Abstract

In this paper, I consider the lexical parameters determining the choice of subjunctive in Greek. I first show that in Greek the subjunctive concerns two syntactic positions: one is the verb form, where a perfective non-past (PNP) appears; the other is a higher particle *na* which is generated as a mood head. We examine the distribution of *na*+PNP in complement clauses, adjunct clauses, and uses of it under negation and in relative clauses (known as “polarity” subjunctives). We also show a vast correlation between polarity item licensing and subjunctive clauses in Greek, suggesting that the same property is regulating both the subjunctive and polarity items. I propose, building on my earlier works, that this property is nonveridicality: verbs selecting the indicative are veridical, and those selecting the subjunctive are nonveridical; the subjunctive will be selected also by nonveridical adjuncts, and can triggered by antiveridal negation. After we establish sensitivity to nonveridicality, we address the question: what is the relation between the particle and verbal dependent? Why does the latter need the former? I argue that we can explain the dependency of *na*+PNP if we assume that the tense of PNP is a *non-deictic* (Giannakidou 2009, in press) variable, i.e. it cannot make reference to a contextually specified time. It is the presence of this variable that renders PNP unusable in veridical contexts.

1 The formal marking of grammatical mood: two main patterns

The study of grammatical mood has a venerable tradition that I will not be able to do justice to in the present paper. In the study of classical languages, i.e. Ancient Greek and Latin, we talk about a number of moods: indicative, subjunctive, optative, imperative, at least—and these appear in main as well as embedded clauses. The indicative is typically the mood of unembedded assertions, and subjunctives can appear in main as well as embedded clauses (but the optative
and the imperative resist embedding.¹ In Modern Indo-European languages, the central mood opposition when it comes to main and embedded clauses is the one between indicative and subjunctive, and this will be the main focus of the paper.²

The formal marking of mood can be a little piece of morphology on the verb, as illustrated below with French, and Greek examples:

(1) a  Marc croit que le printemps est/*soit arrive. (French)
    ‘Marc believes that spring has-IND arrived.’

b. Marc veut que le printemps soit/*est long.
    ‘Marc wants that the spring be-SUB long.’

(2) Pes say.IMP.2sg it (Imperative: Greek)
    ‘Say it.’

A designated mood form is used in French and Greek to formally mark the verb as indicative or subjunctive (French), or imperative (Greek). So it is said that the verb croire ‘believe’ selects the indicative, but the volitional verb vouloir ‘want’ selects the subjunctive. English too has a verb form ‘subjunctive’ following a verb like require:

(3) a  The Dean believes that we were/*be on time.

b  The Dean requires that we be/are on time.

The subjunctive is optional in English with directive verbs like require, which can also appear in the indicative. So, there is no real selection in English (or, it is very limited), the subjunctive is triggered like a polarity item. We will talk more about the polarity subjunctives later.

¹ But see Bostjan Dvorák, Ilse Zimmermann 2007 for embedded imperatives in Slovenian, and Potner 2006 for some facts about Korean. I will not discuss the imperative in this paper.

² It is important to emphasize here that in my view, what traditional grammars call “subjunctive” is a landscape, i.e. a family of dependencies, not all necessarily identical to one another. What I will argue for in the paper is that nonveridicality is a notion necessary for explaining a big part of those dependencies. The “subjunctive”, however, is used as a label for uses that do not follow from non-veridicality (at least not without adjustments); e.g., the Latin and German paradigm of “subjunctive” of indirect speech (Konjunktiv I) after verbs of saying. The languages discussed in the text (modern Romance languages and Greek) do not exhibit this use, and verbs of saying typically select the indicative. There is also the paradigm known as Konjunktiv II, which I think is closer to the conditional mood.
In Greek, only the imperative is designated by verbal morphology. The subjunctive and indicative, and here is the second pattern, are signaled by subordinating particles. This pattern is common in Greek (and other Balkan languages), as well as Romanian (Farkas 1985, Rivero, 1994, Terzi, 1992, Giannakidou 1998, Roussou, 2000, Bulatovic 2008). I illustrate here the Greek indicative particles:

(4) O Pavlos ipe **oti** efi je i Roxani.
    the Paul said.3sg that left.3sg the Roxani
    ‘Paul said that Roxanne left.’

(5) O Pavlos lipate {**pu**/*oti} efi je i Roxani.
    the Paul is-sad.3sg that left.3sg the Roxani
    ‘Paul regrets that Roxanne left.’

A complement introduced with **oti** is traditionally described as being in the indicative mood (Holton et al. 1997, Philippaki-Warburton 1994 and later works). **Oti** is a complementizer, and the indicative mood has no overt exponent on the verb, as we see, where the verb is in the simple past tense. (The verbal mood paradigms of Ancient Greek do not survive in the modern language.). **Pu** is the ‘presuppositional’ complementizer used for complements of emotive factive verbs like *lipame, metaniono* ‘regret’, *xerome* ‘be-glad’ (cf. Christidis, 1981; Varlokosta, 1994; Roussou, 1994, 2000), as well as some epistemic factives such as *thimame* ‘remember’, *paraponieme* ‘complain’, which can alternate between the **oti** and **pu**:

(6) a O Janis paraponethike **oti** ton ksexasa.
    The John complained.3sg that him forgot.1sg
    ‘John complained that I forgot him.’

b O Janis paraponethike **pu** ton ksexasa.
    The John complained.3sg that him forgot.1sg
    ‘John complained that I forgot him.’

The **pu** clause is a ‘real’ factive, presuppositional complement: the propositional content *p* survives under negation, which is not the case for the **oti** complement:
(7)  a  O Janis dhen paraponethike  **pu**  ton ksexasa.  → I forgot John
    The John not complained.3sg that him forgot.1sg
    ‘John did not complain that I forgot him.’

    b  O Janis dhen paraponethike  **oti**  ton ksexasa.  -/→ I forgot John

Hence the truth of the complement is an entailment with **oti** but a presupposition with **pu**. Both complements, though, express truth commitment, and this will be the basis for characterizing them as indicative and veridical (in section 4). We will revisit this pattern later in more detail.

  So, the indicative is a simple tense in Greek (past, as in the examples above, or future with “tha”; Giannakidou 1998, Tsangalidis 1998; Philippaki 1993); and becomes visible with a designated particle in C (which I will be glossing from now on as **that.IND**). With subjunctive complements, the subordinator appears to be **na**:

(8)  Thelo  na  kerdisi  o Janis.
    want.INP.1sg  SUBJ  win.PNP.3sg the John
    ‘I want John to win.’

Greek **na**-clauses come after verbs of volition, directives, and modals, and correspond to English infinitives, hence the contrast **oti/pu** (indicative) versus **na** (subjunctive) maps, at least superficially, to a difference between **that** and **to**. Just like infinitivals, **na** complements can be dependent temporally on the tense of the higher verb (for more discussion, Giannakidou 2009). I will not gloss **na** as **that.SUBJ** because **na** is not a complementizer (see section 2).

  Crucially, as I mentioned earlier, the verb in both **oti/pu** and **na** complements does not contain specified mood morphology; but with **na** the perfective non-past (PNP) is used—designated as PNP in the gloss. This is a dependent form itself:

(9)  * To pis. ‘it say.PNP.2sg’  
     (PNP: * on its own)
The PNP does not occur alone; it must always be embedded, and is therefore characterized as a dependent form. Besides *na*, the PNP appears also after *tha* (future particle), conditional *an*, and nonveridical connectives as we see later.

(10)  

a  Tha to pis.  
FUT  it say.PNP.2sg  
‘You will say it.’  

b  An to pis,….  
if  it say.PNP.2sg  
‘If you say it,…’  

c  Na to pis.  
if  it say.PNP.2sg  
‘You may say it.’  

The *na* version, which is the subjunctive, occurs in main clauses too, as we see, in which case it tends to be interpreted as a “mild” imperative— a permission, or a polite request, indicated above by using “may” in English. The subjunctive in main clauses contains further embedding, then, with a force operator or a covert deontic modal in C (I will not consider this theoretical choice in this paper; see Schwager 2007 for a unifying analysis of imperatives and modals, and Portner 2006 for a more skeptical view). It is important to know, however, that in main clause the *na*+PNP can embed under epistemic modal particles as *perhaps* (Giannakidou 2009):

(11)  

Isos na erthi o Janis.  
Perhaps SUBJ come.PNP.3sg the John  

‘Maybe John will come’.

This is not request, but a sentence with epistemic modality (Giannakidou 2009). So, *na*+PNP can be overtly embedded in main clauses, and indeed not always associated with deontic force.

The forms *tha* PNP and *an* ‘if’ PNP are not thought of as subjunctives in Modern Greek because they do not contain *na*, which is the formal marker of the subjunctive. Instead, they express the future, and *an* is the conditional subordinator. So, in Greek, the subjunctive is
marked both by means of *na* and the dependent verbal form PNP, and it is important to understand the relation between the two, a task that I undertake in section 5.

2 The syntactic status of *na* and the Greek clause

In this section, I will present the basic clause structure of Greek that I will be assuming (argued for in Giannakidou 2009), and within which we will understand the place and role of the subjunctive. In the long history of the syntactic characterization of the particle *na*, the main question has been: is *na* a Mood element or a complementizer? In one approach, *na* is the head of the inflectional category Mood (MoodP; Philippaki-Warburton 1993, 1998, Philippaki-Warburton and Veloudis 1984, Tsimpli 1990, Giannakidou 1998, 2009). The second approach claims that *na* is a complementizer (Agouraki 1991, Tsoulas 1993, and Roussou 2000, who uses an extended C-domain in the spirit of Rizzi 1997). *Na* as a C captures the fact that *na* appears as a subordinator in embedded clauses. The pure C-analysis of *na*, however, has to meet a number of challenges which have been pointed out in the abovementioned analyses of *na* as mood.

