

# The dependency of the subjunctive revisited: Temporal semantics and polarity

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Received 2 March 2006; received in revised form 19 August 2008; accepted 12 November 2008

Available online 5 March 2009

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## Abstract

In this paper, I examine the syntax-semantics of subjunctive *na* clauses in (Modern) Greek. These clauses contain a dependent verbal form with no formal mood features: the perfective nonpast (PNP). I propose that the function of *na* is to introduce the variable *now* (*n*) into the syntax, which is needed because the apparent present tense in the PNP cannot introduce *n*. The PNP contains a *dependent* time variable, i.e. a referentially deficient variable that cannot be identified with the utterance time of the context. This analysis suggests that there is a meaningful distinction between the category “non-past”—which does not make reference to the utterance time—and the category “present”—which does. The analysis relies on the pronominal theory of tense (Partee, 1973, 1984; Kratzer, 1998, and others), and the idea that at least some polarity dependencies emerge as referential ‘deficiency’ of what becomes the polarity item (Giannakidou, 1998, 2001, to appear). In the present work, I treat the Greek non-past as a non-deictic time, i.e. as a time that cannot get a value from the context alone, thus rendering the PNP an instance of a temporal polarity dependency. The analysis proposed here for the PNP can hopefully be useful also for the analysis verbal subjunctives in Romance languages, and infinitival forms in English, but investigation of these will have to be left for the future.

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*Keywords:* Nonpast; Perfective aspect; Non-deictic variables; Subjunctive; Dependent reference; Polarity; Temporal dependency; *now*; Subjunctive particles; Nonveridicality; Clause typing

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## 1. Introduction: mood choice and the dependency of the subjunctive

One of the recurring characterizations of the subjunctive mood is that it is dependent, as opposed to the indicative which is said to be independent, and is the mood *par excellence* of unembedded assertions (Quer, 2009). A corollary of this distinction renders the subjunctive usable only in complement clauses of verbs that share a particular semantic characteristic, and which *select* the subjunctive. In its strong form, the dependency thesis is not mere selection by a higher predicate, but claims that the subjunctive is “triggered” by certain semantic properties of the embedding context, pretty much the way polarity items (PIs) are triggered by their licensers; the subjunctive can thus be viewed as a PI of some kind (Giannakidou, 1994, 1995 among others).

The formal study of the parameters regulating mood selection has a long history originating in the philosophical discussion of conditionals in possible world semantics (Anderson, 1951), speech acts, and illocutionary force (Searle,

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1969; Searle and Vanderveken, 1985, among others). In linguistics, the study of the semantics of mood has made use of the philosophical categories, and when it comes to complementation, has emphasized the role of the embedding propositional attitude verb. The aim has been to provide a coherent and relatively uniform characterization of the group of verbs that select the subjunctive and those which select the indicative. The traditional grammarian's view of the division corresponds to the *realis* (indicative) and *irrealis* (subjunctive) distinction; but the empirical problems with this division prompted refinements based on modality (Farkas, 1985, 1992a,b), nonveridicality (Giannakidou, 1994, 1997, 1998, 1999), model shift (Quer, 1998), illocutionary force (Rivero and Terzi, 1995), and situation semantics (Portner, 1997). Researchers also have exploited the idea that the subjunctive denotes a defective tense (Picallo, 1985), or a null ordering source (Giorgi and Pianesi, 1998). I will not summarize the various theories here (see Quer, 1998; Portner, 1999 for quite lucid overviews); instead I will follow my earlier work, and take the property of (non)veridicality (to be presented later on) to be the semantic factor regulating mood choice.

When we look at the actual realizations of the category “subjunctive” in European languages, we observe a typological split. On the one hand, we have languages where the subjunctive is expressed with a piece of morphology on the verb specific to this category (though it may turn out that verbal mood morphemes are not irreducible to tense or aspect); Romance languages exhibit the subjunctive of this kind which we may label *verbal subjunctive* (see also Quer, 2009). On the other hand, we have languages where no specific verbal morphology is employed but the category is identified with uninflected particles that appear external to the verb, looking like complementizers (and often characterized as such). Balkan languages (e.g. Albanian, Bulgarian, Serbo-Croatian, and Romanian) exhibit this pattern (see Rivero, 1994; Terzi, 1992; Roussou, 2000; Bulatovic, 2008 for general discussion). Ancient Greek exhibited a rich paradigm of non-overlapping verbal moods for the indicative, the subjunctive, and the optative; but Modern Greek aligns typologically with its Balkan neighbors and exhibits mood distinctions external to the verb. In particular, it employs the particle *na* for the subjunctive. Importantly, *na* is accompanied typically by a verbal form—the perfective nonpast—which is itself also dependent (Holton et al., 1997): it cannot occur on its own, but needs *na* (and other nonveridical particles: *tha*, *as*, *an*) to “license” it. Both *na* and the PNP exhibit polarity-like behavior and this will be the starting point of our discussion.

In this paper, I address the question of what the meaning of the subjunctive is, and how exactly this meaning is responsible for the property of dependency. My main focus will be the particle subjunctive *na* of Modern Greek<sup>1</sup> and the PNP. The goal will be to offer an account of these forms that will explain their dependency straightforwardly. I will argue that the semantic contribution of the subjunctive is to introduce the temporal variable *now* (*n*) into the syntax. This will be necessary because the apparent “present” tense in the PNP cannot introduce *n*. The PNP, instead, contains a *dependent* time variable. This variable cannot be interpreted deictically—the way a free variable can; hence it cannot be identified with the utterance time by purely contextual means. The utterance time must thus be introduced by some element in the sentence, which then serves as the antecedent for the identification of the time of the PNP. In other words, the PNP contains a temporal variable that is referentially *dependent* in the sense of Giannakidou (1998, to appear).

This analysis relies on two premises. One is the (quite influential) idea that pronouns and tenses are analogous creatures, i.e. interpretable by the same mechanisms in grammar (Partee, 1973, 1984; Heim, 1994; Kratzer, 1998, and others). The other premise is that at least some polarity items are expressions that contain dependent variables (Giannakidou, 1998, 2001, to appear), i.e. variables that are referentially deficient, and cannot be interpreted deictically. In Giannakidou (1998, 2001) I suggested two kinds of such variables: (a) dependent individual variables, giving rise to PIs like *any*, Greek *kanenas*, and *wh-the hell* items (den Dikken and Giannakidou, 2002); and (b) dependent world variables, creating intensional free choice items in various languages (an idea further implemented in Giannakidou and Cheng, 2006). In the present work I am proposing to treat the subjunctive mood as a non-deictic time, thus an instance of a polarity dependency of the temporal kind.

An attempt to explore the analogy between tenses and pronouns with somewhat similar typological concerns is Schlenker (2003, 2004). Schlenker (2003), in particular, suggested that not all indexical pronouns are interpreted in the same way. In his system, there are two types of indexicals: the *unshiftable* ones, i.e. those that can only be interpreted with respect to the context of the actual speech act, and the *shiftable* ones, i.e. those that can be evaluated in this context as well as in the context of the reported speech act. The driving idea in my paper is exactly the same: that not all *variables* are alike, in that not all of them are interpreted by the same procedures. I then go one step further and argue that there is a natural class of variables that are dependent because they cannot be interpreted deictically. Such variables are not

<sup>1</sup> Since we are not going to consider Ancient Greek, in what follows, I will use the term “Greek” to refer to Modern Greek.



- (4) Tha to pis.  
 FUT it say.PNP.2sg  
 ‘You will say it.’
- (5) Prin to pis,.... (before)  
 before it say.PNP.2sg  
 ‘Before you say it,...’

The dependency of the PNP and its relation to the particles that license it will be the central concern in this paper. Greek nonpast differs obviously from equivalent forms in Slavic and Germanic where the nonpast can be used on its own, but with futurate meaning:

- (6) a Jan komt morgen. (Dutch)  
 b Johan kommt morgen. (German)  
 c John arrives tomorrow. (English)  
 d \* O Janis erthi (PNP) avrio. (Greek)  
 the John come.PNP.3sg tomorrow

As seen in example (6d), the Greek PNP remains robustly unusable, and the adverbial *avrio* ‘tomorrow’ does not help improve it. The questions that immediately arise, then, are the following:

1. Why is PNP unusable on its own?
2. Why does the PNP improve with *na*, *tha* but not with just an adverbial? What is the relation between the particles and the PNP?
3. Why do we get a futurate meaning from an apparent non-future (PNP) form? Why is the shift not possible in Greek with PNP alone?

These questions will guide our discussion, and will prompt us to explain: (a) what the precise semantics of the nonpast is and how it is incompatible with the perfective, (b) what exactly it is that *na* contributes and yields improvement, and (c) what the link is between the PNP and the subjunctive *na*.

Let us now consider mood choice in embedded clauses, in order to establish the dependency of *na* itself.

## 2.2. Mood choice in embedded clauses

In embedded clauses, Greek designates mood choice in what appears to be the complementizer position. For indicative complements, the complementizers *oti* and *pu* are employed:

- (7) O Pavlos ipe **oti** efije i Roxani.  
 the Paul said.3sg that left.3sg the Roxani  
 ‘Paul said that Roxanne left.’
- (8) O Pavlos lipate **pu** efije i Roxani.  
 the Paul is-sad.3sg that left.3sg the Roxani  
 ‘Paul regrets that Roxanne left.’

