Chapter 19

Two kinds of 'much' in Greek

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The English element *much* has an NPI use (see Bolinger 1972, Israel 1996, Solt 2015). In Greek, the degree modifier *poly-* 'much' displays a polarity-sensitive distribution as well. Unlike its free counterpart *poly* 'a lot/much', the bound morpheme *poly-* 'much' functions as an NPI occurring only in antiveridical environments. The main research question that this study addresses is why the bound morpheme *poly-* 'much', but not its independent form *poly* 'a lot/much', is an NPI. In other words, why does *poly-* appear only in negative sentences, as opposed to *poly*, which appears both in negative and affirmative contexts? In my paper, I present a syntactic analysis for the licensing of the degree modifier *poly-* 'much' as an NPI. Following Giannakidou (1997, 2007) and Zeijlstra (2004, 2008), I argue that its polarity licensing happens syntactically as an Agree relation between its formal uninterpretable [uNeg] feature and the interpretable [Neg] feature of the antiveridical operator. I also posit that the two kinds of 'much' in Greek, i.e., the free *poly* and the bound *poly-*, are generated in different positions in the syntactic structure.

Keywords: negative polarity items, negation, much, nonveridicality, degree modifier, Greek

1 Introduction

Negative polarity items (NPIs) – a term attributed to Baker (1970) – are context-sensitive elements appearing in specific environments, like negation, but are excluded from the affirmative ones. Though Buyssens (1959) first lists items sensitive to negation, the scientific research on NPIs began with the works by Klima (1964), Horn (1972), Fauconnier (1975a,b), and Ladusaw (1979).

The element *much* is one of the classic NPIs in English:

(1) a. Joanne did not read much last night.

  b. * Joanne read much last night.

As the grammaticality of sentence (1a) shows, *much* appears under the scope of negation. However, affirmative environments, i.e., those lacking negation, affect the well-formedness of the sentence in (1b).

   Its Greek counterpart, the free morpheme *poly* 'much/a lot' belongs to the category of adverbs of degree that show no restricted distribution, as seen in (2):

(2) a. I   Ioanna dhen kimithike poly   xthes vradi.
      the Joanne not   slept.3sG much last   night
      'Joanne didn't sleep much last night.'

  b. I   Ioanna kimithike poly xthes vradi.
      the Joanne slept.3sG a.lot last   night
      'Joanne slept a lot last night.'

Regarding the degree of Joanne's sleeping, what the speaker implies by uttering (2a) is that she slept sufficiently, but not a lot, as she did in (2b). In other words, the degree of Joanne's sleeping in (2a) is less than a lot.

   Like the free *poly* 'a lot/much', its bound counterpart, the item *poly-* 'much', is also used as a degree modifier in Greek. However, its distribution is restricted only to negative contexts, as the ungrammaticality of the affirmative sentence in (3b) shows, proving that *poly* is an NPI.

(3) a. I   Ioanna dhen poly-kimithike xthes vradi.
      the Joanne not   much-slept.3sG last   night
      'Joanne didn't sleep much last night.'

  b. *I   Ioanna poly-kimithike xthes vradi.
      the Joanne much-slept.3sG last   night
      Intended: 'Joanne slept a lot last night.'

By uttering (3a), what the speaker conveys is that Joanne slept only a little, contrary to (2a), where in that case Joanne slept sufficiently, but not a lot.

   The fact that the morphologically constructed modification of verbs with the bound element *poly-* is licit only under the scope of negation has drawn some attention in the Greek literature (Delveroudi & Vassilaki 1999, Efthimiou & Gavriilidou 2003, Ralli 2004, Dimela & Melissaropoulou 2009). Focusing on the phonological, semantic and structural properties of the element, it has been pointed

out that this bound element combines only with verbal bases in negative sentences to form compounds. Here, I will go one step further arguing that the bound degree modifier *poly-* 'much' is a strong NPI only being licensed by the antiveridical negation and *without*-clauses, as opposed to its free counterpart *poly* 'a lot/much'.

This study addresses two main research questions: (i) Why is the bound *poly-* 'much', but not its free form *poly* 'a lot/ much', an NPI? In other words, why does *poly-* appear only in negative sentences, as opposed to *poly*, which appears both in negative and affirmative environments? (ii) Why is the meaning of the bound *poly-* different from that of the free *poly*? In other words, why does *poly-* mean 'a little' but not 'sufficiently', as the free morpheme does?

The research is based on the (non)veridicality theory of polarity (Giannakidou 1997, 1998, 2001 et seq.), which accounts for elements exhibiting restrictions on their licensing environments, as the English *anyone* and the Greek *kanénas*, and places no categorial restrictions on the items showing NPI behavior.

