

(Non)veridicality, evaluation, and event actualization: evidence from the subjunctive in relative clauses

Anastasia Giannakidou
University of Chicago
June 2013

In this paper, we study the subjunctive relative clause as a means to understand the relation between (non)veridicality, existence and event actualization. I argue that the subjunctive in the relative clause carries a presupposition of epistemic uncertainty as to the existence of a referent for the modified NP. This uncertainty can only be satisfied in non-veridical contexts, hence the distribution of the subjunctive relative clause only in these contexts. The use of the subjunctive in the relative clause correlates with other optional uses of the subjunctive where the subjunctive contributes nonveridical evaluation. In terms of event actualization, we find that veridicality and nonveridicality capture the behavior of aspectual operators such as the progressive, the perfective, and the meaning of TRY. If an operator imposes knowledge of at least partial actualization of an event, it is veridical. I call this ACTUAL operator, and the progressive and the perfective are such. But intentional verbs like TRY are nonveridical: they allow a stage of pure intention in their truth condition, and do not necessitate even minimal actualization.

1. Introduction: referential deficiency and nonveridical contexts

In a number of recent works, veridicality and nonveridicality have been proposed to regulate a number of limited distribution phenomena such as NPI licensing, free choice indefinites (Giannakidou 1997, 1998, 1999, 2006, 2011b; Giannakidou and Quer 2013; Zwarts 1995, Bernardi 2001), mood selection and the so-called polarity subjunctive (Giannakidou 1998, 2009, 2011a, Quer 1998, 2001, 2009, Paducheva 1998, Marques 2004, 2010, Smirnova 2012), expletive negation (Yoon 2010), negator selection in Ancient Greek (Chatzopoulou 2012), the genitive of negation in Russian (Partee 1998, Borschev et al. 2008, Partee et al. 2012, Kagan 2009), to mention just some studies. These studies offer compelling evidence from a substantial number of languages that a big portion of limited distribution phenomena (known as ‘polarity’) are about ‘referential deficiency’ (Giannakidou 1997, 1998)—or, ‘low referentiality’ (Partee 1998), ‘referential vagueness’ (Giannakidou and Quer 2013). Referentially deficient items (also known as ‘weak’ or anti-specific indefinites) favor generally nonveridical contexts.

The correlation of nonveridicality and referential deficiency has also been understood as ‘non-existence’ e.g. for NPI-licensing in Chinese (Lin 1996) and Salish (Matthewson 1998). Matthewson (1998: 179), for instance, says that the NPI-determiners *ku...a* and *kwel...a* in St’at’imcet Salish “represent the notion of *‘non-assertion of existence’*”. Montague’s own conception of veridicality (Montague 1969) relied on existence: if *I see a unicorn* is true, then a unicorn exists, hence *see* is veridical. Kamp (1999-2007: 6) talks about ‘veridical perception’ as ‘proper perception of the actual thing’. Bhatt 1999 and Hacquard 2006 also talk about ‘actuality entailment’ when an event happened in the real world. My goal in the present paper is to address

the relation of veridicality, existence, and actuality by studying a particular polarity item: the subjunctive relative clause. Examining this structure proves helpful not just from the perspective of veridicality, but also for understanding the role of the subjunctive.

I will argue that the subjunctive in the relative clause contributes a presupposition of epistemic uncertainty as to the existence of a referent for the NP it modifies, and I will call this *epistemic weakening*. Epistemic weakening can be done in a nonveridical epistemic space only—because only such a space allows for the possibility that a referent may not exist in the actual world. Epistemic weakening is a kind of *evaluation* (for more discussion see Giannakidou to appear). Overall, it is important to make the correlation between nonveridicality and evaluation, explored in great detail in the very important recent work of Trnavač and Taboada (2012).

The table below (from my earlier work) summarizes the empirical observation that limited distribution, referentially deficient expressions (‘polarity items’ such as negative polarity items, *any*, and free choice items) appear in nonveridical contexts:

Table 1: *Distribution of NPI, FCI, and any in nonveridical contexts*

<i>Environments</i>	<i>Any</i>	<i>Greek kanenas NPI</i>	Greek free choice item
1. Negation	OK	OK	*/#
2. Questions	OK	OK	*/#
3. Conditional (<i>if</i> -clause)	OK	OK	OK
4. Restriction of <i>every/all</i>	OK	OK	OK
5. (Non-antiadditive) DE Q	OK	??	??
6. Modal verbs	OK, with FC	OK	OK
7. Nonveridical attitudes (e.g. <i>want, insist, suggest, allow</i>)	OK, with FC	OK	OK
8. Imperatives	OK, with FC	OK	OK
9. Habituals	OK, with FC	OK	OK
10. Disjunctions	*	OK	OK
11. <i>isos/perhaps</i>	*	OK	OK
12. <i>prin/before</i> clauses	OK	OK	OK
13. Future	OK, with FC	OK	OK
14. <i>as if</i> clauses	*	*	*
15. Progressives	*	*	*
16. Episodic perfective past sentences	*	*	*
17. Positive existential structures	*	*	*
19. Veridical attitudes (e.g. <i>believe, imagine, dream, say</i>)	*	*	*

Nonveridical contexts are contexts where the truth of a proposition *p* is open (i.e. *p* is *not* entailed or presupposed): questions, modal verbs and adverbs, imperatives, conditionals, the future, disjunctions, *before* clauses, and subjunctive selecting propositional attitudes such as *want, hope, suggest* are all nonveridical. Negative contexts are a subcase of the nonveridical: *not p* does not entail *p*, and we call them *antiveridical*. NPIs, FCIs, and *any* are admitted in nonveridical and antiveridical contexts, but are excluded in the last four rows, the veridical space.¹ In bold, we see nonveridical contexts that are not negative or downward entailing.

¹ For *any*, I adopt my earlier position that it is an NPI with a free choice implicature that gets cancelled in negative contexts (Giannakidou 1999, 2011a, Giannakidou and Quer to appear). The Greek NPI doesn’t trigger this implicature and therefore never receives free choice readings. It is common crosslinguistically to tease NPIs and FCIs apart, but the ‘fused’ NPI is not that uncommon (see Haspelmath 1997 for an overview).

Giannakidou and Zwarts operate on a notion of nonveridicality that relies on truth, and the working question for our study here is: how exactly does veridicality correlate with existence? It is necessary to address this question because we hit upon the correlation at least three times, with: (a) the phenomenon of subjunctive triggering in relative clauses; (b) the licensing of NPIs in determiner restrictions, where earlier work (Giannakidou 1998, 1999, Hoeksema 2008) showed that it depends not so much on monotonicity but on whether the restriction is non-empty; and (c) the non-licensing of NPIs and subjunctives with progressives:

- (1) * O Janis **egrafe** olo to proi **kanena** grama.
 The J. wrote.IMPERF.3sg all the morning **any** letter
 *John was writing any letter all morning.
- (2) * O Janis egrafe **ena** grama [pu **na** itan makroskeles] .
 The J. wrote.IMPERF.3sg **a** letter that Subj was long
 John was writing a letter that was long.

The subjunctive in Greek is expressed with the particle *na* (see Giannakidou 2009, to appear for discussion and references), and the subjunctive in the relative clause is one of the polarity phenomena that have been discussed in the literature (Giannakidou 1998, Farkas 1985). The non-licensing of NPIs and the subjunctive with the progressive, that we see above, is surprising given the well-known accounts in the literature that render the progressive modal/intensional (Dowty, Landman 1991, Sharvit 2003, Trnavač 2006, Boogart and Trnavač 2011). To appreciate the puzzle, note that NPIs and the subjunctive relative are otherwise licensed in modal and intensional contexts, as expected:

Modal intensional contexts with NPIs: Existential modals

- (3) You may/can talk to any student.
 (4) John could have talked to anybody.
 (6) The committee should consider any of these candidates.

Modal verbs and volitional predicates

- (7) I Ariadni tha iθele na milisi me {opjonδipote/kanenan} fititi.
 the Ariadne would like.3sg subj talk.1sg with FC- /NPI- student
 ‘Ariadne would like to talk to any student.’
- (8) Prepi na pendrefti enan andra [pou **na** exi pola lefta].
 Must.2sg subj marry.3sg a man who subj have.3sg much money
 She must marry a man who has a lot of money. (But we don’t know if such a man exists).
- (9) Thelo na agoraso mian obrela [pou **na** me prostatevi apo to kryo].
 I want to buy an umbrell that will protect me from the cold. (But I don’t know if I
 can find such an umbrella).
- (10) * I Roxani **idhe** enan andra [pu **na** exi pola lefta].
 (Roxanne saw a man that had a lot of money.)