*Pu* has been characterized as the factive complementizer, because it introduces the complements of factive verbs, e.g. emotive factives like *lipame*, *metaniono* ‘regret’, *xerome* ‘be-glad’ (cf. Christidis, 1981; Varlokosta, 1994; Roussou, 1994, 2000). Semi-factives like *thimame* ‘remember’ optionally take *pu* or *oti* complements:

- (9) Thimame {pu/oti} ton sinandisa sto Parisi.  
 remember.1sg that him met.1sg in-the Paris  
 ‘I remember that I met him in Paris.’

The version of *thimame* ‘remember’ with *pu* has a strong “subjective” dimension (Christidis, 1981), which means that in using the *pu* complement the speaker can re-live the fact in discussion; the indicative remains a neutral assertion. This difference is the one we find in English between *remember + ing* (reliving the fact) and *remember that* (purely recollecting it) respectively, but it is not important for the purposes of our discussion here.

With subjunctive complements the subordinator is *na*:

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

Greek subjunctives after verbs of volition, desideratives, and directives correspond to English infinitives, hence the contrast *otilpu* (indicative) versus *na* (subjunctive) maps, at least superficially, to a difference between *that* and *to* in English. Just like infinitivals, *na* complements can be dependent temporally on the tense of the higher verb (Picallo, 1985; Abusch, 2004; Kamp and Reyle, 1993), a point to which return.

### 2.3. Mood choice and (non)veridicality

A recurring intuition about the subjunctive crosslinguistically is that it is “selected” by a particular class of predicates. Following my previous work, I treat this class as nonveridical (see also Borschev et al., to appear, for an extension to Russian subjunctive, and Quer, 1998, for related approach with a slightly different implementation). I summarize the main details of the selection facts in this section.<sup>2</sup> We revisit embedded clauses in section 5.3, where we discuss briefly the temporal properties of the complements of nonveridical verbs such as *want*, the prototypical selectors of *na* clauses.

#### 2.3.1. Basic verb classifications

In a series of works (Giannakidou, 1994, 1995, 1997, 1998, 1999) I proposed an account of mood choice based on the notion of (non)veridicality. This account incorporates the more traditional intuition about the role of (*ir*)*realis*, but avoids the empirical problems of it by positing a divide within the class of intensional verbs depending on whether a truth inference is available, i.e. 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 a propositional attitude verb expresses such a commitment, it will be veridical and select the indicative; if not, it will be nonveridical and select the subjunctive. Summarizing earlier classifications, the verbs that select indicative (*oti* and *pu*) complements are listed below:

- (11) *Indicative verbs*  
*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’  
*semifactives*: anakalipto ‘discover’, thimame ‘remember’

Fiction and epistemic verbs are called *weak intensional* in Farkas (1985, 1992a,b), and select the indicative in most European languages that allow mood choice (with the exception of Italian epistemic verbs in certain contexts; see Portner, 1997, and Giorgi and Pianesi, 1998).

<sup>2</sup> In Giannakidou (1998) it is mentioned that *na* clauses can also occur with (though not strictly speaking selected by) some veridical verbs such verbs of perception (*I saw John leave*), and aspectual verbs like *arxizo* ‘start’ and *stamato* ‘stop’ (*John {started/stopped} signing*). Such uses are distinguished syntactically from the “regular” subjunctive complements we will be considering in at least three ways (Giannakidou, 1998), and I will take them to be a consequence of the necessarily finite complementation in Greek: in the absence of “smaller” complements, and given that the indicative is a complement with independent tense, Greek will resort to the subjunctive for complements that correspond to “smaller” structures such as bare infinitives or gerunds.

Verbs selecting *na*-complements, on the other hand, are the following<sup>3</sup>:

- (12) Directive *na*- verbs (subjunctive proper, i.e., equivalent to *to*-infinitivals)
- volitionals*: thelo ‘want’, elpizo ‘hope’, skopevo ‘plan’
- directives*: dhiatazo ‘order’, simvulevo ‘advise’, protino ‘suggest’
- modals*: (invariant) prepi ‘must’, bori ‘may’
- permissives*: epitrepo ‘allow’; apagorevo ‘forbid’ (negative permissive)
- negative*: apofevgho ‘avoid’, arnume ‘refuse’

These are known as *strong intensional* (Farkas, 1985, 1992a,b), and are nonveridical. With these verbs *na* embeds the dependent PNP form, and a futurate meaning arises (typical also of infinitival complements after the same class of verbs in English: *I want John to leave, I asked Bill to bring me flowers*). Certain verbs, e.g. *elpizo* ‘hope’, can take subjunctive as well as 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), a fact supporting the idea that the higher verb somehow “licenses” the subjunctive.

Finally, the subjunctive can appear in relative clauses modifying indefinites in the scope of negation (13) or after nonveridical verbs (16), as observed in Giannakidou (1998) and Veloudis (1984). Notice the contrast below with the indicative in (15).

- (13) Dhen idha enan andra [pu **na** forai kokino kapelo.] (subjunctive relative)  
not saw.1sg a man that SUBJ wear.3sg red hat  
‘I didn’t see *any man wearing* a red hat.’
- (14)  $\neg\exists x$  [man(x)  $\wedge$  wear-red-hat (x)  $\wedge$  saw (I,x)]
- (15) Dhen idha enan andra [pu forai kokino kapelo.] (indicative relative)  
not saw.1sg a man that IND wear.3sg red hat  
‘I didn’t see *some man who was wearing* a red hat.’
- (16)  $\exists x$  [man(x)  $\wedge$  wear-red-hat (x)]  $\wedge$   $\neg$  saw(I, x)
- (17) 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.’

With subjunctive, we are not sure if a man wearing a red hat exists in the context (as indicated in the translation by the use of *any* which only admits the scoping of the existential inside negation); with the indicative, on the other hand, it is asserted that such man exists but I didn’t see him (as indicated above by the use of *some*). Subjunctive licensing in relative clauses is observed in Romance languages (Farkas, 1985) and elsewhere. Farkas claimed that subjunctive relative clauses indicate that the NP is interpreted inside the scope of intensional operators (thus calling subjunctive relatives *intensional descriptions*).<sup>4</sup> Negation, however, is not intensional (Giannakidou, 1998; Partee and Borschev, 2004), and it is difficult to imagine how it could be made to be;

<sup>3</sup> The subjunctive may also be triggered in certain cases under negation (Giannakidou, 1995; though this phenomenon is more marginal in Greek than it is in Romance; see also Siegel, 2009), a fact that supports further its polarity-like behavior.

<sup>4</sup> Apparent counterexamples to this generalization, for example, subjunctive relatives modifying NPs in simple past tense sentences (which are not intensional), were claimed to create purpose clauses, thus rendering the subjunctive environment somehow intensional again; see Farkas (1985) for more details. Another problem for the intensional generalization, though, that is harder to overcome is that the Romanian subjunctive is licensed in existential sentences too, a clearly extensional context. For reasons of space, more detailed examination of the subjunctive relative facts will have to await future research.

therefore the generalization that subjunctive relatives are licensed by nonveridicality rather than intensionality (Giannakidou, 1998) seems more plausible, although there are differences between selected *na* complements and relative clauses, as well as crosslinguistic differences, that are in need of an explanation. I hope that the ideas in the present paper will help guide future research in this area.

### 2.3.2. The subjunctive versus indicative and nonveridicality

Montague (1969, 1974) talks about nonveridicality and relates the notion to existence: a verb like *see* is veridical because if *I see a unicorn* is true, then it must be true that a unicorn exists; a verb like *look for*, on the other hand, is nonveridical because if *I am looking for a unicorn* is true, it is not necessarily true that a unicorn exists. Giannakidou (1994, and sequel) and Zwarts (1995) further noticed that polarity items are excluded from veridical sentences but are allowed in nonveridical ones (see also Lin, 1996, for the related idea that *non-existence* is the relevant property for licensing NPIs in Chinese), and formalized definitions of veridicality based on truth rather than existence. Truth and existence are obviously related—as can be seen more clearly in the nonveridicality of determiners (Giannakidou, 1998, 1999), the properties of subjunctive relative clauses, and the fact that nonveridical environments are environments that do not force reference, and are thus comfortable domains for referentially deficient expressions such as polarity items (Giannakidou, 1998, to appear).

The idea behind veridicality and nonveridicality is very simple. A propositional operator  $F$  is veridical iff from the truth of  $Fp$  we can infer that  $p$  is true according to some individual  $x$  (i.e. in some individual  $x$ 's epistemic model). This inference is typically an entailment of the sentence where  $F$  occurs, but it can also be given by a presupposition of that sentence (as is the case with factive verbs and determiners). If inference to the truth of  $p$  under  $F$  is not possible,  $F$  is nonveridical. Nonveridicality, then, captures a state of unknown (or as yet undefined) truth value. This basic idea is expressed in the definitions below:

#### (18) DEFINITION 1. (Non)veridicality for propositional operators

- i. A propositional operator  $F$  is veridical iff  $Fp$  entails or presupposes that  $p$  is true in some individual's epistemic model  $M_E(x)$ ; otherwise  $F$  is nonveridical.
- ii. A nonveridical operator  $F$  is *antiveridical* iff  $Fp$  entails that *not*  $p$  in some individual's epistemic model:  $Fp \rightarrow \neg p$  in some  $M_E(x)$ .

