

# 1

## Mood and Modality

### 1.1 Introduction

Mood is a grammatical category that is inherently tied to modality. This is immediately apparent in the definition of mood provided by Portner (2018, p. 4), according to which it is “*an aspect of linguistic form which indicates how a proposition is used in the expression of modal meaning*”. A wide range of empirical phenomena have been discussed under the broad umbrella of ‘mood’ in the literature, varying in the morphosyntactic manifestations of this category, in the kinds of modal meanings that are associated with it, and in how these modal meanings are argued to be encoded compositionally.

For example, consider the French sentences in (1a)-(1b).

- (1) a. Pierre **veut**  
Pierre **want**.3SG  
[que Marie <sup>OK</sup>**fasse** /\*fait la vaisselle].  
COMP Marie **do.SUBJ.PRS.3SG** /do.IND.PRS.3SG the.FEM dishes  
‘Pierre wants Marie to do the dishes.’ (p.c. Vincent Rouillard)
- b. Pierre **pense**  
Pierre **think**.3SG  
[que Marie \*fasse /<sup>OK</sup>**fait** la vaisselle].  
COMP Marie do.SUBJ.PRS.3SG /**do.IND.PRS.3SG** the.FEM dishes  
‘Pierre thinks that M. is doing the dishes.’ (p.c. Vincent Rouillard)

We see that verbs ‘want’ and ‘think’ in French require different morphological forms of verbs in the embedded clause—so-called *subjunctive* and *indica-*

*tive* conjugations respectively.<sup>1,2</sup> Both sentences express modal meanings: the embedded propositions are evaluated not with respect to the actual world, but with respect to the set of worlds determined by the embedding verb—worlds according to Pierre’s desires in (1a) and according to Pierre’s thoughts in (1b). Verbal mood thus seems to signal some difference between the two modal meanings, and it has been a major research question in the literature what that difference is (Farkas 1985, 1992; Giannakidou 1995, 1997; Giannakidou and Quer 1997; Giorgi and Pianesi 1997; Portner 1997; Giannakidou 1998; Quer 1998; Schlenker 2003; Villalta 2000, 2008; Siegel 2009; Giannakidou 2011; Portner and Rubinstein 2012; Portner 2018; Anand and Hacquard 2013; Portner and Rubinstein 2020; Giannakidou and Mari 2021; Alonso-Ovalle et al. 2024; Grano 2024, a.o.). In section 1.2 I sketch in a generalized form and illustrate with the example in (1) three ideas about the contribution of mood: (i) that subjunctive signals the presence of an ordering source in the semantics of a modal (*ordering source-based theories*), (ii) that indicative signals truth of the embedded proposition throughout a dedicated set of worlds (*commitment-based theories*), and (iii) that subjunctive mood signals activation of focus-alternatives to the embedded proposition (*alternatives-based theories*). In section 1.3 I discuss how these theories can account for mood in embedded clauses more generally, including cases of unselected and polarity subjunctives, and what difficulties they face.

In addition to the question of which semantics the mood morphology is associated with, there is a question of what is exactly the semantic contribution, if any, of the mood morpheme itself. Does it directly encode (part of) the meaning it is associated with? E.g., does it itself have semantics of a modal, of a focus-sensitive operator, or introduce a (non)veridicality presupposition? Or does it merely *reflect* the presence of certain meanings? If the latter is the case, what is the mechanism for ensuring that mood morphology would track semantics? While the mood morphology has been proposed to directly encode the associated semantics (e.g., Portner and Rubinstein 2020, Villalta 2008), in the section 1.6 I will discuss some cases that are problematic for this view (Alonso-Ovalle

<sup>1</sup> The exact morphosyntactic manifestation of mood varies across languages. For example, in Greek and Russian, we see special particles as exponents of the subjunctive mood (see e.g. (2) and (35)), and in German ‘think’ differs from ‘want’ in having a complementizer that licenses V2-clauses (Meinunger, 2004, 2007; Portner, 2006; Truckenbrodt, 2006), which could also be viewed as a difference in mood (I thank an anonymous reviewer for pointing this out). For connection of V2 to mood choice in Icelandic, see (Gärtner and Eyþórsson, 2020).

<sup>2</sup> Languages differ in the range of contexts in which we see subjunctive marking. For example, Italian is well-known to have a peculiar property of licensing subjunctive in the complement of ‘believe’ (Portner, 1997, 2018). An anonymous reviewer also points out that subjunctive can be used in subject control complements, e.g. in Romanian.

et al., 2024; Bondarenko, 2024), and suggest that mood morphemes are better thought of as spelling out agreement with higher semantic operators.

Many languages allow subjunctive mood not only in embedded complement clauses, but in a variety of other environments. For example, in Greek subjunctive mood, which takes the morphosyntactic form of a particle (*na*) that co-occurs with a verbal form,<sup>3</sup> is used not only in complements of predicates like ‘want’, (2a), but also in root clauses, (2b)-(2c), as well as some adjunct clauses, (2d). Cases like (2b)-(2d) differ from (2a) in that there is no obvious overt predicate that can be said to select the subjunctive.

(2) *Greek*

- a. Thelo **na** /\*oti kerdisi o Janis.  
want.1SG SUBJ /IND win.NONPAST.3SG the John  
‘I want John to win.’ (Giannakidou and Mari, 2021, p. 14)
- b. **Na** aniksis to parathiro. *imperative*  
SUBJ open.2SG the window  
‘Open the window!’ (Oikonomou, 2016, p. 146)
- c. **Na** efevge o Janis! *optative*  
SUBJ leave.IMPRES.3SG the John  
‘I wish John had left!’ (Giannakidou and Mari, 2021, p. 13)
- d. I Ariadne irthe gia **na** mas di. *purpose adjunct*  
the Ariadne came.3SG for that.SUBJ us see.3SG  
‘Ariadne came in order to see us.’  
(Giannakidou and Mari, 2021, p. 111)

Greek shows us that subjunctive mood in root clauses can express commands, (2b), and wishes, (2c), often described as *imperative* and *optative* moods respectively.<sup>4</sup> The use of the same morphology for (2a)-(2d) as well as (2b)-(2c) suggests that the same linguistic form can be associated with both *verbal mood*—mood related to the expression of subsentential modal meaning, and with *sentence mood*—mood associated with conversational functions like making a command, a promise, asking a question (see Portner 2018, ch. 3 for a detailed discussion). This suggests that a unified account of these phenomena might be desirable.<sup>5</sup> In section 1.4 I evaluate how the three general approaches to mood introduced in section 1.2 can extend to analyzing mood in root clauses.

<sup>3</sup> Besides Greek, subjunctive is expressed as a particle in at least Bulgarian, Russian, Serbo-Croatian and Romanian, raising the question of whether there are any differences between languages in which mood is expressed on the verb vs. with the help of a particle.

<sup>4</sup> For discussion of optative constructions, see Grosz 2012 and the references therein.

<sup>5</sup> (Portner, 2018) and (Giannakidou and Mari, 2021) attempt to provide unifying accounts of verbal mood and sentence mood.

