	χρόμενον	ὀμιλεῖν
<i>dei</i>	<i>k^hrōmenon</i>	<i>omilein</i>
be.necessary.PRS.IND.ACT.3SG	use.PRS.PTCP.MID.ACC.SG.M	mitigate.PRS.INF.ACT
	‘of the words using which it is necessary to mitigate’	

In (9), the predicative noun is resumed by a relative pronoun, compare (6).

(10) a. CG Antiphon, *Speech*, 4.2.1⁶

Ὅτι	μὲν	τοὺς	βραχεῖς	λόγους	ἐποίησαντο
<i>hoti</i>	<i>men</i>	<i>brak^heis</i>	<i>tous</i>	<i>logous</i>	<i>epoiēsanto</i>
that	PRT	brief.ACC.PL.M	the.ACC.PL.M	word.ACC.PL.M	do.AOR.IND.MID.3SG
		‘that they kept their remarks brief’			

⁵ ἐλέγγω *elegk^hō* ‘to reject’ is technically a verb of realization, ‘qui [a] le comportement syntaxique des V_{supp}, mais qui (...) [est] sémantiquement pleins’ (Mel’čuk 2004: 208).

⁶ The adjective is in predicative position.

b. CG Thucydides, *Histories*, 5.18.11

λόγοις	δικαίοις	χρωμένοις
<i>logois</i>	<i>dikaiois</i>	<i>k^hrōmenois</i>
word.DAT.PL.M	just.DAT.PL.M	use.PRS.PTCP.MID.DAT.PL.M
‘speaking justly’		

In (10), an attributive adjective modifies the predicative noun, compare (7). Thus, by Boye’s definition, support verbs are semi-lexical and semi-grammatical (Butt & Geuder 2001; Grimshaw & Mester 1988).

Some verbs, such as ἔχω *ek^hō* ‘to have’, can function as auxiliaries, (11) and support verbs,⁷ (12):

(11) CG Euripides, *Trojan Women*, 315–321

καταστένουσ’	ἔχεις
<i>katastenous’</i>	<i>ek^hō</i>
lament.PRS.PTCP.ACT.NOM.SG.F	have.PRS.IND.ACT.2SG
‘you are continually lamenting’ (Bentein (2016: sec. 4.3.4), ‘exceptional example’)	

(12) CG Antiphon, *Speech*, 2.3.6

οὐδεμίαν	ἐλπίδα	εἶχε
<i>oudemian</i>	<i>elpida</i>	<i>eik^he</i>
no.ACC.SG.F	hope.ACC.SG.F	have.IMP.F.IND.ACT.3SG
‘he had no hope’		

In (12), ἔχω *ek^hō* ‘to have’ forms a support-verb construction with the lexical noun ἐλπίδα *elpida* ‘hope’; in (11), ἔχω *ek^hō* ‘to have’ forms an imperfective periphrastic in combination with a present participle. While support-verb constructions can be discontinuous (Savary et al. 2018), periphrastic verbal forms tend towards adjacency (Bentein 2016: sec. 2.3.2; Ledgeway & Vincent 2022: 51–54). While support verbs reverse-select their predicative nouns (Bonami 2015), auxiliary verbs do not. While support-verb constructions contain verbal and nominal components, periphrastics as in (11) consist of two verbal components (see also Tronci & Logozzo 2022). Thus, while the same verb can function as a support verb and auxiliary, its properties differ depending on its function.⁸

Support-verb constructions form an internally heterogeneous group with some more tending towards a lexical unit and others towards an analytic syntagm (Heine 2020; Croft 2022). Lexicographically, Mel’čuk (2023: 119) subsumes most support-verb constructions under collocations, which have a semantic pivot (Mel’čuk 2023: 35) in the predicative noun and can contain a quasi-unilexeme – “a degenerate lexeme [...] [which] appears only in a particular collocation (or in a handful of collocations) and has at least one non-degenerate lexeme in its vocable, that is, it co-exists in the language with normal lexemes which have the same signifier and the same syntactics and from which it differs only by its strictly context-bound signified” (Mel’čuk 2023: 46), e.g., *pay* in *to pay*

⁷ This is not uncommon in Greek and across languages (e.g., Vincent & Wheeler 2022; Concu 2022).

⁸ We can either assume a polyfunctional item or a situation of homonymy.

attention. To collocations, operations such as passivisation and pronominalisation can be applied unlike to idioms, which form lexical units (Mel’čuk 2023: 74–75).⁹ The items of interest in this article, i.e., ποιέομαι *poieomai* ‘to do’ and τίθημι *tithēmi* ‘to put’ appear in analytic support-verb constructions.

ποιέομαι *poieomai* ‘to do’ appears in support-verb constructions in which (i) the profiling of the subject component introduced by the support verb coincides with the subject component implied by the predicative noun, (ii) the support verb does not add voice, polarity, *aktionsart*, or aspect information, and (iii) the semantic structure is fully compositional.¹⁰ An example is ἐξέτασιν ποιέομαι *exetasin poieomai* ‘to make an inspection’ in (13):

(13) CG Xenophon, *Anabasis*, 1.7.1

Κῦρος	ἐξέτασιν	ποιεῖται
<i>Kyros</i>	<i>exetasin</i>	<i>poieitai</i>
Cyrus.NOM.SG.M	inspection.ACC.SG.F	make.PRS.IND.MID.3SG
τῶν	Ἑλλήνων	
<i>tōn</i>	<i>hēllēnōn</i>	
the.GEN.PL.M	Greek.GEN.PL.M	
‘Cyrus made an inspection of the Greeks’		

The subject of ἐξέτασιν ποιέομαι *exetasin poieomai* ‘to make an inspection’ is Cyrus. ἐξέτασις *exetasis* ‘inspection’ is a deverbal action noun with -σι- *-si-* being ‘the most productive action noun suffix; it could be added to virtually any verbal root’ (van Emde Boas et al. 2019: 262–269). The implied subject component is an Agent. ποιέομαι *poieomai* ‘to do’ profiles its subject as an Agent. In (13), it only adds verbal morphology to the construction. The semantically speaking object component τῶν Ἑλλήνων *tōn hēllēnōn* ‘of the Greeks’ appears as an objective genitive dependent on the predicative noun. The structure is analytic (Ledgeway & Vincent 2022: 51) and the predicative noun is the semantic head, Mel’čuk’s semantic pivot. The subsequent anaphora μετὰ δὲ τὴν ἐξέτασιν *meta de tēn exetasin* ‘and after the inspection’ shows this (Xenophon, *Anabasis* 1.7.2).

1.3 The battleground

Cross-linguistically/typologically, ‘to do’ as an auxiliary and support verb appears in typologically unrelated languages (Hoffmann 2023). In the Afro-Asiatic family, Kilani (2023) hypothesises a diachronic relationship between *jr(j)* ‘to do’ and the sentence-initial particle *jw* in Classical Egyptian (ca. 2000–1300 BC) (Loprieno 1995: 5–8). Later

⁹ Mel’čuk’s (2023) theory on the distinction between collocations and idioms reflects his categorical approach to compositionality, e.g., *to spill the beans* is an idiom for him (pp. 74–76) although more transparent than *to kick the bucket*. Mel’čuk (2023: 53) dismisses the notion of transparency as a “psychological property of idioms”. Sheinfux et al. (2019: 66) take the opposite approach (cf. *figuration*). Here, only Mel’čuk’s collocations are of interest.

¹⁰ Frameworks developed for verbal multi-word expressions in non-corpus languages, such as PARSEME, have developed test batteries including those relating to the semantics of the noun inside vs. outside of a support-verb construction and those relating to the deletion of the support verb (Test 10 [N-SEM] and Test 12 [V-REDUC] in particular). See: https://parsemefr.lis-lab.fr/parseme-st-guidelines/1.0/?page=060_Specific_tests_-_categorize_VMWEs/020_Light-verb_constructions (last accessed 07 May 2024). Note that PARSEME is at heart a deterministic Natural Language Processing framework, whereas this article adopts a variationist approach.

stages of the language (Coptic, from ca. AD 100) show overt (e.g., Bohairic) or covert (e.g., Sahidic) ‘to do’ especially when integrating Greek loan verbs into the Egyptian morpho-syntactic frame (Reintges 2001; Quack 2017; Funk 2017; Egedi 2017; Grossman & Richter 2017; Zakrzewska 2017). In the Indo-European family, English has a ‘to do’ periphrastic to indicate negation and illocutionary force (e.g., Ellegård 1953; Schwarz 2004) but uses ‘to do’ also in support-verb constructions, e.g., *to do a favour*. Thus, English ‘to do’ can function as an auxiliary, a support verb, and a full lexical verb. In typologically isolated Ainu, Dal Corso (2022) hypothesises that the analytic *kii* ‘to do’ construction gradually replaces the preverbal phrasal clitic functioning as a negative. In Udi, a language of the northeast Caucasus, Harris suggests that *-b-* ‘to do, make’ becomes a classifier productively applied to transitive verbs (Harris 2008: 225).

In the Natural-Language-Processing-inspired PARSEME terminology, ‘to do’ support-verb constructions fall under the label LVC.full (light-verb construction full), in Jiménez López’ collocation-focussed framework (Jiménez López & Baños 2022) under SVC-base (support-verb construction base), and in the function-verb-construction framework under *Nominalisierungsverbgefüge* ‘nominal-verb construction’ (Schutzeichel 2014: 10). Thus, ‘to do’ support-verb constructions fall into the most basic, most prototypical category in each framework. ‘To do’ can often replace the prototypical support verb (Langer 2004; Brown et al. 2012: 237) to form a comprehensible but unidiomatic construction, e.g., *to make a walk*.

We include *-θετέω -^heteō* ‘to put’ as a foil because (i) a diachronic relationship between *ποιέομαι poieomai* ‘to do’ and *τίθημι tit^hēmi* ‘to put’ in support-verb constructions exists (De Pasquale 2023: 263; Cock 1981: 24; Schutzeichel 2014: 84, 154, and 162) due to lexical substitution (Tribulato 2015: 278 n. 32),¹¹ (ii) both verbs exist in bound and unbound forms in classical Greek already (Schutzeichel 2014: 136–138), and (iii) the bound forms appear in various fundamentally different combinations, e.g., + adjective (*φανεροποιέω p^haneroipoiēō* ‘to make clear’) [causative], + non-eventive noun (*τεκνοποιέω teknoipoiēō* ‘to procreate’) [causative / discursively primary], + eventive noun (*λόγοποιέομαι logopoiēomai* ‘to remark’, *νομοθετέω nomotheteō* ‘to legislate’). These have often been grouped together (Tribulato 2015: 57 *ποιος poios* is not a separate lexeme; Asraf 2021), but should not be.