In (10) we see that without a nonveridical licenser, the subjunctive cannot be applied to the relative clause. So, the subjunctive in relative clauses is a licensed form, a polarity item. It appears in nonveridical contexts but not in progressives. But if progressives involve modality,

and since all modal contexts are nonveridical (Giannakidou 1998, 1999) why don't we find NPIs and subjunctive relatives with progressives?

The answer will be that progressives, unlike modals, are veridical. Their veridicality arises because they make reference to *actual* events—albeit incomplete, partial ones. If I say *John was/is crossing the street*, then I, as a speaker, am *committed* to an event that I identify as John's event of crossing the street. Being committed to the event means that I know that John's crossing the street is (at least) partly realized in the actual world, the progressive is therefore veridical, and it is no surprise that it blocks NPs and the subjunctive.

Crucially, the progressive contrasts with *TRY* which allows NPIs and subjunctive relatives. We see this below, with the Greek verb *prospatho* 'try' in both perfective and imperfective:

- (11) O Janis **prospathise/prospathuse** to proi na grapsi **kanena** grama.
 The J. tried.perf.3sg/tried.imperf.3sg the morning subj write.3sg **any** letter
 John tried this morning to write a letter.
- (12) O Janis **prospathise/prospathuse** na grapsi ena grama pu **na** itan makroskeles.
 The J. tried.perf.3sg/tried.imperf.3sg subj write.3sg a letter that was long
 John tried this morning to write a letter that was.SUBJ long.

These sentences contrast minimally with the ones in 2, 3 where the progressive blocks the licensing of *kanena* and the subjunctive. The contrast suggests that *try*, unlike the progressive, must be nonveridical—notice that it takes a subjunctive complement like nonveridical verbs do. This conclusion challenges the unification of TRY and the progressive (Sharvit 2003), and supports that the idea that TRY, unlike the progressive, does not involve necessarily physical action (Grano 2011). Kamp characterizes TRY as an operator of 'intentional activity', and part of the activity is understood as being 'in the head' (intentionality), not actualized or physical. I agree with these analyses, and capture TRY as an operator that conveys force (in the sense of Copley and Harley 2010, Giannakidou and Staraki 2013), i.e. it initiates an 'action path' that may contain both purely mental, intentional acts (such as preparing for the event, making plans for it, etc.), as well as physical acts of realizing the specific event type embedded under TRY. This allows the speaker to still be uncertain about the actualization of the TRY event, hence TRY is nonveridical and allows for NPIs.

The paper goes as follows. In section 2, I lay out the basic ideas about mood selection and nonveridicality from my earlier work, in order to show that the subjunctive depends on a nonveridical licenser. Overall, I believe one can conceptualize the cases of selection as some kind of veridical and nonveridical agreement, with no semantic effect of the subjunctive itself. Then we move on to the subjunctive in relative clauses (section 3). Here the subjunctive has an evaluative, epistemic weakening affect. This effect is to express the speaker's attitude of uncertainty as to the existence of a referent. The discussion concludes with the progressive and TRY in section 4.

2 Mood choice, (non)veridicality, and epistemic (non)commitment

We start here with a commonplace observation: that indicative is the mood of unembedded assertions, whereas the subjunctive is a 'dependent' mood, triggered by a higher element in the sentence. For instance, consider the following example from French:

- (13) Le printemps **est**/***soit** arrivé.
the spring is.IND/is.SUBJ arrived
Spring has arrived.
- (14) a Marc **croit** que le printemps **est** arrivé.
'Marc believes that spring has-IND arrived.'
b Marc **veut** que le printemps **soit** long.
'Marc wants that the spring be-SUB long.'
Marc wants the spring to be long.

We see that in the main clause, the subjunctive is impossible. When embedded, we say that the verb *croire* 'believe' selects the indicative, but *vouloir* 'want' selects the subjunctive. The choice here is a matter of selection in the sense that the use of a particular mood after a particular verb class is non-negotiable: an epistemic verb cannot appear with the subjunctive, and likewise a volitional cannot appear with the indicative. The patterns are quite robust across European languages (with the exception of Italian, see Giorgi and Pianesi 1997). I illustrate below with Greek, where the mood distinctions appear as particles external to the verb:

- (15) O Pavlos nomizi **oti**/***na** efije i Roxani. (indicative: **oti**)
the Paul thinks.3sg that.IND/that.SUBJ left.3sg the Roxani
'Paul thinks that Roxanne left.'
- (16) Thelo ***oti**/**na** erthi o Pavlos. (subjunctive: **na**)
want.1sg SUB come.PNP.3sg the Paul
'I want Paul to come.'

One of the central questions in the mood literature has been: why is the indicative the mood of unembedded assertions? And why is it selected by epistemic verbs, which are typically *irrealis* verbs? The choice of indicative with epistemic attitudes is inconsistent with the traditional *realis/irrealis* distinction, and indeed a fact that makes this distinction a non-starter. Traditional approaches to veridicality, such as e.g. Karttunen 1971, Egge 2008—which identify veridical as 'true in the actual world'—are also challenged by the fact that verbs meaning as believe, think, dream select the indicative.

2.1 (Non)veridicality: the epistemic substratum of mood choice

In a number of works (Giannakidou 1994, 1998, 2009, 2011, to appear), I have been exploring the idea that mood selection is regulated by an epistemic version of (non)veridicality relativized with respect to individuals ('individual anchors'). Specifically, I have argued that the indicative reflects full commitment of an individual to a proposition (veridicality), whereas the subjunctive is selected when there is no full commitment (nonveridicality). Similar ideas in more recent literature say that "mood choice depends on the strength of epistemic commitment" (Smirnova 2012), or that "polarity subjunctives, unlike lexically triggered subjunctives, have the function to mark a high degree of epistemic uncertainty towards the proposition" (Aparicio 2012). This as

my starting point here: mood selection is an epistemic phenomenon.²

A sentence, every sentence, is not true or false in isolation, but relative to an assessor, the *individual anchor* (Farkas 1992, Giannakidou 1998, 1999, 2011b). This means that every sentence is ‘perspectival’, and in an unembedded case, the sentence is true or false with respect to the speaker’s perspective (see also Harris and Potts 2009). To capture this idea of an individual’s perspective, I used in Giannakidou 1997, 1998, 1999 the device of ‘models of individuals’. (Farkas 2003 uses the similar function “worldview”). These models are epistemic spaces, i.e. sets of worlds, representing an individual’s beliefs and knowledge:

- (17) Epistemic model of an individual (Giannakidou 1999: (45))
A model $M_E(x) \in M$ is a set of worlds associated with an individual x representing worlds compatible with what x believes and knows.

We can think of these models as the classical doxastic functions we know from Hintikka’s work, or as Kratzerian modal bases. Crucially, under normal circumstances, the epistemic models of individuals are *not* further structured by ordering sources— unlike modals, which typically do and therefore can only express full commitment in the *best, according to the ordering source*, worlds (see Giannakidou and Mari 2012 for recent detailed discussion of this). Commitment in a model means *universal truth in the model*, as is the case for an unembedded assertion. $M_E(s)$ represents the doxastic/epistemic status of the speaker.³ A proposition p of an unembedded assertion will be evaluated as true or false with respect to this model:

- (18) Truth in a model (= full commitment of an individual)
A proposition p is true in an epistemic model $M_E(x)$ iff $M_E(x) \subseteq p$:
 $\forall w [w \in M(x) \rightarrow w \in \lambda w'. p(w')]$
- (19) a John won the race.
b $[[\text{John won the race}]] = 1$ iff $\forall w [w \in M_E(s) \rightarrow w \in \lambda w'. \text{John won the race in } w']$,
where s is the speaker

This tells us that if the speaker decides in a context to truthfully assert the sentence *John won the race*, (s)he must be epistemically committed to the proposition the sentence conveys, i.e. she must believe that John won the race, which means that all worlds in her epistemic model are *John-won-the race* worlds. Hence: $M(s) \subseteq p$. Hence, unmodalized unembedded assertions expresses full speaker commitment, and are veridical:

² See Giannakidou 2011b and to appear for discussion of why the bouletic ordering approach to mood (Villalta 2008) fails to capture the correct correlations in mood distribution across languages. See also some comments in Portner and Rubinstein (to appear).

³ The model remains a parameter of evaluation, and is not syntactically present (see my earlier work).