As we see in (2d), subjunctive morphology is not restricted to root clauses and complement clauses. We often find mood marking in adjunct purpose clauses, temporal clauses, conditional clauses, some infinitival clauses (see ‘Chapter 13 NON FINITE MODALITY’), relative clauses, under certain modals, and in causative constructions. In section 1.5 I overview two of these environments—purpose clauses and relative clauses,—and discuss the challenges they bring for the existing approaches to mood.

The cross-linguistic variation in verbal mood and the vast differences in terminological and theoretical assumptions present in the literature raise the question of the inventory of verbal moods. How many primitives should we distinguish when it comes to this grammatical category? Descriptions of individual languages contain a variety of notions that are used to describe how propositions are used in expression of modal meanings, e.g. *realis* vs. *irrealis*, *indicative* vs. *subjunctive*, *conditional*, *optative*, *imperative*, *hortative*, *jussive*, *inferential*, among many others. It is far from clear how many of these notions need to be primitive as opposed to being reducible to other ingredients independently needed in the grammar (e.g. see discussion of French conditional mood in Iatridou 2000, p. 266-268), and much more work needs to be done to make studies of verbal mood more comparable cross-linguistically.

## 1.2 Different approaches to mood

There are many different proposals about the semantics of mood (see Portner 2018 and the references therein). In this section I would like to discuss three ideas about the contribution of subjunctive and indicative mood, (3), illustrating them with the phenomenon that has perhaps received the most attention in the literature—selection of mood with predicates like ‘want’ and ‘think’.

- (3) a. **Ordering source-based theories**  
Subjunctive mood signals the presence of an ordering source in the semantics of a modal.
- b. **Commitment-based theories**  
Indicative mood signals that the embedded proposition is true throughout some dedicated set of possible worlds.
- c. **Alternatives-based semantics for mood**  
Subjunctive mood signals obligatory activation of focus alternatives to the embedded proposition.

According to *the ordering source-based* approach, also known as “the proto-

standard theory” of mood (see Giorgi and Pianesi 1997; Anand and Hacquard 2013; Portner and Rubinstein 2012, 2020; Alonso-Ovalle et al. 2024, a.o.), subjunctive mood is associated with a modal that has an ordering source in addition to the modal base. Subjunctive morphology is then viewed as either: (i) signaling the presence of such a modal in the structure, or (ii) itself contributing the modal semantics. Indicative on this approach could either be viewed as a default or signal a modal without an ordering source.

According to *commitment-based theories*, indicative morphology is the one that contributes meaning: it says that the embedded proposition is true throughout some dedicated set of possible worlds determined by a propositional operator (Farkas, 1992; Portner, 1997; Giannakidou, 1995, 2011; Quer, 1998, 2009; Schlenker, 2003). Note that there is a question of whether the theories in (3a) and (3b) are in fact distinct (see Portner 2018, p. 103-107 for discussion). As stated in (3), they actually make compatible claims: it could both be that subjunctive mood is related to the presence of an ordering source, and that indicative signals truth in a dedicated set of worlds—this set could be the modal base of a modal that lacks an ordering source.

*Alternative-based theories* (Villalta, 2000, 2008; Bondarenko, 2022, 2024) share with the ordering source-based theories the core intuition that subjunctive mood signals comparison between several alternatives. They however differ from both theories in (3a) and in (3b) in that they assign a crucial role to *focus-sensitivity*: within this approach, the subjunctive mood signals the presence of a feature which triggers activation of alternatives to the embedded proposition. The activated alternatives require the presence of an alternatives-sensitive operator, which in this case is the source of the modal meaning.

In sections 1.2.1, 1.2.2 and 1.2.3 I sketch out the core ideas of the ordering source-based, commitment-based and alternatives-based theories respectively. To make these approaches more comparable, I adopt a unified framework, which in some cases will result in slight divergence from the exact details of the proposals as they are presented in the literature. I will assume a possibilist version of situation semantics (Barwise 1981; Perry and Barwise 1983; Kratzer 1989; Portner 1992; Kratzer 2020; Elbourne 2005, a.o.), according to which propositions are sets of world parts rather than full worlds. I will further assume that the ontology contains the set  $E$  with all possible individuals, and that possible situations are particulars that form a subset of  $E$ :  $S$ . The set of possible worlds  $W$  is a subset of the set  $S$  containing only maximal possible situations.

In this chapter I will adopt Kratzer’s (1977; 1981; 1991; 2012) semantics for modals (see ‘Chapter 2 CONCEPTUAL FOUNDATIONS’ and ‘Chapter 3 FROM MODAL LOGIC TO MODAL SEMANTICS’ for discussion of other

approaches),<sup>6</sup> according to which modal statements are evaluated against *conversational backgrounds*—“functions which assign to every member of  $W$  a subset of the power set of  $W$ ” (Kratzer, 1991, p. 641). Some modals might use only one background for evaluating the prejacent—the *modal base* ( $f$ ); others will take a second background which functions as *an ordering source* ( $g$ ) that orders the worlds in the intersection of the propositions in the modal base.

Following a growing body of literature (Hacquard 2006; Kratzer 2006; Hacquard 2010; Kratzer 2013; Moulton 2009; Kratzer 2016; Alonso-Ovalle and Menéndez-Benito 2017; Portner and Rubinstein 2020; Alonso-Ovalle et al. 2024, a.o.), I will also adopt the assumption that modal domains are projected from particulars (see ‘Chapter 4 THE CONSTRUCTION OF MODAL DOMAINS - THE KRATZERIAN VIEW’), paired with the neo-Davidsonian approach to argument structure (Castañeda 1967, a.o.). Thus, verbs like *think* and *want* will have the denotations in (4) and (5) respectively, and the modal backgrounds associated with these predicates will be projected from the situation that they describe.

- (4)  $\llbracket \text{think} \rrbracket^s = \lambda s'. \text{think}(s')_s$   $s'$  is a thinking situation in  $s$   
 (5)  $\llbracket \text{want} \rrbracket^s = \lambda s'. \text{want}(s')_s$   $s'$  is a wanting situation in  $s$

I follow (Portner and Rubinstein, 2020; Alonso-Ovalle et al., 2024) in assuming the partial function  $\text{CONT}(\text{ENT})$  which is used to retrieve the modal backgrounds associated with a particular, (6). When defined for a situation  $s$ ,  $\text{CONT}$  will either return a single modal background  $f$  (in case the modal meaning does not involve an ordering source), or a pair of two modal backgrounds  $\langle f, g \rangle$ —in case the modal meaning involves a modal base and an ordering source (see ‘Chapter 23 MODALITY AND ATTITUDE VERBS’ for a more general discussion of modality and attitude verbs).

- (6)  $\text{CONT}(\text{ENT})$  is a partial function  
 $\text{from } E \rightarrow D_{s(st)t} \cup \{ \langle f, g \rangle : f \in D_{s(st)t} \wedge g \in D_{s(st)t} \}$   
 it is defined for particulars associated with modal meanings; when defined, this function maps them either to a single modal background  $f$ —a function of type  $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$  from situations to a set of propositions, or to a pair of two such modal backgrounds  $\langle f, g \rangle$ .