(Non)veridicality is based on truth values, and only Boolean functions can be taken to be nonveridical (Bernardi, 2002:132). Excluding determiners, (non)veridical functions are typically proposition embedding functions: sentence adverbs, modal operators, tense, temporal adverbs, connectives, propositional attitude verbs, the question operator. Relativization of (non) veridicality to epistemic models is motivated by the need to deal with the veridicality properties of propositional attitudes.

Epistemic models are sets of worlds anchored to an individual (the *individual anchor*; Farkas, 1992a) representing worlds compatible with what the individual believes. Without embedding, the only relevant epistemic agent is the speaker, and hers is the only model we consider. But with embedding under propositional attitudes, the model of the attitude subject is also relevant and plays a decisive role.

Assuming standardly that speakers are truthful, unembedded positive episodic assertions are veridical: unless lying or purposefully wanting to deceive, upon uttering a positive sentence in the simple past, the speaker is committed to its truth. These are the typical indicative cases. Additionally, past assertions contain a (possibly covert) perfective past tense which is veridical: From *John found a snake (yesterday)* we can infer that it is true now that at some point in the past *John found a snake*.

Nonveridicality, on the other hand, characterizes the meaning of functions that do not ensure truth, e.g. volitional verbs like *want*, *suggest*, *insist*, all selecting subjunctive complements. From the truth of *John wants to find a snake* we can infer nothing as to whether John actually finds or found one. Modal verbs, the future, the question operator, as well as the connective *prin* 'before' (Giannakidou and Zwarts, 1999) are all nonveridical.

Since the details for each case mentioned have been discussed elsewhere, I am not going to expand here, but for the sake of clarity, let me elaborate a bit on the claim that indicative-selecting verbs are veridical. Consider *pistevo*

‘believe’. Epistemic verbs express relations between individuals and propositions, for which it holds that the main clause subject is committed to the truth of the embedded proposition. Though the speaker might disagree, a prerequisite for  $p$  to be true in (19) 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:  $M_E(\text{Jacob}) \subseteq p$ , i.e. Jacob must be committed to *Ariadne loves Paul* if he believes it. The speaker may believe or even know that what Jacob believes is false, but this is irrelevant for Jacob’s beliefs.

- (19)  $\llbracket \text{Jacob believes that Ariadne loves Paul} \rrbracket = 1$  if  
 $\forall w [w \in M_E(\text{Jacob}) \rightarrow w \in \lambda w'. \text{Ariadne loves Paul in } w']$

Hence, *believe* is veridical according to our definition:  $\llbracket \text{pistevo}(\text{su}, p) \rrbracket_c = 1 \rightarrow \llbracket p \rrbracket_{MB(\text{su})} = 1$ . The same holds for other epistemic verbs such as *think*, and *imagine*, as well as fiction predicates such as *dream*. With *dream*-equivalents, which are typical indicative verbs also in Romance, veridicality arises because the dream worlds replace the actual world (see also Farkas, 1992a,b), and in this case if  $x$  dreams that  $p$  is true then  $p$  must be true in the worlds compatible with  $x$ ’s dreams. Factive verbs are likewise veridical, and indeed strongly:  $p$  is true also in the speaker’s model (factive complements are *presupposed* to be true); see Giannakidou (1998, 1999).

The volitional class, on the other hand, contains future-oriented nonveridical verbs. Consider *thelo* ‘want’. I use the subject’s epistemic model as the anchoring model (instead of a deontic one, as in Portner, 1997); and this model may be seen as including worlds representing future realizations of the actual world, designated as  $M_{Efut}(\text{su})$  (though desires can also be about the past, but I ignore these cases here as they do not seem to alter the overall picture).  $M_{Efut}(\text{su})$  is partitioned into two sets, say  $W_1$  and  $W_2$ .  $W_1$  includes worlds in which  $p$  is true, so the following holds:  $\forall w', w' \in W_1$  and  $W_1 \subset M_{Efut}(\text{su})$ ,  $\llbracket p \rrbracket = 1$  in  $w'$ , therefore  $W_1 \subseteq p$ .  $W_2$ , the complement of  $W_1$ , contains worlds where  $p$  is false:  $\forall w'', w'' \in W_2$  and  $W_2 \subset M_{Efut}(\text{su})$ ,  $\llbracket p \rrbracket = 0$  in  $w''$ , therefore  $W_2 \cap p = \emptyset$ . The worlds in  $W_1$  are more desired alternatives than the worlds in  $W_2$ , but still, from *want* ( $\text{su}, p$ ) we cannot infer that  $p$  is true in  $M_{Efut}(\text{su})$ , because the truth of  $p$  comes about as an existential condition:

- (20)  $\llbracket \text{Jacob wants that Ariadne leave} \rrbracket = 1$  if  
 $\exists w [w \in M_E(\text{Jacob}) \wedge w \in \lambda w'. \text{Ariadne leave in } w']$

Hence  $M_{Efut}(\text{su})$  simply intersects with  $p$  and is not included in it, as is the case with the indicative-selecting *believe* and its ilk. We can also not infer that the actual world  $w_0$  will be a member of  $W_1$ , the set of  $M_{Efut}(\text{su})$  worlds that are also  $p$  worlds. Hence directive verbs selecting typically *to*-infinitivals such as *want*, *hope*, and other members of the volitional and directive class, are nonveridical:

- (21)  $\llbracket \text{thelo}(\text{su}, p) \rrbracket = 1 \not\rightarrow \llbracket p \rrbracket_{M_{Efut}(\text{su})} = 1$  ‘want’

A similar analysis can be given for the other subjunctive-taking attitude verbs and modal verbs (see Giannakidou, 1998, 1999, for more details).

### 3. The syntactic status of *na* and the Greek clause

In this section, I am going to propose that *na* has a double function as a mood and subordinator. I suggest a syntax of *na* as a Mood head linked, in main clauses, to a complementizer  $C$  with the illocutionary force of the imperative. (In embedded clauses there is no imperative illocutionary force—imperative clauses across languages resist embedding—and embedded  $C$  contains merely the lambda operator, as I will argue in section 5.3.) The suggested link between Mood head and  $C$  can be traced back to Kempchinsky’s (1986) analysis of the Romance subjunctive; as regards Greek, I capitalize on Philippaki-Warbuton’s (1998 and earlier work) ideas about the Greek clause structure, and combine these with the position that somehow *na* ends up looking like a complementizer (Agouraki, 1991; Tsoulas, 1993; Roussou, 2000).

### 3.1. Background: *is na Mood or C?*

In the long history of the syntactic characterization of *na*, we distinguish two main approaches. In one approach, *na* is the head of the inflectional category Mood (MoodP; Philippaki-Warbuton, 1985, 1993, 1996, 1998; Philippaki-Warbuton and Veloudis, 1984; Tsimpli, 1990; Giannakidou, 1998). MoodP is distinct from T/AgrP, and directly preceding it, as supported below by the position of the clitics. If the auxiliary *ixes* ‘had.2sg’ plus the clitics occupy T/Agr<sup>0</sup> in (22), then it follows that *na* must be higher than T/AgrP.

- (22) Na to ixes pi.  
SUBJ it had.2sg said  
‘You should have said it.’

(Notice that *na* here combines with past tense verb, and no future or futurate reading arises.) The structure of a main clause, in the MoodP analysis, looks as follows:

- (23) [C [ Mood [ T/Agr [Aspect [V]]]]]

The second approach claims that *na* is a complementizer C<sup>0</sup> (Agouraki, 1991; Tsoulas, 1993, 1996; Roussou, 2000). In this analysis there is no MoodP, and the structure looks as follows:

- (24) [CP *na* [ T/Agr [Aspect [V]]]

(Roussou’s account uses an extended C-domain, and we consider it shortly.). Characterizing *na* as a C captures the fact that *na* is in complementary distribution with the complementizer *oti* in embedded clauses (*\*na oti*, *\*oti na*), and is also consistent with the fact that *na* is not inflected.

The pure C-analysis of *na*, however, has to meet a number of challenges. First, it fails to capture the similarity between *na* and the so-called future particle *tha* (Roussou, 2000), and the fact that *na* and the verb must be adjacent, unlike *oti*. Indeed, no lexical material may intervene (apart from pronominal clitics and negation), between *na* and the verb, as we see below, where the subject cannot appear between *na* and the verb; overt subjects must appear either preverbally, to the left of *na*, or postverbally:

- (25) a \* Thelo na o Pavlos erthi.  
want.1sg SUBJ the Paul.nom come.3sg  
b Thelo o Pavlos na erthi.  
want.1sg the Paul.nom SUBJ come.3sg  
‘I want Paul to come.’

The adjacency requirement between *na* and the verb in a language like Greek with flexible word order cannot be explained if we take *na* to be a plain C<sup>0</sup>, since complementizers such as *oti* and *pu* can indeed be separated from the verb by other material (e.g. the subject):

- (26) O Pavlos ipse oti i Roxani efije.  
the Paul said.3sg that.IND the Roxanne left.3sg  
‘Paul said that Roxanne left.’  
(27) O Pavlos lipate pu i Roxani efije.  
the Paul regrets.3sg that. IND the Roxanne left.3sg  
‘Paul regrets that Roxanne left.’