- (20) Veridicality and Nonveridicality (Giannakidou 1998, 1999, 2011)
- 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 $M(x) \subset p$, i.e. if all worlds in $M(x)$ are p -worlds.
 - ii. If (i) is not the case, F is nonveridical.
 - iii. F is *antiveridical* iff Fp entails *not* p in some individual's model: iff $M(x) \cap p = \emptyset$

A veridical modal space is homogenous, as we see— all worlds are p worlds. A nonveridical modal space, on the other hand, is not homogeneous: it contains p and *non- p* worlds:

- (21) A modal space (a set of worlds) W :
- (i) Is *veridical* with respect to a proposition p just in case all worlds in W are p -worlds. (*Homogeneity*).
 - (ii) If there is at least one world in W that is a *non- p* world, W is nonveridical. (*Non-homogenous space*).

A nonveridical space is typically ordered by some other function (e.g. ordering sources of modals, desire as we see later), and this yields a partitioned domain. Nonveridical spaces are spaces where p and *not* p are live options, and propositions are non-resolved, decided, or *settled* (to use the phrasing from von Stechow and Gillies 2010).⁴ Notice, crucially, that homogeneity and veridicality are not the same thing; this is so because the antiveridical space is homogenous: *not* p . Antiveridical spaces are *nonveridical*: when uttering a negative sentence, it is not the case that all worlds in the speaker's epistemic space are p -worlds. But believing or knowing *not* p does commit the speaker fully to *not* p . Importantly, for this reason, negation in a main clause does not affect the mood: negation never triggers the subjunctive in an unembedded assertion. The subjunctive depends on partitioned, non-homogenous, nonveridical epistemic spaces.

Typically, volitional, future oriented, directive, and modal expressions (verbs, adverbs, the imperative, etc.), and all the polarity licensing environments in Table 1 come with nonveridical spaces. Notice here also the use of NPIs with disjunction (22):

- (22) I bike mesa {**kanenas/opjosdhipote**} i afisame to fos anameno. (disjunction)
 either entered.3sg NPI /FCI OR left.1pl the light on
 {Some person or other/ Anybody} could have come in OR we left the light on.
- (23) *Bike mesa **kanenas/opjosdhipote** **ke.and** afisame to fos anameno. (conjunction)

- (24) Did you see anybody?

Though questions seem common NPI licensors, the appearance of NPIs with disjunction (as opposed to conjunction) may strike one as not so common. However, we observe NPIs with

⁴ See also Condoravdi's 2002 diversity principle, and Falaus's 'epistemic constraint' on PI *vreun* (cognate of *kanenas*) which is very similar, if not identical to nonveridicality: it requires that *vreun* appear in a sentence that "entails that the epistemic agent's doxastic alternatives include *non p*-worlds". Finally, the notion of 'undecidedness' suggested in a manuscript by Farkas (2003) is identical to (non)veridicality:

(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 W_i iff either (i) or (ii); otherwise S is *undecided* in W_i .

disjunctions not just in Greek, but also in Romanian (Giannakidou 1994), and even English. In the example above we have *any*, with a free choice reading, but notice the example below, cited in Zwarts 1995 as a translation from Plato's *Protagoras and the Meno* [23: 146]:

- (25) I hope no relative of mine *or any of my friends*, Athenian or foreign, would be so mad as to go and let himself be ruined by those people.

(*Any of my friends* is not in the scope of *no relative of mine*, another potential licenser). As Zwarts 1995 already noted, disjunction is nonveridical (p or q does not entail p , and does not entail q), but the conjunction is veridical (p and q entail both p and q), therefore the licensing of NPI should not come as a surprise if nonveridicality is the required property for licensing.

2.2. Mood selection patterns: dependency to nonveridicality, but no effect of mood itself

Here I will try to keep the discussion brief, as the topic has been discussed in detail in earlier works. The main selection patterns in Greek are as follows:

(26) *Indicative verbs*

- assertives*: leo 'say', dhiavazo 'read', isxirizome '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'

In the traditional 'realis' accounts, as I said earlier, it is impossible to explain why verbs like 'dream', 'imagine' would select the indicative, since clearly they do not imply truth in the actual world. However, these verbs opt for the indicative systematically, i.e., not just in Greek but also in most of the Romance languages. Importantly, factives in Greek as a class (cognitive as well as emotive) select the indicative.

In Giannakidou 1998, 1999, I argued that all indicative selecting verbs 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 , she believes it to be true. Consider the sentence below. Though the speaker might disagree, the subject believes p to be true. So, in the example below, it is Paul's epistemic model (i.e. the set of worlds compatible with what Paul believes) that is a subset of the worlds where p is true: $M(\text{Paul}) \subseteq p$. The speaker may believe or even know that what Jacob believes is false, but this is irrelevant for Paul's beliefs.

- (27) $\llbracket \text{Jacob believes that Ariadne kissed Bill} \rrbracket_c = 1$ iff
 $\forall w [w \in M_E(\text{Jacob}) \rightarrow w \in \lambda w'. \text{Ariadne kissed Bill in } w']$
- (28) Veridicality of the epistemic verb
 If *believe* (x, p) is true in a context c , then $M_E(x) \subseteq p$ in c
- (29) " a believes p is true in w iff: $\forall w'$ in $\text{Dox}_a(w)$: p is true in w' " Hintikka (1969)
 where $\text{Dox}_a(w)$ all the worlds that are compatible with what a believes

So, *believe/think* expresses full commitment of the believer, and this makes them veridical: all worlds in $M(\text{Paul})$ are p -worlds. With *dream* and fiction verbs (*imagine*, *hallucinate*, etc. all indicative triggers), veridicality arises within the dream/fiction space: if x *dreams that* p is true then p must be true in the worlds compatible with x 's dreams.

- (30) $\llbracket \text{Jacob dreamt that Ariadne kissed Bill} \rrbracket_c = 1$ iff
 $\forall w [w \in M_{\text{Dream}}(\text{Jacob}) \rightarrow w \in \lambda w'. \text{Ariadne kissed Bill in } w']$

- (31) Truth in a dream space
 A proposition p is true in a dream space $M_D(x)$ iff $M_{\text{Dream}}(x) \subseteq p$;
 $M_{\text{Dream}}(x) \subseteq p$ iff: $\forall w [w \in M_{\text{Dream}}(x) \rightarrow w \in \lambda w'. p(w')]$.

So, when I dream or imagine something, as a dreamer, I am fully committed to the fictional reality of my dream. Fictional reality replaces the actual one. McCawley 1981 called these ‘world creating’ predicates for this reason. This can be understood as a kind of context shift: *dream* is veridical in the shifted context of the dreamer, and thus selects the indicative. Within the dream space, one can have moments of awareness that ‘shift’ her back to reality—as is the case, for instance, of being aware that one is dreaming. These can also be understood as model shifts (thanks to Oliver Bott for raising this question).

Factive verbs, as a class, are *strongly* veridical (Giannakidou 1999): they *presuppose* the truth of their complement; the sentence is part of the common ground, part of what speaker and hearer take for granted. So, the speaker’s model, as well the subject’s, only contain p -words:

- (32) O Pavlos kseri **oti** efije i Roxani.
 the Paul is-sad.3sg that left.3sg the Roxani
 ‘Paul knows that Roxanne left.’

- (33) $\llbracket \text{Paul knows that Roxanne left} \rrbracket_c = 1$ iff
 (i) $\forall w [w \in M_E(\text{Paul}) \rightarrow w \in \lambda w'. \text{Roxanne left in } w']$; and
 (ii) $\forall w [w \in M_E(\text{speaker}) \rightarrow w \in \lambda w'. \text{Roxanne left in } w']$

Knowledge spaces are veridical: things that we know are true. All presuppositional, factive verbs are veridical and select the indicative (with the exception of *emotives* in some Romance languages, see Giannakidou to appear for a recent discussion).

It is important to recall that veridical verbs do not license NPIs, FCIs, or subjunctive relatives:

- (34) a. * O Pavlos pistevi oti idhe {kanenan/opjonδipote}.
 the Paul believe.3sg that saw.3sg NPI / FCI
 * Paul believes that he saw anybody.
 b. * Kseri oti aγorasa {kanena/opjoδipote} aftokinito.
 know.3sg that bought.1sg NPI / FCI car
 He knows that I bought any car.
 c. * O Pavlos pistevi oti idhe mia gyneka pou na forai kokino kapelo.
 Paul believes that he saw a woman [that SUBJ wear a read hat]

This correlation is found in most languages that possess NPIs, FCIs and subjunctive relatives (see e.g. Quer 1998 for Catalan and Spanish)— and even if there is no formal subjunctive-indicative distinction, we find the contrast, as in English above.