We can then think of modals in general as having meanings that take the shape in (7): they take a proposition  $p$  and a situation  $s$  as their arguments, and make

<sup>6</sup> Though as far as I can see, nothing in the future discussion will hinge on this particular formal approach to semantics of modality as opposed to other approaches in the literature (e.g. *similarity semantics* (Stalnaker, 1984; Heim, 1992)).

a modal statement about  $p$  given the modal background(s) projected from the situation  $s$  via the function  $\text{CONT}$ .

$$(7) \quad \llbracket \text{modal} \rrbracket = \lambda p \in D_{st}. \lambda s \in S. \text{MODAL}(\text{Cont}(s))(p)$$

Given these assumptions, let us see how we can flesh out the ideas in (3). I will use the case of the selected subjunctives in (8) as an illustration.

- (8) a. Pierre **veut**  
 Pierre **want**.3SG  
 [que Marie <sup>OK</sup>**fasse** /\*fait la vaisselle].  
 COMP Marie **do.SUBJ.PRS.3SG** /do.IND.PRS.3SG the.FEM dishes  
 ‘Pierre wants Marie to do the dishes.’ (p.c. Vincent Rouillard)
- b. Pierre **pense**  
 Pierre **think**.3SG  
 [que Marie \*fasse <sup>OK</sup>**fait** la vaisselle].  
 COMP Marie do.SUBJ.PRS.3SG /**do.IND.PRS.3SG** the.FEM dishes  
 ‘Pierre thinks that M. is doing the dishes.’ (p.c. Vincent Rouillard)

### 1.2.1 Ordering source-based theories

According to ordering source-based theories, subjunctive mood is selected if the modal meaning makes reference to an ordering source. (Portner and Rubinstein, 2020) propose that the mood itself is the source of modal quantification: i.e., the meaning in (7) is the meaning associated with mood morphology. The difference between subjunctive and indicative then can be viewed as a difference in whether the modal expects  $\text{CONT}(s)$  to be a single modal background or a pair of two modal backgrounds. The entries for indicative and subjunctive (adapted from Alonso-Ovalle et al. 2024) could then be stated as in (9) and (10) respectively, where  $\text{ALL}$  and  $\text{BEST}$  are functions from a background/pair of backgrounds and a situation to a set of worlds.

$$(9) \quad \llbracket \text{IND} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is a single background } f. \text{ALL}(f, s) \subseteq p$$

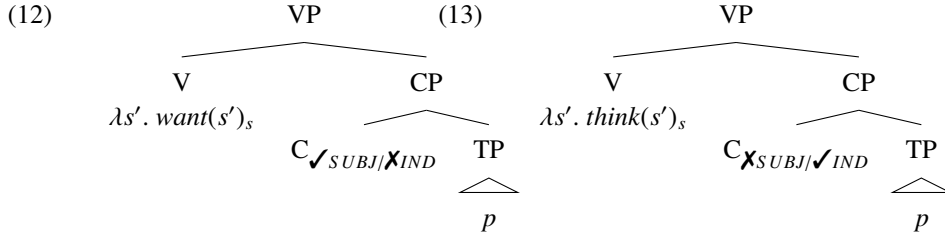
$$(10) \quad \llbracket \text{SUBJ} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is a pair of two backgrounds } \langle f, g \rangle. \\ \text{BEST}(f, g, s) \subseteq p$$

We might in principle entertain different definitions of  $\text{ALL}$  and  $\text{BEST}$  for different modal meanings (see the discussion in relation to mood in Portner and Rubinstein 2020, and the definitions of different modal meanings in Kratzer 1991). In (11) I provide definitions based on *simple necessity* for  $\text{ALL}$  and *human necessity* for  $\text{BEST}$  (von Stechow, 1999; Portner and Rubinstein, 2020).

- (11) a. For any modal background  $f$ , and situation  $s$ ,  $\text{ALL}(f, s) = \bigcap f(s)$   
 b. For any modal backgrounds  $f$  and  $g$ , and situation  $s$ ,  
 $\text{BEST}(f, g, s) = \{w : w \in \text{ALL}(f, s) \wedge \neg \exists v [v \in \text{ALL}(f, s) \wedge v \leq_{g(s)} w]\}$   
 c. For any  $w, w' \in W$ , any  $A \subseteq \mathcal{P}(W)$ :  
 $w \leq_A w'$  iff  $\{p : p \in A \wedge w' \in p\} \subseteq \{p : p \in A \wedge w \in p\}$

Given (11), the indicative mood then is a universal modal that says that all of the worlds in the intersection of the propositions in the modal base are  $p$ -worlds. The subjunctive mood is a universal modal that quantifies over a subset of the worlds in  $\text{ALL}(f, s)$ —it only demands that the worlds most highly ranked according to the ordering source  $g$  be  $p$ -worlds.

Now let us see how this proposal accounts for the selection of mood in the complement of ‘want’ vs. ‘think’, (8), sketched out in (12)-(13).



On this approach, this selection is a consequence of the presuppositions that indicative and subjunctive moods have, (9)-(10), in conjunction with the assumption that all wanting situations are associated with two modal backgrounds, whereas all believing situations are only associated with one, (14). This assumption emerges from the proposal of what *think* and *want* mean. ‘Think’ states that all the worlds compatible with what the attitude holder believes (*doxastic modal base*, *dox*) are  $p$ -worlds. ‘Want’ imposes a weaker requirement: the best worlds (according to the attitude holder’s desires—*buletic ordering source*, *bul*) among the worlds compatible with the attitude holder’s beliefs are  $p$ -worlds. Note that in the current implementation, the modal statements themselves are not contributed by the verbs—they are contributed by the mood morpheme, but the verbs determine the number and type of the conversational backgrounds that the meaning of mood will be able to use.

- (14) a. For any wanting situation  $s$ :  $\text{Cont}(s) = \langle \text{dox}, \text{bul} \rangle$   
 b. For any believing situation  $s$ :  $\text{Cont}(s) = \text{dox}$

The CPs and the verb both are predicates of situations, and will compose by Predicate Modification. The result will be defined just in case the presup-

positions of both the CP and the verb are met. When ‘want’ combines with a subjunctive CP, their presuppositions align well: both require that the content of the wanting situation is a pair of two modal backgrounds. The resulting meaning will be in (15): true iff best of Pierre’s belief worlds according to his desires are worlds in which Marie does the dishes. However if we try to combine ‘want’ with an indicative CP, the result will be deviant: no situation can be such that its content is both a single modal background and a pair of modal backgrounds at the same time. Thus, indicative complements to ‘want’ are correctly ruled out. By similar logic, ‘think’ will be incompatible with subjunctive CPs due to presupposition clash. With an indicative CPs the sentence will be well-formed, and true if all worlds that are compatible with Pierre’s beliefs are worlds where Marie does the dishes, (16).