Another problem for the C status of *na* is that *na* can co-occur with complementizers: e.g. with *ja* ‘for’, *prin* ‘before’, *xoris* ‘without’, and *pu* in relative clauses, as we saw earlier:

- (28) I Ariadne irthe **ja** na mas voithisi. (purpose clause)  
 the Ariadne came.3sg for SUBJ us help.PNP.3sg  
 ‘Ariadne came (in order) to help us.’
- (29) I Ariadne milise **xoris** na xrisimopiisi mikrofono. (*without*)  
 the Ariadne talked.3sg without SUBJ use.PNP.3sg microphone  
 ‘Ariadne talked without using a microphone.’
- (30) I Ariadne efije **prin** na erthi o Janis. (*before*)  
 the Ariadne left.2sg before SUBJ come.PNP.3sg the John  
 ‘Ariadne left before John arrived.’
- (31) Theloume mia gramatea **pu na** milai Italika.  
 want.1pl a secretary that SUBJ speak.3sg Italian  
 ‘We want a secretary who speaks Italian.’

*Ja* ‘for’, *prin* ‘before’, and *xoris* ‘without’ are plausibly C-elements; the co-occurrence of *na* is unexpected if *na* is also a C. Notice that these are nonveridical complementizers (Giannakidou, 1998; Giannakidou and Zwarts, 1999 for *prin* ‘before’); the incompatibility of *na* with the indicative *oti*, then, which was used in favor of the C analysis of *na*, may be due simply to a selection mismatch: *oti* is selected by veridical verbs, but *na* by nonveridical verbs and complementizers. Co-occurrence is thus semantically ruled out.

In a recent paper, Roussou (2000) refines the analysis of *na* as a C in the extended C-domain of Rizzi (1997). She proposes the following structure:

- (32) [C *pu* [Topic /Focus [C<sub>op</sub> *oti/an/na/as* [NegP *dhen/min* [C<sub>M</sub> *tha/tna* [cl+V]]]]]]  
 Roussou (2000: (19))

There are a couple of things that deserve comment here, the most obvious being that we have three C positions: C<sub>M(odal)</sub>, C<sub>op</sub>, and plain C. C<sub>M</sub> is a C head which hosts complementizers that are claimed to be modal: *na* and the future particle *tha* are assumed to be generated in this position. C<sub>M</sub> corresponds to Rizzi’s Fin (finiteness) head. C<sub>op</sub>, on the other hand, corresponds to Rizzi’s Force position and hosts subordinators proper (i.e. elements with clause typing properties that can also determine the illocutionary force of a clause). *Tha* is not a subordinator and remains in its base C<sub>M</sub> position, but *na* moves further to C<sub>op</sub> because it is a subordinator. The additional C position (Roussou’s innovation on Rizzi), hosts *pu*, which is assumed to be a pure subordinator with no modal properties. Putting aside the third C layer, the important features of this analysis are that there is a syntactic position in Greek where modality (*tha*, *na*) is captured: C<sub>M</sub>, and that clause typing happens at a different position. Regarding the subjunctive, the insight that it captures is that the pragmatic and semantic functions of this category should not be collapsed. And this insight is correct.

### 3.2. The syntax of *na*: Mood and C

In this section I will propose an analysis of *na* which incorporates the insight that we need to dissociate the pragmatic and semantic import of the subjunctive, while also reconciling the two apparently conflicting analyses of *na* as Mood or C head. I will suggest that *na* is somehow both, in a way to be made precise below.

Let us go back to Roussou’s analysis. Though the basic idea regarding the subjunctive is correct, the conclusions that *na* is C throughout, and that *na* and *tha* start their lives at lower modal Cs are hardly justified. First, it is *not* necessary that the modal head be a complementizer. Modal elements such as modal verbs, for example, are typically inflectional elements. It is true that *na* and *tha* do not inflect, but notice also that modal verbs too (in English as well as Greek) have impoverished inflection (with deficiencies in tense or person marking, for instance). Noone, however, has

seriously proposed that, for this reason, we must treat modal verbs as C elements; analogously, the lower modality does not have to be C. The second problem with Roussou’s analysis is that the alleged modality of *na* and *tha* remains undefined: no attempt is made to give at least a rough semantic approximation. To be fair, this is a deficiency that plagues almost all syntactic analyses that label the subjunctive “modal”, and as I suggest in the present paper, it is hard to trace the “modality” of the subjunctive because there is not one. Finally, there are important asymmetries between *na* and *tha* that suggest that it would be premature to treat them as realizations of the same “modality” as Roussou suggests.

Two core differences between *na* and *tha* concern negation: negation appears to precede *tha*, but follow *na*, as indicated below. Moreover, *tha* is preceded by the indicative negation *dhen*, whereas *na* is followed by *min*, the non-indicative negation (see Giannakidou, 1998:52 for describing the division this way; *min* is also the negator of gerunds).

(33) Na     *min*     to pis.  
       SUBJ not     it say.2sg  
       ‘Don’t say this.’

(34) *Dhen* tha     to po.  
       not FUT     it say.1sg  
       ‘I will not say this.’

The reverse orders \**min tha* and \**tha dhen* are ungrammatical. Given the distinct selectional pattern, and that *tha* is negated by the indicative *dhen*, we must agree with Philippaki-Warburton that *tha* “as the exponent of the future tense, operates within the indicative” (Philippaki-Warburton, 1998:169). Consider also that *tha* appears in *oti* and *pu* complements but not with *na*:

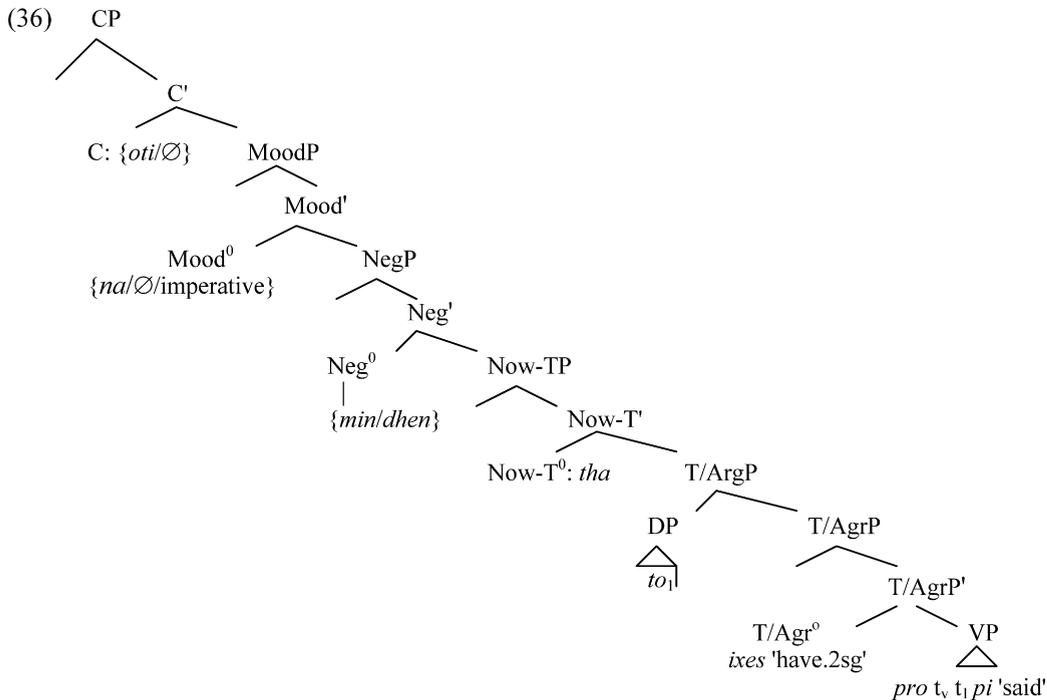
(35) a     ... {*pu/oti*}    tha erthi.  
           that        FUT come.3sg  
           ‘...that he will come’.  
       b     \* na tha erthi

This difference is inexplicable in Roussou’s account which must do something special to prevent coexistence of *na* and *tha* once the former has moved out of the lower C; but it follows if we assume that when we see *tha* the clause is indicative.

In my earlier work (Giannakidou, 1998), I argued that *dhen* and *min* head NegP in Greek, and that they are exactly parallel to the Italian sentential negations described in Zanuttini (1991): they take TP as their complement. If this is so, then *tha* must be generated as a separate T-related head—Future, as in Philippaki-Warburton, or *Now-T*, as I will suggest here. This explains the ordering *dhen tha* observed with negation, and it is also consistent with the semantic function of sentential negation, which applies to a proposition: the syntactic counterpart of the proposition is the TP. In this context, the *Now*-head is an extension of TP, and C remains, quite standardly, the domain of clause typing and force exclusively.

*Na*, then, must be generated in a position directly above negation. Following Philippaki-Warburton and Giannakidou (1998:55), I suggest that *na* projects MoodP. I will argue further, that *na* is linked to a null complementizer in C which gives directive illocutionary force in main clauses—but not in subordinate clauses (which remain assertions). The subordinator C is merely clause typing and the locus of the lambda operator (see section 5.3). Another idea would be to say that *na* itself moves to C (as argued in Giannakidou, 1998), but we will see evidence that *na* is compatible with illocutionary force other than imperative in main clauses. If this is so, then the only reasonable thing to say is that *na* stays in Mood.