The literature is divided between those assuming a diachronic link between support and auxiliary verbs (e.g., Anderson 2006; Slade 2013; Itzész 2022) and those who hypothesise one lexeme appearing in various frames (e.g., Butt 2010; Butt & Lahiri 2013). Butt and Lahiri (2013) argue against a diachronic link because support-verb constructions are complex predicates, i.e. the verbal and nominal components contribute to the event structure and the structure is monoclausal (Butt 1995; Butt 2010). It gets complicated when, as with ‘to do’ and ‘to put’ in a two-argument frame, the otherwise clear contribution of the support verb as regards profiling the subject component coincides with the subject argument implied by the predicative noun. This is the case in (1) *he made the suggestion that she join* (Agent); in (3) *he lacks patience*, the subject component implied by the predicative noun is a Volitional Undergoer (Næss 2007) but the support verb profiles the subject component as a Frustrative. The issue of a diachronic relation-

¹¹ Lexical substitution is diachronically common in Greek, cf. AG *ἔρδω erdō* – CG *ποιέομαι poieomai* – MG *κάνω kanō* ‘to do’ (Meissner 2016: 28; Itzész forthcoming on the protolanguage), but also e.g., CG *λαμβάνω lambanō* – MG *παίρνω pairnō* ‘to take’, AG *λαγχάνω lagk^hanō* – CG *τυγχάνω tugk^hanō* ‘to receive’, AG *τίθημι tit^hēmi* – CG *δίδωμι didōmi* ‘to let’ (causative).

ship between support and auxiliary verbs is here approached by considering the relationship between λογοποιέομαι *logopoieomai* and λόγον / λόγους ποιέομαι *logon / logous poieomai* ‘to make (a) remark(s)’ and νομοθετέω *nomotheteō* and νόμον / νόμους τίθημι *nomon / nomous titēmi* ‘to establish laws / to legislate’.

1.4 Research questions and overview

The article addresses three research questions: (i) Are support verbs the unbound alternative of bound affixes? (ii) How do semi-lexical support verbs become semi-grammatical affixes? (iii) Why did -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-tēteō* ‘to put’ not become productive? The way the terms semi-lexical and semi-grammatical are used throughout is determined by which property of the support verb or affix has slight prevalence. The support verb and the affix are semi-lexical and semi-grammatical in that they contribute to the event structure (lexically) and act akin to the derivational (denominal) and inflexional morphology (grammatically). The article is based on (post)classical Greek corpora.

After this introductory section, Section 2 introduces the five data samples that the discussion draws on, Section 3 addresses research question one, Section 4 research question two, and Section 5 research question three. Section 6 summarises the findings and offers conclusions.

2 Datasets

The article is based on (i) the *Thesaurus Linguae Graecae*, which compiles literary texts from the archaic to the early modern periods, <https://stephanus.tlg.uci.edu> (subscription-only), and (ii) the *Duke Database of Documentary Papyri*, which compiles documentary texts of the postclassical and early medieval periods, <https://papyri.info> (open-access). From these datasets are drawn.

Literary texts were written with an artistic intent and in Classics and related disciplines are taken to include oratory, historiography, prose, and multiple verse-genres. Literary texts also include technical writing, such as commentaries, medical writings, lexicographic writings, or later homilies. In most cases, literary texts have come down to us through a tradition of copying and re-copying of manuscripts. Conversely, documentary texts are texts that were written for specific purposes in daily life in personal and professional contexts. They include texts such as letters, receipts, contracts, and wills. They can be divided into higher-register (H) and lower-register (L) texts based on their link or lack thereof with governmental affairs of any kind (Palme 2009: 361–363). They have come down to us in the form of papyri and potsherds that have survived in the sands of Egypt. The chance of preservation affects both corpora. Both corpora reflect diatopic, diastratic, and diachronic diversity of sources.

An internally homogenous (regarding register, dialect, timeframe, non-poetic literary genre) sub-sample of (i) is the *ECF Leverhulme* corpus, which is implemented in Sketch Engine, an online corpus-analysis tool (Fendel & Ireland 2023). The *ECF Leverhulme* corpus consist of half a million words of literary classical Attic oratory, historiography, and prose, Table 1.

Table 1. *ECF Leverhulme* corpus

Historiography (203,186 words):	Thucydides, <i>Histories</i> , vol. 1–5 (98,945); Xenophon, <i>Anabasis</i> , vol. 1–4 (32,034), <i>Memorabilia</i> , vol. 1–4 (36,465), <i>Hellenica</i> , vol. 1–4 (35,742);
Oratory (143,937 words):	Antiphon, <i>Speeches</i> 1–6 (18,605); Isocrates, <i>Speeches</i> 1–6 and 13 (37,311); Isaeus, <i>Speeches</i> 1–8 (25,018), Lysias, <i>Speeches</i> 1, 3, 7, 12, 14, 19, 22, 30, 31, 32 (24,130); Demosthenes, <i>Speeches</i> 1, 2, 3, 4, 6, 9, 18 (38,873);
Prose (145,497 words):	Plato, <i>Gorgias</i> (27,790), <i>Phaedrus</i> (17,271), <i>Republic</i> , vol. 1–3 (28,688); Aristotle, <i>Rhetoric</i> (44,312), <i>Politics</i> , vol. 1–3 (27,436)

20% of this corpus are fully annotated for support-verb constructions and the remainder is annotated for a select number of support-verb-construction families.¹²

Five datasets were annotated and analysed for Sections 3 to 5¹³, as shown in Table 2:

Table 2. Datasets

Dataset 1	<i>ECF Leverhulme</i> Sketch Engine corpus, concordance ¹⁴ operating on lemmata for (i) λόγος <i>logos</i> + ποιέω <i>poieō</i> and (ii) νόμος <i>nomos</i> + τίθημι <i>tithēmi</i> within 5 words of each other (manual correction for support-verb constructions and voice of the verb)
Dataset 2	<i>ECF Leverhulme</i> Sketch Engine corpus, concordance operating on lemmata for (i) λογοποιέομαι <i>logopoieomai</i> and (ii) νομοθετέω <i>nomotheteō</i> (manual correction for part-of-speech = verb and manual assessment of lexical anaphora)
Dataset 3	Duke <i>Database of Documentary Papyri</i> search for (i) οποι <i>opoi</i> and (ii) οθετ <i>othet</i> , manual correction for appearance in verbs consisting of -ποιέω <i>-poieō</i> / -θετέω <i>-theteō</i> and a nominal or adjectival component and subsequent classification on whether these verbs contain an eventive nominal component ¹⁵
Dataset 4	Duke <i>Database of Documentary Papyri</i> search for (i) λόγον <i>logon</i> + lemma ποιέω <i>poieō</i> , (ii) λόγους <i>logous</i> + lemma ποιέω <i>poieō</i> , (iii) νόμον <i>nomon</i> + lemma τίθημι <i>tithēmi</i> , and (iv) νόμους <i>nomous</i> + lemma τίθημι <i>tithēmi</i> within 5 words of each other (manual correction for support-verb constructions and voice of the verb) ¹⁶
Dataset 5	<i>Thesaurus Linguae Graecae</i> Text search – simple – lemma (i) ποιέομαι <i>poieomai</i> and (ii) θετέω <i>theteō</i> – substring match (the full list of lemmata returned is manually corrected for combination with an eventive nominal component)

¹² Dataset: DOI 10.5287/ora-g2op5v0em

¹³ Datasets: DOI 10.5287/ora-0zzadxvj5

¹⁴ Concordances are vertical tables showing the context of the selected item / lemma.

¹⁵ Papyri.info: a simple string search. *αποι apoī* and *ηποι ēpoi* only returned one relevant hit, P.Babatha 22 καθαραποιοῦντός *katharapoiountos* ‘cleansing’ (Maoza, 130 AD, sale), which is a combination of adjectival and verbal components. Note the a-stem of the adjective, see Section 5.

¹⁶ Papyri.info – Search: [accusative case of the predicative noun] NEAR LEX [lemma of the support verb] within 5 words of each other. (i) the singular and plural of the predicative noun in the accusative need to be searched separately, (ii) the search returns all the documents that contain the relevant string, but these must be searched manually for relevant structures, (iii) manual correction for the voice of the verb is needed, and (iv) false positives abound due to incorrect lemmatisation.

The following timeframes are adopted: Archaic Greek (AG) pre 5th c. BC; Classical Greek (CG) 5th / 4th c. BC; Ptolemaic Greek (PG) 3rd–1st c. BC; Roman Greek (RG) 1st–3rd c. AD; Early Byzantine Greek (EBG) 4th–7th c. AD; Medieval Greek (MG) post 8th c. AD.¹⁷ If items are e.g., 4th–3rd c. BC, they are counted in PG; if items are e.g., 7th–8th c. AD, they are counted in EBG.

3 Variability, ambiguity, discontinuity: the unbound form

The first research question (*Are support verbs just the unbound alternative of bound affixes?*) arises from the observation that the bound and unbound forms co-exist, e.g., Plato, *Republic* 456b12 ἐνομοθετοῦμεν *enomot^hetoumen* next to ἐτίθεμεν τὸν νόμον *etit^hemen ton nomon* ‘to legislate’ and BGU.1.4 (Arsinoites, AD 177–178, petition), 9–15 ἐλο[γ]οποιούμην *elo[g]opoioumēn* next to λόγον ... πεποίηται *logon ... pepoiētai* ‘to make a remark’.¹⁸ The unbound form differs in its semantic and pragmatic characteristics. The differences are illustrated with λόγον / λόγους ποιέομαι *logon / logous poieomai* ‘to make a remark’ below but also apply to νόμον / νόμους τίθημι *nomon / nomous tithēmi* ‘to legislate’. The section draws on Datasets 1 and 4.