- (15)  $\llbracket \text{Pierre wants Marie to do the dishes} \rrbracket^s =$   
 $\exists s' [want(s')_s \wedge EXP(s') = \text{Pierre} \wedge \text{BEST}(dox, bul, s') \subseteq \{w' : \text{Marie does the dishes in } w'\}]$
- (16)  $\llbracket \text{Pierre thinks that Marie is doing the dishes} \rrbracket^s =$   
 $\exists s' [think(s')_s \wedge EXP(s') = \text{Pierre} \wedge \text{ALL}(dox, s') \subseteq \{w' : \text{Marie does the dishes in } w'\}]$

To sum up, ordering source-based theories propose that the crucial difference between modal meanings that select for subjunctive vs. indicative is the presence of an ordering source in the meaning of the former and its lack in the meaning of the latter. This sensitivity is encoded as a lexical property of the verb: verbs differ in whether the *CONTENT* function returns one or two conversational backgrounds when applied to their situation argument. Indicative and subjunctive moods presuppose that their situation arguments are associated with one and two backgrounds respectively, leading to selection between verbs and the mood of the complement. Note that as long as *CONTENT* is a function, it cannot be returning different results for the same situation, and so on this approach we naturally expect compatibility with subjunctive/indicative to be fixed for a given verb and not depend on a bigger environment.

### 1.2.2 Commitment-based theories

The intuition behind commitment-based theories (Farkas, 1985, 1992; Giannakidou, 1997; Giannakidou and Quer, 1997; Portner, 1997; Quer, 1998; Giannakidou, 1998, 2011, 2013; Giannakidou and Mari, 2021; Schlenker, 2003) is that the indicative mood signals that the attitude holder is committed to the embedded proposition: it is true through some dedicated set of worlds related to the attitude holder. One way to think about this set of worlds is that it is an *individual model*, or an *information state*, that we arrive at by applying a

special accessibility relationship to an individual (*anchor*). If the accessibility relation is an intersection of *i*'s doxastic and epistemic modal bases, (17),  $M(i)$  will contain all the worlds that *i* believes to be true.

- (17) *Information state of an individual anchor i*  
 An information state  $M(i)$  is a set of worlds associated with an individual *i* representing worlds compatible with what *i* knows or believes.  
 (Giannakidou and Mari, 2021, 36)

Giannakidou & Mari then propose that information states associated with individuals can be *veridical* or *non-veridical*, (18)-(19), and that this distinction is what lies behind licensing of indicative vs. subjunctive mood, (20). Given the accessibility relation in (17),<sup>7</sup> an individual *i* is a holder of a veridical  $M(i)$  with respect to *p* if *i* believes or knows *p*, and of a non-veridical  $M(i)$  with respect to *p* if *i* is agnostic about *p*.

- (18) *Veridical information state* (Giannakidou and Mari, 2021, 41)  
 An information state  $M(i)$  is veridical with respect to *p* iff:  
 $\forall w[w \in M(i) \rightarrow w \in p]$ <sup>8</sup>
- (19) *Non-Veridical information state* (Giannakidou and Mari, 2021, 45)  
 An information state  $M(i)$  is nonveridical about *p* iff  $M(i)$  contains both *p* and  $\neg p$  worlds. A non-veridical  $M(i)$  does not entail *p*.
- (20) **Licensing of Mood** (Giannakidou and Mari, 2021, 43;182)
- a. **The indicative** will be licensed in the complement of a propositional attitude that is veridical.<sup>9</sup>
  - b. **The subjunctive** will be licensed in the complement of a propositional attitude (*ATT*) iff *i ATT p* presupposes that  $M(i)$  is a nonveridical state, i.e. partitioned into *p* and *not p* worlds.

Under common assumptions about the lexical meanings of ‘think’ and ‘want’, this approach correctly predicts that ‘think’ will combine with indicative, and ‘want’ will combine with subjunctive. *Pierre thinks that Marie is doing the*

<sup>7</sup> Different accessibility relations can give rise to different models/states associated with an individual, and we could apply notions of veridicality and non-veridicality to them too. Veridicality implies belief and non-veridicality implies agnosticism when our accessibility relation is belief/knowledge-based as in (17).

<sup>8</sup> I simplified the notation: in (Giannakidou and Mari, 2021, 36) the condition is written as  $\forall w[w \in M(i) \rightarrow w \in \{w' | p(w')\}]$

<sup>9</sup> For simplification, I've omitted reference to objective and subjective veridicality in this definition—Giannakidou and Mari (2021) say that veridicality here can be both objective or subjective, by which they mean that the attitude verb could either be factive (objectively veridical) or true throughout the individual model of the attitude holder (subjectively veridical).

*dishes* is true just in case all the worlds compatible with Pierre’s beliefs are the subset of the set of worlds in which Marie is doing the dishes (Hintikka, 1969). This would entail that for ‘think’,  $M(i) \subseteq p$ —the information state of the attitude holder is veridical, and hence indicative should be selected. Verbs like ‘want’ come with a *diversity presupposition* (Heim, 1992; von Stechow, 1999): the informational state associated with the attitude holder must contain both  $p$  and *not*  $p$  worlds. Thus, subjunctive will be licensed for such verbs.

One big challenge for approaches like the one sketched above lies in how to determine the relevant informational state or individual model  $M(i)$  and its properties from the lexical semantics of the clause-embedding verbs in a non-stipulative way. For example, verbs like ‘dream’ in many languages select indicative complements. On the approach above we need to say that there is a dream state  $M_{dream}(i)$  (Giannakidou and Mari, 2021, 145) and it is a veridical state in order to account for its selectional properties, similarly we’ll need to postulate veridical states  $M_{imagination}(i)$  for ‘imagine’,  $M_{hallucination}(i)$  for ‘hallucinate’, and so forth. The question that then arises is how we can predict from a verb’s meaning whether it will be associated with a veridical or a non-veridical model: why do different verbs have the models of the type that they do?

Another big question is whether commitment-based theories are actually distinct from the ordering-based theories (see discussion in Portner 2018, ch.2). Note that one possible answer to the question above about (non)veridicality of a model and the meaning of the attitude report could be that non-veridical models, unlike veridical ones, are associated with attitude reports that involve comparative meanings. Let us see how the idea of veridicality being the crucial factor for mood selection could be adapted to the approach to modality adopted at the beginning of this chapter, and how it can relate to ordering-based theories.

Recall that in Kratzer’s approach to modality, modal meanings are built from one or two conversational backgrounds—the modal base ( $f$ ) and the ordering source ( $g$ ). It seems that the concept of an individual model, or an information state related to an individual anchor ( $M(i)$ ), could be equated with the intersection of all propositions in the modal base of the attitude verb ( $\cap f(s)$ ).<sup>10</sup> Indicative mood then could be a modal that demands that all the worlds in  $\cap f(s)$  are  $p$ -worlds, (21)—the modal base is *veridical*. Subjunctive mood could be a modal that imposes the diversity condition on the modal base that requires that  $\cap f(s)$  contain both  $p$  and *non*  $p$  worlds, (22)—its modal base would be *non-veridical*. Note that both indicative and subjunctive could have additional modal meaning that they are contributing—I abbreviate it in (21)-(22) as  $\text{MODAL}(\text{Cont}(s))(p)$ . This approach in principle doesn’t impose restrictions

<sup>10</sup> Under the neo-Davidsonian assumptions, the dedicated set of worlds will be connected to the attitude holder indirectly, via the situation argument.

on whether  $\text{CONT}(s)$  is a single modal background or a pair of backgrounds. All it does is restrict the intersection of the modal base associated with the situation described by the verb.