The resulting structure will be the following:



Placing NegP above tense accords with the fact that *dhen* and *min* take sentential scope, and accounts for the orders [*dhe(n) tha* verb] and [*na mi(n) verb*] observed with the indicative and the subjunctive, and suggest that a clause containing *tha* is indicative. The orders [*dhe(n) clitics verb*] and [*na mi(n) clitics verb*] are also predicted under the assumption that clitics are adjoined to T/AgrP. Crucially, Now-T is a contribution of *tha* only; if *tha* is not present, Now-T is not projected. Given that the indicative is a zero morpheme in Mood (cf. Philippaki-Warburton, 1993), an interesting consequence of (36) is that it links mood in Greek to two positions: C and Mood, with indicative being overtly realized in C, and subjunctive in Mood.

Finally, this analysis predicts correctly incompatibility of negation and the imperative:

- (37) \* Min ela.  
not come.IMP.2sg  
(‘Don’t come!’)

As Zanuttini (1991) observed for Italian, a negation that has the status of an independent head cannot negate a morphological imperative. This follows if we assume that the imperative is a bound morpheme generated under Mood<sup>0</sup> but must move further to C where it gets the illocutionary force (Rivero and Terzi, 1995). With negation, verb movement is barred because of the head status of negation. With *na* there is no problem because the verb stays in T/Agr.<sup>5</sup>

Let me close this section with a brief digression: the phrase structure in (36) allows a new position for preverbal subjects in Greek—Spec, MoodP (for an earlier suggestion for this position see Drachman and Klidi, 1992). In most works since Philippaki-Warburton’s original claim, Greek preverbal subjects are said to be topics (see especially the recent discussion in Alexiadou and Anagnostopoulou, 1998); yet one hardly sees clear arguments for this position, and the intuitions of native speakers often disagree with it; e.g. sentences with preverbal subjects can indeed answer questions *what happened?*, which do not impose a particular status on their subjects. In the absence of real

<sup>5</sup> This, incidentally, would be an additional problem for Roussou’s analysis: if *na*, a head, must move to the higher C positions past negation, why isn’t this movement blocked by negation, just like in the imperative?

topicalizations or focus movement, where the preverbal subject can appear even higher than CP (e.g. preceding the *wh*-phrase *pjos*; Tsimplici, 1995), it makes more sense to place it in the specifier of MoodP, where it has no privileged discourse status, in agreement with intuition. The fact noted earlier, i.e. that overt subjects are excluded between *na* and the verb (*\*na o Janis erthi*) follows easily: subjects are predicted canonically pre-*na* (at Spec, MoodP) or postverbally (in their base VP internal position). In other words, the fact that Spec, TP in Greek is not a subject position follows not from the (controversial) status of the preverbal subject as topic, but from the properties of Greek clause structure: TP is an unsaturated inflectional domain, the highest inflectional category being Mood, which appears outside the verb.<sup>6</sup> In this set-up, Greek is not VSO (as is usually argued) but SVO.

We will explore next the temporal and aspectual properties of the verbal dependent (PNP), and offer in section 5 a compositional semantics for the syntax I just proposed.

#### 4. Tense and aspect in Modern Greek

In order to examine the interaction between the subjunctive *na* and the verbal form PNP, we must first understand the specific contribution of tense and aspect in Modern Greek. The Greek verb is obligatorily inflected for tense and aspect. The four possibilities for the verb *grafo* ‘I write’ are given in (38) (cf. Mackridge, 1985; Holton et al., 1997):

- |      |    |                             |               |               |          |                         |             |             |             |          |      |
|------|----|-----------------------------|---------------|---------------|----------|-------------------------|-------------|-------------|-------------|----------|------|
| (38) | a. | graf-                       | -o            | (INP)         | b.       | grap-                   | s-          | -o          | (PNP)       |          |      |
|      |    | write.                      | <b>imperf</b> | -1sg.nonpast  |          | write-                  | <b>perf</b> | 1sg.nonpast |             |          |      |
|      |    | ‘I am writing (right now).’ |               |               |          | [no English equivalent] |             |             |             |          |      |
|      |    | ‘I write (generally).’      |               |               |          |                         |             |             |             |          |      |
| (39) | a. | e-                          | graf-         | -a            | (IP)     | b.                      | e-          | grap-       | s-          | a        | (PP) |
|      |    | past-                       | write.        | <b>imperf</b> | 1sg.past |                         | past-       | write-      | <b>perf</b> | 1sg.past |      |
|      |    | ‘I used to write.’          |               |               |          | ‘I wrote.’              |             |             |             |          |      |
|      |    | ‘I was writing.’            |               |               |          |                         |             |             |             |          |      |

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 what I call 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.

Let us now spell out precisely the contribution of tense and aspect.

##### 4.1. Grammatical aspect in Greek

Following standard assumptions (and I am relying here on Kamp and Reyle, 1993; Klein, 1994; von Stechow, 2002; Giannakidou, 2003), I will take it that perfective aspect (*Aktionsart* will be ignored for reasons that will become clear in a second) 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).

For Klein (1994), grammatical aspect concerns the relationship between *event time* and *topic time*, where “topic time” refers to Reichenbach’s *reference time*. According to Comrie (1976:16), further, “perfectivity indicates the view of a situation as a single whole, without distinction of the various separate phases”. Greek perfective follows these

<sup>6</sup> A question arises here about the intermediate Spec positions. Conceivably, one could argue that these are still projected, for example in order to host temporal or aspectual adverbials. Or, we can hypothesize that phonologically empty pronominals linked to the subject may occupy them (as in Philippaki-Warbuton and Spyropoulos, 2003, for example).

descriptions and exhibits the typical eventive meaning associated with the perfective: it creates statements that involve existential quantification over events. Such statements, depending on the internal composition of the VP, are often telic and bounded (again, as is typically the case). I will treat perfective aspect 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:

$$(40) \quad [[\text{PFT}]] = \lambda P \lambda t \exists e [ P(e) \wedge e \subseteq t ]$$

The condition ‘ $e \subseteq t$ ’ (Kamp and Reyle, 1993) expresses that  $e$  takes place, or is included, at  $t$ ; the same thing can be expressed by making  $t$  an argument of the verb. A typical sentence with past perfective is interpreted episodically. This is straightforward if the verb itself is eventive, but statives can also be modified by the perfective, and trigger eventive readings (Giannakidou, 2003):

- (41) a. I Ariadni **agapise** ton Pavlo.  
Ariadne love.PP.3sg the Paul  
‘Ariadne fell in love with Paul.’
- b.  $\exists e [\text{love}(\text{Ariadne}, \text{Paul}, e) \wedge t <_n \wedge e \subseteq t]$

(I am assuming here the pronominal theory of tense, see discussion in the next section). This produces an inchoative reading: there is a falling in love event. Such aspectual shifts are common in languages (see Zucchi, 1998 for recent discussion and references), but in Greek they seem to be quite free (Giannakidou, 2003): with the exception of very few statives (e.g. *ksero* “know” which appears with only one aspect), statives generally can be modified by perfective and yield eventive readings of the kind specified here. Given this systematicity, I believe it makes sense to treat these shifts as the result of aspect, rather than lexical ambiguities. Whether the Greek verb itself contains eventuality information is a question I would be hesitant to answer positively. In previous works (Giannakidou, 2002, 2003) I suggested that the Greek  $V$  is unspecified (or underspecified) for lexical aspect; if it weren’t, that is, if *agapo* came lexically as a stative, then we would expect either a type mismatch to arise above, just like in English, contrary to fact; or we would have to posit systematic type shifting in order to fix the mismatch. Underspecification versus systematic type shifting make different learnability predictions which will in any case be exciting to test.

Imperfective aspect in Greek, on the other hand, is used for habitual and generic statements, as well as to denote progressive and ongoing events. Again, Greek is not unique in this respect, but pretty much follows the pattern observed in Romance and Slavic (Comrie, 1967). In both functions, what makes the imperfective different from the perfective is that it is temporal and stative: it creates an interval during which an event is in progress (and is thus viewed as a state since culmination is not included; progressive), or it expresses a purely temporal generalization (generic). When the imperfective is used for the progressive, I will assume that it denotes the function PROG. Following common practice (while ignoring other aspects of the progressive relating to frames and modality; see Landman, 1992; Bonomi, 1997), PROG will be taken to have the semantics in (42) which builds on Bonomi (1997):

- (42) The imperfective progressive PROG
- $$\text{PROG} = \lambda P \lambda i \exists s \forall t [(t \in C \wedge t \subseteq i) \rightarrow P(s, t) \wedge s O i]$$

The condition  $s O i$  indicates that  $s$  overlaps with the interval  $i$ . Hence for the sentence (43a) below, with *filuse* “kiss.progressive.past”, we end up with the meaning in (43b):

- (43) a. I Ariadni **filuse** ton Pavlo epi pende lepta.  
‘Ariadne was kissing Paul for five minutes.’
- b.  $\exists s [ \text{five-minutes}(i) \wedge i <_n \wedge \forall t [(t \in C \wedge t \subseteq i) \rightarrow \text{kiss}(\text{Ariadne}, \text{Paul}, s, t) \wedge s O i]]$

When used generically, the imperfective contributes GEN. The output is an interval during which generic quantification takes place. The particular formulation I am following relies on Krifka et al. (1995):

- (44) The imperfective generic/habitual GEN (based on Krifka et al., 1995)
- a. **GEN** =  $\lambda P \lambda i \text{ GEN}_t [(t \in C \wedge t \subseteq i; \mathbf{P}(t))]$
  - b. **PAST GEN (VP)** =  $\text{GEN}_t [t \in C \wedge t \subseteq i; \mathbf{write}(j, t) \wedge i \leq n]$   
(For *Egrafe o Janis* “John used to write”)

The imperfective thus expresses a generalization over times, and creates itself an interval for the VP property to map onto. As we see, no eventuality information is encoded with the generic use. To summarize, then, Greek verb forms, unlike English, are either eventive if perfective, or denote progressive and generic intervals. The differences will be important when we consider soon why the nonpast is bad with the perfective but good with the imperfective.