In Giannakidou 2009, I suggest that *na* is a Mood head linked to a complementizer C with the illocutionary force of the imperative. Here I will assume that analysis, but relax the condition that the force is C is imperative, since *na* is also compatible with epistemic force (*perhaps*, that I just mentioned) and interrogative force, as we see below:

(12) Pjos na kerdise (araje)?
who subj win.PP.3sg question particle
‘Who (do you think) won?’

Here we have a question, and C hosts the function turning a proposition into a question. *Na* questions are described as dubitative (Rouchota 1994), a flavor due to the particle *araje* (used only in questions), and captured in the translation here by using an epistemic word. It is clear then that *na* does not have force of its own but depends on the force that C provides.

That there is a higher C position above *na* is also evidenced by the fact that higher, complementizer elements may preceed *na*: ja ‘for’ in *ja na* for purpose clauses, *xorís na* ‘without’, *prin na* ‘before’, *oste* na ‘with the result that’ (for some more details see Giannakidou
2009, and again later in section 3). It thus makes sense to understand na being itself subordinated syntactically to the higher C position. The resulting structure will be the following:

(13) \[
\text{CP}
\]

\[\text{C: } \{\text{oti}/\emptyset\}\]

\[\text{MoodP}\]

\[\text{Mood'}\]

\[\text{NegP}\]

\[\{\text{na}/\emptyset/\text{imperative}\}\]

\[\text{Neg'}\]

\[\text{Neg}^0\]

\[\text{Now-TP}\]

\[\text{Now-T'}\]

\[\{\text{min/dhen}\}\]

\[\text{Now-T}^0: \text{tha}\]

\[\text{T/ArgP}\]

\[\text{DP}\]

\[\text{T/ArgP}\]

\[\text{T/ArgP'}\]

\[\text{DP}\]

\[\text{to}_1\]

\[\text{T/Arg}\]

\[\text{ixes 'have.2sg'}\]

\[\text{VP}\]

\[\text{pro } t_1, t_1 \text{ pi 'said'}\]

In C, we see the subordinators oti, pu, plus the other subordinating elements I just mentioned. The C position may also host the covert deontic force operator of the na clause (and operators with other forces too, naturally). The imperative moves to the C position (Rivero and Terzi 1994, Giannakidou 1998) to acquire its deontic force. Na is in Mood, followed by negation (na min, but not *min na). Now-T is the projection of PRES, i.e. where the now is introduced (Giannakidou 2009), and hosts the so-called future particle tha, which turns out to be just a present marker in this analysis. The indicative is a zero morpheme (Philippaki-Warburton 1993) in Mood. This tree poses an interesting relation between C and Mood, with indicative being overtly realized in C (oti, pu), and the subjunctive in Mood.

With this background—to which we return in section 5—I will now proceed to examine in more detail the empirical patterns of mood choice in embedded clauses in Greek. The discussion continues as follows. In section 3, we review the core empirical patterns of mood choice in Greek, as well as the correlation with polarity items licensing. In section 4, I outline
the nonveridicality theory. In section 5 we discuss the temporal properties of the subjunctive and use them to explain the limitation of the subjunctive to nonveridical contexts.

3 Empirical patterns mood choice in Greek: selection, polarity subjunctive, and NPIs

Most accounts of mood in various theoretical and descriptive frameworks agree that mood phenomena must best be thought of as a dependency between a property of the higher verb (or element, in the case of polarity subjunctive), and the mood in the lower clause. What is this property? Philosophical treatments of mood originate in the discussion of conditionals in possible world semantics (Anderson 1951, Stalnaker 1968, 1979), and in speech act and illocutionary force discussions (Searle 1969, Searle and Vanderveken 1985, among others); but the traditional grammarian's view of the division corresponds to the realis (indicative) and irrealis (subjunctive) distinction.

Empirical problems with the traditional realis/irrealis division prompted refinements based on nonveridicality (Giannakidou 1994, 1997, 1998, 1999), model shift (Quer 1998, 2001), and non-propositional semantics for subjunctive clauses (Portner 1997; also Laca 2010 for volitionals in particular). Sometimes also the concept of notional mood is used (attributed to Jespersen initially; Portner 1997, 1998; Giorgi and Pianesi 1997; Yoon 2010). Notional mood classifies clauses by a semantic principle concerning the speaker's, or some individual's commitment about the truth of the sentence; Giorgi and Pianesi (1997) define notional mood as the complex of semantic factors concerning the classification of the contexts in which the truth conditions of clauses are assessed. So it is generally recognized that truth assessment is necessary for understanding mood choice. My notion of nonveridicality targets precisely this observation.

My goal in sections 3 and 4 is to show that, if we assume that nonveridicality is the property that determines lexical selection of mood in embedded clauses and with adjuncts in Greek, we can also explain the subjunctive in non-selection patterns, thus enabling a unifying analysis. Nonveridicality also will be crucial for the correlation between the subjunctive and NPI-licensing (Giannakidou 1998, 1999), which I will briefly discuss here in section 3.3. There is also a correlation between the subjunctive, expletive negation, and nonveridicality (observed initially in Espinal 2000, and more recently exploited in Korean and Japanese (Yoon 2010), a topic that unfortunately I cannot expand on here. These correlations present empirical and analytical advantages that other theories will have to match when compared to the nonveridicality approach.
In this section we review first (3.1) the basic selection patterns in embedded clauses in Greek. These facts are well known (Giannakidou 1994, 1995, 1997, 1998, 1999, 2009), so I will only summarize them here, presenting briefly also some new facts on mood alternation, and mood selection in adjunct clauses. Next, I present in 3.2. the correlation between mood and polarity item licensing: NPIs are licensed in subjunctive clauses but not in indicative ones. In section 3.3. we discuss the so-called polarity subjunctive triggered mainly by negation and in relative clauses in Greek. The broad set of facts presented here will be shown to follow in section 4 if we assume that mood choice and NPI licensing in Greek are regulated by (non)veridicality. Borschev et al. 2007, based on a similar set of facts, propose that (non)veridicality is the relevant notion for mood selection also in Russian.

3.1 Basic selection patterns in Greek in complement and adjunct clauses

In my earlier work, I posited a divide within the class of attitude verbs depending on whether at least one epistemic agent (the speaker or the subject of the main verb) is committed to the truth of the complement sentence. If an attitude verb expresses such a commitment, it will be veridical and select the indicative; if not, it will be nonveridical and select the subjunctive.

(A) Indicative complements

Summarizing, the verbs that select indicative (oti and pu) complements are listed below:

(14)  

**Indicative verbs** (selecting oti, pu complements)

*assertives:* leo ‘say’, dhiavazo ‘read’, isxirizome ‘to claim’

*fiction verbs:* onirevome ‘to dream’, fandazome ‘imagine’

*epistemics:* pistevo ‘believe’, nomizo ‘think’

*factive verbs:* xerome ‘be glad’, gnorizo ‘know’, metaniono ‘regret’

*epistemic factives:* anakalipto ‘discover’, thimame ‘remember’

Fiction and epistemic verbs express commitment to the truth of their complement by the main clause subject. These verbs select the indicative also in Romance languages (with the exception of Italian epistemic verbs in obviating; Quer 2001:92 shows that with first person the indicative is selected in Italian). Some illustrations of Greek indicative complements are given below:
Notice that the choice of indicative after epistemic, dream, and fiction verbs contradicts that traditional view that the indicative is the mood of realis contexts, since epistemic complements to do not imply truth in the actual world. Factive verbs, as mentioned earlier, appear in the indicative pu complement in Greek, but they can chose between the indicative and the subjunctive in Romance, as indicated in the examples below from Catalan (from Quer 2001):

(16)  a.  Es queixa que no li facin cas.
     ‘S/he complains that they don’t pay-SUB attention to him/her.’

     b.  Es queixa que no li fan cas
     ‘S/he complains that they don’t pay-IND attention to him/her.’