Now consider the verbs selecting subjunctive complements. These are the following:

(35) Subjunctive verbs

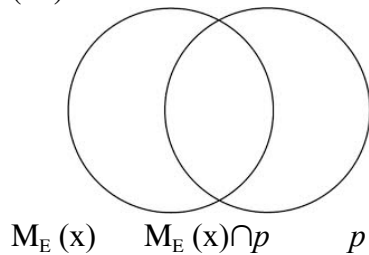
- volitionals*: thelo ‘want’, elpizo ‘hope’, skopevo ‘plan’
directives: dhiatazo ‘order’, simvulevo ‘advise’, protino ‘suggest’, prospatho ‘try’
modals: prepi ‘must’, bori ‘may’
permissives: epitrepo ‘allow’; apagorevo ‘forbid’ (negative permissive)
negative: apofevgho ‘avoid’, arnume ‘refuse’

Four are the core classes: volitional verbs, directives, negative verbs (including verbs of fear), and modals. It is clear that these verbs do not express certainty of the subject, but rather desire or wish, possibility, and more ‘psychological’ states such as fear, etc. These attitudes all involve epistemic uncertainty with respect to the outcome. Consider *want* as a representative case, but we also discuss *prospatho* ‘try’ at the end of the paper. The truth condition for *thelo* ‘want’ only requires that the intersection between $M(x)$ and p be nonempty:

- (36) a O Pavlos theli **na** fiji i Roxani.
 the Paul wants.3sg *that leave.PNP.3sg the Roxani*
 ‘Paul wants that Roxanne leave.’
 b [[Paul wants that Roxanne leave]]=1 if
 $\exists w [w \in M_E(\text{Paul}) \wedge w \in \{w'. \text{Roxanne leave in } w'\}]$

If x *wants* p , not all worlds in $M(x)$ are p -worlds. In the doxastic model of the ‘wanter’ there are p and *non- p* worlds. x *wants* p requires that there is at least one world w in $M(x)$ that is also a p -world. We can thus envision $M(x)$ as partitioned into two sets, $W1$ and $W2$. $W1$ is the part that intersects with p . $W2$, is the part containing non- p worlds: therefore $W2 \cap p = \emptyset$:

(37)



This places nonveridicality at heart of the truth condition for desire, and as I said, one can posit further psychological dimensions, as constraining ordering sources (e.g. bouletic, teleological, etc, as for example in Heim 1992). The important thing for mood choice is that a desire does not commit one to truth, and the choice to use subjunctive is determined by the epistemic non-commitment of the desirer. Overall, the important thing to retain is that nonveridicality arises whenever we have this partition within the epistemic model, and we have it with the other directive verbs such as “ask”, “suggest”, “hope” etc., as well as modals, verbs of fear (see

Giannakidou 1998, 1999, 2011b, 2013), and as I will argue in section 4, *try*.

This picture makes volitional and directive predicates epistemically very similar to disjunctions (that we discussed earlier). Subjunctive selecting verbs typically allow NPIs—in contrast to the indicative verbs that we saw earlier:

- (38) I Ariaðni ða iðele na milisi me {opjonðipote/kanenan} fititi.
 the Ariadne would like.3sg subj talk.1sg with FC- /NPI- student
 ‘Ariadne would like to talk to any student.’

Overall, then, we see that veridicality and nonveridicality regulate mood choice in complement clauses and main clauses, as well as NPI licensing. In the complement clauses, the mood itself does not seem to contribute anything semantically—and as I argued in Giannakidou 2009, the mood particle is merely the place to introduce the lambda binder for the internal now. Depending on one’s favorite theory of selection, one can simply say that, in selection, mood is a reflex of veridicality or nonveridicality marking, a kind of (non)veridicality agreement or concord with the higher, licensing element.

We can now proceed to address the role of subjunctive in relative clauses. We will see that in contrast to the selected subjunctive, the subjunctive in the relative clause actually has a semantic contribution: a presupposition of epistemic uncertainty.

3 The subjunctive in relative clauses

3.1. The mood alternation

Typically, the subjunctive is allowed in the relative clause that modifies an indefinite QP which is in the scope of a nonveridical verb, e.g. *thelo* ‘want’ or *psaxno* ‘look for’:

- (39) Theloume na proslavoume mia gramatea [pu **na** gnorizi japonezika.]
 want.1pl subj hire.1pl a secretary that subj know.3sg Japanese
 We want to hire a secretary that knows Japanese. But it is hard to find one, and we are not
 sure if we will be successful.
 # Her name is Jane Smith.

- (39’) $\exists w [w \in M_E(s): \exists x (\text{secretary}(x, w) \wedge \text{speaks Japanese}(x, w) \wedge \text{hire}(we, x, w))]$

This gives us a *de dicto*, narrow scope reading for the indefinite. There are worlds w where we find a secretary that speaks Japanese, but we do not know if the actual world will turn out to be a world with a secretary that speaks Japanese. Given our analysis of *want* earlier, the subjunctive statement says: there are doxastic alternatives w such that there is a secretary in w and she speaks Japanese. But there are also doxastic alternatives w' in $M_E(s)$ where there is no such secretary, and it may turn out that real world is one of those. So, we don’t know, at the time of utterance, if there exists in the real world a secretary who speaks Japanese and that we can hire. Because we don’t know that, the continuation *Her name is Jane Smith*, as indicated, is not permitted. The effect is similar to classical modal subordination.

Given this property of ‘narrow scope’, note that it is impossible to use the subjunctive

without a nonveridical trigger:

- (40) * I Roxani **idhe** enan andra [pu **na** exi pola lefta.]
 (Roxanne saw a man that has a lot of money.)

In a positive veridical sentence, we are forced to talk about a man in the actual world; the subjunctive is impossible. With veridical propositional attitudes, again we have a bad result:

- (41) * O Janis **kseri** oti proslavame mia gramatea
The John knows that hired.1pl a secretary
 [pu **na** gnorizi japonezika.]
that subj know.3sg Japanese
 John **knows** that we hired a secretary that knows of Japanese.

The subjunctive in the relative clauses appears also with negation:

- (42) 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.’

- (42’) $\forall w \in M(s): \neg \exists x [\text{man}(x,w) \wedge \text{wear-red-hat}(x,w) \wedge \text{saw}(I,x,w)]$

Notice that the sentence is not generic, so we can’t say it contains a modal operator (*pace* what is suggested by Partee 2008). Likewise, the genitive of negation in Russian is triggered in a purely episodic negation with exactly the same effect. Besides Greek and Romanian, this use of the subjunctive in relative clauses is found in other Romance languages and Russian (Borchev et al. 2007, Partee 2008, Kagan 2011).

Farkas 1985, in her dissertation on the Romanian subjunctive, characterized subjunctive relative clauses as ‘intensional descriptions’. Given what we see here, clearly, the subjunctive triggering is not simply due to intensionality: veridical verbs are intensional but don’t allow it, and negation allows it but is not intensional. In Giannakidou 1997, 1998, I suggested that the presence of the subjunctive indicates that “it is not known whether $\exists x$ [NP(x) & Relative clause (x)] exists”. In the present paper I will make this suggestion more precise.

The indicative relative (i.e. a relative clause without *na*) receives an interpretation independent of *thelo* “want”, *de re*:

- (43) Theloume na proslavoume mia gramatea [pu gnorizi japonezika.]
want.1pl subj hire.1pl a secretary that know.3sg Japanese
 We want to hire a secretary that speaks Japanese.
 OK: Her name is Jane Smith.
 # But I don’t know if we’ll find such a person.

Without subjunctive, the secretary exists in the actual world, the speaker has one in mind— as indicated in the logical form by adding the real world w_0 as an argument. In other words, the indefinite is interpreted ‘specifically’:

- (44) $\exists x \text{ secretary}(x, w_0) \wedge \text{speaks Japanese}(x, w_0) \wedge \exists w \in M(s) [\text{hire}(w, x, w)]$

So, the speaker is certain that there exists an actual secretary who speaks Japanese, and the desire is to hire her. The uncertainty continuation *But I don't know if we'll find such a person*, as we see, is unacceptable. It appears then that the subjunctive-indicative alternation correlates with knowledge or non-knowledge of existence, and absence of subjunctive indicates existence in the actual world (or context). As a result, we cannot have referential definite descriptions being modified by subjunctive relatives:

- (45) 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.'

On the other hand, the subjunctive is *required* with verbs of creation: the speaker knows that there is no referent in the real world yet:

- (46) 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.'
- (47) */#Prepi na grapso mia ergasia [pu ine pano apo 15 selidhes.]

Because the essay doesn't exist yet, I cannot use the indicative with creation verbs. Overall, then, it seems fitting to say that the use or not of *na* in the relative clause depends on what the speaker knows; in choosing *na*, the speaker signals that she is uncertain that a referent exists.