#### 4.2. Tense

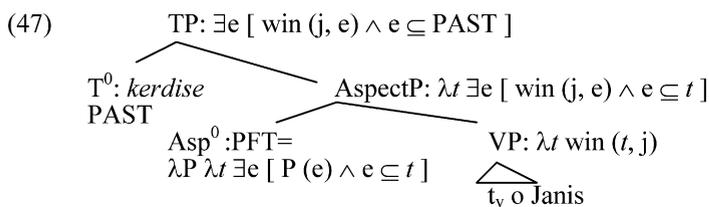
Let us now spell out precisely the contribution of tense. I will assume the pronominal theory of tense (originating in Partee’s, 1973, 1984 seminal work; see also Heim, 1994; Abusch, 1998, 2004, and others). Tenses contribute temporal variables, and they also give temporal orientation. E.g. a past tense denotes anteriority: it refers to a time prior to the utterance time, designated here as *n*:

- (45)  $[[\text{PAST}]^{\text{g}^\circ}]$  is defined only if  $g(t) < n$ , in which case  $[[\text{PAST}]^{\text{g}^\circ}] = g(t)$

I am following Heim in representing the orientation as a presupposition, but in the formulas I will be using we also find it as part of the sentence. 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. Present forms, on the other hand, are typically taken to denote simultaneity with respect to the utterance time—a claim that can be shown to be problematic for a number of reasons that I will not go to. But even if we accept that apparent presents express some relation to the utterance time, Greek nonpast, I will claim here, does not.

Consider first a Greek perfective past sentence:

- (46) *Kerdise* o Janis.  
won.PP.3sg the John  
‘John won.’



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. In this, it differs from the nonpast, which, as will shall see, specifies no relation to the utterance time.

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

#### 5. Subjunctive and the dependency of the nonpast

Recall that the PNP can never occur by itself in a sentence.

- (48) \**Fiji* o Janis.  
leave.PNP.3sg the John

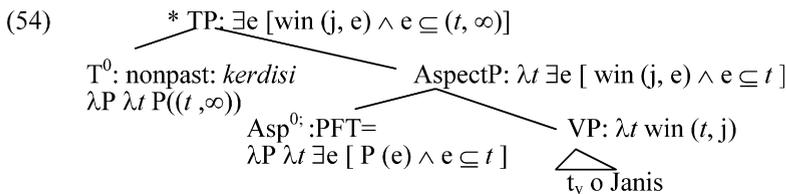


containing such a variable, the Greek PNP follows the pattern I identified for other PIs in recent work, which I called *non-deictic* indefinites (Giannakidou, 1998, to appear). It is the presence of this referentially deficient temporal variable that renders PNP a dependent form and polarity like.

I will propose the following semantics for nonpast.

$$(53) \quad \llbracket \text{nonpast} \rrbracket = \lambda P \lambda t P((t, \infty))$$

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*, ∞) 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*, ∞) 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”. The particles *na*, *tha*, etc., which in turn are triggered by nonveridical predicates (recall the mood selection patterns we observed earlier), I will argue next, ‘rescue’ the otherwise illicit PNP: they supply the needed *n*, thus fixing the referential “deficiency” of the nonpast by filling in *n* for *t*.

Before I proceed to show this, I would like to emphasize that the semantics I proposed here for the Greek nonpast rejects the view of nonpast being equivalent to the present tense in the sense of containing the time PRES—which in most analyses indicates simultaneity and is identified with the utterance time *n*. In other words, I am proposing that there is a meaningful difference between nonpast and present, and that languages may vary with respect to what their surface “present” forms denote: in languages like English, the surface form “present” denotes PRES and is capable of introducing *n*, which at the top will by default be identified with the utterance time. But in languages like Greek, the surface form “present” is really a nonpast and is not capable of making reference to *n*. This, I will argue, may be the basis for the dependency of verbal subjunctives too: we can hypothesize that they also contain what was defined here as nonpast (thus spelling out more precisely the intuition that verbal subjunctives contain “deficient” tense, as in Picallo, 1985).

One final question is: why is the PNP fine with the imperfective? The key to understand this difference is first to understand what it means to be fine. Consider an imperfective sentence in the nonpast. Such sentences are vague, in Greek as well as English, due to the ambiguity of the imperfective between the habitual and the progressive. However, if we add adverbials, the one or the other reading emerges. Consider the generic/habitual reading first, which comes about with the adverb *sixna* ‘often’, as indicated below:

(55) O Janis grafi sixna.

‘John writes often.’

$$(56) \quad \text{OFTEN}_t [t \in C \wedge t \subseteq i; \text{write}(j, t) \wedge i = (t, \infty)]$$

The key here is to realize that generic statements in the nonpast are *not* generalizations about the present. Rather, they are often described as “atemporal”: John often, in the present, past, and, given what we know, also future, writes. In

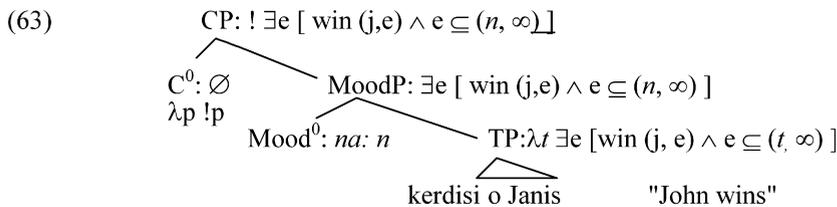


When Now-TP is not projected, *n* will be given by the next inflectional head: Mood.

- (61) Na kerdisi o Janis.  
 subj win.PNP.3sg the John  
 Let John win! (i.e. I wish that John wins).

- (62)  $[[na]] = n$

*Na* thus introduces *n* in the subjunctive clause. Given that in indicative clauses *n* is given by *tha*, an additional overt exponent in Mood becomes redundant, and this is why there is no overt indicative particle. In C further resides the directive force, designated below as “!” which assigns to the sentence the illocutionary force of a request or a command:



Here *n* is introduced by the Mood head which hosts *na*. At  $C^0$  we have the operator that gives the illocutionary force of a request or a command:  $\lambda p !p$ . This function is also performed by the imperative morpheme.

Occurrences of *na* with other illocutionary forces, e.g. interrogative, support further the observation that directive force is not an inherent contribution of *na*:

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

Here we have a wh-question, and C hosts the interrogative function which turns a proposition into a question. *Na* questions of this kind have been 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 attitude.

Consider, finally, other cases of *na* with past tense—a possibility for both *na* and *tha*. In these cases, as mentioned earlier, no future meaning arises:

- (65) a (Mallon) tha efije o Janis.  
 likely tha left.PP.3sg the John  
 ‘It is likely that John left.’ or  
 ‘(For all I know), John must have left.’  
 b Isos na efije o Janis.  
 perhaps/possibly Subj left.PP.3sg the John  
 ‘Perhaps John left.’

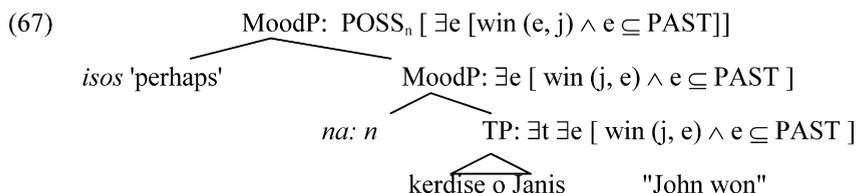
Here we have epistemic statements about the past, indicated in the translations. Both sentences are assertions, a fact again supporting the idea that *na* by itself does not contribute directive illocutionary force. Epistemic modality arises because of the adverbials *mallon* ‘likely’ and *isos* ‘possibly/perhaps’ (the use of which is optional with *tha* but obligatory with *na*)—recall the use of epistemic *araje* in the question earlier. If we were to assign inherent future meaning to *na* or *tha*, we would have trouble with these cases, where a past tense is used. The fact

that *tha* is not always future is not a novel observation; it is often mentioned in the grammars, and emphasized in Tsangalidis (1999).