The unbound support verb is part of a verbal multi-word expression that has an internal syntax, unlike the bound affix which is part of a multimorphemic word (Asraf 2021). The extent to which the internal syntax of the support-verb construction is accessible depends on its (overt and covert) analyticity and compositionality (Ledgeway & Vincent 2022: 51). Support-verb constructions display degrees of variability, discontinuity, and ambiguity of components (Savary et al. 2018: 88–90; Tutin 2016). Variability and discontinuity are specific to the unbound form.

Tables 3 and 4 show variability, as measured by the permissibility of adding determiner phrases (DP), attributive phrases (ATT), and pluralisation to the predicative noun, and discontinuity, as measured by the number and type of items intervening between the support verb and the predicative noun (the support-verb-construction field, see columns 5 and 6) (Fendel 2024)¹⁹, along with the preferred order of support verb and predicative noun (NV, VN) (see further Section 4). In column 6, only >1 tokens are indicated in brackets.

¹⁷ MG is included, but our main interest ends with EBG.

¹⁸ The same is true of typologically related Latin for which the phenomenon has been studied in more depth as in Latin and Romance, for a long time (Baños 2012; Baños 2013; Marchello-Nizia 1996).

¹⁹ Instances which show (i) co-ordination of predicative nouns and/or support verbs, (ii) morphological passivisation of the support verb with the predicative noun becoming the subject, and (iii) pronominalisation (including zero anaphora) or relativisation of the predicative noun are not counted when assessing the support-verb-construction field. Only instances of the canonical form are assessed (cf. PARSEME https://parsemefr.lis-lab.fr/parseme-st-guidelines/1.0/?page=010_Definitions_and_scope/030_Syntactic_variants_of_VMWEs (accessed 04 Jan 2024)).

Table 3. Dataset 1. *ECF Leverhulme Sketch Engine corpus*²⁰

	Total occurrences	DP	ATT	Mean field size	Field type	NV	VN
λόγος <i>logos</i> & ποιέομαι <i>poiēomai</i> 'to make a remark'	13	11 85%	3 22%	0.31	PRN, PRT, DP (2)	10 77%	3 23%
λόγοι <i>logoi</i> & ποιέομαι <i>poiēomai</i> 'to make remarks'	56	40 71%	7 13%	0.58	PRT (3), PP (2), DP (22), VP (2), ATT, ADV	29 53%	27 ²¹ 47%
νόμος <i>nomos</i> & τίθημι <i>tithēmi</i> 'to legislate'	9	6 67%	–	0.44	DP (3), PRT	5 56%	4 44%
νόμοι <i>nomoi</i> & τίθημι <i>tithēmi</i> 'to legislate'	22	12 55%	4 18%	0.64	ATT (2), DP (7), ADV, PRT (2), indO	15 68%	7 32%

Table 4 is divided by the singular and plural forms of the predicative noun (λόγος *logos* vs λόγοι *logoi*). Each such created half is further subdivided by the period of time that the relevant instances data from, i.e. Ptolemaic Greek (PG) 3rd–1st c. BC; Roman Greek (RG) 1st–3rd c. AD; Early Byzantine Greek (EBG) 4th–7th c. AD.

²⁰ One instance of λόγοι *logoi* 'remarks' & ποιέομαι *poiēomai* 'to do' involves co-ordination of predicative nouns; 41 instances of νόμος / νόμοι *nomos / nomoi* 'law(s)' & τίθημι *tithēmi* 'to put' involve morphological passivisation (of these 9 are singular), 4 involve pronominalisation (of these 1 is singular).

²¹ Aristotle, *Rhetoric* 1355a show a structure with co-ordinated predicative nouns, ποιείσθαι τὰς πίστεις καὶ τοὺς λόγους *poieisthai tas pisteis kai tous logous* 'to prove and argue/speak'.

Table 4. Dataset 4. *Duke Database of Documentary Papyri*

	Total occurrences	DP	ATT	Mean field size	Field type	NV	VN	High register	Low register
λόγος <i>logos</i> & ποιέομαι <i>poieomai</i> ‘to make a remark’	48	30	8	0.69		35	13	39	9
PG	28	21 75% NEG (15)	5 18%	0.61	PRN, DP (3), ATT (3), PP (5)	23 82%	5 18%	27 94%	1 4%
RG	10	3 30% NEG (1)	2 20%	0.4	PRN (2), NEG (2)	8 80%	2 20%	6 60%	4 40%
EBG	10	6 60% NEG (0)	1 10%	1.2	PP (2), DP (5), ADV, PRN	4 40%	6 60%	6 60%	4 40%
λόγοι <i>logoi</i> & ποιέομαι <i>poieomai</i> ‘to make remarks’	13	7	1	0.62		10	3	13	–
PG	5	–	1 20%	1.2	REL clause, PP	5 100%	–	5 100%	–
RG	1	–	–	0	–	1 100%	–	1 100%	–
EBG	7	7 100%	–	0.29	DP (2)	4 57%	3 43%	7 100%	–

The adding of determiner phrases, attributive phrases, and pluralisation to the predicative noun constitutes a modification of the internal morpho-syntax of the support-verb construction. Such operations are possible on analytic support-verb constructions but may be constrained even with those. E.g., *to hold in X esteem* accepts attributive phrases (*X*) but they must indicate a degree, e.g., *high, low*, cf. *British National Corpus*. Determiner phrases, attributive phrases, and/or pluralisation that render the predicative noun referential or break the co-referentiality between the subject of the event referred to by the

predicative noun and the subject of the support verb, break up the support-verb construction and force a verb-object reading. E.g., *Paul and Mary made a suggestion* contains a support-verb construction, but *Tim offered their suggestion to the committee* a verb-object structure. For compositional support-verb constructions, the change in meaning attached to the adding of determiner phrases, attributive phrases, and pluralisation to the predicative noun is no greater than the change expected based on the change in form (e.g., pluralisation correlates with particularisation of meaning).

Tables 3 and 4 evidence diachronic developments, from the classical to the early Byzantine periods, for λόγος *logos* ‘remark’ and ποιέομαι *poieomai* ‘to do’; observations for νόμος *nomos* ‘law’ and τίθημι *tithēmi* ‘to put’ are absent from the *Duke Database of Documentary Papyri* sample:

(i) Determiner phrases while reasonably established in the classical sample (85% of instances in the singular, 71% of instances in the plural) become fewer over time.²² In Ptolemaic times, the availability of determiner phrases seems to have been exploited in the singular for negation (71% of all instances), thus indicating contrastive focus (Fendel 2023b) (e.g., *I made no suggestion but a comment*).²³ Negative determiner phrases do not combine with attributive phrases; 8 of the post-classical passages with a determiner phrase that is not negative show an attributive phrase.²⁴

(ii) The incidence of attributive phrases decreases markedly by the early Byzantine period. Attributive phrases are always limited to those that do not render the predicative noun referential and thus force a verb-object reading, e.g., λόγος *logos* as ‘message’ rather than ‘remark’ (cf. Rusten 2020). They provide internal modification as opposed to external modification by means of adverbs, e.g., *I gave a good speech* vs *I gave the speech well* where the former refers to the content of the speech and the latter to its delivery (Didakowski & Radtke 2020).

(iii) The ratio of singular vs plural is reverse in the classical as opposed to the postclassical sample (19% singular vs 81% plural in classical times; 79% singular vs 21% plural in postclassical times). In the classical sample, the plural prevails and is the more flexible option; in the post-classical sample, the singular prevails and is the more flexible option. In the post-classical sample, the singular appears gradually also in the lower registers, whereas the plural remains confined to the higher registers throughout. Pluralisation as a flexibly available modification (indicating particularisation) seems to have become unavailable (Giry-Schneider 1991: 105 and 120).

²² 100% of instances showing determiner phrases in early Byzantine times in the plural may reflect a fixed expression. The support-verb-construction field is maximally small (a mean of 0.29 items) and only determiner phrases can appear in it. The only remnant of flexibility pertains to the word order.

²³ E.g., P.Cair.Zen. 1.59018, 6–8 (Palestine, 258 BC, letter) μηθένα λόγον πεποιῆσθαι τῷ ἐπιστο [λίῳ μου], αὐτοῖς δὲ *mēthena logon pepoiēsētai tō episto[liō mou]*, *autois de* ‘(that they) did not make any reference to my letter, but ... on them’.

²⁴ Unlike in classical times, e.g., Demosthenes, Speech, 18.34 ἂν ἐγὼ λόγον οὐδέν’ ἐποιούμην ἕτερον *an egō logon ouden’ epoioumēn heteron* ‘I would not have made another remark’.

As the bound form constitutes part of a morphological word, these modulations of meaning by modifications in form are impossible (Asraf 2022).

The unbound support verb displays flexibility vis-à-vis the bound affix not only as regards the semantics of the lexical unit, as shown, but also as regards its discursive embedding. The unbound form creates a discontinuous structure with the predicative noun. The extent of discontinuity is shown in Tables 3 and 4 in the form of the size and type of the support-verb-construction field. Information-structurally closely related pieces of information can be sandwiched iconically (Lakoff & Johnson 1980: 130), as the prepositional phrases referring to recipients in (14) and (15):

- (14) CG Isaeus, *On the Estate of Meneclēs*, 15

λόγους	οὖν	πρὸς	ἡμᾶς	ἐποιεῖτο
<i>logous</i>	<i>oun</i>	<i>pros</i>	<i>hēmas</i>	<i>epoieito</i>
word.ACC.PL.M	PRT	towards	we.ACC.PL	do.IMP.F.IND.MID.3SG

καὶ ἔφη (...)
kai ep^hē (...)
 and say.IMP.F.IND.ACT.3SG
 ‘thus, he spoke to us and said (...)’

- (15) PG P.Eras.1.1 (Oxyrhynchos, 148–147 BC, petition), 22–26

τὸν	προσῆκοντα		
<i>ton</i>	<i>prosēkonta</i>		
the.ACC.SG.M	be.suitable.PRS.PTCP.ACT.ACC.SG.M		

λόγον	πρὸς	αὐτοὺς	ποιήσασθαι
<i>logon</i>	<i>pros</i>	<i>autous</i>	<i>poiēsast^hai</i>
word.ACC.SG.M	towards	they.ACC.SG.M	do.AOR.INF.ACT

‘to make a suitable remark to them’

The more the support-verb construction tends towards a word and away from a syntagm, the smaller and more constrained the support-verb-construction field becomes as regards permissible parts-of-speech. This is especially obvious in the plural in the documentary sample.²⁵ By the early Byzantine period a mean of only 0.29 items intervene between the support verb and the predicative noun and the only permissible part-of-speech is a determiner phrase.