- (21) *Veridicality-Based Approach: Indicative*  
 $\llbracket \text{IND} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is either one background } f \text{ or a pair } \langle f, g \rangle.$   
 $\cap f(s) \subseteq p \quad (\wedge \text{MODAL}(\text{Cont}(s))(p))$
- (22) *Veridicality-Based Approach: Subjunctive*  
 $\llbracket \text{SUBJ} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is either one background } f \text{ or a pair } \langle f, g \rangle$   
 $\wedge \exists w \in \cap f(s)[p(w) = 1] \wedge \exists w' \in \cap f(s)[p(w') = 0].$   
 $\text{MODAL}(\text{Cont}(s))(p)$

Compare (21)-(22) to the denotations of indicative and subjunctive under the ordering-based approach, repeated below in a non-abbreviated format:

- (23) *Ordering Source-Based Approach: Indicative*  
 $\llbracket \text{IND} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is a single background } f. \cap f(s) \subseteq p$
- (24) *Ordering Source-Based Approach: Subjunctive*  
 $\llbracket \text{SUBJ} \rrbracket = \lambda p. \lambda s : \text{CONT}(s) \text{ is a pair of two backgrounds } \langle f, g \rangle.$   
 $\{w : w \in \cap f(s) \wedge \neg \exists v[v \in \cap f(s) \wedge v \leq_{g(s)} w]\} \subseteq p$

First, note that indicative mood on this account encodes veridicality as part of its meaning: all the situations in the intersection of the modal base are  $p$ -worlds. The only difference in the account of the indicative mood then is that on the ordering source-based approaches, indicative mood carries an explicit presupposition that  $\text{CONT}(s)$  is a single background. The veridicality-based approach and similar commitment-based approaches are in principle compatible with there being ordering source still present, and some additional modal meaning asserted by the indicative mood. In light of this difference it is interesting that languages seem to make different choices about mood selection when it comes to factive evaluative predicates like *regret* (Farkas, 2003; Portner, 2018): with such predicates  $p$  is true throughout the modal base, yet their meanings involve comparison—and thus should have an ordering source. It might be that languages like Romanian, which select indicative in these cases, have the meaning of indicative like in (21): indicative is selected because  $p$  is true throughout the modal base, and the presence of an ordering source does not play a role. If a language uniquely selects subjunctive under verbs like *regret*, we can hypothesize that it's because indicative in this language has the meaning in (23) and is incompatible with the presence of the ordering source.

When it comes to subjunctive, note that the diversity condition in (22) has

to hold for (24) to be informative. If diversity is not met and all the worlds in  $\cap f(s)$  are  $p$  worlds, then the assertion of (24) can never be false: all the best ranked worlds are a subset of  $\cap f(s)$ , and so will all trivially be  $p$ -worlds. So the ordering source-based approach indirectly encodes the non-veridicality of the modal base with subjunctive mood. But it again imposes a stronger requirement, as it requires two modal backgrounds in the meaning of the modal. Commitment-based approaches do not make such a demand on the subjunctive meaning: according to them, subjunctive can be a modal that lacks any comparative meaning to it, as long as its modal base is diverse. One type of predicates that might be useful to consider in this regard are epistemic modal verbs like ‘allow for the possibility’ which we find in Slavic languages (see Močnik 2019 on Slovenian *dopuščati*). These predicates are clearly non-veridical, and do not involve any comparative component in their meanings. At least in Russian, (25), we see that they cannot take subjunctive complements, which would favor the theories that associate subjunctive with comparative semantics.<sup>11,12</sup>

- (25) Ja dopuskaju, [čto-(\*by) Petja prišel domoj], i ja dopuskaju,  
 I allow COMP-(SUBJ) Petya came home and I allow  
 [čto-(\*by) Petja ne prišel domoj].  
 COMP-(SUBJ) Petya NEG came home  
 ‘I allow for the possibility that Petya came home, and I allow for the  
 possibility that Petya didn’t come home.’

### 1.2.3 Alternatives-based semantics for mood

Alternatives-based theories (Villalta, 2000, 2008; Bondarenko, 2022, 2024) share with the ordering source-based theories the idea that subjunctive mood signals comparison between several alternatives. I separate them in a category of their own because they differ in how the alternatives that are compared are introduced and acted upon. The core idea of this approach is that subjunctive

<sup>11</sup> Russian *dopuskat*’ does seem to allow subjunctive under negation, at least for some speakers:

- (i) Ja ne dopuskaju (togo), [čto-(by) Petja uže prišel domoj].  
 I NEG allow (that.GEN) COMP-(SUBJ) Petya already came home  
 ‘I don’t allow for the possibility that Petya has already come home.’

Thus, this verb seems to pattern with other epistemic verbs in the language in allowing polarity subjunctives (see section 1.3 for discussion). But crucially, on its own it is not compatible with subjunctives, which is surprising under commitment-based theories.

<sup>12</sup> An anonymous reviewer mentions that predicates like *possible* in Romance languages allow subjunctive complements, which seems to argue against approaches with comparative semantics, and might also be problematic for the alternatives-based approach.

mood signals activation of contextually salient alternatives to the embedded proposition, and that it is licensed with the same mechanisms as alternative-sensitive expressions are licensed in natural languages more generally.

Villalta (2006, 2008) proposed that the difference in meaning between verbs like *think* and *want* is that the latter are focus-sensitive, and that this is the reason they license subjunctive.<sup>13</sup> One important piece of evidence for this claim is that there are contexts in which the different placement of focus within the clause embedded under *want* can lead to different truth-conditions, whereas the truth-conditions of sentences with verbs like *think* do not show such focus-sensitivity. Consider (26a)-(26b) in the provided context.

- (26) **Context:** (*adapted & simplified from Villalta 2008, p. 496*)  
 Lisa doesn't want John to be the one teaching syntax. But John will teach syntax, and given this, Lisa prefers it if he teaches on Tuesdays and Thursdays rather than on Mondays, Wednesdays and Fridays.
- a. Lisa wants John to teach syntax [ON TUESDAYS AND THURSDAYS]<sub>F</sub>
  - b. Lisa wants [JOHN]<sub>F</sub> to teach syntax on Tuesdays and Thursdays.

In the given context, (26a) feels true, but (26b) feels false. This difference in judgment seems to stem from the choice of alternatives that we are considering. While it's true that Lisa prefers "*John teaches syntax on Tuesdays and Thursdays*" to all other alternatives of the form "*John teaches syntax on X*", it is false that Lisa prefers "*John teaches syntax on Tuesdays and Thursdays*" to all alternatives of the form "*X teaches syntax on Tuesdays and Thursdays*". Thus, Villalta concludes that the meaning of *want* has to have access to the alternatives that focus inside of the embedded clause generates.

Compare (26) to sentences with other verbs in (27).<sup>14</sup> It is difficult to imagine a context where (27a) would be true and (27b) would be false or vice versa. The focus alternatives of these sentences will of course be different, but this doesn't seem to affect the truth-conditions in the way that it does with *want*.

- (27) a. Lisa knows/said/thinks that John teaches syntax  
           [ON TUESDAYS AND THURSDAYS]<sub>F</sub>  
 b. Lisa knows/said/thinks that [JOHN]<sub>F</sub> teaches syntax  
       on Tuesdays and Thursdays.