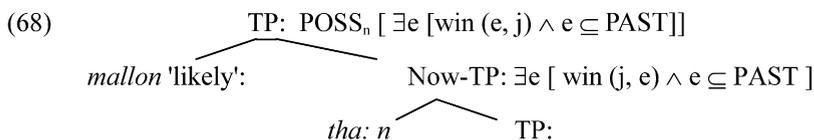
For our examples here, the perfective past will assign the following meaning to TP:

$$(66) \quad \llbracket \text{TP} \rrbracket = \exists e [ \text{win} (j, e) \wedge e \subseteq \text{PAST} ]$$

PAST is a time prior to  $n$  (and requires no overt reference time). *Na* will then introduce  $n$  which will now be used as the temporal index for the modal adverbial:



POSS is the possibility operator that the modal contributes, i.e. an existential quantifier over epistemic alternatives, taken here to be adjoined to MoodP. I will suppress more details about modality as they are not relevant to our discussion here; the important thing is that we assume that modality is always relativized with respect to a time (for recent discussion see Ippolito, 2003), and that *na* provides the time for the modal, indicated here by indexing  $n$  to POSS. The same applies to *tha*:



*Araje*, the question particle that we noted earlier, can be understood as an epistemic adverb, I will suggest. In case no modal is used (recall that *mallon* is optional with *tha*), I will assume a covert modal. Modality is thus not inherent to *tha* but is due to the epistemic modal. We end up, then, with a very simple semantics for *tha* that can capture its core uses (future as well as epistemic modal).

What we have seen so far is that *na* and *tha* have the function of PRES: they introduce  $n$  into the syntax. I believe this idea can be extended to the whole class of subjunctive and optative particles (*as*, *makari*, etc.). These particles function as PRES because the Greek nonpast itself is not PRES and cannot introduce  $n$ . At this point it is helpful to elaborate a bit on the nature on  $n$ . For Abusch (2004:38) and others,  $n$  is a variable, but the lexical entries of tenses contain free occurrences of it thus referring to the utterance time. This we saw to be the case with the past tense in Greek; and in main clauses the  $n$  from *na* and *tha*, I suggested, can also be identified with the utterance time. In complement clauses, however, we will find that  $n$  is bound by a lambda binder that resides in C (Abusch, 2004), and which is needed independently in order to create a property of times (*iwt*; the type of CP). It will be helpful to look at a case of embedding to see what consequences this assumption has for the interpretation of the embedded  $n$  of the *na* clause.

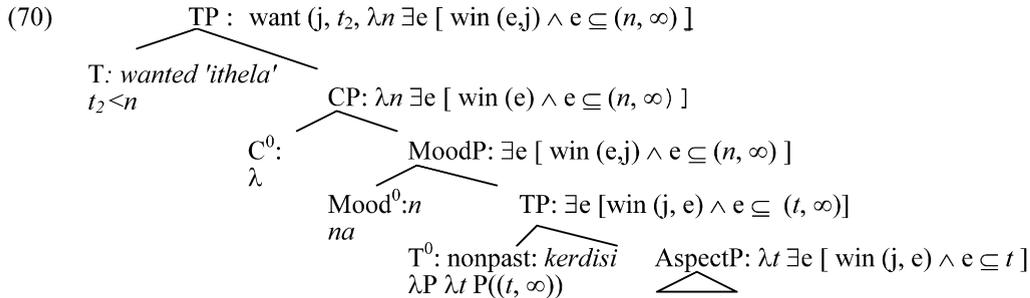
### 5.3. The subjunctive in complement clauses

When it comes to complement clauses, it is important to remember that there is no directive illocutionary force. This is consistent with the fact that the imperative force tends to not be embeddable (Portner, 2004) that I mentioned earlier. I will assume, then, that above embedded *na* a lambda binder rests in C. Consider embedding under a higher past:

- (69) Ithela            na        kerdisi        o Janis.  
 want.PP.1sg    SUBJ   win.PNP.3sg the John  
 'I wanted John to win.'

With the past tense *ithela* “want.past.imperf.” the top T contributes a time  $t_2 < n$  (past). If the *na*-clause is interpreted in the nonpast we get the mixed reading where I wanted in the past that there be an event of John’s winning that is not in the past.<sup>8</sup>

Past (mixed reading)



Would this imply that I wanted at  $t_2$  that John’s winning happen either at the utterance time or in any time after that? This would ascribe to me a very strange desire. Instead, my desire seems to be better expressed in the following paraphrase:

- (71) The time  $t_2$  of my wanting is located in the past, but the time  $t$  of John's winning is located in the interval that starts from  $t_2$  and extends to  $\infty$ .

That interval, then, would be the one that starts at the internal *now* of the attitude (which can be identified with  $t_2$ ) and moves forward to include the actual utterance time, as well as times before or after that. Hence, when embedded, the lambda bound  $n$  of *na* cannot refer to the utterance time, but to the relative  $n$  of the attitude. This is consistent with the fact that embedded *na* is *selected* by the attitude verb: it is interpreted inside its scope as a well behaved polarity item.

How about the free occurrences of  $n$  in main clauses? Do these contradict the narrow scope property that I just identified? The answer is negative. Recall first that in main clauses, *na* is always embedded under a nonveridical function – usually under illocutionary force (imperative or interrogative, as we saw), or a modal adverbial. We could rewrite the formulas and generalize that in these cases too we have a lambda binder for  $n$  and then identify  $n$  with the speaker’s  $n$  which would be, at the top, the utterance time. Hence in both cases,  $n$  is interpreted as relative, only in main clauses the result will never guide us to a time other than the utterance time.

Hence a welcome result of the idea that *na* denotes a relative *now* is that it offers a way to link its interpretation with its limited distribution under nonveridical attitudes and operators. In this sense, we have succeeded in providing a dependency analysis of *na* where its polarity status is not stipulated, but is consistent with its lexical semantics. This is a result that, to my knowledge, no previous analysis of the Greek subjunctive has achieved.

**6. The verbal dependent and  $n$  in conditionals**

In this final section, I want to extend the  $n$ -analysis to the conditional *an*. Let me first note that the conditional protasis constitutes a nonveridical context (Giannakidou, 1998, 1999): the *an* clause is hypothetical, and is also equivalent to the restriction of a universal quantifier, on a par with restrictions of quantifiers like *every* and *all* which are also nonveridical. *An* thus belongs to the class of nonveridical particles that we are discussing.

Here I wanted to consider briefly a puzzle posed by the following cases:

- (72) An **epine**                    o Janis                    afto to siropi tha jinotane                    kala.  
 if drink.imperf.P.3sg    the John                    this the syrup    fut become.imperf.P.3sg                    well  
 ‘If John drank this syrup he would get well.’

<sup>8</sup> This sentence also has the past anaphoric reading where the time  $t_2$  of wanting is located in the past, and the time  $t$  of John’s winning is also located in the past. I will assume that this reading is derived by a sequence of tense rule, but space prevents me from extending further on this here.

This is the case known as mismatched past counterfactual (Ippolito, 2003), or future less-vivid conditional (FLV; see Iatridou, 2000, which cites literature on Classical Greek for the term). In Greek as in English, the apparent past tense in the antecedent is interpreted as futurate, more or less equivalent to the PNP versions we just discussed. (The sentence also has the literal past reading, as well as a counterfactual in which case John didn't drink this syrup). The FLV, crucially, involves imperfective aspect along with the past (IP in the glosses below), and the interesting thing about it is that the tense and aspect shift to an interpretation inconsistent with either past or imperfective: the sentence is not generic or habitual, nor is it progressive, as expected by imperfective aspect; it also doesn't refer to a past event, as is expected by the past. Rather, imperfective past in the FLV reading seems to be near-equivalent to the PNP reading.

How does this equivalence come about? Since the FLV reading is given by a simple past and not a pluperfect, attempts to explain it by invoking a second layer of past like Ippolito (2003, relying on earlier work by Ogihara) cannot handle it successfully. A more plausible starting point would be Iatridou (2000) who suggested that the past tense in the conditional is interpreted as ranging not over times, but worlds, and expresses the following condition:

(73) The topic worlds  $w$  exclude the world  $w'$  of the speaker.

This is called the exclusion feature of the past (Iatridou, 2000:46). This condition says that the actual world is not among the topic worlds, and since there is no further temporal specification, it could very well be that the event in the *an*-clause is ongoing at the utterance time:

(74) An **epine**                    o Janis **tora**    afto to siropi    tha jinotane                    kala.  
if drink.IP.3sg                    the John now    this the syrup    fut become.imperf.past.3sg well  
'If John drank this syrup now he would get well.'

Hence we predict correctly the present meaning of the past form, triggered here with *tora* 'now'.

Plausible though it may seem, this account can be questioned on three counts. The first problem is conceptual: why is it that a time morpheme switches to quantification over worlds in the conditional? Allowing this flexibility in the meaning of the past tense is very close to treating the past tense morpheme as ambiguous between a modal and a temporal operator, but unless we have independent evidence for it, it is hard to see this move as something more substantial than mere stipulation. Instead, a more conservative strategy seems desirable by adhering to the idea that the past is a tense and refers to (or quantifies over) times always; in the conditional, the time of the past will be the time relative to which the conditional worlds will be considered.

The second objection is empirical: if the meaning of the past is indeed this flexible exclusion function, it is predicted that past should *generally* have the ability to shift to futurate meanings—e.g. also in restrictions of adverbial quantifiers, e.g. introduced with *otan* 'when':

(75) **Otan** epine                    o Janis (**#tora**)    afto to siropi tha jinotane kala.  
when drink.IP.3sg the John (\*now)    this syrup fut become.imperf.past.3sg well  
'(In some past interval) When John drank this syrup (#now) he got well.'