The unbound form makes syntactic anaphora possible, in the form of pronominalisation (including null anaphora) and relativisation. In the classical sample, ποιέομαι *poieomai* ‘to do’ is replaced by χράομαι *khraomai* ‘to use’ when more freedom regarding attributive phrases and pronominalisation is required or when larger support-verb-construction fields are needed for discursive reasons.²⁶ While Squeri (forthcoming) finds the latter to be an option preferred in technical contexts, no meaning or context differences can be observed in the literary classical Attic sample. In the postclassical sample, no relevant instances appear. Conversely, for νόμον/νόμους τίθημι *nomon /*

²⁵ Non-restrictive relative clauses have their own illocutionary force and are irrelevant for this, cf. SB.6.9225, 12 (unknown, 300–201 BC, law) (see, e.g., Koev 2022).

²⁶ Relevant examples appear in classical Greek, e.g., in Plato, *Gorgias* 484d; Plato, *Gorgias* 451d; Thucydides, *Histories* 4.17.2.

nomous tit^hēmi ‘to legislate’ the syntagm seems preserved exactly because it allows for pronominalisation and morphological passivisation, Table 3.²⁷

Note in passing that the word order is not fixed and the only combination that displays a strong preference for Noun-Verb is *λόγος logos* ‘remark’ and *ποιέομαι poieomai* ‘to do’ in the literary data. In the documentary data, there seems to be shift in preference from the Ptolemaic to the Early Byzantine periods. Word-order preferences are discussed in Section 4.

4 Cliticization, incorporation, or univerbation: from unbound to bound

The second research question (*How do semi-lexical support verbs become semi-grammatical suffixes?*) arises from the observation in Section 3 that support verbs are semi-lexical and from the debate over their relationship to auxiliary verbs outlined in Section 1. The section draws on Datasets 1 and 2.

When a diachronic link between support verbs and auxiliary verbs (e.g., Anderson 2006; Slade 2013; Itzès 2022) is posited, a lexical item is assumed to become a grammatical item by means of grammaticalization, i.e. the conventionalisation of discursively secondary status according to Boye (2023) (cf. Section 1).²⁸ Grammaticalization thus defined can co-occur with ‘phonological reduction, bondedness and semantic bleaching’ (Boye 2023: 280). An extreme case is the French future tense, which has arisen from the combination of *habere* ‘to have’ and an infinitive (Hopper & Traugott 2003: 52–53; Adams 2003: 822–823), possibly through an intermediate stage of **cliticization** (Crystal 2008: 80). While such a development is regularly attested for auxiliary verbs, e.g., (ἐ)θέλω (*e*)^t*elō* ‘to want’ vs ‘will’ (Markopoulos 2009: 85), it is not for support verbs, which maintain positional freedom and phonological shape.

Unlike auxiliaries, support verbs contribute to the event structure of the support-verb construction (Butt 2010) and contain a lexical noun²⁹ instead of a non-finite verb (participle, infinitive), which must be fit into a verbal frame. These observations have given rise to positing **noun incorporation** for cases such as *λογοποιέω logopoieō*. The noun “is stripped of its nominal suffixes such as case and number endings” and “cannot be qualified by determiners or adjectives” (Asraf 2021: 37–38; see also Asraf 2022; Pompei 2006; Pompei 2014; Pompei & Grandi 2012). Asraf (2021: 40) explains formations such as *λογοποιέω logopoieō* and *νομοθετέω nomotheteō* as noun incorporation with the verb ending in *-έω -eō* as a secondary denominal formation (yet Tribulato 2015: 57).³⁰ In his sample, the “incorporated noun can fulfil various semantic roles” including location, goal, instrument, similitive, time, and patient (Asraf 2021: 54). Predicative nouns fulfil none of these adjunct roles and never the role of Patient. This is because in noun-

²⁷ Lexical anaphora relies on the compositionality of the structure and thus seems to cut across bound and unbound support verbs, e.g., P.Koeln.7.317 (Hermopolites, AD 501–600, letter), 26–28, 37–38, and 46–47 with *λόγος logos* ‘remark’. See further Section 4.

²⁸ Boye (2023: 282–289) considers the distinction between lexical and grammatical categorical, unlike the continuum often assumed (e.g., Lehmann 1988: 217).

²⁹ Work on syntactic nominalisations (cf. English *to give someone a beating*) is a desideratum, yet see for initial thoughts Fendel (submitted).

³⁰ Similarly, Lehmann (2020: 211) on German *staubsaugen* ‘to Hoover’.

incorporation contexts, the verb is discursively primary, whereas in support-verb constructions the noun is (see also Fendel 2023a). This semantic make-up explains why noun-incorporated items contain nouns referring, e.g., to people, τεκνοποιέω *teknopoieō* ‘to bear a child’, which cannot be reconceptualised as eventive and are thus excluded in support-verb constructions (cf. Section 1). The semantic make-up of support-verb constructions is reflected in **anaphora patterns**, as anaphoric references point back to the semantic head.³¹

The syntagm λόγον/λόγους ποιέομαι *logon/logous poieomai* ‘to make (a) remark(s)’ first appears in Aesop’s fables (6th c. BC) (Fable 120, version 1, line 10 οὐδένα λόγον τῶν χρημάτων ποιοῦνται *oudena logon tōn k^hrēmātōn poiountai* ‘they made no mention of these matters’), the word λογοποιέομαι *logopoieomai* ‘to remark’ in Thucydides’ *Histories* (5th c. BC) (6.38, there active). The syntagm νόμον/νόμους τίθημι *nomon/nomous tit^hēmi* ‘to legislate’ first appears in a fragment by Heraclitus (6th / 5th c. BC) (fragment 1, νόμους θεῖναι *nomous t^heinai* ‘to establish legislation’)³², the word νομοθετέω *nomot^heteō* ‘to legislate’ in Herodotus’ *Histories* (5th c. BC) (2.42)³³. Both syntagms and words are absent from Homer’s epics (9th / 8th c. BC).³⁴

-ποιέομαι *-poieomai* ‘to do’ and -θετέω *-theteō* ‘to put’ differ. ποιέομαι *poieomai* ‘to do’ is a lexeme in Archaic and Classical Greek such that the univerbation hypothesis holds for a period for which we have extant evidence. -θετέω *-theteō* seems to align with denominal formations as suggested for a range of items by Asraf (2021). However, νομοθετέω *nomot^heteō* ‘to legislate’ does not fit the semantic profile, i.e., its nominal component is in fact the semantic head, and the unbound form is a support verb. Thus, if Schutzzeichel’s (2014: 136–138) univerbation hypothesis is correct, univerbation happened before the Archaic period.

Table 5 illustrates (i) positional freedom as evidenced by the order of predicative noun and support verb and (ii) phonological shape as evidenced by the support-verb-construction field in the classical literary Attic sample. Only >1 tokens are indicated in brackets.

³¹ Not all of Asraf’s examples qualify as support-verb constructions. Rather, esp. λογοποιέω *logopoieō* ‘to remark’ and νομοθετέω *nomot^heteō* ‘to legislate’ do not align with the rest of the sample (cf. Asraf 2021: 56–57).

³² The instance in the *Apophthegmata* by the Septem Sapientes (division 2, apophthegm 31) is difficult to date.

³³ The instance in the *Apophthegmata* by the Septem Sapientes (division 10, apophthegm 18) is difficult to date.

³⁴ The lack of attestations of λόγον/λόγους ποιέομαι *logon/logous poieomai* ‘to make (a) remark(s)’ would be explicable by the lexical substitution of ἔρδω *erdō* ‘to do’ or ἔπος *epos* ‘word’, but no relevant examples appear.

Table 5. Dataset 1. *ECF Leverhulme Sketch Engine corpus*³⁵

	λόγος <i>logos</i> & ποιέομαι <i>poieomai</i> 'to make a remark'	λόγοι <i>logoi</i> & ποιέομαι <i>poieomai</i> 'to make remarks'	νόμος <i>nomos</i> & τίθημι <i>tithēmi</i> 'to legislate'	νόμοι <i>nomoi</i> & τίθημι <i>tithēmi</i> 'to legislate'
Mean field size	0.31	0.58	0.44	0.64
Field type	PRN, PRT, DP (2)	PRT (3), PP (2), DP (22), VP (2), ATT, ADV	DP (3), PRT	ATT (2), DP (7), ADV, PRT (2), indO
NV word order	10 77%	29 53%	5 56%	15 68%
VN word order	3 23%	26 47%	4 44%	7 32%
Total occurrences	13	56	9	22

Table 5 shows that the support verbs in question retain positional freedom, as opposed to structures such as *προσέχω τὸν νοῦν* *prosekho ton noun* 'to pay attention' (Fendel 2024). The only word-order preference appears with singular *λόγος* *logos* 'remark' and *ποιέομαι* *poieomai* 'to do'. For *νόμος* *nomos* 'law' and *τίθημι* *tithēmi* 'to put', most instances display morphological passivisation or pronominalisation. Neither are considered when assessing word-order patterns (see Section 3), but both attest to positional freedom, in that components can be modified and moved independently. Table 5 also shows that the support verb seems to retain its phonological shape with support-verb-construction fields being small, but no combination showing a field that has a mean of 0.

Anaphora patterns help to determine the semantic head of a support-verb construction. (16) to (19) show anaphora patterns, both lexical and morphosyntactic.³⁶ Lexical anaphora can take the form of collocation, i.e., the appearance of "lexical items that often occur in the same lexical environment" (Halliday & Hasan 1976: 284–286), and reiteration, i.e., "the repetition of a lexical item [...] the use of a general word to refer back to a lexical item [...] and a number of things in between – the use of a synonym,

³⁵ One instance of *λόγοι* *logoi* 'remarks' & *ποιέομαι* *poieomai* 'to do' involves co-ordination of predicative nouns; 41 instances of *νόμος* / *νόμοι* *nomos* / *nomoi* 'law(s)' & *τίθημι* *tithēmi* 'to put' involve morphological passivisation (of these 9 are singular), 4 involve pronominalisation (of these 1 is singular).