The paper is organized as follows. In §2, I discuss briefly the (non)veridicality theory of polarity, the distinction between strong and weak NPIs (§2.1), and show that, based on this theory, the bound degree modifier *poly-* 'much' is a strong NPI (§2.2). In §3, I show that the bound *poly-* is licensed only locally in the domain of sentential negation (super strong licensing) (§3.1), and I claim that its licensing is accomplished syntactically due to the uninterpretable [uNeg] feature of *poly-* (§3.2). In §4, I answer the question how the meaning of *poly-* differs from the meaning of *poly* by giving the semantics of each element. §5 concludes.

2 Nonveridicality, NPIs, and the Greek *poly-*

2.1 The framework

The framework followed in the current research is the (NON)VERIDICALITY THEORY OF POLARITY (Giannakidou 1994, 1997, 2001 et seq.), which captures (i) the environments in which NPIs appear and (ii) the distinction between different kinds of NPIs. For years, it was difficult to identify the properties of NPIs and explain their polarity sensitive behavior. Under the (non)veridicality theory of polarity, which was motivated by the distribution of the NPIs *kanénas* 'anyone, anybody' (non-emphatic)/*KANENAS* 'no one, nobody' (emphatic) in Modern Greek and is supported crosslinguistically, Giannakidou provides a semantic account for the distribution of NPIs, i.e., for all the environments under which the property of (non)veridicality is applied.[1] (NON)VERIDICALITY is a semantic property under

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[1]For a discussion on emphatic/non-emphatic *kanénas*, see Giannakidou (1997, 1998, 2000).

which the truth of a proposition p embedded under an operator F is entailed or presupposed:

(4) *Veridicality and nonveridicality* (Giannakidou 2002: 33)

  a. A propositional operator F is *veridical* iff Fp entails p: $Fp \rightarrow p$; otherwise, F is *nonveridical.*

  b. A nonveridical operator F is *antiveridical* iff Fp entails not p: $Fp \rightarrow \neg p$.

She also defines NPIs as linguistic expressions sensitive to (non)veridicality, that is, being licensed in non-veridical contexts:

(5) *Polarity item* (Giannakidou 2001: 669)
    A linguistic expression α is a polarity item iff:

  a. The distribution of α is limited by sensitivity to some semantic property β of the context of appearance, and

  b. β is non-veridical, or a subproperty thereof: $\beta \in$ {veridicality, nonveridicality, antiveridicality, modality, intensionality, extensionality, episodicity, downward entailingness}.

Under this definition, NPIs are taken to be elements that appear in non-veridical contexts and are excluded from affirmative environments. They can be divided into two classes: strong NPIs and weak NPIs. *Strong* NPIs are elements showing restricted distribution, being licensed only in antiveridical contexts, such as that of negation and *without*-clauses, and are excluded from non-veridical environments:

(6) *Strong NPI*
    An NPI is a strong NPI iff it appears only in antiveridical environments.

On the other hand, *weak* NPIs are elements that occur in non-veridical contexts, namely questions, conditionals, modal verbs, imperatives, generics, habituals, and disjunctions, in addition to antiveridical ones:

(7) *Weak NPI*
    An NPI is a weak NPI iff it can appear in nonveridical environments.

In Greek, the distinction between weak and strong NPIs is captured by non-emphatic NPIs, on the one hand, and emphatic NPIs and minimizers, on the

other (Giannakidou 1997, 1998).[2] Non-emphatic NPIs are the unaccented *n*-words (e.g., *kanenas* 'anyone, anybody'), whereas the emphatic ones are the accented *n*-words (e.g., *KANENAS* 'no one, nobody').[3]

2.2 *Poly-* as a strong NPI

Given that the bound degree modifier *poly-* cannot appear in affirmative contexts, unlike its free counterpart *poly*, a question that arises now is what kind of NPI it is. I argue that, according to the (non)veridicality theory of polarity, *poly-* is a strong NPI exhibiting a restricted distribution: it appears with the antiveridical licensers of negation, *xoris* 'without' and *prin* 'before', but not with non-veridical licensers, namely imperatives, modal verbs, conditionals, questions, generics, habituals, and disjunctions.

2.2.1 Negation

Like all NPIs, *poly-* occurs with sentential negation marked by negative operators, like *dhen*, as in (8a), and is excluded from affirmative contexts, as in (8b) (repeated from 3):

(8)   a.   I   Ioanna dhen poly-kimithike xthes vradi.
           the Joanne not   much-slept.3SG last   night
           'Joanne didn't sleep much last night.'

      b.   *I   Ioanna poly-kimithike xthes vradi.
           the Joanne much-slept.3SG last   night
           Intended: 'Joanne slept a lot last night.'

2.2.2 'Without'-clauses

Poly- also appears in *xoris* 'without'-clauses:

(9)   I   Ioanna egrapse   dhiagonisma xoris   na   poly-diavasi.
      the Joanne wrote.3SG exam   without SBJV much-study.3SG
      'Joanne took an exam without studying much.'

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[2] As Giannakidou (1997, 1998) indicates, Greek minimizers differ from English ones (e.g., *drink a drop, sleep a wink*). Unlike the former, the latter exhibit wider distribution, appearing also in nonveridical contexts, such as questions and conditionals, among others.