(76)  $Q_{w,t} [ t < n \wedge \text{John drank this syrup at } t \text{ in } w ] [ \exists t' \text{ following } t \text{ in } w: \text{John got better at } t' ]$

But this is not the case, as we see. The sentence here is a past habitual statement (notice the ill-formedness of *tora* 'now') denoting a generalization that whenever John drank this syrup at some interval in the past he got well. Tense and aspect are then interpreted literally in the *when* clause. Likewise with the conditionals *efoson* 'if/provided that' and *se periptosi pu* '(just) in case':

(77) Efoson epine                    o Janis (**#tora**)    afto to siropi tha jinotane kala.  
if                    drink.IP.3sg    the John (#now) this the syrup fut be.imperf.past.3sg well  
' # Provided that John drank this syrup (now) he would get well.'

- (78) Se periptosi pu epine o Janis (#tora) afto to siropi tha jinotane kala.  
 In case that drink.IP.3sg the John (# now) this the syrup fut.be.imperf.past.3sg well  
 ‘# In case John drank this syrup (now) he would get well.’

*Efason*, like *provided that*, is less of an all-purpose *if*, but the sentences are indeed conditional structures—yet they are incompatible with *tora* ‘now’, our diagnostic for the FLV reading. Both sentences, unlike *an*, remain only past conditionals (and may also give rise to past counterfactual readings), as expected from the use of past *tense*. The crucial fact here is that we have *efason* and *se periptosi pu* instead of *an* ‘if’. If the world reading of the simple past, as Iatridou argues, is responsible for the FLV non-past reading in the *an*-sentence, then we do not expect the absence of this reading with *efason* and *stin periptosi pu*. More generally, by arguing that the past can just shift from quantifying over times to quantifying over worlds in the conditional, we predict a systematicity of shifting from one option to the other that is not in fact attested—and we miss the generalization that the shift to FLV happens only in *an* clauses.

Finally, apart from some comments on genericity, the role of imperfective aspect remains unclear in Iatridou’s account. In our analysis, on the other hand, we capitalize precisely on the use of imperfective and the fact that it introduces an interval:

- (79) [[ epine o Janis to siropi ]] =  
 $\exists i [\mathbf{drank} (j, \text{the syrup}, i) \wedge i < n]$   
 (John *drank.imperfective* the syrup)

This is the literal interpretation of the imperfective past, which is of course possible as an independent assertion, and would yield either a habitual statement (e.g. with an adverbial like *kathe proi* ‘every morning’), or a progressive (e.g. with an adverbial like *epi dio lepta* ‘for two minutes’), as we saw earlier. When we add *an*, a relative *n* will be introduced which will be identified with the utterance time, and which can be used as the left boundary for the imperfective interval *i*; given no additional information, the imperfective interval will be taken to stretch forward, producing the futurate meaning.

- (80) [[ an epine o Janis to siropi ]] =  
 $\mathbf{drank} (j, \text{the syrup}, i) \wedge \underline{i} = (n, \infty)$

In other words, the presence of *n* that *an* contributes changes the temporal orientation of the imperfective interval from past ( $[t, n]$ ) to the underlined  $i = [n, \infty]$ . This accounts for the intuition that the past meaning is lost. The past meaning is at the same time also available: just like in the combinations of *na*, *tha* and past, the introduced *n* will serve as the temporal parameter of the conditional altogether. In this explanation, the reason why the FLV meaning arises with *an* and not with *otan*, *efason*, *se periptosi pu* is that these are regular complementizers and do not contribute *n*, unlike *an* which does. (This, I suppose, would entail an analysis of *an* as, starting at least, a lower, perhaps Mood head, a hypothesis worth exploring in future work.).

In this account, two factors are decisive: the ability of the particle to introduce *n*, and the use of imperfective aspect in the *an*-clause to create an interval. If our premises are correct, then we expect futurate readings to be triggered generally by the whole class of *n* expressions, i.e. with *na*, *as*, and *tha*, if they are accompanied by a past verbal form with imperfective aspect. This is indeed what we get:

- (81) {As/na} xtipouse to tilefono (tora)!  
 as na rang.imperf.3sg the phone now  
 ‘If only the phone rang now!’
- (82) Tha ertotane tora.  
 tha came.imperf.3sg now  
 ‘He was going to come now.’

- (83) {Thelo/tha ithela} na exotane tora.  
 I.want/would.like na came.imperf.3sg now  
 ‘I would like (him or her) to come now.’

Hence *as*, *an*, *na*, and *tha* behave as a natural class in allowing the nonpast reading with imperfective past, and this reading is not “fake” or deviant, but derived from the literal meanings of the particles and imperfective aspect in the system I laid out in this paper.

## 7. Conclusion

In this paper, I proposed a syntax-semantics for two dependent forms in Greek—the subjunctive particle *na*, and the verbal perfective nonpast—which cannot occur in positive unembedded assertions. *Na* is selected by nonveridical predicates, or appears embedded under imperative force in C in main clauses; and the PNP is dependent on *na*, *tha* and other nonveridical particles, hence it occurs in contexts where *na* and these particles occur. Following my previous work, I argued that these contexts are nonveridical, and my goal in this paper was to explain the dependency of both *na* and the PNP as the result of their lexical semantic contribution.

The key to the dependency of the Greek PNP to the particles is that Greek lacks an actual present *tense*. I proposed that the semantic function of the present tense is played by the particles: the so-called future *tha*, the subjunctive *na*, and the other (optative and conditional) particles we discussed. These particles, I argued, introduce a *now* variable *n*. In main contexts, *n* can be identified with the utterance time, which then serves as the parameter for the temporal anchoring of the PNP, resulting in the futurate reading. In embedded contexts, *n* remains a variable bound by lambda, and gives the relative *now* of the attitude. This is consistent with the fact that in embedded contexts *na* is selected and not freely occurring. The temporal *n* of the subjunctive in embedded clauses remains a relative *now*, an idea consistent with the fact that embedded *na* is triggered by a higher predicate.

The nonpast, on the other hand, introduces an open interval that depends on some other time to anchor its left boundary. In main clauses, this time will be provided by the *n* of *na* and *tha*, thus yielding a time that starts now and moves forward open-ended. In the absence of particles, the left boundary of the nonpast interval remains unspecified, i.e. unbound or unidentified with a previous time, and this renders the PNP ungrammatical. The PNP was thus identified as another instance of a referentially deficient *dependent* variable in the sense of Giannakidou (1998, 2001, to appear)—i.e. as a variable that cannot be used deictically to refer to a particular time specified by the context only. The analysis here relied on the important insight that tenses are pronominal elements, and unified the polarity behavior of temporal expressions with the polarity that we observe in the nominal domain.

The analysis I argued for has a number of potentially revealing implications for our understanding of mood, tense, and polarity in Greek as well as in other languages. For one thing, I suggested that there is no modality involved in mood: semantically, *na* and the PNP are just tenses. I also suggested that perhaps we can identify introducing *n* as the defining function of particle subjunctives (e.g. a phenomenon of Balkan languages) in general.

The notion of dependent time in the sense I suggested here, importantly, can give us a plausible foundation for the analysis of dependent tenses in other languages—for example, Bulatovic (2008) presents an account of *two* dependent, in the sense assumed here, tense forms in Serbian: the so-called Future 2, and the Serbian PNP which seems to be strikingly similar to the Greek PNP in terms of being a nonpast (rather than a present). Another likely domain to explore the consequences of this analysis is verbal mood in Romance languages (and perhaps *to* infinitival in English), though future research is needed to establish how far the temporal dependency analysis of the PNP can be extended to these cases. It is important to remember, in this connection, that the relation between the subjunctive and tense has not gone unnoticed in the literature, as indicated in the recurring intuition that the subjunctive tense is somehow “deficient” (Picallo, 1985; Quer, 2009). What I tried to do in this paper is argue that the deficiency of the tense of the subjunctive is in fact a very precise form of temporal dependency anchored to *now*. It remains to be seen how this idea can capture some of the puzzles left open, for instance, the use of the subjunctive in relative clauses.

## Acknowledgements

Many thanks to the editor of this issue, Josep Quer, for inviting me to write this paper and for making absolutely sure that I do so. I am grateful for the pressure and the detailed comments Josep provided, along with the many stimulating discussions on mood and the many related topics we have had through the years. I am also grateful to the audiences at MIT, UMass, the 8th *International Conference on Greek Linguistics* held at the University of Ioanina (Greece), and the Workshop on *Tense Across Languages* held at the University of Bamberg, where parts of this paper were presented. In particular, I benefited enormously from discussions with Barbara Partee during my visit to UMass, for which I am grateful; her suggestions and comments led to considerable improvements and, I think, a much clearer analysis. Many thanks also to Gina Bulatovic for talking about the Serbian dependent tenses, Jason Merchant, and Chris Potts, for their very insightful questions, suggestions, and discussion. Finally, my thanks to Kai von Stechow, Daniel Atschuler, and Dmitry Levinson for their written comments on earlier versions of this manuscript; to Sabine Iatridou, Angelika Kratzer, Marika Lekakou, Victor Manfredi, Oystein Nilsen, Anna Roussou and George Tsoulas for comments and suggestions; and to the two *Lingua* reviewers for their very helpful feedback.

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