³⁶ The types of anaphora differ discursively. Lexical anaphora appears when "less prominent referents can only be picked up by full descriptive terms", morphosyntactic anaphora when "[s]peakers choose pronouns or zero forms for prominent discourse referents" (von Heusinger & Schumacher 2019: 123 and 125).

near-synonym, or superordinate” (Halliday & Hasan 1976: 278), (17) and (18). Morpho-syntactic anaphora can be by means of pronominalisation (using relative, personal, and demonstrative pronouns) (Manolessou 2001) or zero anaphora (Luraghi 2003a), (16) and (19).³⁷

(16) Isocrates, *Speech*, 12.249

πεποιήσαι <i>pepoiēsai</i> do.PRF.IND.MID.2SG	πολλούς <i>pollous</i> many.ACC.PL.M	λόγους, <i>logous</i> word.ACC.PL.M	τοὺς μὲν <i>tous men</i> some.ACC.PL.M	δικαίους <i>dikaious</i> right.ACC.PL.M
καὶ <i>kai</i> and	σεμνοῦς, <i>semnous</i> just.ACC.PL.M	τοὺς δ’ <i>tous d’</i> others.ACC.PL.M	ἀσελγεῖς <i>aselgeis</i> brutal.ACC.PL.M	
καὶ <i>kai</i> and	λίαν <i>lian</i> too	φιλαπεχθήμονας· <i>philapekhthēmonas</i> quarrelsome.ACC.PL.M		

‘you made many remarks, some right and just, others brutal and excessively quarrelsome’

(17) Isocrates, *Speech*, 12.215

θρασέως <i>thrasedōs</i> arrogant.ADV	μὲν <i>men</i> PRT	οὐδὲ <i>oude</i> NEG	πρὸς <i>pros</i> towards	ἐν <i>en</i> one.ACC.SG.N
ἀντεῖπε <i>anteipe</i> reply.AOR.IND.ACT.3SG	τῶν <i>tōn</i> the.GEN.PL.N	εἰρημένων, <i>eirēmenōn</i> say.PRF.PTCP.PASS.GEN.PL.N		οὐδ’ <i>oud’</i> NEG
αὖ <i>au</i> in.turn	παντάπασιν <i>pantapasin</i> entirely	ἀπεσιώπησεν, <i>apesiōpēsen</i> be.silent.AOR.IND.ACT.3SG		ἀλλ’ <i>all’</i> but
ἔλεγεν, <i>elegen</i> say.IMP.F.IND.ACT.3SG	ὅτι. <i>hoti</i> that	«Σὺ <i>su</i> you.NOM.SG.M		μὲν <i>men</i> PRT
πεποιήσαι <i>pepoiēsai</i> do.PRF.IND.MID.2SG	τοὺς <i>tous</i> the.ACC.PL.M	λόγους» [...] <i>logous [...]</i> word.ACC.PL.M		

‘he did not reply arrogantly to anything that was said nor did he remain silent but he said:
‘You have made remarks [...]’

³⁷ In the postclassical period, the system of demonstratives (Manolessou 2001) and the permissibility of null objects changes (Luraghi 2003a: 180; Luraghi 2004: 245; Lavidas 2015).

(18) Aristotle, *Politics*, 1274b

τοὺς	νόμους	ἔθηκεν,	ἴδιον
<i>tous</i>	<i>nomous</i>	<i>et^hēken</i>	<i>idion</i>
the.ACC.PL.M	law.ACC.PL.M	establish.AOR.IND.ACT.3SG	unique.NOM.SG.N
δ’	ἐν	τοῖς	νόμοις
<i>d’</i>	<i>en</i>	<i>tois</i>	<i>nomois</i>
PRT	in	the.DAT.PL.M	law.DAT.PL.M
			οὐδέν
			<i>ouden</i>
			nothing.NOM.SG.N
ἔστιν	ὅ τι	καὶ	μνείας
<i>estin</i>	<i>o ti</i>	<i>kai</i>	<i>mneias</i>
be.PRS.IND.ACT.3SG	which.NOM.SG.N	also	mention.GEN.SG.F
ἄξιον,	πλὴν [...]		
<i>axion</i>	<i>plēn [...]</i>		
worthy.NOM.SG.N	except		

‘He (sc. Drakon) legislated, but in the laws there is nothing unique which is worthy of mention except [...]’

(19) Isocrates, *Speech*, 12.152

με	διεξιέναι	τοὺς	νόμους
<i>me</i>	<i>diexienai</i>	<i>tous</i>	<i>nomous</i>
I.ACC.SG.M	go.THROUGH.PRS.INF.ACT	the.ACC.PL.M	law.ACC.PL.M
οὓς	Λυκοῦργος	μὲν	ἔθηκε,
<i>hous</i>	<i>Lukourgos</i>	<i>men</i>	<i>et^hēke</i>
which.ACC.PL.M	lycurgus.NOM.SG.M	PRT	establish.AOR.IND.ACT.3SG
Σπαρτιάται	δ’	αὐτοῖς	χρῶμενοι
<i>Spartiatai</i>	<i>d’</i>	<i>autois</i>	<i>k^hrōmenoi</i>
spartan.NOM.PL.M	PRT	they.DAT.PL.M	use.PRS.PTCP.MID.NOM.PL.M

τυγχάνουσιν.
tug^hanousin
 happen.to.PRS.IND.ACT.3PL

‘(that) I am going through the laws which Lycurgus established, and which the Spartans (still) happen to use’

Anaphora patterns show that the semantic head of the support-verb construction is the predicative noun. This points towards a different process to connect λογοποιέομαι *logopoieomai* ‘to remark’ with λόγον / λόγους ποιέομαι *logon / logous poieomai* ‘to make (a) remark(s)’ and νομοθετέω *nomot^heteō* ‘to legislate’ with νόμον / νόμους τίθημι *nomon / nomous tit^hēmi* ‘to legislate’, namely univerbation.³⁸

Univerbation is “the diachronic unification of two or more erstwhile autonomous words in a single one, regardless of whether the resulting word is monomorphemic or internally complex” (Giomi 2023: 48). The formerly autonomous words appear in

³⁸ Anaphora patterns for the bound form marginally matter (cf. Asraf 2022). They appear for λογοποιέομαι *logopoieomai* ‘to remark’ (one instance) and νομοθετέω *nomot^heteō* ‘to legislate’ (5 instances) in Dataset 2.

“syntagmatically adjacent” position frequently beforehand (Lehmann 2020: 206). Univerbation relies upon a synchronically valid syntactic structure rather than a word-formation pattern and downgrades a syntactic boundary to a morphological one (Berg 2020; Lehmann 2020: 228–229, 238, and 245–246). As support-verb constructions form phrasemes (Mel’čuk 2023: 74–78), their univerbation falls under phrasal univerbation which can follow onto lexicalisation and grammaticalisation (Lehmann 2020: 214–223).

λόγον ποιέομαι *logon poieomai* ‘to make a remark’ in particular exhibits symptoms typical of univerbation in the literary classical Attic data (cf. Lehmann 2020: 232–238). The small support-verb-construction field only allows for function words to appear and reflects “enforcement of continuity” of the structure. The strong preference for noun-verb (77% of all instances) points towards the “fixation of word order”. The limited availability of attributive phrases (see Section 3) reflects the “reduction of syntactic structure”. In λογοποιέομαι *logopoieomai* ‘to remark’, “the internal structure is suppressed, [and the] external structure is added as needed” (Lehmann 2020: 235), i.e., verbal inflexional endings. Compositionality is retained, yet the “loss of compositionality is neither a necessary nor a sufficient condition for univerbation” (Lehmann 2020: 236). The new lexeme is prosodically adapted: the stress appears on the penultimate syllable if the ultimate is long and on the ante-penultimate when the ultimate is short. It is also segmentally adapted, i.e., the inflexional endings on the former predicative noun disappear.³⁹

Univerbation produces new lexemes rather than new grammatical forms (Giannakis 2023: 202). It is a spontaneous process at the level of *parole* (Lehmann 2020: 248). Over time, univerbation may “lead to the emergence of new rules of word formation” (Giomi 2023: 50) due to reanalysis of the structure of the univerbate (Asraf 2021: 40; Giomi 2023: 53; Tribulato 2015: 40; Giannakis 2023: 202), e.g., the Latin ablative *mente* (from *mens* ‘mind’) into the Romance adverb suffix *-ment* (Booij 2014: 173). Items such as *claramente* ‘in a clear manner’ could “function as models for new deadjectival adverbs” (Booij 2014: 173). This has been cast in the notion of leader words, i.e. “words which might have served as models for word formation processes due to their morphological transparency” (Burdy 2019: 43 with references).

Extensive work relates to the Latin support verb *facere* ‘to do’ and its relationship with the suffixes *-fico(r)* and *-facio*, e.g., Brucale and Mocciaro (2016) on *-facio* being the more modern type without vowel reduction; Galdi (2018; 2019) on *facere* as a support verb in late Latin, Marini (2005; 2014; 2018) on *-fico* vs *-ficor*. Rosén (2020: 266–267) speaks of the ‘mechanization of the conjugating element (*-ficare* vel sim.)’. Tronci (2017b: 298) considers *-facio* the native formation as opposed to *-issol/-izo/-idio* which appear primarily with Greek loans. By the time of Old French, “-(i)fier could never be identified with *faire* ‘to make’ and therefore qualifies as a suffix” (Rainer & Buridant 2015: 1980). Apparently, erstwhile univerbates with the support verb *facere* ‘to do’ (leader words) were reanalysed over time into stem + suffix and thus a word-formation pattern emerged. A similar analysis is proposed by Asraf (2021: 42) for his Greek noun incorporates.

³⁹ Phonologically, this involves loss/assimilation of a nasal before a plosive. Semantically, the singular is unmarked vs the particularising plural.

As regards word-formation, we may initially think of compounding. The Greek compounding system is largely right-headed but “tolerates a number of left-headed types” (Tribulato 2015: 46), the productivity of which may be limited (Tribulato 2015: 103). Greek compounds contain a first component “that does not correspond to a full ‘word’ but to a stem” and a second component “which may consist of either a stem or an independently attested word” (Tribulato 2015: 18). Formations such as λογοποιέομαι *logopoieomai* ‘to remark’ would fit the bill in that they are left-headed (λόγο- *logo-*), the first component is a stem rather than a full word, and the second component is an independently attested word. Section 5 shows that the development of -ποιέομαι *-poieomai* ‘to do’ has gone beyond compounding and seems to align rather with the development of *-fico* ‘to do’ and *-(i)fier* in Latin / Romance. In Latin / Romance, the bound and unbound forms of ‘to do’ co-exist (e.g., Giry-Schneider 1987) and we observe splitting, i.e., “a grammatical descendent is gradually differentiated from its lexical source, with which it co-exists” (Boye 2023: 285). Such an analysis also aligns with Butt and Lahiri’s (2013) objection to the grammaticalization of support verbs.