[3] Veloudis (1983/1984) is the first one to note the emphatic accent of *n*-words in Greek.

2.2.3 'Before'-clauses

In addition, *poly-* occurs with the antiveridical *prin* 'before':[4]

(10) I   Ioanna kimithike prin   na   poly-diavasi.
      the Joanne slept.3sg before sbjv much-studied.3sg
      'Joanne slept before studying much'

2.2.4 Imperatives

On the contrary, and like many strong NPIs, *poly-* does not appear in imperatives:

(11) * Poly-dhiavase   ghia to   diagonisma!
        much-study.2sg.imp for   the exam
        Intended: 'Study much for the exam!'

2.2.5 Modal verbs

Sentences with *poly-* under the scope of modal verbs are ill-formed:

(12) * I   Ioanna bori na   poly-diavasi.
        the Joanne may sbjv much-study
        Intended: 'Joanne may study much.'

2.2.6 Conditionals

Like other strong NPIs, *poly-* does not allow well-formed sentences when occurring in the antecedent of conditionals:

(13) * An I   Ioanna poly-diavasi,   tha pari A.
        if   the Joanne much-study.3sg will get   A
        Intended: 'If Joanne studies much, she will get an A.'

2.2.7 Questions

In *yes-no* questions, the bound *poly-* does not allow well-formed sentences:

(14) * Poly-dhiavase   i   Ioanna?
        much-studied.3sg the Joanne
        Intended: 'Did Joanne study much?'

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[4]Giannakidou (1997, 1998) argues that *prin* 'before' is context-sensitive and can be analyzed as antiveridical with respect to its second argument (see Giannakidou 1998: 143).

2.2.8 Generics

Sentences with generics, which are about non-referential expressions, such as *kathe fititis* 'every student' in (15), cannot license the occurrence of *poly-*:

(15)   * Kathe fititis   poly-diavazi.
      every student much-study.3sɢ
      Intended: 'Every student studies much.'

2.2.9 Habituals

Habitual sentences with Q-adverbs of varying force (e.g., 'usually', 'often', 'rarely', 'sometimes', 'never') and *poly*-verbs are ill-formed:

(16)   * I   Ioanna sinithos poly-maghirevi.
      the Joanne usually much-cook.3sɢ
      Intended: 'Joanne usually cooks much.'

2.2.10 Disjunctions

The context of disjunctions, mainly in the sense of individual disjuncts taken separately, as in (17), comply with the bound degree modifier *poly-*:

(17)   * I   itan tixheros ke   perase   tin eksetasi i poly-dhiavase.
      either was lucky   and passed.3sɢ the exam   or much-studied.3sɢ
      'Either he was lucky and passed the exam or he studied much.'

Therefore, as its narrow distribution shows, *poly-* clearly belongs to the category of strong NPIs, only occurring under the scope of negation and the antiveridical *xoris* 'without' and *prin* 'before'.

3 The syntax of *poly* and *poly-*

3.1 Super strong licensing

Given that *poly-* 'much' is a strong NPI, a question that arises now, based on its restricted distribution, is whether it is licensed locally by negation (strong licensing) or it permits long-distance dependencies (weak licensing), in other words, whether *poly-* needs to be in a local relation with the negative operators or not. Giannakidou (1995, 1997, 1998) and Giannakidou & Quer (1995, 1997) associate

strong NPIs with strong licensing: they cannot be licensed by the negation of the main clauses when appearing in subjunctive clauses embedded by *oti* 'that' and *pu* 'that', but they allow long-distance licensing when appearing in subjunctive clauses with *na*. Here, I argue that *poly-* is associated with super strong licensing, showing that it can only be licensed locally in the domain of sentential negation.

More specifically, *poly-* can only be licensed locally by the negative operator *dhen* when appearing in indicative embedded clauses with the complementizer *oti*, as (18) shows:

(18) a. Ipa   oti dhen poly-dhiavases   ghia tin eksetasi.
          said.1SG that not   much-studied.2SG for   the exam
          'I said that you didn't study much for the exam.'

      b. * Dhen ipa   oti poly-dhiavases   ghia tin eksetasi.
           not   said.1SG that much-studied.2SG for   the exam
           'I didn't say that you studied much for the exam.'

Embedded clauses with the complementizer *pu* do not allow long-distance dependencies of *poly-* on the negative operator *dhen*:

(19) a. Mu ipe   pu   dhen poly-dhiavazis.
          me told.1SG that not   much-study.2SG
          'He told me that you don't study much.'

      b. * Dhen mu ipe   pu   poly-dhiavazis.
           not   me told.1SG that much-study.2SG
           'He didn't tell me that you study much.'