Quer describes the contrast as follows: “When indicative is an option, the factive-emotive predicate yields an assertive reading which is absent with a subjunctive argument clause: whereas the embedded proposition is presented as old information in (49a) [here 16a, with subjunctive] and the
The subjunctive complement is a true presuppositional factive complement, but the indicative complement is only entailed. Recall (section 1) that this contrast in Greek surfaces with a difference between a \( pu \) and an \( oti \) complement. I repeat here the crucial examples:

\[
\begin{align*}
(17) \quad a & \quad O \text{ Janis paraponethike } oti \text{ ton ksexasa.} \\
& \quad \text{The John complained.3sg that.IND him forgot.1sg} \\
& \quad \text{‘John complained that I forgot him.’} \\
& \quad b \quad O \text{ Janis paraponethike } pu \text{ ton ksexasa.} \\
& \quad \text{The John complained.3sg that.IND him forgot.1sg} \\
& \quad \text{‘John complained that I forgot him.’}
\end{align*}
\]

The \( pu \) complement, I said earlier, is the ‘real’ presuppositional complement, because it remains true under negation; but the truth of the \( oti \) complement is only an entailment. Importantly, \( na \) is not an option with presupposed complements in Greek (as pointed out also in Quer 2001).

\[
\begin{align*}
(18) \quad a & \quad *O \text{ Janis paraponethike } na \text{ ton \{ksexasa/ ksexnao\}.} \\
& \quad \text{The John complained.3sg that him forgot.1sg/ forget.imperf.1sg} \\
& \quad \text{‘John complained that I \{forgot/forget\} him.’}
\end{align*}
\]

So, factive verbs only allow indicative complements in Greek. The triggering of the subjunctive with presupposed complements in Romance does not follow from the veridicality perspective I posit here (and see Quer 2001 for some ideas for a solution appealing to the causative character of the subjunctive complement); but note that this is not a problem in Greek. Quer additionally notes that “The appearance of subjunctive with factive-emotives should not be ascribed to some notion of ‘subjectivity’ underlying the expression of emotions or to evaluative character (contra Farkas 1992): purely evaluative predications take the indicative without any trouble, as attested in (52).

\[
\begin{align*}
(52) \quad \text{Llàstima que no van } & \text{ arribar a l’hora} \\
& \quad \text{pity that not AUX.IND.3PL to-arrive on time} \\
& \quad \text{‘Pity they did not arrive on time.’} \\
\end{align*}
\]

(Quer 2001: 109)
No matter what the explanation is for the presuppositional subjunctive after factives in Romance—an open question, as far as I can tell—in Greek, as I said, the na complement is not presuppositional. This is also noted by Quer, who gives the paradigm below:

(19) a. Tis arese {pu/*na} pighate(PAST.PERF) moni sas. (Quer 2009: 19)
   ‘She liked it that you went just the two of you.’

b. Tis aresi {pu/*na} pighate(PAST.PERF) moni sas.
   ‘She likes it that you went just the two of you.’

c. Tis aresi {pu/na} pijenete (NONP.IMPERF.) moni sas.
   ‘She likes it that you go just the two of you.’

The good na example in c requires imperfective aspect and can only be habitual. The habitual does not give us commitment to the truth of the complement—as habitual, generic generalizations are not about actual generalizations necessarily (Krifka et al. 1995). In the na version of the grammatical c sentence, there is no entailment that “you actually go just the two of you”; the sentence can be continued by something like “but you never get the chance to do that”, a continuation unacceptable with the pu-version. So, we can safely conclude that the na sentence cannot be used to make reference to a fact.

(B) **Subjunctive verbs (verbs selecting na-complements)**

Like in Romance, verbs selecting na-clauses are volitional, directive, modal, and negative verbs meaning fear, forbid. Often, the na-clause refers to future action wrt the selecting verb’s time:

(20) Subjunctive verbs

- **volitionals:** thelo ‘want’, elpizo ‘hope’, skopevo ‘plan’
- **directives:** dhiatazo ‘order’, simvulevo ‘advise’, protino ‘suggest’
- **modals:** (invariant) prepi ‘must’, borı ‘may’
- **permissives:** epitrepo ‘allow’; apagorevo ‘forbid’ (negative permissive)
- **negative:** apofevgho ‘avoid’, arnume ‘refuse’
Given the prevailing future or modal interpretation of these verbs, they do not express commitment to the truth of their proposition: I may want to be an astronaut, but wanting to be astronaut doesn’t make me one. Here are some examples:

(21)  

a  I Maria **theli** na aγορασει ena aftokinito.  
Maria wants SUBJ buy.3sg a car  
Maria dreamt that I bought a car.

b  I Maria **protine** na aγοράσουμε ena aftokinito.  
Maria suggested.3sg SUBJ buy.1pl a car  
Maria suggested that we buy a car.

c  I Maria **epimeni** na aγοράσουμε ena aftokinito.  
Maria insists SUBJ buy.1pl a car  
Maria insists that we buy a car.

d  **Prepi** na aγοράσουμε ena aftokinito.  
must.3sg SUBJ buy.1pl a car  
Maria insists that we buy a car.

e  **Bori** na aγοράσουμε ena aftokinito.  
must.3sg SUBJ buy.1pl a car  
Maria insists that we buy a car.

Some verbs may alternate between subjunctive and indicative complements—such shifts are common crosslinguistically among verb classes, and are usually accompanied by a change in the verb meaning (Giannakidou, 1995; Quer, 1998, 2001 2009). Recall our discussion of factives in Romance, or the alternation between the *oti* and *pu* complement. Consider now the following:

(22)  

a  O Janis lei **oti** efijan noris.  
The John says that-IND left.3pl early  
John says that they left early.

a  O Janis lei **na** figoun noris.  
The John says SUBJ leave.3pl early  
John {**wants/is planning**} them to leave early.
Lei ‘says’ with the _oti_ complement has its reporting meaning, but with the _na_ complement it acquires a volitional, directive meaning. I will give another example with the factive verb:

(23) a O Janis xarike _pu_ episkeftike ti jaja tu.
    The John was-happy.PERF.3sg that.IND visited.PRF.3sg his grandmother
    John was happy that he visited his grandmother.

b O Janis xerotane _na_ episkeftete ti jaja tu.
    The John was-happy.IMPERF.3sg SUBJ visit.IMPERF3sg his gr.mother
    John was happy to visit his grandmother (that summer).

Of the two sentences, only the _pu_ version is factive, as I said earlier: there is a fact that John visited his grandmother (hence that John visited his grandmother is true), and that fact made John happy. Notice the perfective in both the higher and the lower verb. The _na_ version, on the other hand, contains imperfective on both forms, and this renders the sentence habitual, as can be seen in the translation by the addition of _that summer_. With a non-emotive factive, the _na_ complement is equivalent to a _how-to_ complement in English (see Varlokosta 1994):

(24) a O Janis _kseri_ (pos) _na_ kolibai.
    The John knows3sg how SUBJ swim.imperf.3sg
    John knows how to swim.

Here it is plausible to assume that _pos_ ‘how’ is present in C, since the word can also be realized. More manifestations of C we see below with the adjunct clauses.

**C. The subjunctive in adjunct clauses**

In adjunct clauses, non-veridical connectives _xoris_ ‘without’ and _prin_ ‘before’ select the subjunctive (Giannakidou 1994, 1998, Giannakidou and Zwarts 1999):

(25) a Ekane ti metafrasi _xoris_ _na_ xrisimopiisi leksiko.
    Did.3sg the translation without SUBJ use.perf.NONPAST.3sg dictionary
He did the translation without using a dictionary.

b  *Ekane ti metafrasi xoris xrisimopiise leksiko.
    Did.3sg the translation without use.perf.PAST.3sg dictionary

(26) a  Prin na kimithi, epline ta dontia tu.
    Before SUBJ sleep.perf.NONPAST.3sg washed.past.3sg his teeth
    Before sleeping, he washed his teeth.

b  *Prin kimithike, epline ta dontia tu.
    Before sleep.perf.PAST3sg washed.PP3sg his teeth

All sentences make reference to the past, but as we see, the past tense is not allowed. Instead, na and PNP are used. The meanings ‘without’ and ‘before’ are nonveridical (Giannakidou 1997, 1998, Zwarts 1995, Giannakidou and Zwarts 1999): without a dictionary entails not using a dictionary, and p before q does not entail q. Equivalents of before select the subjunctive in French and other Romance languages. Notice that the subjunctive here, which is not selected by a higher verb, does not itself convey gradability semantics—a problem for approaches positing that the subjunctive depends on element with preference ordering (Villalta 2009).

With veridical particles, on the other hand, such as afu “after”, the subjunctive is out:

(27) a  *Afu (na) kimithi, figame.
    after SUBJ sleep.PNP.3sg left.3sg

b  Afu kimithike, figame.
    after slept.3sg left.3sg
    After he slept we left.

P after q entails q, so afu ‘after’ is veridical. I have not yet defined the terms veridical and nonveridical, but I wanted to give these informal descriptions here in order to anticipate the discussion in section 4. Clearly, the prospective time of before renders it nonveridical, but the after time is retrospective (i.e. past wrt the p) and this makes is veridical. Notice, in this connection, that prin ‘before’ xoris ‘without’) license negative polarity items (NPIs) and free choice items (FCIs), but afu ‘after’ doesn’t (Giannakidou 1998). The fact concerns both Greek and English:
We see here that ‘prin’ ‘before’ but not *afu ‘after’ allow the NPI kanenan or the FCI opjondhipote (Giannakidou 2001); notice the exact parallel with *any, despite the absence of the mood distinction. These facts suggest that nonveridicality is relevant not just to mood selection, but also polarity item licensing. More facts supporting this correlation are coming next.

3.2 Polarity licensing correlates with mood choice in embedded clauses

In Giannakidou 1994, 1995, 1998, 1999, 2001 I noted that NPIs and FCIs appear in the complements of the subjunctive selecting attitudes and modal verbs (and with future tense), but not in indicative complements. Notice the contrasts below:

(29) I Ariadne epemine na afisoume {opjondhipote/kanenan} na perasi mesa.
the Ariadne insisted.3sg SUBJ let.PNP.1pl FCI-person/ NPI-person SUBJ come.3sg in
‘Ariadne insisted that we allow anyone in.’
With kanenan: ‘Ariadne insisted that we allow some person or other to come in.’

(30) I Ariadne tha ithele na milisi me {opjondhipote/kanenan} fititi.
the Ariadne would like.3sg SUBJ talk.PNP.1sg with FC- /NPI- student
‘Ariadne would like to talk to any student.’

(31) I Ariadne bori na milisi me {opjondhipote/kanenan}
Ariadne may SUBJ talk.PNP.3sg to anybody.