Villalta's proposal is that the focus alternatives in (26) are evaluated under *want* and are factored into its meaning, but that the focus alternatives in

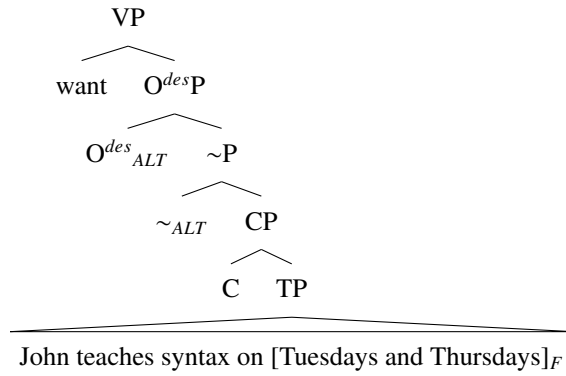
<sup>13</sup> See Portner 2011; Rubinstein 2012; Harner 2016; Phillips-Brown 2018; Pasternak 2018 for criticism and counter-proposals to Villalta's proposal.

<sup>14</sup> See (Harner, 2016) for classification of attitude-predicates with regard to focus-sensitivity.

(27) are evaluated at the matrix level: we'll get propositions of the form “*Lisa knows/said/thinks that John teaches syntax on X*” and “*Lisa knows/said/thinks that X teaches syntax on Tuesdays and Thursdays*” for (27a) and (27b).

Let us now see how these ideas can be fleshed out under the assumptions about modality adopted at the beginning of section 1.2. Within the alternatives-based approach Rooth (1985, 1992), we can think of severing modality from the lexical verb in the following way: ‘want’ is a combination of the lexical verb *want*, an alternatives-sensitive operator, which I call  $O^{des}_{ALT}$ , and the squiggle operator,  $\sim_{ALT}$ . This is illustrated in (28).<sup>15</sup>

(28) **Decomposing ‘want’:** *want* +  $O^{des}_{ALT}$  +  $\sim_{ALT}$



The verb *want* simply denotes a predicate of wanting situations, (29), and it is  $O^{des}_{ALT}$  that carries all the heavy semantic load, (30)-(31).

(29)  $\llbracket \text{want} \rrbracket^s = \lambda s'. \text{want}(s')_s$

(30)  $\llbracket O^{des}_{ALT} \rrbracket^{s,a} = \lambda p. \lambda s : \text{Cont}(s) \text{ is a pair } \langle f, g \rangle \wedge \forall q \in a(ALT) : \text{ALL}(f, s) \cap q \neq \emptyset . \forall q[q \in a(ALT) \wedge q \neq p \rightarrow \text{BETTER}_{f,g,s}(p)(q)]$

(31) For any modal backgrounds  $f$  and  $g$ , situation  $s$  and propositions  $p$  and  $q$ ,  $\text{BETTER}_{f,g,s}(p)(q)$  holds iff the following two conditions hold:

- a.  $\forall u[u \in \text{ALL}(f, s) \wedge u \in q \rightarrow \exists v[v \in \text{ALL}(f, s) \wedge v \leq_{g(s)} u \wedge v \in p]]$
- b.  $\neg \forall v[v \in \text{ALL}(f, s) \wedge v \in p \rightarrow \exists u[u \in \text{ALL}(f, s) \wedge u \leq_{g(s)} v \wedge u \in q]]$

The meaning of  $O^{des}_{ALT}$  is closely based on the semantics of *want* proposed in (Villalta, 2008, p. 479-480), but adapted to the assumptions discussed at the beginning of section 1.2. The first thing to note is that  $O^{des}_{ALT}$  has a modal

<sup>15</sup> Villalta 2008 does not decompose the meanings of attitude verbs, so the meaning of  $O^{des}_{ALT}$  for her is part of the lexical entry of *want*. She also assumes that the squiggle operator is below the C head, and that it corresponds to the Mood head. Given that C is semantically vacuous for her, whether  $\sim_{ALT}$  is above or below C does not affect her analysis as far as I can see.

meaning which is anchored to the situation  $s$  and involves two backgrounds: the modal base  $f$  and the ordering source  $g$ . This feature unites this denotation with the ordering source-based approaches. Second,  $O^{des}_{ALT}$  has a meaning that is context-sensitive: it comes with a variable over sets of propositions  $ALT$  which receives its value from the assignment function  $a$ . The alternatives in  $a(ALT)$  factor into the modal meaning:  $O^{des}_{ALT}$  requires that the prejacent  $p$  be *better* than all the propositions in  $a(ALT)$  not equivalent to it. I assume that ‘being better’ is understood as in (31), which uses Kratzer’s (1991) notion of being a **better possibility** (which Villalta 2008 bases her meaning on: see ft. 6). According to (31), for every  $q$  world in the intersection of the modal base, there is a  $p$ -world that is at least as good as it is according to the ordering source, but that the reverse is not true. Finally,  $O^{des}_{ALT}$  also presupposes that all the alternatives are compatible with the modal base. So if in case of want the modal base is doxastic, this presupposition will ensure that all the alternatives that the attitude holder is considering are compatible with their beliefs.

The squiggle operator is the element that will interpret the focus alternatives activated within the CP, (32): it will introduce the presupposition that  $a(ALT)$  is a subset of the focus value of the constituent  $\sim_{ALT}$  combines with.

- (32)  $\llbracket \sim_{ALT} \phi \rrbracket_o^a$  is defined only iff  $a(ALT) \subseteq \llbracket \phi \rrbracket_f^a$ ,  
where defined,  $\llbracket \sim_{ALT} \phi \rrbracket_o^a = \llbracket \phi \rrbracket_o^a$

Putting the pieces together, we will get the following meaning for a sentence with *want*, (33).<sup>16</sup> When defined, it will be true if Lisa prefers John teaching syntax on Tuesdays and Thursdays to John teaching syntax on other days.

- (33)  $\llbracket \text{Lisa wants John to teach syntax [on Tuesdays and Thursdays]}_F \rrbracket^{s,a}$   
= defined if all alternatives in  $a(ALT)$  have non-null intersection with Lisa’s beliefs, and if all propositions in  $a(ALT)$  are of the shape “*John teaches syntax on X*” where  $X$  is some day; when defined true iff  
 $\exists s' [\text{want}(s')_s \wedge \text{EXP}(s') = \text{Lisa} \wedge \forall q [q \in a(ALT) \wedge q \neq p \rightarrow \text{BETTER}_{\text{dox}, \text{bul}, s'}(p)(q)]]$ ,  
where  $p = \lambda w. \text{John teaches syntax on Tuesdays and Thursdays in } w$

In the context in (26) this sentence is correctly predicted to be true, and the sentence with focus on *John*, (26b), will be false: for that sentence to be true it would need to be the case that Lisa prefers John teaching syntax to other people teaching syntax, which is false in the given context.

Now that we have provided semantics for ‘want’ within the alternatives-based approach, we can ask the question of the contribution and meaning of

<sup>16</sup> I omit here the presupposition about the content of the wanting situation.

the subjunctive mood. Villalta 2008 argues that subjunctive mood expones the squiggle operator, which for her is the denotation of the Mood head below the semantically vacuous C head. Indicative mood for her is an operator that introduces a presupposition that if there is a contextually available set of alternatives included in the focus value of TP, then it's a singleton containing the ordinary value of TP. This presupposition will prevent verbs like *want* from combining with indicative. She then introduces additional constraint to ensure that verbs like *think* cannot embed subjunctive:

- (34) **Constraint on SUBJ:** (Villalta, 2008, p. 507)  
 SUBJ can only be licensed if it appears in the scope of a focus sensitive operator.