Regarding subjunctive embedded domains with the complementizer *na*, where the negative operator *min* is used instead of *dhen*, Giannakidou (1997, 1998) shows that emphatics, which are strong NPIs, can be licensed even when the negative operator is in the main clause. However, unlike emphatics, *poly-* does not allow long-distance licensing when occurring in subjunctive clauses with *na*, as the ungrammaticality of (20b) shows:[5]

(20) a. Bori na   min poly-dhiavases   ghia tin eksetasi.
          might SBJV not much-studied.2SG for   the exam
          'It may be the case that you didn't study much for the exam.'

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[5]Giannakidou & Quer (1997) also point out cases of subjunctive embedded domains which are opaque, as in Catalan.

b. * Dhen bori   na   poly-dhiavases   ghia tin eksetasi.
not   might SBJV much-studied.2SG for   the exam
'It can't be the case that you studied much for the exam.'

I conclude here that *poly-* is licensed only locally when occurring in *oti-* and *pu-* indicative and *na*-subjunctive embedded clauses, restricting its distribution to the boundaries of mono-clausal structures. On the other hand, given that its free counterpart, the degree modifier *poly* 'a lot/much', is not an NPI, it appears in *oti-* and *pu-* indicative and *na*-subjuctive embedded clauses, whether the negative operators *dhen* and *min* are in the main or embedded clause:

(21)   a. Ipa   oti dhen dhiavases   poly ghia tin eksetasi.
said.1SG that not   studied.2SG much for   the exam.
'I said that you didn't study much for the exam.'

b. Dhen ipa   oti dhiavases   poly ghia tin eksetasi.
not   said.1SG that studied.2SG much for   the exam
'I didn't say that you studied much for the exam.'

(22)   a. Mu ipe   pu   dhen dhiavazis poly.
me told.2SG that not   study.2SG much
'He told me that you don't study much.'

b. Dhen mu ipe   pu   dhiavazis poly.
not   me told.1SG that study.2SG much
'He didn't tell me that you study much.'

(23)   a. Bori na   min dhiavases   poly ghia tin eksetasi.
might SBJV not studied.2SG much for   the exam
'It can be the case that you didn't study much for the exam.'

b. Dhen bori   na   dhiavases   poly ghia tin   eksetasi.
not   might SBJV much-studied.2SG for   the   exam
'It can't be the case that you studied much for the exam.'

3.2 *Poly* and *poly-* in structure

So far, I have shown that *poly-* 'much' is a strong NPI, being grammatical in a sentence where it is licensed by antiveridical operators, like negation and *without*-clauses. Moreover, its licensing by negative operators can only happen locally (super strong licensing). Here, I propose an analysis for its licensing which answers the first question set out above: although *poly-*, like all NPIs, is sensitive to its semantic environment, I argue that its licensing is accomplished syntactically.

Before I give the syntax of the bound *poly-* 'much', it is instructive to see the lexical features and the position of the free *poly* 'a lot/much' in syntactic structure, which is of the category of adverbs, as its lexical entry in (24) shows:

$$(24) \quad poly \begin{bmatrix} \text{CAT} & : & [\text{Adv}] \\ \text{INFL} & : & [-] \\ \text{SEL} & : & [\langle - \rangle] \end{bmatrix}$$

For a sentence with the free degree modifier *poly*, as in (25), I assume the syntactic derivation in Figure 1.

(25) O   Petros dhen dhiavase   poly.
      the Peter   not   studied.3sɢ much
      'Peter didn't study much.'
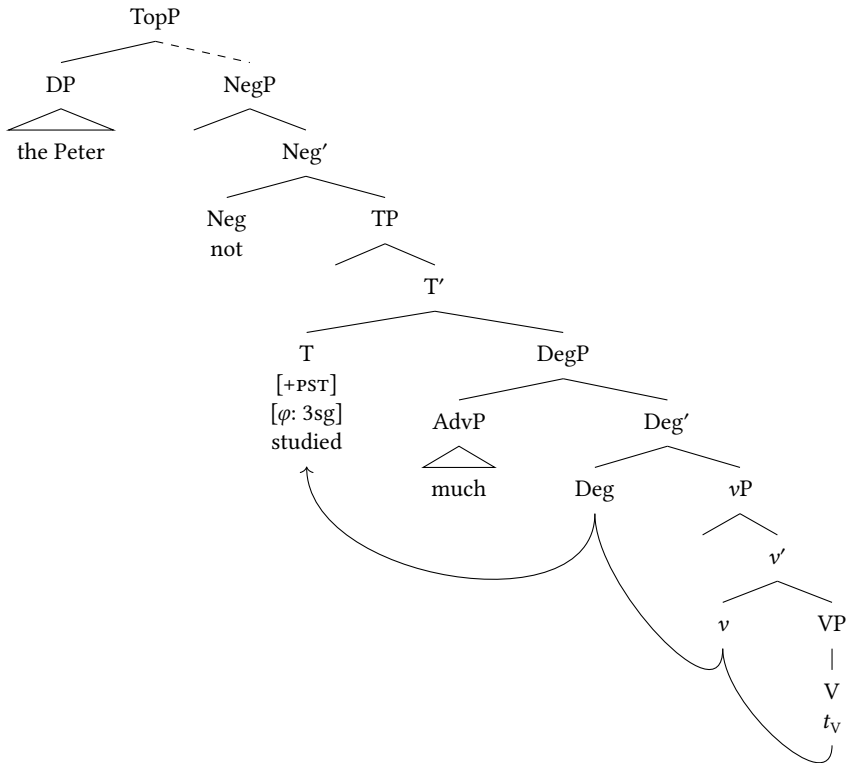
Figure 1: Syntactic representation of (25)