(32) a * O Pavlos pistevi oti akuse {kanenan/opjondhipote} theorivo.
the Paul believe.3sg that.IND heard.3sg NPI / FCI noise
* Paul believes that he heard any noise.

b  * Kseri oti aγorasa {kanena/opjodhipote} aftokinito.

know.3sg that.IND bought.1sg NPI / FCI car

* He knows that I bought any car.

This contrast holds in other languages that have similar polarity items and the subjunctive, e.g. Spanish and Catalan (the data below are from Quer 1998, 1999):

(33) a  La Paola vol evitar que desaparegui qualsevol llengua minoritària. (Catalan)

b  Paola quiere evitar que desaparezca cualquier lengua minoritaria. (Spanish)

Paola want.3sg avoid disappear.subj.3sg FC language minoriatia
Paola wants to prevent any minority language from disappearing.

(34) a  * La Paola creu que desapareix qualsevol llengua minoritària. (Catalan)

b  * Paola cree que desaparece cualquier lengua minoritaria. (Spanish)

Paola believe.3sg that disappear.ind.3sg FC language minority
*Paola believes that any minority language is disappearing.

Notice also that the correlation holds regardless of the formal marking of mood. In English too any appears in the complement of directive verbs—would like, ask, be willing—and is excluded from the complements of epistemic and dream/fiction verbs:

(35) a  John would like to invite any student.

b  John asked us to invite any student.

c  John is willing to invite any student.

d  I insist that you allow anyone in.

(36) a  * John believes that we invited any student.

b  * John dreamt that we invited any student.

Recall in addition that NPIs and FCIs appear in before but not after clauses. These facts are problematic for the downward entailment (DE) approach to polarity, including von Fintel’s (1999) Strawson DE (see recent discussion of this in particular, and comprehensive criticism of
Strawson DE in Giannakidou 2006). But nonveridicality captures the correlation between the embedding predicate and connective and PI-licensing, as I have shown in my earlier work.

The so-called polarity uses of the subjunctive, as we see next, can also be captured as sensitivity to nonveridicality.

3.3 Subjunctive as polarity item: with negation, in relative clauses

Here we discuss the so-called polarity subjunctive (Quer 1998, 2009 and references therein), where the subjunctive seems to behave like a PI itself. The subjunctive can be triggered in the lower clause if the higher verb, which otherwise selects the indicative, is negated. This holds for a number of languages: Greek (Giannakidou 1995), Romance (Quer 1998, 2001, 2009), and Balkan languages (Siegel 2009):

(37) Pienso que está dormida. Spanish
    think.1sg that 3.s.be.IND asleep.Fem
    ‘I think she is asleep.’

(38) No pienso que esté dormida.
    not think.1sg that 3.s.be.SUB asleep.Fem
    ‘I don’t think she is asleep.’

(39) a Pistevo oti irthe o Janis. Greek
    believe.1sg that.IND came.3sg the John
    I believe that John came.

b Dhen pistevo oti irthe o Janis.
    believe.1sg that.IND came.3sg the John
    I don’t believe that John came.

c Dhen pistevo na irthe o Janis.
    believe.1sg SUBJ came.3sg the John
    I don’t expect that John came. (I would hope he didn’t).

Here the subjunctive is licensed by negation, itself like an NPI; and notice that there is a choice between the subjunctive and the indicative. Importantly, the use of the subjunctive comes a
meaning shift in the main predicate: *thren pistevo na* in the example loses its epistemic meaning and means rather something akin to “I hope not”. This meaning shift was observed, as I said earlier, in almost all cases of alternating mood patterns.

In Giannakidou 1998 (chapters 2, 3), I showed that *na* also appears in relative clauses (see Veloudis 1983/84 for the initial observation), when these are in the scope of subjunctive taking verbs and negation. This use of the subjunctive in relative clauses is found in Romance (Farkas 1985) and Russian (Borchev et al. 2007, Partee 2008). Consider the following example:

(40) Theloume na proslavoume mia gramatea [pu na gnorizi kala japonezika.]

want.1pl subj hire.1pl a secretary that SUBJ know.3sg good Japanese

We want to hire a secretary that has good knowledge of Japanese. (But it is hard to find one, and we are not sure if we will be successful).

(41) ∃w_{fut}[∃x secretary(x, w) ∧ speaks good Japanese (x,w) ∧ hire (we, x,w)]

The use of the subjunctive in the relative clause forces the NP to be interpreted inside the scope of *thelo* ‘want’ — indicated above by relativizing it to some future world w. The NP can thus only be interpreted *de dicto*, and we may not find a secretary with knowledge about Japanese. Without the subjunctive, the NP is forced to be interpreted outside the scope of *thelo* “want”, *de re*:

(42) Theloume na proslavoume mia gramatea [pu gnorizi kala japonezika.]

want.1pl subj hire.1pl a secretary that know.3sg good Japanese

We want to hire a secretary that has good knowledge of Japanese. OK: Her name is J. Smith.

(43) ∃x secretary(x, w_{0}) ∧ speaks good Japanese (x, w_{0}) ∧ ∃w'_{fut}[hire (we, x, w')]

As a result, we cannot have definites being modified by subjunctive relatives, and the subjunctive will obligatorily be used with verbs of creation:

(44) I Roxani theli na pandrefti {enan/*ton} andra pu na exi pola lefta.

the R. want.3sg subj marry.3sg a/*the man that SUBJ have. much money

‘Roxanne wants to marry a man who has a lot of money.’
(45) Prepi na grapso mia ergasia [pu na ine pano apo 15 selidhes.]
must.3sg subj write.1sg an essay that SUBJ is more than 15 pages
‘I have to write an essay which has to be longer than 15 pages.’
(46) */#Prepi na grapso mia ergasia [pu ine pano apo 15 selidhes.]

Importantly, negation also triggers subjunctive in the relative clause, which is again reminiscent of NPI behavior:

(47) Dhen idha enan andra [pu na forai kokino kapelo.]
not saw.1sg a man that SUBJ wear.3sg red hat
‘I didn’t see a man wearing a red hat.’
(48) ¬∃x [man(x) ∧ wear-red-hat (x) ∧ saw (I,x)]

(49) Dhen idha enan andra [pu forai kokino kapelo.]
not saw.1sg a man that wear.3sg red hat
‘I didn’t see a man wearing a red hat.’
(50) ∃x [man(x) ∧ wear-read-hat (x)] ∧ ¬ saw(I, x)

The NP with the subjunctive again takes narrow scope wrt negation, but without na the NP takes wide scope. In Giannakidou 1997, 1998 I argued that the indicative relative is a positive polarity item, whereas the na relative should be understood as a narrow scope PI. Given that negation is not an intensional operator, it is important to emphasize here that subjunctive triggering in relative clauses in Greek (and see Partee 2008 for similar data in Russian) cannot be understood as sensitivity to intensionality, as was claimed initially by Farkas. The gradability approach (Villalta 2009) will also have trouble explaining the subjunctive in this set of facts, as again these do not involve preference ordering, but are rather about existence. I will not go into more details here (see Giannakidou 1998: chapter 2 for more data and discussion).

In sum, in this section, we saw the following facts about the Greek subjunctive (na+PNP):
(i) Na+PNP is selected by volitional, directive, and modal verbs, and generally future oriented propositional attitudes that do not commit the speaker or the main clause subject to the truth of the na complement.

(ii) Na+PNP is selected by connectives such as prin ‘before’ and xoris “without”, and is excluded with afu “after”. Again, there is no commitment of the speaker to the truth of the na+PNP clause.

(iii) Na+PNP can be triggered under negation, and in relative clauses. Na triggering again suspends truth commitment, and existence (in relative clauses).

(iv) The na+PNP clause is never factive in Greek. Factive verbs in Greek alternate between the two kinds of indicative complements.

(v) Na+PNP allows NPIs and FCIs, but indicative complements don’t.

These five generalizations must be captured by a successful theory of the subjunctive in Greek, and the na clause is not compatible with full commitment to the truth of a sentence. This is what I tried to capture in the notion of nonveridicality that we study next.

4 (Non)veridicality, subjective truth assessment, and mood

In this section I develop a formal system (section 4.1) within which to understand the distribution of the subjunctive and indicative in Greek. In sections 4.2. and 4.3, I discuss the veridicality and noveridicality properties of some of the basic propositional attitude verbs that we discussed thus far, in particular, belief, dream, volitional, and factive verbs. In section 4.3 I will also tackle the problem of implicative verbs like kataferno ‘manage’, which select the subjunctive, and show that the choice of subjunctive is not inconsistent with the nonveridicality hypothesis, although it may appear to challenge it at first glance.

4.1 Giannakidou 1998, 1999: Subjective truth assessment and nonveridicality

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3 There appear to be three “exceptions”: the use of Na+PNP with implicative verbs (kataferno ‘manage’), verbs of perception (John saw Mary dance), and aspectual verbs like arxizo “start” It started raining (Giannakidou 1997, 1998). I will offer an analysis of the implicative consistent with the nonveridicality hypothesis in section 4.3. With verbs of perception and aspectuals—which take ‘smaller’ complements in English, I argued that na is chosen because the na clause is the only small complement in Greek, since Greek lacks infinitives (Giannakidou 1998).
Montague 1969 used the term *veridicality* for the verb *see: see* is veridical because *If I see a unicorn* is true then a unicorn exists. The notion was further defined based on truth, and its relevance for PI-licensing has been developed in Zwarts 1995, Giannakidou (1998, 1999, 2001, 2006, 2009) for various kinds of PIs and mood choice, and Bernardi (2002) who implemented a (non)veridicality calculus in a categorial type logic for PI-licensing in Italian. In what follows here, I will summarize from those discussions.