Alternatively, we might think of the subjunctive morpheme as a lexical item that obligatorily activates alternatives (akin to weak NPI items like *any*, Bondarenko (2022)), or as agreement of some projection within left periphery with a focus feature within the embedded clause (Bondarenko, 2024). The common idea behind all the implementations is that subjunctive signals activation of focus-alternatives that are a necessary ingredient in the meaning of *want* and other subjunctive-selecting predicates, but not in the meaning of *think*.

The alternatives-based approach differs from both the ordering source-based and from commitment-based theories. While the meaning in (30) involves an ordering source, and the meaning of *think* would lack it, the alternatives-based approach doesn't expect a one-to-one correspondence between comparative semantics and the presence of subjunctive. Even if it was the case that all comparative meanings are focus-sensitive, there are definitely cases of focus-sensitivity that do not involve a modal with an ordering source, and the expectation of the alternatives-based approach is that it is the focus-sensitivity that should matter for subjunctive licensing. This approach also doesn't expect veridicality or another commitment-based notion to play a role, as long as these notions are independent of focus-sensitivity. For example, in (30) we see an anti-veridical presupposition, which ensures that all the alternatives entertained by the attitude holder are compatible with their beliefs. But there are no additional requirements imposed. Thus, we expect potentially to find subjunctive-selecting verbs that are veridical, and indicative-selecting verbs that are non-veridical. The former expectation seems to be borne out in languages in which emotive factives take subjunctive complements (Farkas, 1992, 2003; Portner, 2018). The general prediction of the alternative-based approach is that emotive factives would select subjunctive just in case the meaning of the embedding verb requires a set of alternatives as part of its meaning. Whether the semantics

of emotive factives can be shown to differ in exactly this way crosslinguistically to give rise to the observed variation in selection remains to be explored.

The alternatives-based approach faces two big challenges. First, it needs to show that indeed all cases of subjunctive mood are cases where focus-alternatives are activated. This is far from obvious. For example, directive predicates like *order*, *demand*, and modal predicates like *necessary* usually take subjunctive (Portner, 2018, p. 74-75), but it's unclear that focus placement inside the embedded clause has any consequence on the truth-conditions. The second challenge for this approach is to explain why subjunctive morphology doesn't appear in *all* environments where focus alternatives are activated: e.g., languages that have subjunctive forms don't automatically use them in sentences with *only* or other focus-sensitive elements.<sup>17</sup>

To sum up, in this section I have sketched out three ideas about what governs selection of verbal mood, focusing on mood selection under verbs like 'want' vs. 'think'.<sup>18</sup> In the next sections, I discuss the advantages and challenges of these ideas applied to clausal embedding, root clauses, and other environments.

### 1.3 Mood and clausal embedding

There are three patterns of verbal mood that we observe in embedded complement clauses. First, there are verbs that are compatible with only one type of mood in the embedded clause in all contexts. If this mood is subjunctive, the respective clause is often called **selected subjunctive**. Selected subjunctive clauses are commonly found with desire predicates like 'want', as we've seen with French *vouloir* in (1), directive predicates like 'demand', certain modal predicates, e.g. 'necessary' (see Portner 2018, p. 74 -75). Non-emotive factive verbs like 'know' are among the verbs that usually select indicative. Selected subjunctives have been the primary focus of most works on the semantics of

<sup>17</sup> Villalta 2008, p. 507 suggests that SUBJ is not the same head as the garden-variety squiggle operator  $\sim$ : the latter may appear in a sentence even in the absence of a focus sensitive operator, but SUBJ really needs the presence of an operator to result in a well-formed structure. As she acknowledges in ft. 14, this does not explain why we wouldn't use subjunctive in a sentence with an overt operator like *only*.

<sup>18</sup> This is not an exclusive list of ideas about verbal mood. One other very interesting idea, for example, has been proposed by Portner (1997). He adopts the framework of situation semantics, and argues that we can think of indicative mood in English as presupposing that the embedded proposition contains only *normal worlds*—spatiotemporally extensive whole worlds. Infinitival complements in English are different: they denote sets of *future-oriented situations*—situations that begin at the time of wanting and extend into the future, eventually including the situation that is wanted. On this view, we can think of mood markers as morphemes that introduce presuppositions about the "size" or type of the situations in the denotation of the embedded proposition, and selectional requirements will follow from verbs selecting propositions with a particular types of situations inside of them.

verbal mood, and in the previous section we have seen three approaches to modeling selection of mood under verbs like *want* vs. *think*. The biggest challenge for all theories regarding selected mood is whether the theory carves out the right class of predicates that would select subjunctive vs. indicative. For example, ordering source-based theories need to explain why verbs like *hope*, which have comparative semantics, often select for indicative mood (see Portner and Rubinstein 2020 for a proposal), commitment-based theories need to explain why factive emotive predicates sometimes take subjunctive (see chapter 7 of Giannakidou and Mari 2021), and alternatives-based theories need to explain why predicates like ‘necessary’, whose truth-conditions don’t seem to depend on placement of focus, nevertheless select for subjunctive.

While some predicates are compatible with only one mood of the embedded clause, there are predicates that exhibit optionality. (35) and (36) present examples of **optional subjunctives** from Russian: with the verb *skazat’* ‘say’ and with a causative verb *sdelat’* ‘make (so)’ respectively.

- (35) Maša skazala, [čto-(by) Petja prišël]. *Optional Subjunctive*  
 Masha said COMP-(SUBJ) Petya came  
 IND: ‘Masha said that Petya came.’  
 SUBJ: ‘Masha told Petya to come.’
- (36) Saša sdelał tak, [čto-(by) ves’ šou-biznes kategoričeski  
 Sasha made so COMP-(SUBJ) whole show-business categorically  
 rezko ot menja otvernulsja]. *Optional Subjunctive*  
 abruptly from me turn.away.PST  
 ‘Sasha made it so that the whole show business abruptly and categorically turned away from me.’ (adapted from Bondarenko 2022, p. 508)

One thing to note is that the meanings with subjunctive and indicative mood in (35)–(36) are somewhat different. (35) with indicative mood just reports a statement that Masha made—she said that Petya came. With subjunctive mood we report a request that Masha made—she wanted Petya to come, and has made no claims as to whether he did. While the difference between subjunctive and indicative in (36) is subtle, the use of subjunctive seems to imply that Saša had an intention of causing the situation described by the embedded clause (show business abruptly turning away)—he wanted it to happen, whereas he might have caused this state of affairs on accident if indicative is used.<sup>19</sup>

<sup>19</sup> An anonymous reviewer points out that we might want to distinguish cases of optionality like in (35), where the presence of the subjunctive morpheme changes the meaning, and cases where both indicative and subjunctive moods are allowed without a detectable difference in meaning (e.g., French *hope*). Indeed, if there are cases where there is true synonymy between