3.2 The subjunctive 'evaluates': epistemic weakening

So, the function of the subjunctive in the relative clause is to bring in the speaker's subjective point of view, in particular, her uncertainty about the existence of a value for the NP. I will call this *epistemic weakening* of the subjunctive. Epistemic weakening is both a nonveridical and evaluative effect in the sense that affects the strength of the initial evaluation of the sentence (see especially Trnavac and Taboada's 2012 conclusions, which I use as background here). The initial evaluation is the sentence without *na*, which conveys veridicality and certainty. Adding *na*, removes that certainty. But *na* can't introduce uncertainty on its own. Recall that without a nonveridical trigger, *na* is prohibited:

- (48) I Roxani idhe enan andra [pu (*na) exi pola lefta.]
 (Roxanne saw a man that had a lot of money.)

The subjunctive has no effect here, and in fact it is unacceptable. Now, remember that we adopted a subjective, stance on truth: every sentence is evaluated with respect to an individual, and the main sentence is evaluated by the speaker. The speaker has a choice to use a subjunctive in the relative clause or not. In a positive unmodalized (veridical) sentence such as the one above, the speaker is committed to the existence of a man who has a lot of money. The subjunctive cannot be used to alter the speaker's commitments.

Trnavač and Taboada 2012, in a recent very insightful study, examine the interactions between nonveridicality and evaluative structure in corpora, and draw a number of useful conclusions. Two of these conclusions will be of relevance here: (a) they point out that a nonveridical device ‘tampers with’ the evaluative content of utterances, with the result of weakening the evaluation (TT: 2012: 316); and (b) nonveridical elements in the majority of cases modify polarity at the local level, i.e. level of the clause (TT: 2012: 317). Following up on these observations we can say that, although the use of the subjunctive itself in the relative clause cannot weaken the veridicality and create a nonveridical space, once in a nonveridical space, a speaker will choose to use the subjunctive to reflect her weakened certainty about the existence of a possible referent. (Recall that in the nonveridical context, the speaker also has the choice of indicative in case she is certain).

I suggest to formulate this as the following presupposition:

- (49) *Epistemic weakening* presupposition of the subjunctive in relative clauses
 The subjunctive will felicitously apply in a CP modifying an NP iff:
 There is at least one world w in $M_E(\text{speaker})$ where the modified nominal ($NP \cap CP$) receives no value.

This presupposition excludes the subjunctive from a veridical space, since in this case *all* the worlds in $M_E(x)$ would be worlds where the modified nominal receives a value, thus failing to meet the weakening presupposition. The same thing happens with veridical verbs, as we noted earlier: in every world, there is a secretary—maybe the same one, maybe different ones, it doesn’t matter. Notice crucially that this shows that the phenomenon is not really about specificity, as one may think given the narrow scope observations, but about the speaker’s commitment of existence. In choosing the subjunctive, the speaker simply doesn’t have enough knowledge to support existence in all epistemic alternatives. She leaves the possibility open that there is a world with no value. With nonveridical verbs, we have *non-p* worlds, and in these worlds the indefinite may receive no value. By being partitioned into *p* and *non-p* spaces, nonveridical models thus satisfy the presupposition of the subjunctive.

This gives us a very simple account of the ‘polarity’, i.e. limited distribution, of the subjunctive in the relative clause: its distribution is restricted by the presupposition of epistemic weakening, and nothing special needs to be said regarding the polarity status of the subjunctive itself. I consider this to be an appealing result. And notice that, in agreement with Trnavač and Taboada, the effect is local: subjunctive weakening will impact the relative clause. However, notice also that the requirement is imposed on the non-local model, the speaker’s— though since the models are not syntactically present, but mere parameters of evaluation, one could maintain that locality has a limiting effect only in syntactic objects. Clearly, locality in this syntactic sense is met, since *na* influences the relative clause.

We move on now to address one final puzzle: the non-use of the subjunctive in the progressive, but its use with *try*.

4 Nonveridicality, event actualization, and *trying*

In this final section, we examine the impossibility of NPIs/subjunctive relative clauses with the progressive, and their well-formedness with TRY. I discuss the progressive and imperfective first (4.1) and show that the progressive is veridical because it involves physical realization, i.e.

actualization of the specific event type described by the VP; I then compare the progressive with TRY (4.2), in order to show that the latter is nonveridical, i.e. it does not impose event actualization. The arguments will rely on recent work by Kamp (1999-2007), Grano (2011), and Giannakidou and Staraki (2013).

4.1 The veridicality of the progressive: knowledge of partial event realization

We start with the basic puzzle:

- (50) * O Janis **egrafe** olo to proi **kanena** grama.
 The J. wrote.IMPERF.3sg all the morning **any** letter
 *John was writing any letter all morning.
- (51) * O Janis egrafe **ena** grama [pu **na** itan makroskeles] .
 The J. wrote.IMPERF.3sg **a** letter that Subj was long
 John was writing a letter that was long.

In my earlier work, I claimed that the progressive is veridical, but given what we just said about the presupposition of the subjunctive, we have an obvious puzzle: if from *John was writing a letter* we cannot conclude that a letter exists in the actual world, the subjunctive should be OK. Additionally, there is very well-known literature that makes a case for a modal dimension in the progressive: Dowty, Landman 1992 claim that the progressive is intensional (it involves *inertia* worlds and continuation branches), Sharvit 2003 modifies that analysis by restricting the event progression to *realistic* continuation branches; Trnavač 2006, Boogart and Trnavač 2011 posit a connection between imperfective aspect and modal, counterfactual readings, and epistemic modality, and much other work assumes a semantics of the progressive that involves *possible* completion in some branch or other as the event progresses (see Pinon 2008, Grano 2011 for more recent overviews). All these could be used to argue for a ‘nonveridical’ analysis of the progressive, but the subjunctive and NPI licensing facts require the progressive to be veridical, and entail some sort of action and existence.

Consider an explicitly modal approach to PROG, e.g. Sharvit’s (2003):

- (52) For any event *e*, property of events *P*, and world *w*, $e \in \text{PROG}(w)(P)$ iff:
 a. *e* is an event in *w*; and
 b. for any *realistic continuation branch* *C* for *e* relative to *w*, there is an event *e'* and a world *w'* such that $\langle e', w' \rangle$ is in *C* and $e' \in P(w')$. (Sharvit 2003: 414)

The idea here is that in order to evaluate a sentence such as *Mary was crossing the street (when a bus hit her)*, we build a continuation branch based on the evaluation world and the ongoing event given by the VP. We stay in the evaluation world until Mary gets hit by bus, at which point we shift to a maximally similar world in which a bus does not hit her and *which is a reasonable option*, and continue to trace the progression of the event. Under normal circumstances, the continuation branch will contain an event in which Mary successfully crosses the street, and so the sentence is judged true. In a sentence like *Mary was landing on the moon (when the phone rang)*, on the other hand, we have a non-realistic evaluation branch and therefore the sentence is judged to be false—or true only in a fictional/dream context.

The important thing is clause *a*, that an event (given by the VP) is physically realized in a world. This physical realization, although completion is lacking, suffices to give us veridicality: a rational speaker chooses to use PROG [*cross the street*] when she knows that there is an *actual*, ongoing event *e* of crossing the street. So, all worlds compatible with her beliefs, knowledge and perceptions, are worlds where the street is physically being crossed, though the event may not be completed. Likewise, in degree based approaches of the progressive (Pinon 2008), progressive events are realized, in the actual world, to a degree higher than zero. This again makes the progressive *actual*.

It appears, then, that when we consider events, the veridicality of the sentence correlates with actualization, and actualization is physical realization in the actual world of the event. The progressive is thus an actualization function—I will call it ACTUAL—that when it applies to VP creates veridicality:

(53) *ACTUAL is veridical*

- (i) When an eventuality *P* is *actualized*, *P* is at least partially physically realized in the actual world.
- (ii) Actualization happens with actualization functions (ACTUAL).
- (iii) Application of ACTUAL to *P* entails veridicality: the speaker *knows* that *P* is at least partly realized.

ACTUAL refers abstractly to functions like the progressive (PROG), the perfective, and the past tense. In choosing any of these functions, the speaker knows that there is some physical realization of the event *P*. This knowledge renders the sentence with PROG veridical. This explains why the progressive patterns with the perfective past in being a bad context for NPIs, subjunctives, and other polarity items (recall Table 1). Lacking a result doesn't have any implications: an actualized event can be a complete one (perfective) or an incomplete, open-ended one (progressive).

In earlier work, I suggested a special definition for veridicality and nonveridicality for temporal operators:

(54) **Giannakidou 2002 (23):** *(Non)veridicality for temporal/interval operators*

Let *F* be a temporal/aspectual operator; *t* an instant or an interval.