5 Productivity and paradigmaticity in diachrony: the bound form

The third research question (*Why did -ποιέομαι -poieomai ‘to do’ and -θετέω -t^heteō ‘to put’ not become productive?*) arises from the observation in Section 4 that λογοποιέομαι *logopoieomai* ‘to remark’ and νομοθετέω *nomot^heteō* ‘to legislate’ are products of spontaneous univertation but that through reanalysis a word-formation pattern may have developed. The section draws on Datasets 3 and 5.

5.1 A new word-formation pattern

The bound form of the support verb qualifies as an affix. Inflexional affixes determine the function of an item in the sentence and are applicable to any item that is not invariable (such as particles). Derivational affixes enact transitions between different parts-of-speech and apply to content words only (e.g., not to determiner phrases). Lexical affixes change the semantics of an item (e.g., the prefixed negatives alpha privative and δυσ- *dus-* (Joshi 2020), the suffixed diminutives in -ιον *-ion* (Hopper & Traugott 2003: 5)) and apply to small groups of items depending on their meaning. Thus defined, -ποιέομαι *poieomai* ‘to do’ acts akin to a derivational suffix in transforming an event referred to by a noun into a verb phrase **and** a lexical affix in changing the event structure (e.g., Wittenberg & Levy 2017). Section 3 showed that unbound ποιέομαι *poieomai* ‘to do’ is semi-lexical and semi-grammatical and subject to reverse selection by the predicative noun, such that its combinatorial freedom is limited. What about the bound form?

Table 6 shows the lemmata in the *Thesaurus Linguae Graecae* which contain the substring ποιέομαι *poieomai*, in which the first half is nominal and can be re-conceptualised as eventive, and ποιέομαι *poieomai* ‘to do’ is not causative.

Table 6. Dataset 5. *Thesaurus Linguae Graecae*⁴⁰

Lemma	AG	CG	PG	RG	EBG	MG	Total	Dictionary meaning
διασκευνοποιέομαι <i>diaskēnoroiēomai</i>						#1	1	Trapp: inszeniert werden ‘to be put on stage’
δυναμοποιέομαι <i>dunatoroiēomai</i>					#2	11	13	– (‘to be able’)
έμετοποιέομαι (έμετος) <i>emetoroiomai</i> (<i>emetos</i>)		3			#2		5	Trapp: zum Erbrechen gereizt werden ‘to be made to vomit’
μισθοποιέομαι <i>mist^horoiēomai</i>						#1	1	LSJ: to derive rent
όρκοποιέομαι <i>^horkoroiēomai</i>						#1	1	Trapp: schwören ‘to swear’
πραγματοποιέομαι <i>pragmatoroiēomai</i>						8	8	Trapp: verwirklichen ‘to realise’
σπονδοποιέομαι <i>spondoroiēomai</i>			3	#6		4	13	LSJ: to pour a libation
συνειδοποιέομαι <i>suneidoroiēomai</i>					2	#2	4	LSJ: to be specified together with
συνθηκοποιέομαι <i>sun^hēkoroiēomai</i>				#1	#4	3	8	LSJ: = συνθήκας ποιέομαι <i>sunthēkas poiēomai</i> ‘to make an agreement’
χαραποιέομαι <i>k^hararoiēomai</i>					#1	#1	2	Lampe: to rejoice
χρεωποιέομαι <i>k^hreōroroiēomai</i>					#1	6	7	Lampe: to need the assistance of, need
λογοποιέω <i>logoroiēō</i>		31	9	70	56	260	426	‘to compose / to remark’
λογοποιέομαι <i>logoroiēomai</i>			#1	17	7	40	65	‘to remark’
Number of tokens [count λογοποιέω <i>logoroiēō</i>]	0	34	12	77	68	298	n/a	
Number of types	0	2	2	3	7	11	n/a	

⁴⁰ Abbreviations used in Table 6: V = Verse, # = hapax, idiolectal. Idiolectal (#) means that the item is used repeatedly in the same author’s writings.

Table 6 allows for three observations: Firstly, *-ποιέομαι -poieomai* ‘to do’ seems suffixed to an o-stem noun with one exception, which is *χαραποιέομαι kharapoiomai* ‘to rejoice’, whereas in univertation contexts we would expect that any stem type can appear. Secondly, the earliest attestations of *-ποιέομαι -poieomai* ‘to do’ formations appear in technical registers and the formation is limited to prose rather than verse contexts. Thirdly, there is a striking numerical preponderance of one lemma (*λογοποιέομαι logorpoieomai* ‘to remark’) from the classical period onwards and no relevant lemmata appear before the classical period. Table 7 shows the results for the same search parameters in the *Duke Database of Documentary Papyri*, to which the above observations also apply:

Table 7. Dataset 3. *Duke Database of Documentary Papyri*⁴¹

	Total of tokens	Total of types	Mean tokens per type	Register	Lemmata
PG	4	1	4	all H	λογοποιέομαι <i>logorpoieomai</i> ‘to remark’ (4)
RG	35	6	5.8	H = 33 L = 2 (λογοποιέομαι <i>logorpoieomai</i> ‘to remark’)	λογοποιέομαι <i>logorpoieomai</i> ‘to remark’ (20) μαρτυροποιέω/ομαι <i>marturopoieō/omai</i> ‘to testify’ (11) μετροποιέω <i>metropoieō</i> ‘to measure’ (1) στιχοποιέω <i>stikh^hopoieō</i> ‘to compose (verses)’ (1) βλαβοποιέω <i>blaborpoieō</i> ‘to harm’ (1) κακιοποιέω <i>kakioipoieō</i> ‘to wrong’ (1)
RG/EBG	1	1	1	all H	λογοποιέομαι <i>logorpoieomai</i> ‘to remark’ (1)
EBG	7	5	1.4	all H	λογοποιέω/ομαι <i>logorpoieomai</i> ‘to remark’ (3) μαρτυροποιέω/ομαι <i>marturopoieō/omai</i> ‘to testify’ (1) μετροποιέω <i>metropoieō</i> ‘to measure’ (1) συμφεροποιέομαι <i>sump^heropoieomai</i> ‘to benefit’ (1) χρεωποιέομαι <i>k^hreōpoieomai</i> ‘to need’ (1)

⁴¹ *αποι αποι* and *ηποι εροι* did not return relevant hits.

Regarding observation one, the apparent limitation to o-stem nouns in combination with *-ποιέομαι* *-poieomai* ‘to do’, two aspects are of interest: Firstly, there is one exception to this rule, *χαραποιέομαι* *k^harapoieomai* ‘to rejoice’, which appears only twice in the literary data, in the 6th / 7th c. AD *Commentarius in Ecclasiaten* by Gregorius (6.16, 28–34) and in the astrological *Zodiologicum*, which is of uncertain date (e cod. Mus. Hist. Mosq. 186, fol. 144, 29–33). These instances may attest to two author’s creativity rather than a new pattern. Secondly, there are several formations for which the underlying support-verb construction contains an a-stem noun but the *-ποιέομαι* *-poieomai* formation does not. *διασκήνη* *diaskēnē* ‘stage’, *σπονδή* *spondē* / *σπονδαί* *spondai* ‘libation / truce’, *συνθήκη* *sun^hēkē* ‘agreement’, and *χρεία* *k^hreia* ‘need’ are a-stem nouns that appear in the support-verb construction but seem transformed into o-stem nouns in the *-ποιέομαι* *-poieomai* ‘to do’ formations. *δύναμις* *dunamis* ‘power’ is an s-stem seemingly transformed into an o-stem. Relevant instances also appear in the documentary data. Instead of a-stem *βλάβη* *blabē* ‘harm’, s-stem *βλάβος* *blabos* ‘harm’ seems to appear, instead of a-stem *κακία* *kakia* ‘badness’, the comparative adjective *κακίων* / *κάκιον* *kakiwn* / *kakion* ‘worse’, instead of a-stem *συμφορά* *sum^hora* ‘chance’, the participle *συμφέρον* *sum^heron* ‘suitable’, instead of a-stem *χρεία* *k^hreia* ‘obligation’, the s-stem *χρέος* *k^hreos* ‘obligation’. Instead of positing a random stem change for the nominal component of the *-ποιέομαι* *-poieomai* ‘to do’ formations, one might posit an emerging word-formation pattern. The o-vowel would be part of the word-formation pattern and the nominal component would be a bare stem (cf. Tribulato 2015: 18).⁴² From this, two questions emerge: why the o-vowel and what is the function of the new pattern?

5.2 Leader words

Observation two, the numerical preponderance of *λογοποιέομαι* *logopoieomai* ‘to remark’ from the classical period onwards without relevant lemmata before the classical period, links to the notion of leader words introduced in Section 4. Table 8 shows the lemmata in the *Thesaurus Linguae Graecae* which contain the substring *-θετέω* *-t^heteō* ‘to put’, in which the first half is nominal and can be reconceptualised as eventive, and *-θετέω* *-t^heteō* ‘to put’ is not causative.

Table 8. Dataset 5. *Thesaurus Linguae Graecae*⁴³

Lemma	AG	CG	PG	RG	EBG	MG	Total	Dictionary meanings
<i>διαγωνοθετέω</i> <i>diagōnot^heteō</i> ⁴⁴			2			#2	4	LSJ: to set at variance
<i>δικοθετέω</i> <i>dikot^heteō</i>						#1 (V)	1	Trapp: Recht sprechen ‘to judge’
<i>δογματοθετέω</i> <i>dogmatot^heteō</i>						#1	1	Trapp: ein Dogma darlegen ‘to lay out a dogma’

⁴² This is inexplicable under a noun-incorporation approach except if assuming noun incorporation as the first step and subsequent reanalysis (Giannakis 2023: 202).

⁴³ Abbreviations used in Table 8: V = Verse, # = hapax, idiolectal.