The intuitive idea behind veridicality and nonveridicality is very simple: a linguistic item L is veridical if it expresses certainty about, or commitment to, the truth of a sentence; and L is nonveridical if it doesn’t express commitment. For example, if *We know that Bill left* then *Bill left* is true—in fact *Bill left* is not simply entailed in the context, but presupposed to be true, i.e. it is part of the context’s common ground. Hence all factive verbs are veridical. But if it is true that I have a desire that *Bill leaves*, I am not committed to the truth of *Bill leaves*. From this intuitive description, we see immediately that veridicality and nonveridicality correlate with the two basic categories of the indicative selecting verbs (factives), and the subjunctive ones (volitionals). In Giannakidou 1998 and 1999 I developed a formal system that described these distinctions, and I will reproduce part of that discussion here.

The notion of certainty and uncertainty that I employ here is one of epistemic assessment, and epistemic assessment itself relies on an *individual* assessing whether the proposition denoted by a sentence is true or false. This individual is the *individual anchor* (Farkas 1992, Giannakidou 1998, 1999), and I made the assumption that *every sentence*, embedded or not, is true or false with respect to an individual. An unembedded sentence will be assessed as true or false with respect to the speaker. With propositional attitudes (which are propositional operators, a treatment originating in Hintikka 1962), we have two possible individual anchors for truth assessment: the speaker, as in the unembedded sentence, and the attitude subject,; and the complement sentence may be true or false depending on whose perspective we take.

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4 Truth and existence are obviously related— as can be seen in the nonveridicality of determiners (Giannakidou 1998, 1999), and subjunctive relative clauses. It was also suggested by Lin 1996 that the notion of non-existence is relevant for Chinese NPIs, with examples similar to the ones I discussed in my own work on Greek. Existence can be derived from truth: if the truth of a sentence is not guaranteed in a world, existence of the event participants will likewise be suspended in that world.
It is clear from this set up that I am taking a *subjective* stance on the task of truth assessment. Harris and Potts 2010: 1 express a similar view in saying that: “We say that a clause \( C \) with denotation \( p \) is speaker-oriented in utterance \( U \) if, and only if, in uttering \( U \), the speaker expresses, with \( C \), *a commitment* to \( p \). For example, if I utter the clause *Ohio is the birthplace of aviation* with the intention of sincerely asserting it, then I express, in virtue of this utterance, my public commitment to the proposition that *Ohio is the birthplace of aviation*. Thus, *Ohio is the birthplace of aviation* is speaker-oriented in this case.” (Harris and Potts 2010: 1-2).

In Giannakidou 1997, 1998, 1999 I added to the context ‘models of individuals’. These models represent the doxastic state of individuals, as in the philosophical tradition where belief and knowledge states are modeled as sets of possible worlds in terms of accessibility functions relative to individuals (see Hintikka and Heim 1992, among many others).

\[(51)\quad DF1: \text{Model of an individual} \quad \text{(Giannakidou 1999: (44))}\]

Let \( c = \langle \text{cg}(c), \text{W}(c), M, s, h, w_0, f, \ldots \rangle \) be a context.

An model \( M(x) \in M \) is a set of worlds associated with an individual \( x \); \( x \) is the individual anchor.

The context assumed in this definition is Stalnakerian. It is a tuple consisting of a common ground \( \text{cg}(c) \), a context set \( \text{W}(c) \), i.e. the set of worlds in which all the propositions in the \( \text{cg}(c) \) are true (i.e. it is the set of worlds compatible with that is believed to be true by the agents of the conversation prior to any assertion), an assignment function \( f \), and a number of what Condoravdi calls *Kaplanian* (Condoravdi 1994) parameters such as the speaker \( s \), the hearer \( h \), the actual world \( w_0 \), and possibly other parameters. Models are construed as collections of worlds in \( c \), corresponding essentially to the accessibility functions what we know from the treatment of attitudes in modal logic and possible world semantics. (Farkas 2003 uses the similar function “worldview”).

In the simplest case, i.e. for an unembedded assertion, and for sentences embedded under epistemic verbs as we shall see in 4.2, \( M(x) \) stands for an individual’s belief state: it represents the epistemic status of that individual, and it includes worlds compatible with what \( x \) believes in the actual world. This is captured in the definition below, where \( M(x) \) is indexed with \( B \):

\[(52)\quad DF2: \text{Belief model of an individual} \quad \text{(Giannakidou 1999: (45))}\]
Let $c=<c(c), W(c), M, s, h, w_0, f, ...>$ be a context.

An model $M_B(x) \in M$ is a set of worlds associated with an individual $x$ representing worlds compatible with what $x$ believes.

The proposition $p$ of an unembedded assertion will be evaluated with respect to the speaker’s model, naturally:

(53)  
\[ \begin{align*}
& a \quad \text{John won the race.} \\
& b \quad \llbracket \text{John won the race} \rrbracket = 1 \text{ iff} \\
& \quad \forall w [ w \in M_B(s) \rightarrow w \in \lambda w'. \text{John wins the race in } w']
\end{align*} \]

This tells us that if the speaker decides in a context to truthfully assert the sentence *John won the race*, (s)he must believe that John won the race, which means that all worlds in his model $M_B(s)$ are *John-won-the race* worlds. Hence: $M_B(x) \subseteq p$:

(54) \hspace{1cm} DF3: Truth in an epistemic model

A proposition $p$ is true in an epistemic model $M_B(x)$ iff:

\[ \forall w [ w \in M_B(x) \rightarrow w \in \lambda w'. p (w')] \]

So, unembedded assertions expresses speaker commitment. This is formalized in some recent works (e.g. Alonso-Ovalle and Menendez-Benito 2010) by introducing an implicit assert operator in the syntax that brings in the $M_B(x)$, but in Giannakidou 1998, 1999, $M_B(x)$ remains a parameter of evaluation that is not syntactically present. The question of whether $M_B(x)$ needs to be syntactically present or not parallels the debate about whether the *judge* (Lasersohn 2005), the individual anchor for predicates of personal taste, must be represented syntactically as a covert pronoun (as in Stephenson 2007) or not. The debate is not central to what we discuss here though, so I leave it aside.

Unembedded positive assertions in the simple past, then, like *John won the race*, are veridical. We are now ready to definite the notion:
i. A propositional operator $F$ is veridical iff $Fp$ entails or presupposes that $p$ is true in some individual’s model $M(x)$; $p$ is true in $M(x)$, if $M(x) \subset p$.

ii. If (i) doesn’t hold; $F$ is nonveridical.

iii. A nonveridical operator $F$ is antiveridical iff $Fp$ entails $\neg p$ in some individual’s model: $Fp \rightarrow \neg p$ in some $M(x)$.

Given that a proposition $p$ is true in a model $M(x)$ iff it is true in all worlds in $M(x)$, $DF4$ says that an expression $F$ will be veridical if the proposition of the sentence $F$ embeds is universally true in all worlds in $M(x)$. So veridical operators express an individual’s commitment to the truth of a proposition. Nonveridical expressions, on the other hand, lack such commitment: it is not the case that all worlds $w$ in $M(x)$ are $p$-worlds. This is typically what we get with volitional and future oriented predicates, as we see in 4.3.

Within the class of the nonveridical functions, negation is identified as \textsc{anti-verbatim}: assertion of $\text{NOT} \ p$ requires that the set of worlds in $M_{\text{B}}$(speaker) and the $p$ worlds are disjoint:

\begin{equation}
\text{(56) Antiveridicality of negative assertion}
\end{equation}

\begin{equation}
[[\text{not} \ p]] \ is \ true \ in \ M_{\text{B}}(\text{speaker}) \ iff \ M_{\text{B}}(\text{speaker}) \cap p = \emptyset
\end{equation}

Negation, disjunction (Zwarts 1995), imperatives, questions, are all nonveridical (Giannakidou 1998, 1999), and licensing environments for NPIs in Greek. Giannakidou 1998 used the term \text{averidical} (with Greek $a$- meaning \textit{without}) for non-assertive sentences such as imperatives and questions because for their assessment we do not use the concepts or truth or falsity, hence they lack veridicality. Since then, I am using the term nonveridical to include the nonveridical and averidical cases, since the latter too, strictly speaking, do not require satisfaction of clause (i), i.e. truth in a speaker’s model.

I showed in my earlier work that the nonveridical functions license negative polarity items (NPIs); and in the present paper my focus is to show that they also license the subjunctive. I continue now with describing in some more detail first the veridicality properties of some of the attitudes we saw earlier. I should mention also that Quer’s (1998, 2001) account of mood in Spanish and Catalan implements the notion of model that I define here, and suggests that the
availability of multiple models is the key to licensing the subjunctive in Romance. I am not
convinced that this extends to the polarity subjunctives with negation and in relative clauses, but
I think it is important to mention this implementation of the system I outlined here.

4.2 Indicative and veridicality

When it comes to sentence embedding, Giannakidou 1998, 1999 argues that epistemic attitudes
are veridical. For x believes that p to be true, it must be the case that x, the main clause subject, is
committed to the truth of the embedded proposition p. Though the speaker might disagree, a
prerequisite for p to be true is that Jacob's epistemic model (i.e. the set of worlds compatible with
what Jacob believes) be a subset of the worlds where p is true: \( M_{e}(Jacob) \subseteq p \). The speaker may
believe or even know that what Jacob believes is false, but this is irrelevant for Jacob’s beliefs.