- i. *F* is *veridical* iff for *Fp* to be true at a time *t*, *p* must be true at a (contextually relevant) time $t' \leq t$. Otherwise *F* is *nonveridical*.
- ii. If *Fp* is true of an interval *t*, then *F* is veridical iff for some and possibly all (contextually relevant) $t' \subseteq t$, *p* is true at *t'*. Otherwise, *F* is nonveridical.

Clause (i) was intended to capture veridicality of the past and nonveridicality of the future, and relied on *p* being true at a time prior to equal to the utterance time. This rendered the past veridical, but the future nonveridical, but it required a difference definition for nonveridicality. This now doesn't seem necessary, since in (53), we rely simply on the veridicality of the speaker's knowledge. This seems to me a better analysis, not in the least because it allowed us to capture veridicality *globally*, as a property of sentences containing actualization operators. With *Past p*, the speaker knows that *p* is true, therefore the past is veridical. The future is also not veridical, since at the time of utterance the speaker does not know *p* to be true (Giannakidou 1998, Giannakidou and Mari 2012, 2013, see also earlier work by Copley 2002).

Before closing this section, I wanted to address the ‘modality’ of the *imperfective*. In Greek, unlike English, progressive readings are conveyed with the imperfective aspect. This is typically the case in Romance and Slavic languages too. A recurring observation is that the imperfective also has modal uses, i.e. it is the form that allows counterfactual readings in conditionals (for Greek see Iatridou 2000, Giannakidou 2013, Giannakidou and Mari 2012), and allows modal readings with present imperfectives (including future readings, such as *O Janis fevgi avrio* ‘for all I know, John is leaving tomorrow’). In recent, quiet detailed work, Boogart and Trnavac 2012 suggest that languages differ with respect to how strongly their imperfectives are ‘linked’ to modality—and Boogart and Trnavac correlate this further with sequence of tenses: in languages with sequence of tense (Romance, Germanic), we have a “perspectivized” function of imperfective past tense in indirect speech, which is an intermediate step between “objective” (temporal, aspectual) use of imperfective aspect and “subjective” (modal) readings of imperfective aspect. Greek and Slavic, on the other hand, do not have sequence of tenses (for Greek, see Sharvit 2003), and this would mean that the link to modality might be weaker in Romance languages, and that Greek in that respect is closer to Slavic languages. In other words, if the link between modality and progressive aspect in Greek is weaker, that could be part of the explanation why subjunctive does not occur with progressive in Greek. However, as far as I know, the distribution of the subjunctive in relative clauses doesn’t differ much between Greek and the Romance languages, and Romance subjunctive is also not allowed with the progressive. Since there is no empirical difference, it becomes difficult to make the case for a correlation of the strength between modality and the imperfective, on the one hand, and NPI/subjunctive licensing on the other.

Finally, it is not entirely clear to me that the common observation that imperfective aspect conveys modality is correctly captured. Regarding the counterfactual readings, consider the following classical case:

- (55) I Ariadne tha efevge tora.
 the Ariadne FUT leave.IP.3sg now
 Ariadne would leave now.
 a. Ala dhen efije telika.
 ‘But she didn’t actually leave’.
 b. Ke pragmati, ine sto treno.
 ‘And indeed she is in the train’.

The counterfactual reading is cancellable. But not so with the past perfect:

- (56) I Ariadne tha ixē fiji
 the Ariadne FUT had.3sg left.PERF.past
 Ariadne would have leave left.
 # Ke pragmati, ine sto treno.
 ‘#And indeed she is in the train.’

So, the past perfect indeed compositionally conveys counterfactuality. But for the imperfective, it is reasonable to assume that the counterfactual reading is not a genuine compositional reading—in the sense that it is not derived from the meaning of past and imperfective. Rather, it is an implicature that we get because we are not using the *perfective* past. We can imagine the

hearer thinking that if the speaker knew that Ariadne left, they would have used the perfective form, a stronger one which conveys completion of the event. They didn't, therefore the speaker must not know for sure that Ariadne left, hence the counterfactual inference. So, in this case too, the use of imperfective aspect correlates with speaker uncertainty (nonveridicality), but the uncertainty is created by pragmatic reasoning, and not from inherent nonveridicality of the imperfective.⁵

4.2 TRY, (non)veridicality, and intentional activities

Prospatho 'try' contrasts with the progressive in that it allows NPIs and subjunctive relative clauses. We mentioned this at the beginning of the paper, recall the examples below, with the Greek verb *prospatho* 'try' in both perfective and imperfective version:

- (57) O Janis **prospathise/prospathuse** to proi na grapsi **kanena** grama.
 The J. tried.perf.3sg/tried.imperf.3sg the morning subj write.3sg **any** letter
 John tried this morning to write a letter.
Speaker bias: but he didn't manage to write a word.

- (58) O Janis **prospathise/prospathuse** na grapsi ena grama pu **na** itan leptomeres.
 The J. tried.perf.3sg/tried.imperf.3sg subj write.3sg a letter that was detailed
 John tried this morning to write a letter that was.SUBJ detailed enough.
Speaker bias: but he didn't manage to write anything close to that.

These sentences contrast minimally with the progressive ones where *kanena* and the subjunctive are blocked. The contrast suggests that *try*, unlike the progressive, must be nonveridical—notice that it takes a subjunctive complement like nonveridical verbs do—and challenges analyses unifying TRY with progressive (Sharvit 2003). The contrast seems to support the competing idea that TRY is an 'intentional activity' that involves both *mental* and physical action (Kamp 1999–2007, Grano 2011). Notice also that the uses of the NPI and the subjunctive relative clause impose a bias in the context for a non-realization reading (we return to this soon).

The existence of the incremental theme has been central to the discussion of TRY. Sharvit (2003b) argues that *try* is different from *want*, in that it entails existence of the theme:

- (59) a. John wanted to cut a tomato, but there were no tomatoes to cut.
 b. John tried to cut a tomato, #but there were no tomatoes to cut.
 (60) a. Mary wanted to push a cart, but there were no carts to push.
 b. Mary tried to push a cart, #but there were no carts to push. (Sharvit 2003: 405)

She then goes on to say: "Intuitively, it seems that *try* differs from its cousins *want*, *expect*, *believe*, etc. in that it doesn't simply express an attitude of some individual toward some

⁵ Crucially, the imperfective as GEN is indeed nonveridical (see Giannakidou 1995, 1997), since from "generally p" the speaker does not know if p is *actually* true. GEN may even be modal. As is obvious, this differing behavior of GEN (and the ensuing pattern of NPI-licensing) challenges the unification of the two uses of the imperfective, and makes it, in my view, undesirable to attribute them to a single semantics. In the view I sketched above, the imperfective can be understood as *non-perfective*, and in this sense it has a variety of uses, which need not be unified by a single overarching function.

‘proposition’, *but that it also expresses some activity* . . . This required ‘action’ is extensional, in the sense that it has to go on in the actual world for the sentence to be judged true.” (Sharvit 2003: 407). ‘Extensional action’ renders *try* an actualization operator, akin to the progressive. But then, the non-licensing of NPIs and subjunctive relatives with TRY becomes a problem.

But is TRY really an actualization operator? (I am using here TRY for the item crosslinguistically). Grano 2011 suggests that *try* does not necessarily involve physical action and does not always imply the physical existence of the incremental theme. He offers the following cases; notice crucially the contrast with the progressives:

(61) John tried to find a book, but there was no book.

(62) a John was eating an apple. → Part of the apple was consumed.
b. John tried to eat an apple. But there was no apple, so no apple was consumed.

(63) Context: John is severely injured and cannot move his arm:

a. # John was raising his arm.
b. John tried to raise his arm. (But he didn’t.)

These examples are problematic for the assumption that *TRY* involves action like the progressive, and show that, although we tend to think of TRY as involving physical action, in fact it need not. According to Kamp (Kamp 1999-2007: 1), TRY (as well as FAIL, SUCCEED) is a device for intentional activity, and is one of the cases that indicate “conceptual continuity which often exists between things we *intend* to find or do or make, and the events in the real world that result when we try to realize those plans and intentions.” In $x \text{ TRY } P$, where P is a predicate of events, an agent x has the intention or a plan to set a path for action that will count as P , but what Kamp seems to be saying is that there is a conceptual continuum between the plan/intention and the action— a continuum that includes pure intention as well as action. Grano 2011, likewise, proposes that *try* P , unlike the progressive, contains a preparatory phase of the event that need not involve physical action P , but just mental action (e.g. planning, etc.)