⁴⁴ *διαγωνία* *diagōnia* ‘struggle’ is a cranberry word.

προνομοθετέω <i>pronomot^heteō</i>		#1	2	7	10			
προσεπινομοθετέω <i>prosepinomot^heteō</i>				#1		1		
προσνομοθετέω <i>prosnomot^heteō</i>			10	6	3	19		
συννομοθετέω <i>sunnomot^heteō</i>		3			#1	3	7	
νουθετέω <i>nout^heteō</i> ⁴⁵	#4	1 28 (V)	8 3 (V)	3 8 3 (V?)	1009	1 449 (V)	3,053	LSJ: to put in mind
ἀντινουθετέω <i>antinout^heteō</i>				#1			1	
ἀπονουθετέω <i>apounout^heteō</i>						#1	1	
ἐπινουθετέω <i>epinout^heteō</i>						#1	1	
κατανουθετέω <i>katanout^heteō</i>					#1	6	7	
προνουθετέω <i>pronout^heteō</i>						3	3	
ὑπερνουθετέω <i>^hypernout^heteō</i>						#1	1	
ὑπονουθετέω <i>^hypounout^heteō</i>				#1			1	
Number of tokens [prefixed options are counted under root]	5	489	227	962	3675	5029	n/a	
Number of types [prefixed options are counted under root]	2	2	4	5	6	12	n/a	

Table 8 reflects the same seeming preference for o-stem nouns with -θετέω *-t^heteō* ‘to put’ as observed for -ποιέομαι *-poiēomai* ‘to do’ (esp. διαγωνοθετέω *diagōnot^heteō* ‘to set at variance’ but διαγωνία *diagōnia* ‘struggle’ and δικοθετέω *dikot^heteō* ‘to judge’

⁴⁵ νουθετ-εύω *nout^het-euō* in the 14th c. AD.

but δίκη *dike* ‘judgement’). It also reflects a numerical preponderance of two lexemes, νουθετέω *noutheteō* ‘to put in mind’ and νομοθετέω *nomotheteō* ‘to legislate’, similarly to λογοποιέομαι *logopoieomai* ‘to remark’. However, those two lexemes appear already in archaic Greek.

λογοποιέομαι *logopoieomai* ‘to remark’ appears in the passive from the 2/3 c. AD onwards in the *Thesaurus Linguae Graecae*. Passivisation applies externally to the word rather than taking the internal syntagmatic structure into account. Only future and aorist passive formations are counted as in all other tenses, the middle and passive share the same set of endings. νομοθετέω *nomotheteō* ‘to legislate’ and νουθετέω *noutheteō* ‘to put in mind’ exist in the passive from classical times onwards reflecting their earlier lexicalisation and becoming a word (Mel’čuk 2023: 72; Langer 2004: 177–178). From classical times, both lexemes can be modified by lexical prefixes (preverbs) (cf. Luraghi 2003b) further pointing towards their status as a word rather than a syntagm.

All three leader words, i.e., νουθετέω *noutheteō* ‘to put in mind’, νομοθετέω *nomotheteō* ‘to legislate’, and λογοποιέομαι *logopoieomai* ‘to remark’, contain an o-stem noun before -θετέω *-theteō* ‘to put’ or -ποιέομαι *-poieomai* ‘to do’.⁴⁶ They are morphologically transparent and semantically compositional, at least until passive formations and/or preverbs start appearing. Thus, the o-vowel in the hypothesised word-formation pattern may result from re-segmentation of the univerbates of support-verb constructions and subsequent reanalysis of the former support verb as a suffix.

5.3 Productivity

If we posit -ποιέομαι *-poieomai* ‘to do’, and possibly -θετέω *-theteō* ‘to put’, as a word-formation pattern, the question of productivity arises. Productivity means that an item “is repeatedly used in language to produce further instances of the same type” such as the inflexional past-tense suffix *-ed* in English (Crystal 2008: 390).

As -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-theteō* ‘to put’ are not purely derivational but have a lexical element to them, productivity is not expected to be high. With less productive items, we distinguish between available patterns and patterns that language users generally accept. E.g., German *öffbar* ‘can be opened’ results from the availability of the derivational pattern for verbs in *-nen* such as *öffnen* ‘to open’ (Finkbeiner 2008: 401) and English *readable* relies on the pattern of deverbal adjective formations in *-able*. Neither is universally accepted. German prefers the formation with *-en-*, e.g., *einordnen* ‘to put in order’ with *einordbar/einordenbar*, English prefers *legible*.⁴⁷ Patterns that are theoretically available but not generally accepted would qualify as creativity rather than productivity (Goldberg 2019; Hoffmann 2018). These patterns appear in the corpus data as *hapaces* or idiolectal attestations (cf. Baayen 2009). Patterns that are generally accepted appear with relatively high token-type ratios. However, the text type may impose limitations in a corpus language such as (post-)classical Greek (Hoffmann 2005: chap. 8). Productivity can increase and decrease diachronically (Barðdal et al. 2024; Hartmann 2018).

Table 9 shows the lemmata in the *Duke Database of Documentary Papyri* which contain the substring οθετ *othet*, in which the first half is nominal and can be reconceptualised as eventive, and -θετέω *-theteō* ‘to put’ is not causative. Searches for ηθετ *ēthet* and αθετ *athet* did not return relevant hits.

⁴⁶ νόος *noos* regularly contracts to νοῦς *nous*.

⁴⁷ The German and English suffixes add modality.

Table 9. Dataset 3. *Duke Database of Documentary Papyri*

	Total of tokens	Total of types	Mean tokens per type	Register	Lemmata
PG	1	1	1	all H	ὀριοθετέομαι ^h <i>oriot^heteō</i> ‘to set boundaries / divide’
RG	15	3	5	all H	νομοθετέω/ομαι <i>nomot^heteō/omai</i> ‘to legislate’ (6) λογοθετέω/ομαι <i>logot^heteō/omai</i> ‘to call to account’ (4) ἀγωνοθετέω <i>agōnot^heteō</i> ‘to exhibit games’ (5)
EBG	5	2	2.5	all H	λογοθετέω/ομαι <i>logot^heteō/omai</i> ‘to call to account’ (3) νομοθετέω/ομαι <i>nomot^heteō/omai</i> ‘to legislate’ (2)

Compared to Table 7 for -ποιέομαι *-poieomai* ‘to do’ formations, the same o-vowel before the suffix and the smaller range of types is noticeable. Table 7 showed 1 type for the Ptolemaic period, 6 types for the Roman period, and 5 types for the early Byzantine period. Table 10 synthesises counts of types that are not *hapaces*, idiolectal, or leader words (and their compounds) for -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-t^heteō* ‘to put’ formations based on Tables 6 to 9. *Hapaces* and idiolectal items are excluded as they reflect creativity rather than productivity; leader words are excluded as they are the origin of reanalysis and do not constitute new types.

Table 10. Counts without *hapaces*, idiolectal items, and (compounds of) leader words

Number of types	AG	CG	PG	RG	EBG	MG
-ποιέομαι <i>-poieomai</i> ‘to do’ literary	–	1 ⁴⁸	1	–	1	5
-ποιέομαι <i>-poieomai</i> ‘to do’ documentary	–	–	–	1 ⁴⁹	–	–
-θετέω <i>-t^heteō</i> ‘to put’ literary	–	–	1	2	4	4
-θετέω <i>-t^heteō</i> ‘to put’ documentary	–	–	–	2	1	–

Productivity of the hypothesised word-formation patterns seems relatively low throughout although with a slight increase over time in the literary sources. Productivity of the hypothesised word-formation patterns is more limited in the documentary than the literary data.

⁴⁸ ἐμετοποιέομαι *emetopoieomai* ‘to be made to vomit’: Hippocrates Med., *De affectionibus*; Diocles Med., *Fragmenta* (2x).

⁴⁹ μαρτυροποιέω/ομαι *marturopoieō/omai* ‘to testify’.

5.4 Technical contexts and idiolects

This brings us to observation two, i.e., that the earliest attestations of -ποιέομαι *-poieomai* ‘to do’ formations appear in technical registers, primarily medical writing in literary contexts and witness statements in documentary contexts, and the formation seems limited to prose contexts. This applies to -θετέω *-t^heteō* ‘to put’ formations less strictly, in that the leader words appear in verse contexts from classical times and some non-leader formations in later periods. Both formation patterns were apparently exploited for creative purposes. This is productivity in the sense of Barðdal’s extensibility, Baayen’s potential productivity, and Sampson’s E(nlarging)-creativity.⁵⁰ It points towards the function of this new word-formation pattern. Table 11 shows the number and context of *hapaces* and idiolectal formations extracted from Tables 6 to 9.

Table 11. *hapaces* (without compounds of leader words) and idiolectal items⁵¹

Types	PG	RG	EBG	MG
-ποιέομαι <i>-poieomai</i> ‘to do’	–	2	5	5
Register (literary)	n/a	Apollonius, <i>Lexicon Homericum</i> ; Athenaus, <i>Deipno- sophistae</i>	Pseudo-Dionysios Areopagita, <i>De divinis nominibus</i> (2x); Paulus Med., <i>Epitomae medicae libri septem</i> (2x); Hesychius, <i>Lexicon</i> (4x); Gregorius, <i>Commentarius in Ecclesiasten</i> ; Ephraem, <i>Sermo compunctorius</i>	Photius, <i>Epistulae et Amphilochia</i> ; Achmet Astrol., <i>Achmetis</i> <i>Oneirocriticon</i> ; Michael Psellus, <i>Epistulae</i> ; Manuel Bryennius Mus / Math / Astron, <i>Harmonica</i> (2x); <i>Astrologica</i> , <i>Zodiologium</i>
-ποιέομαι <i>-poieomai</i> ‘to do’	–	4	4	–
Register (documentary)	n/a	list (2x); petition; taxes	contract (2x); order; protocol	n/a

⁵⁰ Barðdal’s (2008: 24–25) ‘extensibility of a word formation pattern’ refers to the ‘degree, [to which] the word formation patterns of a given language are available when new words come into existence’ and is ‘a function of a construction’s type frequency’. Baayen’s (2009: 902) potential productivity ‘estimates the growth rate of the vocabulary of the morphological category’ based on the hapax-token ratio. Sampson’s (2016: 19) E(nlarging) creativity is ‘creativity that enlarges or expands our system(s)’ by breaking the existing system rules intentionally or unintentionally (see also Bergs 2019).