(57) a \([ [ Jacob \ believes \ that \ Ariadne \ kissed \ Bill ]]_{e} = 1 \) \iff \forall w \left[ w \in M_{b}(Jacob) \rightarrow w \in \lambda w'. Ariadne \ kissed \ Bill \ in \ w' \right]

b Veridicality of the epistemic verb

If believe \((x, p)\) is true in a context c, then \( M_{b}(x) \subset p \) in c

Since all worlds in the model \( M_{b}(Jacob) \) are \( p \)-worlds, believe is veridical: \( M_{b}(Jacob) \subset p \). And
since the indicative is used in both unembedded assertions and in the complement of belief verbs,
we can argue that indicative in Greek is chosen for sentences whose proposition is judged as true
in an individual model. The sentences can be true at a past time (as in the examples I illustrated
earlier in section 3), or in the present time as here, or in a future time, since tha embeds under
oti: I Maria pistevi oti tha figoume avrio “Mary believes that we will leave tomorrow”.

Other veridical predicates besides pistevo ‘believe’ are verbs of dream/fiction and verbs
of saying. In Giannakidou 1998, 1999 I defined a dream model of an individual \( M_{d}(x) \), which
includes worlds compatible what x dreams or imagines:

(58) DF5: Dream model of an individual \( \) (Giannakidou 1999: (46))

Let \( c = \langle cg(c), W(c), M, s, h, w_{0}, f, .. > \) be a context.
An model $M_D(x) \in M$ is a set of worlds associated with an individual $x$ representing worlds compatible with what $x$ dreams.

Crucially, the worlds compatible with one’s beliefs need not be, in fact are not, identical to the worlds compatible with one’s dreams. $M_B(x)$, the belief model of $x$, and $M_D(x)$ the dream model of $x$, single out different (but possibly intersecting) sets of worlds with respect to the same individual. In Giannakidou 1999 I also noted that although $M_B(x)$ can be viewed as a doxastic extension of the actual world, $M_D(x)$ isn’t such an extension (Giannakidou 1999: 387). This echoes an earlier observation by Farkas 1992 that with dream/fiction verbs a fictional reality replaces the actual one. At any rate, in the dream model of the subject, all worlds $w$ are p-worlds, hence again we have veridicality:

$$\text{(59) a} \quad [[\text{Jacob dreamt that Ariadne kissed Bill}]]_c = 1 \iff \forall w [w \in M_D(Jacob) \rightarrow w \in \lambda w'. \text{Ariadne kissed Bill in } w']$$

$$\text{b} \quad \text{Veridicality of the dream verb}$$

If $\text{dream}(x, p)$ is true in a context $c$, then $M_B(x) \subseteq p$ in $c$

For assertive verbs like $\text{leo say}$, $\text{isxirizome}$, etc. we need to view the model as conceptualizing the reported conversation, illustrated below in the index RC. Under realistic assumptions, $M_{RC}(x)$ includes worlds different from $M_D(x)$ and $M_B(x)$:

$$\text{(60) DF6: Model of reported conversation for an individual} \quad \text{(Giannakidou 1999: (47))}$$

Let $c = <c_g(c), W(c), M, s, h, w_0, f, \ldots>$ be a context.

A model $M_{RC}(x) \in M$ is a set of worlds associated with an individual $x$ representing worlds compatible with what $x$ takes the reported conversation to be in the context.

For more recent ideas on reported context see Schlenker 2003, but it is not necessary for the present paper to go into more detail, as I do not see an incompatibility between Schlenker’s findings and veridicality. What I do see worth emphasizing is that, as I said in Giannakidou 1998, 1999, the models we employ here, though distinct, are all epistemic in a more general sense: what one dreams represents the state of belief while dreaming, what one takes the reported
conversation to be represents one’s belief state regarding the reported conversation. So by saying that truth assessment is done with respect to an individual’s model, we are saying that we are always relying on an individual’s doxastic state broadly speaking.

Factive verbs, furthermore, are strongly veridical (Giannakidou 1999): the worlds in the speaker’s model too are p-words, consistent with the observation that factive complements are presupposed to be true (see Giannakidou 1998, 1999 for more discussion).

(61)  \[
[[\text{Jacob knows/regrets that Ariadne kissed Bill}]]_c = 1 \text{ iff } \\
(\ i ) \quad \forall w \ [w \in M_B(\text{Jacob}) \rightarrow w \in \lambda w'. \ \text{Ariadne kissed Bill in } w'] \text{; and } \\
(\ ii) \quad \forall w \ [w \in M_B(\text{speaker}) \rightarrow w \in \lambda w'. \ \text{Ariadne kissed Bill in } w'] \\
(\ iii) \quad \text{Veridicality of the dream the factive verb} \\
\quad \text{If } \{\text{know/regret } (x, p)\} \text{ is true in a context } c, \text{ then } M_B(x) \subset p \text{ in } c, \\
\text{and } M_B(\text{speaker}) \subset p \text{ in } c.
\]

Hence, the choice of indicative for Greek factives is consistent with the fact that they presuppose truth commitment (veridicality). In Romance, where factives select the subjunctive for this presuppositional use, one needs a different kind of explanation (see Quer 2001 for some ideas consistent with model shifts). Let us move on now to the nonveridical predicates.

4.3 Nonveridicality and the subjunctive

The three core classes of subjunctive selecting verbs, volitionals, directives, and modals are nonveridical: they do not require an individual’s commitment to the truth of the embedded proposition, and express a weaker relation between the speaker and the embedded proposition. I will not consider modal verbs here (see Giannakidou 1998: chapter 3). I will only elaborate on the volitional class, and offer some new discussion on what may appear as a problematic case at first, namely the use of subjunctive with implicative verbs (in Greek as well as Romance).

A. Volitionals and other directives

Consider thelo ‘want’. The truth condition for thelo simply requires that the intersection between $M_E(x)$ and $p$ be nonempty:
If $x$ wants $p$ it is not the case that all worlds in $M_B(x)$ are also $p$-worlds. $X$ wants $p$ simply requires that there is a some world $w$ in $M_B(x)$ that is also a $p$-world. We can thus envision $M_E(x)$ as partitioned into two sets, $W_1$ and $W_2$. $W_1$ is the part that intersects with $p$. $W_2$, is the part containing non-$p$ worlds: therefore $W_2 \cap p = \emptyset$. So, thelo “want” is nonveridical:

(63) Nonveridicality of the volitional verb

If $\text{thelo} (x, p)$ is true in a context $c$, then $M_B(x) \cap p$ is not $\emptyset$ in $c$  ‘want’

Likewise, other directive verbs such as “ask”, “suggest”, “hope” etc:

(64) a If $\text{suggest} (x, p)$ is true in a context $c$, then $M_B(x) \cap p$ is not $\emptyset$ in $c$
b If $\text{hope} (x, p)$ is true in a context $c$, then $M_B(x) \cap p$ is not $\emptyset$ in $c$
c If $\text{ask} (x, p)$ is true in a context $c$, then $M_B(x) \cap p$ is not $\emptyset$ in $c$

These are all (sometimes future oriented) verbs which require simply that the intersection $M_B(x) \cap p$ be non-empty. This is nonveridicality. The semantics of modal verbs follow the same pattern (see Giannakidou 1998, chapter 3): the modal base (MB) is part of $M_B(x)$. With necessity modals it is not the case that $M_B(x) \subset p$, and with existential modals it is not even the case that the MB $\subset p$.

The semantics for want, modals, and the other directives I propose in my work uses an epistemic model, not a bouletic one, it thus assumes that what one desires depends on what one believes—a connection often made in the literature on desire reports (Stalnaker 1984, Asher 1987, Heim 1992). The connection is done usually in terms of preference: specifically, Stalnaker claims that “wanting something is preferring it to certain relevant alternatives, the relevant alternatives being those possibilities that the agent believes will be realized is he does not get what he wants” (Stalnaker 1984: 89). Heim 1992, building on this position, poses that $x$ wants $p$ is true if John prefers $p$ to not $p$, as can be seen in her definition below:
(65) [Heim 1992: 193]

“α wants that φ’ is true in w₀ iff for every w ∈ Dox (α) (w₀):

every φ-world maximally similar to w is more desirable to α in w₀ than any non-φ world maximally similar to w.”

Dox (α) (w) is the accessibility function determining a set of doxastic (epistemic) alternatives for α; in other worlds, it is Mₐ (x). Villalta (2008) proposes the following semantics for want:

(66) Semantics of want based on comparison of alternatives

\[
[[\text{want}]]^\mathfrak{a} (p)(a)(w) = 1 \text{ iff } \\
\forall q: q \neq p & q \in g(C): \text{Sim}_{w'}(\text{Dox}_a(w) \cap p) >_{a,w} \text{Sim}_{w'}(\text{Dox}_a(w) \cap q)
\]

Notice that the semantics derives a nonveridical want, just like we do. But Villalta claims that it is this ordering semantics that unifies subjunctive selecting contexts Spanish (she does not consider nonveridicality), and that cannot be true. Volitionals do have the preference dimension in their meaning in addition to being nonveridical, but it is questionable whether all subjunctives depend on preference orderings. Certainly, modal verbs prepi ‘must’ and bori ‘can’ do not; and we also saw that the subjunctive is licensed with before and without, negation and in relative clauses. In these context there is no preference ordering. Nonveridicality, on the other hand, makes the right generalization about mood choice and captures easily all these cases.

I will show next that even what appears a recalcitrant case, i.e. subjunctive selection after implicative verbs, manifests a nonveridical component in the meaning of the implicative.