I will follow here Copley and Harley 2010 and Giannakidou and Staraki 2013 in capturing the conceptual continuum between intention/planning (mental action) and physical action as an action path characterized by *force*. Forces are, in the most obvious case, physical forces, i.e. contact forces that result in change in the spatiotemporal properties of the object (i.e. in movement or rest, etc). Forces, in this physical sense, can also be understood as ‘tendencies’ (in the sense of Aristotle, e.g. in *Physics*), or gravitational forces; but forces can also be *psychological forces*, i.e. desires, intentions, and, as Giannakidou and Staraki suggest, abilities. Psychological forces are not ontologically identical to physical forces: intentions are not physical themselves. Having a desire by itself does not necessarily entail acting on the desire—and I may well have desires that I know cannot be acted upon. So, although desires and intentions are forces, they do not involve action themselves, physical or mental, and are therefore nonveridical.

Kamp describes the difference between intentional verbs like *try* and pure volitionals as follows: “The situation is different with verbs such as *want*, *wish*, and *desire*. These verbs do not claim the existence of an intention, you can wish or desire to open the door without having an actual intention to that effect. [...] In the semantic contribution of the *to*-complements of these verbs, we do not want any intention at all, in particular we do not want the one that comes from the action verb.” (Kamp 1999-2007: 63). In other words, *want* is a nonveridical verb without intention for action, but TRY is a nonveridical verb with intention for action.

TRY is device that triggers a transition from pure intention (psychological force) to an *action path*. The TRY path thus includes physical force, i.e. actions of an agent in order to materialize the intention, but also an initial stage of mental force where no physical action has taken place. If we go back to the injured person example, trying to raise her hand, we see that it is possible for a TRY-path to refer exclusively to this initial stage of intention, without physical realization at all. Likewise, the biased Greek examples with the NPIs focus the sentence almost exclusively to the initial stage of intention/preparation: the speaker imagines a situation in which John was sitting on his desk, maybe reading old letters that he wrote, thinking about what to write, making a mental map of what needs to be included or excluded, but not actually engaging in physical letter writing. Or maybe John put some scribbles on the paper, or words on the screen—material that in the view of the speaker (because of their mistakes, incoherence, or randomness), do not count as actual realization of ‘write a letter’. So, part of the TRY path involves purely mental force, the intention to do P, and it is possible to override actualization as not really counting as trying P.

The progressive thus involves physical action, it is, as I said in section 4.1, an actualization operator. TRY isn’t. Notice that the two contrast sharply also in cases of direct negation of the action:

- (64) a John *tried* to write a letter, but he didn’t.
b John *wanted* to write a letter, but he didn’t.
c #John was writing a letter but he didn’t.
- (65) a John *tried* to talk to Ariadne, but he didn’t manage [to talk to Ariadne]
b John *wanted* to talk to Ariadne, but he didn’t manage [to talk to Ariadne]
c #John was talking to Ariadne, but he didn’t manage [to talk to Ariadne]

Try follows the nonveridical pattern with the verb *want*. But the progressive simply does not allow for the event not happening. I will briefly summarize this in the truth condition below, where TRY initiates a path for action that contain non-physical action:

- (66) TRY as ‘action-path’ operator
 $\llbracket x \text{TRY}_{\text{Force}}(P) \rrbracket$ is true at time t in w iff:
(i) there is an action path characterized by the event predicate P ;
(ii) an action path is a sequence of actions S ($\langle s_{\text{init}}, \dots \rangle$) in order to bring about P ;
(iii) The initial action s_{init} is pure intention to bring about P .
- (67) *TRY* is nonveridical
TRY P does not imply that the speaker knows that P is at least partly realized.

In other words, TRY is not ACTUAL. The truth condition renders TRY does not attribute to the speaker the knowledge that P is physically realized, since, but clause (iii), TRY P includes an a stage where the eventuality P has no physical dimension yet. We must conclude then, that a uniform analysis of TRY and the progressive, in terms of both comprising physical realization of an event is not desirable. Instead, we need to distinguish the two by acknowledging that TRY does not entail physical realization. This analysis renders TRY, in contrast to the progressive,

nonveridical, and explains why TRY, unlike the progressive, is a licenser for NPIs and subjunctive relative clauses. At the same time, it explains why TRY is different from nonveridical volitional predicates such as *want*, *wish* which involve no intention, and therefore no force or action.

5 Conclusions

In this paper, we used NPIs and the subjunctive relative clause as a diagnostics for studying the relation between (non)veridicality, existence and event actualization. We found that veridicality and nonveridicality are fundamentally epistemic notions that appear to be able to capture the behavior of aspectual operators too, such as the progressive, the perfective, and the meaning of verbs like TRY. In these cases, veridicality and nonveridicality rely on the speaker's knowledge of whether an event is at least partially *actualized*, i.e. physically realized in the actual world. If an operator imposes knowledge of at least partial actualization, it is veridical. The progressive and the perfective are such operators. But intentional verbs like TRY are nonveridical because they allow a stage of pure intention in their truth condition, and are therefore not homogenous.

Another important finding was that the subjunctive in the relative clause contributes *epistemic weakening*: a presupposition of epistemic uncertainty as to the existence of a referent for the NP it modifies. Epistemic weakening can be done in a nonveridical epistemic space only— because only such a space allows for the possibility that a referent may not actually (i.e. in the real world) exist. The weakening presupposition of the subjunctive in the relative clause supports the correlation between nonveridicality and evaluation, observed in the very important recent work of Trnavač and Taboada (2012). Just as predicted in that work, we found the subjunctive to ‘tamper’ with the strength of evaluation by weakening the speaker's convictions.

Acknowledgement

I wish to thank Rada Trnavač and Maite Taboada for inviting to prepare this paper for the Workshop on *Veridicality, Evaluation, and Discourse Coherence*. I am also very grateful for their detailed and helpful comments on a previous version of this manuscript, which helped me to re-direct the paper in the dimension of epistemic evaluation, which connects really nicely with their work. Many thanks also to the audience of workshop for their feedback— especially to Hans Kamp for his very helpful suggestions and more recent discussions here in Chicago. Some of this material was presented on the TRAIT workshop on *Categories*, at the University of Wrocław, Poland, and I wanted to thank that audience too for their insightful comments, especially Malte Zimmermann, Mikhail Kissine, and Oliver Bott. Many thanks also to Barbara Partee for continuing discussions on nonveridicality and the subjunctive relative clause, and to Tommy Grano, for discussions on the progressive and *try*.

References

- Ambar, Manuela. 1999. “Infinitives vs. Participles”. In Esthela Trevino e José Lema (eds.) *Semantic Issues in Romance Syntax*, Current Issues in Linguistic Theory. Amsterdam-USA: John Benjamins, pp. 1-20.
- Aparicio, Helena. 2012. Polarity subjunctives, epistemic modals, and (non)veridicality. Ms. University of Chicago.

- Bernardi, R.. 2002. *Reasoning with Polarity in Categorical Type Logic*. PhD thesis, U Utrecht.
- Bhatt, R. (1999). *Covert Modality in Non-Finite Contexts*. PhD. University of Pennsylvania
- Boogaart, R. and R. Trnavac 2011. "Imperfective aspect and epistemic modality". In [Cognitive Approaches to Tense, Aspect, and Epistemic Modality](#). In Patard, Adeline and Frank Brisard (eds.), 217–248.
- Borschev, Vladimir, Paducheva, E.V., Partee, Barbara H., Testelefs, Yakov, and Yanovich, Igor. 2008. Russian genitives, non-referentiality, and the property-type hypothesis. In *Formal Approaches to Slavic Linguistics: The Stony Brook Meeting 2007 (FASL 16)*, eds. Andrei Antonenko, John F. Bailyn and Christina Bethin, 48-67. Ann Arbor: Michigan Slavic Publications.
- Chatzopoulou, K. 2012. *Negation in Greek: a diachronic perspective*. PhD thesis, U Chicago.
- Condoravdi, C. 2002. Temporal interpretations of modals: modals for the present and modals for the past. In D. Beaver, S. Kaufmann, B. Clark and L. Casillas (eds.) *The Construction of Meaning*, 59-88. CSLI Publications, 2002.
- Copley, Bridget. 2002. *The semantics of the future*, PhD thesis, MIT.
- Copley, B. and H. Harley.(2010). An ontology for a force-dynamic treatment of events. Ms. Paris 8, and University of Arizona.
- Espinal, M.T. 2002. Licensing expletive negation and negative concord in Catalan and Spanish. *Catalan Working Papers in Linguistics*.
- Falaus, A. 2009. Polarity items and dependent indefinites in Romanian. Doctoral Dissertation, Université de Nantes.
- Farkas, D.F. 1985. *Intensional Descriptions and the Romance subjunctive mood*. Garland, NY.
- Farkas, Donka F. 2002. Extreme non-specificity in Romanian In: C. Beyssade, R. Bok-Bennema, F. Drijkoningen & P. Monachesi (eds.). *Romance Languages and Linguistic Theory 2000*. Amsterdam: John Benjamins, 127–151.
- Farkas, Donka F. 2003. Notes on Mood. Lecture presented at ESSLI.
- Von Stechow, P. and A. Gillies. 2010. Must...stay...strong! *Nat Lang Semantics* (2010) 18:351–383.
- Giannakidou, Anastasia 1994. The semantic licensing of NPIs and the Modern Greek subjunctive. In De Hoop H. et al. (eds) *Language and Cognition* 4:55-68, Yearbook of the Research Group for Theoretical and Experimental Linguistics, University of Groningen.
- Giannakidou, Anastasia 1997. *The Landscape of Polarity Items*. Ph.D. thesis. U Groningen.
- Giannakidou, Anastasia. 1998. *Polarity Sensitivity as (Non)veridical Dependency*. Amsterdam and Philadelphia: John Benjamins.
- Giannakidou, Anastasia. 1999. Affective dependencies. *Linguistics and Philosophy* 22.367-421.
- Giannakidou, A. 2001. The meaning of free choice. *Linguistics and Philosophy* 24: 659-735.
- Giannakidou, Anastasia 2002. Licensing and sensitivity in polarity items: From downward entailment to nonveridicality. In: M. Andronis, A. Pycha & K. Yoshimura (eds.). *Proceedings of the Annual Meeting of the Chicago Linguistics Society (= CLS)* 38. 29–53.
- Giannakidou, Anastasia 2006. *Only*, emotive factive verbs, and the dual nature of polarity dependency. *Language* 82, 575–603.
- Giannakidou, Anastasia 2009. The dependency of the subjunctive revisited: Temporal semantics and polarity. *Lingua* 119(12), 1883–1908.
- Giannakidou, Anastasia. 2011a. [Nonveridicality and mood choice: subjunctive, polarity, and time](#). *Tense across Languages*, ed. by Renate Musan and Monika Rathert. Berlin: Mouton de Gruyter. 59-90.