Following Cinque (1999), I argue that the free *poly* is generated in the specifier of the functional phrase Deg[ree]P, i.e., AdvP.[6] The negative operator *dhen* occupies the head of Neg[ation]P[7]. The verb moves, via Head Movement (Travis 1984), to *v* and then T to get subject-agreement and tense.[8] That *poly* sits in the specifier position of DegP comes from the fact that it is not incorporated with the verb, allowing the latter to move to T. Moreover, *poly* together with other elements, such as *para* 'very' in (26), form a complex head:

(26) O Petros dhen dhiavase   para poly.
      the Peter not studied.3sɢ very much
      'Peter didn't study very much.'

On the other hand, as seen in §3.1, the bound degree modifier *poly-* 'much' needs to be licensed locally by antiveridical operators, such as negation. The licensing of *poly-*, like other Greek NPIs, is similar to the case of ɴᴇɢᴀᴛɪᴠᴇ ᴄᴏɴᴄᴏʀᴅ (NC). In NC languages, negation is expressed with more than one negative element in a clause (mainly, a negative marker and an *n*-word), although it is interpreted only once (Giannakidou 1997, 1998, 2002, Zeijlstra 2004, Giannakidou & Zeijlstra 2017). Working on the Greek NPI *oute* 'even', Giannakidou (2007) proposes that its licensing is related to the local relation it has with negation and the uninterpretable negative feature [uNeg] *oute* hosts. This feature, a characteristic it shares with other strong NPIs, needs to be checked by the interpretable [Neg] feature of sentential negation (Giannakidou 1997, 2007, Zeijlstra 2004). Following this account, I assume that *poly-* contains a formal uninterpretable feature [uNeg] that requires the presence of a matching categorial interpretable feature [Neg] in order for the sentence to be grammatical. This interpretable [Neg] feature is found in the negative operator *dhen* 'not', as the lexical entries of the elements show:

(27) *dhen* $\begin{bmatrix} \text{CAT} & : & [\text{Neg [Neg]}] \\ \text{INFL} & : & [-] \\ \text{SEL} & : & [\langle \text{TP} \rangle] \end{bmatrix}$

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[6]The obligatory or optional presence of DegP in the clausal structure does not seem to have immediate consequences for the proposed analysis.

[7]In Greek, NegP is situated above TP (Agouraki 1991, Tsoulas 1993, Rivero 1994, Philippaki-Warburton 1994 among others).

[8]Following Spyropoulos & Revithiadou (2009), I assume that T is subject to fusion between T and Agr. I omit discussing other functional categories in the verbal projection, such as Voice and Aspect (see Merchant 2015 for relevant discussion). Moreover, the subject is in its surface position, i.e., in the specifier of Topic Phrase (TopP).

(28) *poly-* $\begin{bmatrix} \text{CAT} & : & [\text{Deg}] \\ \text{INFL} & : & [\text{uNeg}] \\ \text{SEL} & : & [\langle v\text{P}\rangle] \end{bmatrix}$

Unlike its free counterpart, the bound *poly-* belongs to the category of Deg. I argue that its licensing is accomplished syntactically via the operation of Agree (Chomsky 2000, 2001). The negative operator *dhen* 'not' with the interpretable [Neg] feature c-commands *poly-* with the uninterpretable [uNeg] feature. Given that, the [uNeg] feature is checked and eliminated by the [Neg] feature of *dhen*. Therefore, the agreement happens via c-command, as schematically illustrated in Figure 2.
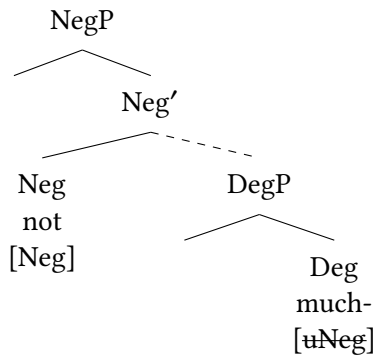
Figure 2: Licensing of *poly-*

As Figure 2 shows, *poly-* remains under the scope of negation. Its licensing happens in situ, thus no movement for checking is needed. Moreover, the fact that *poly-* with the uninterpretable [uNeg] feature is licensed by the interpretable [Neg] feature of negation can also explain the impossibility of *poly-* being licensed by non-veridical operators, such as questions and imperatives. Since non-veridical operators lack the [Neg] feature, the [uNeg] feature of *poly-* cannot be checked.[9]