(B) Implicatives and nonveridicality

Consider a sentence with manage “kataferno”:

(67) I Maria kataferá na ftiaksi to aftokinito.
Maria  managed.3sg           SUBJ fix.3sg    the   car
Maria managed to fix the car.

(68) Kartunnen’s 1971

Manage p entails p, and presupposes that it took (some or considerable) effort to do p.
Since manage \( p \) entails \( p \), manage appears to be veridical. However, manage verbs select the subjunctive systematically in a number of languages. Why is that?

The key to understanding this *prima facie* unexpected behavior of manage verbs is to appreciate the effort component: effort implies trying, and *trying to do p* does not entail *having done p* at every instance of trying. I will suggest then that the implicative meaning MANAGE is a complex meaning *TRY to do p and p*. Some motivation for this comes from the fact that, at least in Greek, the implicative appears with *ke* ‘and’, a paratactic complement (Giannakidou 1998, Giannakidou and Staraki 2010):

\[
(69) \quad \text{I Maria katafere ke eftiakse to aftokinito.}
\]
Maria managed.3sg and fix.PNP3sg to car

\[
\text{Maria tried [to fix the car] and did fix the car.}
\]

The occurrence of this paratactic complement with *ke*, remained mysterious in the Greek literature, but I think it is suggestive of the richer implicative meaning that I am suggesting, and which has two components: a trying event, and a successful result state:

\[
(70) \quad \text{Implicative meaning}
\]

\[
[[x \text{ TRY to DO } p \text{ and } p]] \text{ is true iff:}
\]

\[
\exists t \exists e [(\text{try } (e, x, \text{do } p) \land e \subseteq t \land \text{agent } (e, x)] \land \exists t' [t < t' \land \text{BE-fixed } \text{car}, s, \text{at } t']
\]

From this condition, it follows that the car is fixed only at the time \( t' \), which follows the time \( t \) of the trying event. If this is the meaning of MANAGE, then in assessing the truth of a sentence *MANAGE p*, the speaker is also accessing the trying times (or world/time pairs), prior to the final result, and at the trying worlds/times there is no fixing the car. In the epistemic model of the \( x \) too, it is not the case that every world is such that it \( x \) fixed the car: there are worlds \( W_{\text{try}} \) — the belief worlds of \( x \) at the time of trying—where \( x \) has not yet fixed the car. The car being fixed is the result state temporally *following* the trying event, and from the point of view of \( x \), the fixing of the car does not characterize all his belief worlds: only the ones after the end state. Hence:

\[
(71) \quad \text{If manage } (x, \text{to do } p) \text{ is true in a context } c, \text{ then } \exists W [W_{\text{try}} \subseteq M_{\text{try}}(x) \land W_{\text{try}} \cap p = \emptyset],
\]

where \( W_{\text{try}} \) are the belief worlds of \( x \) at the time of trying;
Thus, if manage \((x, \text{to do } p)\) is true in a context \(c\), then it is not the case that \(M_B(x) \subset p\).

(nonveridicality)

So, belief states must be relativized to times in order to appreciate the nonveridicality of the implicative. Karttunen insisted that “John managed to fix the car” is not equivalent to the simple assertion “John fixed the car,” and though what I sketched here is a rough idea of how this should be modeled (see Giannakidou and Staraki 2010 for more), it is important to note that the complex implicative meaning I defined in (71) characterize a larger set of action sentences in Greek as well as English, including actions that involve ability predicates such as ABLE.

To conclude, I offered in section 4 an account of mood phenomena in Greek based on the notion of (non)veridicality. I showed that this account not only explains the core mood selection patterns in complement and adjunct clauses, but it also predicts a correlation with NPI licensing that remains unexpected in other current theories of mood alternations, and unifies polarity and “canonical” subjunctive. The essence of the proposal has been that, like polarity items, the subjunctive is a dependent form that, at least in Greek, marks the nonveridicality of a sentence. 5

Before moving on to the final question of the dependency, I will wanted to point out the similarity between my (non)veridicality account, and the notion of decidedness of Farkas 2003:

\[ \text{(72) Deciding an issue} \quad \text{(Farkas 2003: (19))} \]

Let \(W_i\) be a set of worlds, and \(S\) a sentence with propositional content \(p\).

(i) \(S\) is positively decided in \(W_i\) iff \(W_i \subset p\).

(ii) \(S\) is negatively decided in \(W_i\) iff \(W_i \cap p = \emptyset\).

(iii) \(S\) is decided in \(S \in W_i\) iff either (i) or ii); otherwise \(S\) is undecided in \(W_i\).

A mere glance at these definitions makes evident the similarity with nonveridicality. A sentence is decided within a set of worlds (Farkas’s worldview). It is positively decided if all worlds in the set are p-worlds (veridicality); negatively decided if \(p\) and the set are disjoint (antiveridicality);

5 Importantly, this view is similar to Giorgi and Pianesi’s claim that “the relationship between grammatical mood and notional mood is an interpretive one: a given grammatical mood is interpreted as signaling that the clause it appears in must be evaluated in a semantic environment having certain properties.” (Giorgi and Pianesi 1997: 211).
and undecided if it is not positively or negatively decided (nonveridicality). Farkas thus also utilizes truth; the only difference is that I am defining nonveridicality as a property of expressions that guarantee truth of a sentence, but Farkas is defining it directly on the sentence. Bringing the two together: a sentence is positively decided in the scope of a veridical operator, negatively decided in the scope of an antiveridical operator, and undecided in the scope of a nonveridical operator.

It is further stated that “The complement of desideratives is added to the subject’s epistemic context, but the addition is not assertive. It does not result in the complement being decided in any context.” (Farkas 2003: 12). Farkas here collapses non-assertiveness with undecideness (nonveridicality), thus implying that non-assertive contexts will be nonveridical. This is exactly what Giannakidou 1997, 1998, 1999 states (and we mentioned earlier) about nonassertive speech acts (questions, imperatives, which are nonveridical). Crucially, however, negation is assertive—but it does have an effect on subjunctive, i.e. it triggers polarity subjunctive, and also triggers NPIs. So, non-assertiveness, unless connected to (non)veridicality, does not give us the appropriate tool to capture mood choice and NPI licensing, and in Giannakidou (1997: 142-143) I rejected it. Nonveridicality predicts sensitivity of mood and NPI licensing to non-assertiveness, while also predicting dependency to negation, modality etc. which are nonveridical but nevertheless assertive.

The next, and final, question to address is the dependency of the subjunctive, as it is manifested in the relation between na and the PNP.

5 The meaning of subjunctive: the subjunctive as containing a non-deictic time
Now that we have established that the subjunctive is used in nonveridical sentences, we can ask the question: what is the relationship between the two forms used in Greek? Why does the PNP need na? Understanding this relation will help us see why the two forms appear in nonveridical contexts only.

A common idea has been that the subjunctive is modal (Roussou 2000) or futurate, and it is true that the subjunctive clause often comes with future orientation (even with implicatives, as we saw earlier). Notice, however, that future orientation is not always the case—recall xoris ‘without’:
I will follow my earlier work (Giannakidou 2009) and argue that the contribution of the subjunctive is temporal, but that the subjunctive itself has nothing to do with the future. I will start by explaining the dependency of the verbal form, and then show why *na* is necessary.

### 5.1 Tense and aspect in Greek

The Greek verb is obligatorily inflected for tense and aspect. The four possibilities for the verb *grafo* ‘I write’ are given in (74) (cf. Mackridge, 1985; Holton et al., 1997):

(74) a. graf- -o (INP)  
    \[\text{write}\text{.imperf }1\text{sg.nonpast}\]  
    ‘I am writing (right now).’

b. grap- s- -o (PNP)  
    \[\text{write}\text{- perf }1\text{sg.nonpast}\]  
    [no English equivalent]

    ‘I write (generally).

(75) a. e- graf- -a (IP)  
    \[\text{past}\text{- write}\text{.imperf }1\text{sg.past}\]  
    ‘I used to write.’

b. e- grap- s- -a (PP)  
    \[\text{past}\text{- write}\text{- perf }1\text{sg.past}\]  
    ‘I wrote.’

The basic temporal opposition is between a morphological past, which is usually marked by the prefix *e*- attaching to the verbal stem and specific inflection, and the nonpast which is signalled by the absence of the prefix *e*- (hence the label *nonpast*), and which has its own inflection. The nonpast is not equivalent to a present, as will become evident soon.

Following standard assumptions (and I am relying here on Kamp and Reyle, 1993; von Stechow, 2002; Giannakidou, 2003, 2009), I will take it that perfective aspect (*Aktionsart* will be ignored; see Giannakidou 2003, 2009) is a lower function that applies to the verb meaning first; then tense is applied. In order to achieve simpler types and syntactic structures, I am also assuming that the subject is in VP at least at LF, an assumption fully consistent with the fact that the Greek subject is generated in this position. Greek exhibits verb movement to T in declarative
clauses, but for the purposes of semantics, V is interpreted inside the VP, just like in English. The T head gives temporal information, specifically temporal orientation (a time prior to the utterance time for the past morpheme; for the nonpast we see below.) Following Abusch (2004) and others, I will also assume that the tenseless VP is a time abstract of type \(i,wt\) (for \(i\) the type of a time interval, and \(wt\) the type of propositions).