- Giannakidou, Anastasia. 2011b. Negative polarity items and positive polarity items. In von Stechow, Arnim, and Portner, Paul (ed.), *Semantics: An international Handbook of Natural Language Meaning (second edition)*. Berlin: Mouton de Gruyter. 1660-1711.
- Giannakidou, Anastasia, to appear. The epistemic basis of mood: selection, nonveridical weakening, and emotive verbs. To appear in *Tense, Mood, and Modality: New Perspectives on Old Questions*, ed. by Blaszcak, J., D. Klinek-Jankowska, Krzysztof Mygdalski, and Anastasia Giannakidou. With Chicago University Press.
- Giannakidou, Anastasia and Alda Mari. 2012. The future as epistemic and evidential: evidence from Greek and Italian. To appear in *Lingua*.
- Giannakidou, Anastasia and Josep Quer. 2013. Exhaustive and non-exhaustive variation with anti-specific indefinites: free choice and referential vagueness in Greek, Catalan and Spanish. In press, *Lingua*.
- Giannakidou, A. and E. Staraki, 2013. Ability, action, and causation: from pure ability to force. To appear in Mari et al. (eds), *Genericity*, OUP.
- Giannakidou, Anastasia & Suwon Yoon 2011. Referential vagueness and negative polarity: evidence from Greek and Korean. To appear in CLS 38.
- Giannakidou, Anastasia and Frans Zwarts. 1999. Temporal, aspectual operators and (Non)Veridicality. Ms.
- Giorgi, Alessandra, and Fabio Pianesi. 1997. *Tense and Aspect: from Semantics to Morphosyntax*. Oxford University Press.
- Grano, Thomas. 2011. Mental action and event realization in the semantics of *try*. *SALT* 21: 426–443.
- Hacquard, V. (2006). *Aspects of Modality*. PhD thesis. MIT.
- Harris, Jesse and Chris Potts. 2010. Perspective shifting with appositives and expressives. *Linguistics and Philosophy* 32: 523-552.
- Häselmath, Martin. 1997. *Indefinite Pronouns*. Oxford University Press: Oxford.
- Heim, I. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9, 183-221.
- Holton, David, Peter Mackridge, and Irene Philippaki-Warbuton. 1997. *Greek: A comprehensive grammar of the modern language*. Routledge: London.
- Hoeksema, J. 2008. There is no number effect in the licensing of negative polarity items: a reply to Guerzoni and Sharvit. *Linguistics and Philosophy* 31 (4):397-407.
- Iatridou, Sabine. 2000. The grammatical ingredients of counterfactuality. *Linguistic Inquiry* 31:231-270.
- Kagan, Olga. 2009. Genitive of negation: a modal account. Ms. Hebrew University of Jerusalem
- Kamp, Hans. 1999-2007. Intentions, plans, and their execution: turning objects of thought into entities in the external world. Ms.
- Kratzer, A. 1991. Modality. In *Semantics: An International Handbook of Contemporary Research*, edited by Arnim von Stechow & Dieter Wunderlich, pp. 639–650. Berlin: de Gruyter.
- Klecha, P. 2011. The meanings of predictive expressions. Ms. University of Chicago.
- Landman, F. 1992. The Progressive. *Natural Language Semantics*.
- Lee, Chungmin 1999. Types of NPIs and nonveridicality in Korean and other languages. In: G. Storto (ed.). *Syntax at Sunset 2 (= UCLA Working Papers in Linguistics) 3*, LA, CA.
- Lin, Jo-Wang 1996. *Polarity Licensing and Wh-Phrase Quantification in Chinese*. Ph.D. Dissertation. University of Massachusetts, Amherst.

- Marques, Rui. 2004. On the system of mood in European and Brazilian Portuguese. *Journal of Portuguese Linguistics* 3 (2004), 89-109.
- Marques, Rui. 2010. On the selection of mood in complement clauses. in Hogeweg et al. *Crosslinguistic semantics of tense, aspect and modality*. Benjamins
- Matthewson, Lisa 1998. *Determiner Systems and Quantificational Strategies. Evidence from Salish*. The Hague: Holland Academic Graphics.
- Montague, R. 1969. On the nature of certain philosophical entities. *The Monist* 53, 159–194.
- Partee, Barbara H. 2008. Negation, intensionality, and aspect: Interaction with NP semantics. In: S. Rothstein (ed.). *Theoretical and Crosslinguistic Approaches to the Semantics of Aspect*. Amsterdam: John Benjamins, 291–317.
- Partee, Barbara H. & Vladimir Borschev 2004. The semantics of Russian genitive of negation: The role and nature of perspectival structure. In: K. Watanabe & Robert B. Young (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) XIV*, Ithaca, NY : CLC Publications, 212–234.
- Partee, Barbara H., Borschev, Vladimir, Paducheva, Elena V., Testelefs, Yakov, and Yanovich, Igor. 2011. Russian Genitive of Negation alternations: The role of verb semantics. *Scando-Slavica* 57.2:135-15.
- Piñón, Chris. 2008. Aspectual composition with degrees. In Louise McNally & Christopher Kennedy (eds.), *Adjectives and Adverbs: Syntax, Semantics, and Discourse*, 183–219. Oxford: Oxford University Press.
- Quer, Josep 1998. *Mood at the Interface*. Ph.D. Dissertation. University of Utrecht.
- Quer, Josep. 2001. Interpreting mood. *Probus* 13: 81-111. Quer, Josep. 2009. Twists of mood: the distribution and interpretation of the indicative and the subjunctive. *Lingua* 119: 1779-1787.
- Rubinstein, Aynat, and Paul Portner. to appear. Mood and contextual commitment. *Proceedings of SALT* 22.
- Sharvit, Yael (2003). "Trying to be Progressive: the Extensionality of Try", *Journal of Semantics* 20:403-445.
- Sharvit, Yael (2003). Embedded Tense and Universal Grammar, *Linguistic Inquiry* 34:669-681.
- Smirnova, A. 2012. The semantics of mood in Bulgarian, To appear in CLS 48.
- Trnavac, R. 2006. *Aspect and subjectivity in Modal constructions*. PhD thesis, Un. of Leiden.
- Trnavac, Radoslava, and Maite Taboada. 2012. The contribution of nonveridical rhetorical relations to evaluation in discourse. In *Language Sciences* 34: 301-318.
- Villalta, Elizabeth. 2008. Mood and gradability: an investigation of the Subjunctive Mood in Spanish. *Linguistics and Philosophy* 31:467-522.
- Yoon, Suwon. 2010. *NOT in the Mood: the Syntax and Pragmatics of Evaluative Negation*. PhD thesis, U. of Chicago.
- Zwarts, Frans. 1995. Nonveridical contexts. *Linguistic Analysis* 25, 3-4: 286-312.