Since *poly-* is also licensed by the antiveridical *xoris* 'without', I argue that the latter also has the interpretable [Neg] feature. However, the co-occurrence of the negative operator *dhen* and *xoris* 'without' in a sentence is impossible, showing

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[9]The direction of probing in the assumed Agree operation is different from the one standardly assumed (cf. Chomsky 2000 et seq.): the element with the uninterpretable feature (probe), here *poly-*, is c-commanded by the element with the interpretable feature (goal), here *dhen* (see Zeijlstra 2004 et seq.).

that *poly-* with the uninterpretable [uNeg] feature needs the presence of only one element with an interpretable [Neg] feature in a sentence to be licensed:

(29) * I   Ioanna dhen kimithike xoris   na   poly-fai.
       the Joanne not   slept.3SG   without SBJV much-ate.3SG
       Intended: 'Joanne didn't sleep without eating much.'

For a sentence with the bound *poly-*, as in (30), I propose the syntactic derivation in Figure 3.

(30) O   Petros dhen poly-dhiavase.
       the Peter   not   much-studied.3SG
       'Peter didn't study much.'
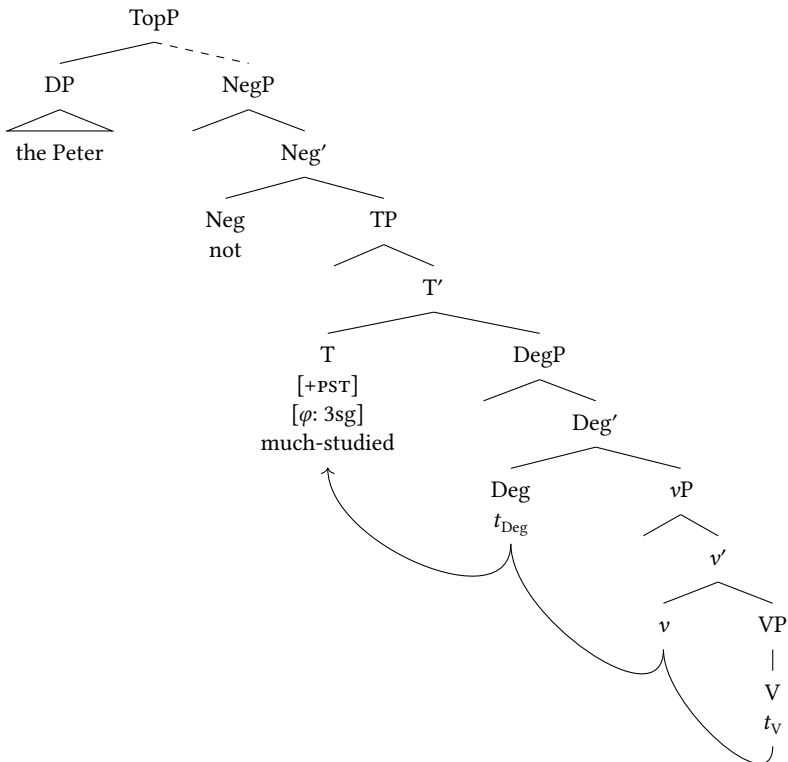
Figure 3: Syntactic representation of (30)

I argue that *poly-* is obligatorily generated in the head of the functional phrase DegP, unlike the free *poly*, which is generated in SpecDegP. Sitting in that position, *poly-* triggers the Head Movement of the verb to form a complex unit with it. I assume that the formation of the verbal complex happens as a subject of Head Movement (Travis 1984): the verb moves to the Deg-head, where the bound morpheme is generated, creating a complex unit. Later on, the complex head moves even higher, to T.[10]

So, how are *poly*-verbs formed? Rivero (1992) discusses this phenomenon of adverb-verb word formation in Modern Greek as a subject to Incorporation providing a syntactic account.[11] She proposes that adverbs functioning as complements, i.e., being internal to VP, can incorporate into the governing V-head considering this syntactic process an instance of Adverb Incorporation. However, treating adverbs that can be incorporated as VP-complements requires them to be obligatorily selected by the verb, which is not the case. If it was true that a verb subcategorizes for the adverb *poly-* as its complement, then we would expect *poly*-verbs not to take direct objects or sentences without the degree modifier *poly* to be ungrammatical. As seen in (31a), a verb like *thelo* 'want' also takes the DP *ti Maria* 'Mary' as its complement, whereas the absence of *poly* does not render the sentence in (31b) ungrammatical.

(31) a. O Yanis dhen theli poly ti Maria.
the John not wants much the Mary
'John doesn't really want Mary.'

 b. O Yanis dhen theli ti Maria.
the John not wants the Mary
'John doesn't want Mary.'