According to Comrie (1976:16) "perfectivity indicates the view of a situation as a single whole, without distinction of the various separate phases". The Greek perfective exhibits the typical eventive meaning associated with the perfective: it creates statements that involve existential quantification over events. (And it implies no telicity; Giannakidou 2003). I will thus treat perfective aspect, quite standardly, as the modifier function below: it takes the VP meaning \(P\) as its input and gives back a predicate of times such that an event characterized by \(P\) is included in those times:

\[
[[\text{PFT}]] = \lambda P \lambda t \exists e [ P(e) \land e \subseteq t ]
\]

The condition \(e \subseteq t\) (Kamp and Reyle 1993) expresses that \(e\) takes place, or is included, at \(t\). A typical sentence with past perfective is interpreted episodically:

\[
(76) \quad a. \quad \text{I Ariadni filise ti mama.}
\]
\[
\text{Ariadne kiss.PP.3sg the mommy}
\]
\[
\text{‘Ariadne kissed mommy.’}
\]

\[
(77) \quad b. \quad \exists e [ \text{kiss (Ariadne, mommy, e)} \land t < n \land e \subseteq t]
\]

Imperfective aspect in Greek, on the other hand, is used for habitual and generic statements, as well as to denote progressive and ongoing events, as is common crosslinguistically. I will not discuss the imperfective here at all (see Giannakidou 2009 for details).

Regarding tense, I will assume the pronominal theory of tense (originating in Partee's, 1973, 1984 seminal work; see also Heim, 1994; Abusch, 1998, 2004, and others). Tenses contribute temporal variables, and they also give temporal orientation. E.g. a past tense denotes anteriority: it refers to a time prior to the utterance time, designated here as \(n\):
(78) \[ [\text{PAST}]^g_c \text{ is defined only if } g(t) < n, \text{ in which case } [\text{PAST}]^g_c = g(t) \]

I am following Heim in representing the orientation as a presupposition. As pronominal elements, times can also be bound, for instance by existential quantifiers as in Bauerle (1979), von Stechow (1992), and Kratzer (1998). The past tense, as suggested above, expresses anteriority with respect to \( n \), and it is this that makes the past function as a "real", independent tense. A perfective past sentence in Greek, then is derived as follows:

(79) \text{Kerdise} \quad o \text{ Janis.} \\
\text{won.PP.3sg} \quad \text{the John} \\
'\text{John won}.'

(80) \text{TP: } \exists e \quad [ \text{win} (j, e) \wedge e \subseteq \text{PAST} ] \\
\text{T0: kerdise} \\
\text{AspectP: } \lambda t \exists e \quad [ \text{win} (j, e) \wedge e \subseteq t ] \\
\text{PAST} \\
\text{Asp0:PFT=} \\
\lambda P \lambda t \exists e \quad [ \text{P} (e) \wedge e \subseteq t ] \\
\text{VP: } \lambda t \text{win} (t, j) \\
\text{t0 o Janis}

Aspect operates on the verb meaning first. The output of aspect serves as the input to Tense, which fills the interval argument (following Abusch, 2004:37), in this case with the PAST. So, a typical sentence with past perfective is interpreted episodically, and the past tense specifies independently a relation to the utterance time: anteriority.

Let us see now what the contribution of nonpast is, and what goes wrong when we combine it with perfective aspect.

5.2 What goes wrong with perfective nonpast?

I argued in Giannakidou 2009 that the Greek PNP cannot make reference to the utterance time, as is usually assumed to happen with apparent present tenses. In other words, Greek nonpast does not function as a present tense. Instead, the PNP denotes an interval whose left boundary is

\footnote{With the exemption of auxiliary verbs where there is no aspectual distinction. With imperfective forms, reference to the utterance time is done indirectly (Giannakidou 2009).}
a dependent (Giannakidou 1998), non-deictic variable t. The presence of such a variable renders an expression polarity sensitive because a dependent variable will come with conditions on its use; and I have argued (Giannakidou 1998, in press) that the existence of such a variable plays an important role in the formation of NPIs crosslinguistically.

A non-deictic variable cannot be interpreted as a free variable:

(81) **Non-deictic variables** (Giannakidou in press: (109))

An variable x is non-deictic iff x cannot be interpreted as a free variable.

This means that a non-deictic variable cannot pick up contextual values by default, like regular variables do. An item containing such a variable will be referentially deficient, or non-referential, and will thus depend on another element in the sentence for reference. Greek NPIs such as *kanenas* (that we talked about in section 3) contain type e non-deictic variables of this kind. Free choice items like *opjosdhipe* that we also saw in section 3 contain type i (world) non-deictic variables (Giannakidou 2001, Giannakidou and Cheng 2006). Here I am extending the analysis to identify the PNP as a polarity item containing a non-deictic temporal variable whose presence renders the PNP a dependent form. I will propose the following semantics for nonpast.

(82) $[[\text{nonpast}]] = \lambda P \lambda t P((t, \infty))$

This semantics is inspired by Abusch's (2004) analysis of *will* as a substitution operator. According to Abusch, "in the substitution operator, t is a bound variable that corresponds to the tense argument of will [which is n, coming from the higher PRES; clarification mine]. For a top-level occurrence of will, the effect is to substitute (n, \infty) for n" (Abusch, 2004:39). However, with the Greek nonpast we will not be able to do this substitution because, unlike *will*, which is decomposed into the substitution operator plus PRES supplying n (Abusch 2004: (48)), the Greek nonpast contains no higher temporal information, that is, no PRES, it will thus require some other element to supply n; without it, t remains free at the top. But t is, as Abusch puts it, a **bound** variable, and as such it cannot be left free. In this case, the structure becomes ill-formed:
The interval \((t, \infty)\) lacks temporal orientation, because \(t\) lacks reference to a time: it can only be interpreted as bound variable, and here there is nothing above nonpast to bind it. A kind of default rule that would give the utterance time as its value would not work either, because it doesn’t supply a real binder. The PNP form must therefore rely on another element in the sentence to give a value to \(t\). This is why the PNP must be “licensed”.

Given the dependent nature of nonpast and its inability to function as a PRES and introduce \(n\), it becomes necessary to introduce \(n\) in some other node in the clause. With the indicative, the designated node is Now-TP which hosts \(tha\); but in the subjunctive clause \(tha\) is not projected (\(na\) and \(tha\) are incompatible; Giannakidou 2009, Roussou 2000, and references therein), so \(n\) will be given by the next inflectional head above TP: Mood.

\[ (84) \quad [[\text{na}]] = n \]

\[ (85) \quad \text{CP: } \exists e \ [ \text{win}(j,e) \land e \subseteq (n, \infty) ] \]

\[ \quad \text{C: } \emptyset \quad \text{MoodP: } \exists e \ [ \text{win}(j,e) \land e \subseteq (n, \infty) ] \]

\[ \quad \lambda p \not p \quad \text{Mood: } na: n \quad \text{TP: } \lambda t \exists e \ [ \text{win}(j,e) \land e \subseteq (t, \infty) ] \]

\[ \quad \text{kerdisi o Janis} \quad \text{"John wins"} \]

\(Na\) thus functions as PRES in a subjunctive clause. Given that in indicative clauses \(n\) is given by \(tha\), an additional overt exponent in Mood becomes redundant, and this is, I believe, why there is no overt indicative particle in Greek. Here \(n\) is introduced by the Mood head which hosts \(na\). In the absence of a modal or adverbial or a question particle, at \(C^0\) we have the operator that gives the illocutionary force of a request or a command: \(\lambda p \not p\).

In other words, particle subjunctives, and related particles in Balkan languages (I would suppose), have the PRES-like function of introducing \(n\), and are always embedded, even in main
clauses—since they are under the force operator (or, we saw in Greek, an epistemic modal operator) in C. When embedded under a verb, *na* gives the internal now of the attitude. There is more detailed consideration of specific embedded examples in Giannakidou 2009, and for reasons of space I close the present discussion here.

### 6 Conclusions

The main conclusions to be drawn from this work are the following. First, subjunctive selection in Greek manifests lexical sensitivity to nonveridicality. The cases of canonical (selected) as well as non-canonical (triggered) subjunctives, at least in Greek, seem to follow this pattern—and evidence from Russian adduced in Borchev et al. and Partee 2008 suggests the same for Russian. The sensitivity of subjunctive to nonveridicality also helps us make sense of the fact that polarity items are licensed in subjunctive clauses (if the language allows the mood distinction) or under nonveridical elements—verbs, as well as adjuncts such as *before and without*. In order to be successful, a semantic account of mood selection must be able to connect these three facts—selection by verbs and adjuncts, non-canonical triggering by negation and in relative clauses, polarity item licensing—and, as far as I can tell, the other accounts currently on the market cannot.

Another way of summarizing our findings is to say that the sensitivity to nonveridicality is a phenomenon grammaticized in at least three ways (mood selection, mood triggering, and NPI licensing). If a language does not have mood distinctions, e.g. English, we are bound to see on the latter; in a language like Greek, we can see all three.

In answering the question of why the subjunctive is dependent, I suggested that there is a deep deficiency in Greek in what appears as a potential present (PRES) form, the PNP. The PNP contains a non-deictic temporal variable that cannot be interpreted by default referring to the utterance time. The presence of this variable renders the PNP unusable in veridical contexts. In order to use PNP, it becomes necessary to introduce PRES in a higher node. In the indicative, there is a designated node that does this job: Now-T, occupied by *tha*. In the subjunctive, the PRES function it done by *na*, whose contribution, I thus argued, is just temporal. The subjunctive is therefore indeed a ‘deficient’ tense (Picallo 1985), but in Greek the deficiency is manifested as a relation between two positions in the tree. In main clauses, both of these positions (*na* and the PNP) remain embedded under the (deontic, epistemic, or interrogative) operator in C.
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