⁵¹ No relevant hits for AG and CG.

-θετέω -theteō ‘to put’	1	1	–	6
Register (literary)	Antiochus Astrol., Fragmenta (1x).	Vettius Valens, <i>Anthologiarum libri xi</i>	n/a	Constantinus VII Porphyrogenitus (2x); Constantinus Manasses Poeta, <i>Breviarium Chronicum</i> (1x); Michael Syncellus Gramm, <i>Laudatio sancti Mocii</i> (1x); Scholia in Theocritum; Cosmas Vestitor, <i>Vita Joannis Chrysostomi</i> (1x); Scholia in Aratum
-θετέω -theteō ‘to put’	1	–	–	–
Register (documentary)	petition	n/a	n/a	n/a

-ποιέομαι *-poieomai* ‘to do’ formations in the literary data appear primarily in technical writing – medical, astrological, and commentary / lexicon projects – and in the documentary data in technical documents – contracts, protocols, and tax documents. In the literary and documentary sources, -ποιέομαι *-poieomai* ‘to do’ formations appear to be exploited as a creative means only from the Roman period onwards. This aligns with the observation that the leader word had by this point become a word and reanalysis must have happened before. A noticeable example is συνθηκοποιέομαι *sunt^hēkopoieomai* ‘to make an agreement’, all eight instances of which come from lexica and scholia, apparently a formation created for technical writing.

-θετέω *-^heteō* ‘to put’ formations in the literary data appear from the Ptolemaic period onwards, initially primarily in technical writing – astrological and anthological writings. Yet, they do not seem to be exploited for creative purposes before the medieval period. The documentary data is very limited. A noticeable instance is Hesychius’ *Lexicon* (5th / 6th c. AD) (640) νομοθετεῖ : νομοποιεῖ *nomot^hetei : nomopoiei* ‘to legislate’, where the (newer) more transparent formation explains the apparently no longer fully transparent formation. Both are causative.

The above shows, akin to Baayen (2009: 908), that the suffixes in question are most common in technical writing in the sense of a creative exploitation of a theoretically available pattern, and that -ποιέομαι *-poieomai* ‘to do’ formations seem to emerge productively in technical contexts (cf. Van Camp 2005; Squeri forthcoming; Schutzeichel 2014: 136–138). Yet, Greek has extensive derivational morphology to transform verbs into nouns and vice versa (van Emde Boas et al. 2019: 262–269), such that a desire to

integrate nominal technical terms in the predicate slot cannot explain the emergence of a new word-formation pattern.

Rather, neither the bound nor the unbound forms of ποιέομαι *poieomai* ‘to do’ and τίθημι *tithēmi* / -θετέω *-tʰeteō* ‘to put’ are fully grammatical or fully lexical. ποιέομαι *poieomai* ‘to do’ in particular is a hybrid element, in that it converts nouns into verbs but also interferes with the event structure of the resulting verb phrase (in profiling the subject component), and seems specialised for technical writing.⁵² The resulting verb phrase can take direct objects (cf. Fendel 2023a) unlike an antipassive (cf. Marini 2010; Creissels 2016; Asraf 2021), which could be considered a categorial periphrastic (Haspelmath 2000).⁵³

ποιέομαι *poieomai* ‘to do’ seems to exist in a bound and an unbound form from the classical period onwards (after lexical renewal struck down ἔρδω *erdō* ‘to do’) and until lexical renewal strikes it down (cf. modern Greek κάνω *kanō* ‘to do’ (Anastassiadis-Symeonidis, Fotopoulou & Kyriacopoulou 2019)). Possibly due to its shorter lifespan, it does not reach the degree of productivity of Latin *-facio/-fico* ‘to do’ (cf. Section 4). -θετέω *-tʰeteō* ‘to put’ seems to be the older counterpart that saw a brief revival in the early medieval period (cf. Schutzeichel 2014: 136–138 on early specialization).⁵⁴

6 Summary, conclusion, outlook

The support verbs ποιέομαι *poieomai* ‘to do’ and τίθημι *tithēmi* ‘to put’ exist in bound and unbound forms from classical into medieval times, ποιέομαι *poieomai* ‘to do’ as ποιέομαι *poieomai* and -ποιέομαι *-poieomai*, τίθημι *tithēmi* ‘to put’ as τίθημι *tithēmi* and -θετέω *-tʰeteō*. They differ from auxiliaries, in that they are semi-lexical as they contribute to the event structure of the verb phrase. The article used five data samples drawn from the literary corpus of the *Thesaurus Linguae Graecae* and the documentary corpus of the *Duke Database of Documentary Papyri* (cf. Section 2) to answer three research questions: (i) Are support verbs the unbound alternative of bound affixes? (ii) How do semi-lexical support verbs become semi-grammatical affixes? (iii) Why did -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-tʰeteō* ‘to put’ not become productive?

Section 3 found by considering the variability and discontinuity of support-verb constructions with ποιέομαι *poieomai* ‘to do’ and τίθημι *tithēmi* ‘to put’ (Datasets 1 and 4) along with their anaphora patterns that the bound and unbound forms differ in the semantics of the lexical unit and its discursive embedding. When applying Boye’s (2023) criteria for distinguishing between lexical and grammatical items, i.e., the permissibility of being (i) focussed, (ii) addressed in subsequent discourse, (iii) modified, and (iv) of standing alone in an utterance, support verbs appear to be semi-lexical. Section 4

⁵² It seems to index a technical context (cf. Bentein 2019 on indexing in Greek documentary data).

⁵³ Categorial periphrastics have “a sufficiently high degree of grammaticalization to be described as part of the verbal paradigm”, yet they do not equal forms in the paradigm, but are add-ons, such as the French *aller*-future (Haspelmath 2000: 664).

⁵⁴ An anonymous reviewer remarked that “in Modern Greek the verb ποιέω [*poieō*] has some very common bound forms which do not seem to appear in earlier Greek, such as χρησιμοποιώ [*kʰrēsimoipoiō*] ‘to use’”. The remark is interesting because ποιέω *poieō* ‘to do’ has yielded as the main doing verb to κάνω *kanō* ‘to do’ in Modern Greek. If there are indeed bound forms that have no pre-modern ancestor, this would lend support to the hypothesis of a word-formation pattern. However, one should caution that in the example provided, χρήσιμος *kʰrēsimos* ‘useful’ is an adjective. Further investigation of syntactic nominalisations in the predicative-noun slot of the support-verb construction and the slot before the affix in the bound form would be needed to draw further conclusions.

rejected the grammaticalization and cliticization hypotheses for support verbs turned affixes based on their positional freedom and morphological shape (Datasets 1 and 2) and the noun-incorporation hypothesis based on anaphora phenomena. It showed that formations such as λογοποιέομαι *logopoieomai* ‘to remark’ result from univerbation. The co-existence of homonymous support and auxiliary verbs is explained by splitting. Section 5 argued for the emergence of a new word-formation pattern due to reanalysis of leader words (λογοποιέομαι *logopoieomai* ‘to remark’, νουθετέω *nout^heteō* ‘to put in mind’, and νομοθετέω *nomot^heteō* ‘to legislate’). Re-segmentation in the process explains the o-vowel in -ποιέομαι *-poieomai* ‘to do’ and -θετέω *-t^heteō* ‘to put’ formations. The new suffixes are semi-lexical like the unbound support verb, largely limited to prose contexts, and more common in literary than documentary texts. Creative formations, i.e. *hapaces* and idiolectal items, attest to their availability for creative purposes, especially in technical registers, from the Ptolemaic/Roman period onwards, while productivity remains low throughout.

In Greek, ποιέομαι *poieomai* ‘to do’ is an outlier. Diachronically, the support verb (bound and unbound) replaces from the classical period earlier ἔρδω *erdō* ‘to do’ but yields to κάνω *kanō* ‘to do’ by the modern period. Synchronically, it combines with so large a range of nouns that reverse selection due to lexical collocation seems lower than with other support verbs. Perhaps therefore, ποιέομαι *poieomai* ‘to do’ can be replaced by verbs of realization, including πράττω *prattō* ‘to achieve’ and ἐργάζομαι *ergazomai* ‘to work on/at’ (De Pasquale 2023: 263; Baños & Jiménez López forthcoming). ποιέομαι *poieomai* ‘to do’ is the only support verb with form-identical bound and unbound forms. Conversely, ‘to do’ exists as a support verb across typologically unrelated languages, e.g., Persian (Saeedi 2017) and Coptic (Reintges 2001; Grossman 2023), and its bound form constitutes a semi-lexical affix (see also Croft 2022: 397–431).

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Abbreviations

AG	Archaic Greek (pre 5 th c. BC)
AOR	Greek aorist tense
ATT	attributive phrase
CG	Classical Greek (5 th / 4 th c. BC)
CONJ	conjunction
DP	determiner phrase
EGB	Early Byzantine Greek (4 th –7 th c. AD)
H	high register
IMPF	Greek imperfect tense
indO	indirect object
L	low register
Lampe	Lampe, Geoffrey, <i>A Patristic Greek Lexicon</i> 1961 (accessible via http://stephanus.tlg.uci.edu/laj/)
LSJ	Liddell, Henry, and Robert Scott and Henry Jones, <i>Greek-English Lexicon</i> 1996 (accessible via http://stephanus.tlg.uci.edu/laj/)

LVC	light-verb construction (PARSEME)
MG	Medieval Greek (post 8 th c. AD)
MID	middle voice
NV	noun-verb order
PG	Ptolemaic Greek (3 rd –1 st c. BC)
PN	predicative noun
PP	prepositional phrase
PR	present tense
PRN	pronoun
PRT	particle
RG	Roman Greek (1 st –3 rd c. AD)
SV	support verb
SVC	support-verb construction
Trapp	Trapp, Erich, and Wolfram Hörandner, <i>Lexikon zur byzantinischen Gräzität: besonders des 9.–12. Jahrhunderts</i> 2001 (accessible via https://stephanus.tlg.uci.edu/lbg/#context=lsj&eid=17288)
VN	verb-noun order
VP	verb phrase

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Contact information:

Victoria Beatrix Fendel
 University of Oxford
 e-mail: victoria.fendel@classics.ox.ac.uk
 ORCID: <https://orcid.org/0000-0001-6302-3726>