Moreover, evidence that *poly*-verb formation does not derive from the unincorporated *poly* functioning as a complement to the verb comes from the fact that the formation of a *poly*-verb is ungrammatical in affirmative environments. more specifically, if we follow Rivero's account that the degree modifier *poly* 'much' incorporates into the verb *theli* 'wants' to form the complex unit *poly-theli*, then we expect to get the same results in positive sentences. However, this is not possible, as the ungrammaticality of (32b) shows:

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[10]See Alexiadou & Anagnostopoulou (1998) and Merchant (2015) for V-to-T movement in Greek.
[11]A morphological analysis of the phenomenon of Incorporation in Modern Greek is proposed by Smirniotopoulos & Joseph (1998). See also Kakouriotis et al. (1997).

(32) a. O Yanis theli poly ti Maria.
          the John wants much the Mary
          'John really wants Mary.'

      b. * O Yanis poly-theli ti Maria.
          the John much-wants the Mary
          Intended: 'John really wants Mary.'

Thus, this is evidence that the formation of *poly*-verbs is not a subject to Adverb Incorporation. In addition, this proves that the free degree modifier *poly* and the bound degree modifier *poly-* generate in different positions in the syntactic derivation and have different lexical entries, as discussed above, with the latter, but not the former, owning an inflectional uninterpretable [uNeg] feature.

4 The meaning of *poly* and *poly-*

In this section, I answer the second question my study addresses, i.e., why the meaning of the bound degree modifier *poly-* differs from that of the free degree modifier *poly*, arguing that this difference can be explained by the semantics of the morphemes themselves. In other words, since both kinds of 'much' in Greek are elements of category Deg but one of them projects fully to a DegP, whereas in the case of the other the projection stops at some lower level, this is related to the different meanings (values) such forms can be mapped to on a degree scale.

As I have already presented from the very beginning of this study, both Greek degree modifiers, the free *poly* and the bound *poly-*, occur under the scope of negation:

(33) a. O fititis dhen dhiavase poly.
          the student not studied.3sɢ a.lot
          'The student didn't study a lot.'

      b. O fititis dhen poly-dhiavase.
          the student not much-studied.3sɢ
          'John doesn't really want Mary.'

However, its polarity-sensitive behavior identifies *poly-* as an NPI, something that also affects its meaning. To capture the difference, I assume the scale of degree for gradable predicates in (34):

(34) *Scale of degree*
      ⟨excessively, a lot, sufficiently, little, very little⟩

In the scale in question, the value SUFFICIENTLY is the threshold representing the value close to the norm. The scale of degree itself is sensitive to contextual factors, and the threshold SUFFICIENTLY, like all scalar predicates, does not have a fixed value, but rather it is context-sensitive (Kennedy 2007). By uttering (33a) with the free *poly* under the scope of negation, what the speaker means is that the student did not study a lot. Therefore, the degree of the student's studying is below the degree A LOT, close to the value SUFFICIENTLY. This means that the student studied sufficiently, but not a lot. On the other hand, by uttering the negative sentence in (33b) with the bound *poly-*, what the speaker actually means is that the student studied little or even less than little. Here it is not the case that the student studied much or sufficiently. Instead, the degree of the student's studying moves below the contextually dependent threshold, at the degree LITTLE, or even close to the lowest values on the scale.

In order to capture the difference in the meaning of the free *poly* and the bound *poly-*, I propose a semantic analysis under which there is a different denotation for each degree modifier. Starting with the free *poly* 'a lot/much', I provide the structure in Figure 4 as a simplified version of the sentence in (33a), where the subject is reconstructed to a lower position, i.e., below negation.
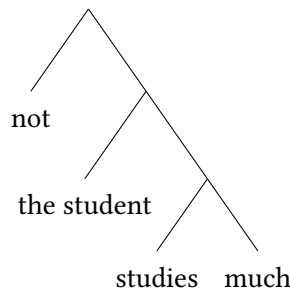
not

the student

studies   much

Figure 4: Simplified structure of sentence (33a)

I argue that the negative sentence in (33a) is true if and only if the degree of the student's studying is below the quantity of A LOT. Formally, the denotation for the free degree modifier *poly* is given in (35). The semantics is a construction that involves a degree. It corresponds to the well-known generalized quantifier-style denotation that can also capture the presence of individuals. The free *poly* is a relation that takes a scalar predicate P and an individual argument x and returns True if and only if there exists a degree d such that x P above the degree SUFFICIENTLY:

(35) $[\![\text{poly}]\!] = \lambda P \lambda x. \exists d [P(x)(d) \wedge (d > \text{SUFFICIENTLY})]$

The analysis is built on the following denotations. In particular, the DP *o fititis* 'the student' denotes a unique student:[12]

(36) $[\![\text{o fititis}]\!] = \iota x[\text{STUDENT}(x)]$

The denotation I propose for intransitive verbs like *dhiavazo* 'study' is not the standard one. Here, intransitive verbs denote a function that takes an individual *x* and a degree *d*, which is assigned to the denotation of the free *poly*:

(37) $[\![\text{dhiavazi}]\!] = \lambda d \lambda x[\text{STUDY}(x)(d)]$

(38) $[\![\text{dhiavazi poly}]\!] = \lambda x. \exists d[\text{STUDY}(d)(x) \wedge (d > \text{SUFFICIENTLY})]$

Finally, the standard denotation of the negative marker *dhen* 'not' is given in (39), where negation is a function that returns the opposite of the truth value of the proposition:

(39) $[\![\text{dhen}]\!] = \lambda p[\neg p]$

Given the denotations above, the compositional semantics of the sentence in (33a) with the free degree modifier *poly* is unremarkable and proceeds by function application and β-reduction as follows:

(40) $[\![S]\!] = \neg \exists d[\text{STUDY}(\iota x[\text{STUDENT}(x)])(d) \wedge (d > \text{SUFFICIENTLY})]$

The meaning of the negated sentence shows that the degree of the student's studying is not above the degree SUFFICIENTLY. Instead, it is equal to the degree SUFFICIENTLY or even below.

Moving to the bound *poly-*, I present in Figure 5 a simplified structure of the sentence in (33b), where the subject is reconstructed to a lower position, i.e., below the negative operator *dhen* 'not'.

The denotation I propose for the bound degree modifier *poly-* is given in (41). It is similar to that of the independent form, though the degree maps to a different part on the scale. In particular, *poly-* is a function that takes a scalar predicate *P* and an individual argument *x* and returns True iff there exists a degree *d* such that *x P* above the degree LITTLE.

(41) $[\![\text{poly-}]\!] = \lambda P \lambda x. \exists d[P(x)(d) \wedge (d > \text{LITTLE})]$

---

[12]The denotation for the DP *o fititis* is derived by the denotations of the definite determiner *o* and the noun *fititis* by function application and *β*-reduction:

(iii) $[\![\text{fititis}]\!] = \lambda x[\text{STUDENT}(x)]$

(iv) $[\![o]\!] = \lambda Q[\iota x[Q(x)]]$
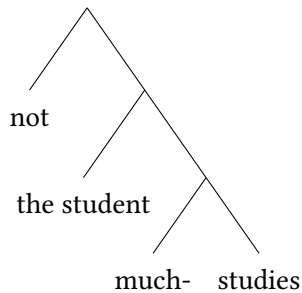
Figure 5: Simplified structure of sentence (33b)

The verbal complex *polydhiavazi* 'much-studied' has the following denotation:

(42) $[\![\text{polydhiavazi}]\!] = \lambda x.\exists d[\text{STUDY}(d)(x) \wedge (d > \text{LITTLE})]$

Finally, given the denotation in (42), and assuming the same denotations for definite nouns in (36) and negation in (39), the compositional semantics of the sentence in (33b) proceeds by function application and *β*-reduction as follows:

(43) $[\![\text{S}]\!] = \neg\exists d[\text{STUDY}(\iota x[\text{STUDENT}(x)])(d) \wedge (d > \text{LITTLE})]$

Given that the sentence combines with the negative operator, the direction of the degree of the bound modifier *poly-* changes and the degree maps to a value equal to A LITTLE on a scale like the one I provided in (34).

   Therefore, my analysis derives the correct meaning for the Greek degree modifiers *poly* and *poly-*. The boundedness of the latter is captured not only syntactically, as seen in §3.2, but also semantically with the denotations I proposed.

5 Conclusion

In this paper I presented a syntactic analysis for the licensing of the Greek NPI *poly-* 'much', whereas the difference in meaning between the free degree modifier *poly* and the bound degree modifier *poly-* is captured semantically. My analysis made use of the (non)veridicality theory of polarity (Giannakidou 1994, 1997, 1998 et seq.). Based on that, I have shown that, while its free counterpart, the degree modifier *poly* 'much/ a lot', exhibits no restricted distribution, the bound element *poly-* 'much' shows polarity behavior belonging to the category of strong NPIs only being licensed by antiveridical operators.

   To answer the question of its polarity-sensitive behavior, I argued that the bound *poly-* is associated with super strong licensing, i.e., it is licensed locally by

an antiveridical operator. I claimed that its licensing is an Agree relation between its formal uninterpretable [uNeg] feature and the interpretable [Neg] feature of the antiveridical operator. In contrast, given that the free *poly* does not have a [uNeg] feature, it does not need to be licensed by negation, and thus, can appear in both negative and affirmative environments. Moreover, the syntactic analysis I proposed illustrates the operation of Head Movement that *poly-* needs to be attached to the verb stem. With respect to the second research question of this paper, i.e., the difference in meaning between *poly* and *poly-*, I provided distinct semantic denotations for each element indicating that the value of the NPI *poly-* is mapped to the lowest values on a degree scale.

Abbreviations

1/2/3	1st/2nd/3rd person		PST	past tense
CAT	category		SBJV	subjunctive
IMP	imperative		SEL	selection
INFL	inflection		SG	singular

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