Let us see what three kinds of theories predict about the cases of optional mood selection. Ordering source-based theories can say that predicates which show optionality in mood selection contain in their extension both situations whose content is just a single background and situations whose content is a pair of conversational backgrounds. In this case verbal mood will restrict the set of situations described by the verb to the subset containing only situations with the relevant propositional content associated with them. So, for example, while saying situations could have declarative content or imperative content, subjunctive mood will restrict the set of saying situations to the latter. In other words, we can think of mood as narrowing down the interpretation of the verb to be compatible with the semantics of mood. Commitment-based theories could also postulate that lexical meanings of certain embedding predicates are flexible with respect to the presence of commitment, and for such predicates both moods will be possible, with subjunctive mood signaling the absence of commitment to the embedded proposition. It seems that causative predicates pose a potential problem for the commitment-based theories that are based on the notion of veridicality, as the choice of mood in (36) does not correlate with presence vs. absence of veridicality for either the speaker or the Agent of causing. The speaker in both cases takes the embedded proposition to be true, and nothing in the semantics tell us about what Saša's beliefs on the matter are. So it is not quite clear to me how the notion of veridicality can be extended to account for such cases.<sup>20</sup>

Optional subjunctive like in (35)-(36) seem to pose a challenge for alternatives-based theories on the face of it, as it is not clear in what sense we could think of 'say' and 'make' as being focus-sensitive. However, given that both of these cases seem to involve semantics of desire (in (35) Masha finds Petya coming desirable, and in (36) Saša wants the business to turn away from the speaker), it seems that this approach might say that the same  $O^{des}_{ALT}$  that is present with 'want' is present in the LFs of these sentences and adds an additional alternative-sensitive layer of meaning to the meaning contributed by 'say' and 'make' themselves. More work is needed to see if this is a viable direction.

The fact that there are cases where we see both verbal moods being possible, and this difference results in different modal meanings, supports the view that modality in sentences with clausal embedding comes from the embedded

the two forms, they would require a different treatment than the one sketched out for predicates like 'say'. Such cases require further investigation: we need to exclude the possibility that there are components of meaning in which these sentences differ even if they have the same truth-conditions (cf. the causative example in (36)).

<sup>20</sup> It seems that this use of subjunctive is most closely related to the subjunctive relative clauses in extensional contexts in Spanish and to subjunctive found in purpose clauses—all of these cases seem to involve goal-oriented modality.

clause and not the lexical verb (Kratzer, 2006, 2016; Moulton, 2009, 2015; Bogal-Allbritten, 2016, 2017; Elliott, 2020; Bondarenko, 2022). For example, in Buryat (Mongolic) examples in (37) we see that verbal mood in the embedded clause determines whether the sentence with verb *hanaxa* describes a belief (with *indicative*—no special mood marking) or a desire (with *optative* mood marking). Similar ‘think’/‘want’ ambiguity has been observed at least in Navajo (Bogal-Allbritten, 2016, 2017) and Mandarin (Grano and Lu, 2021).

- (37) a. [Badma ɳnɳ nom unša-xa gəʒə] bi hana-na-b.  
 Badma this book read-FUT COMP I mental.state-PRS-1SG  
 ‘I **think** that Badma will read this book.’  
 b. bi [tan-i:jə nam-da gəʔ-ə: xaru:l-**hai** gəʒə]  
 I you-ACC I-DAT house-ACC.REFL show-OPT COMP  
 hana-na-b.  
 mental.state-PRS-1SG  
 ‘I **want** you to show me your house.’

These data suggest that the lexical verb itself is not the carrier of the modal meaning. It is not *hanaxa* that determines the number of backgrounds that the modal meaning is built with, but some element inside the embedded CP.

There is another case of optional modality-related marking that has been called “mood” in the literature: German “subjunctive” forms, also known as “reportative” or “logophoric” mood, which are used to mark indirectness. This seems to be a distinct phenomenon from the verbal mood discussed above, as the use of mood does not affect truth-conditions and is sensitive to how the attitude predicate is used (performatively or to report an attitude). For discussion of reportative mood, see (Fabricius-Hansen and Sæbø, 2004; Schlenker, 2003, 2005; Potts, 2004; von Stechow, 2004; Sode, 2023a; Kratzer, 2016).

Finally, some verbs embed **polarity subjunctives**: these are subjunctive clauses that with a given verb are possible only if further embedded under certain semantic operators, like negation, question, or certain quantificational elements. This phenomenon is cross-linguistically very common in languages that have subjunctive morphology: polarity subjunctives exist in Bulgarian (Siegel, 2009), Catalan (Quer, 1998, 2009), French (Farkas, 1992), Icelandic (Hrefna Svavarsdóttir, p.c.), Italian (Brugger and D’Angelo, 1995), Greek (Philippaki-Warbuton, 1994; Giannakidou, 1995; Siegel, 2009), Romanian (Farkas, 1992), Russian (Dobrushina, 2012, 2016; Bondarenko, 2022, 2024), Spanish (Rivero, 1971), German (Sæbø, 2023). In (38)–(40) I illustrate it with data from Russian:

- (38) Mitja pomnit [čto /\*čto-**by** Nastja kurila].  
 Mitya remembers COMP /COMP-SUBJ Nastya smoked  
 ‘Mitya remembers that Nastya smoked.’
- (39) Mitja ne pomnit [čto /čto-**by** Nastja kurila].  
 Mitya NEG remembers COMP /COMP-SUBJ Nastya smoked  
 ‘Mitya doesn’t remember that Nastya smoked.’
- (40) Tol’ko Mitja pomnit [čto /čto-**by** Nastja kurila].  
 only Mitya remembers COMP /COMP-SUBJ Nastya smoked  
 ‘Only Mitya remembers that Nastya smoked.’

In (38) we see that *pomnit* ‘remember’ cannot license subjunctive in the embedded clause in an upward-entailing environment—subjunctive is neither obligatory nor optional, only indicative is possible. However, once the verbal phrase containing the CP is embedded under negation, or is in the scope of ‘only’, subjunctive becomes possible alongside indicative (see Bondarenko 2022, 2024 for discussion of other contexts). Which environments allow polarity subjunctives varies across verbs and languages, raising the question of how to account for the variation in contexts which allow polarity subjunctives.

Polarity-sensitivity of natural language expressions has a long tradition of being analyzed in alternative semantics (Lahiri 1998; Chierchia 2013; Crnič 2019, a.m.o.), and so the alternatives-based approach to verbal mood comes naturally equipped with the tools necessary for handling polarity subjunctives. Recall that on this view, subjunctive morphology signals activation of alternatives. For selected subjunctive with *want*, we hypothesized a focus-sensitive operator  $O_{ALT}^{des}$  as part of the lexical meaning of *want*. Bondarenko (2022, 2024) proposed that in case of polarity subjunctives like in (38)–(40), we are also dealing with a focus-sensitive operator—but in this case it is not part of the meaning of a lexical item, but a functional operator  $O_{ALT}$ , the same one that we would use for licensing weak NPIs, (41).  $O_{ALT}$  introduces a presupposition that all the alternatives to the prejacent are entailed by it.

$$(41) \quad \llbracket O_{ALT} \rrbracket^{s,a} = \lambda p_{st}. \forall q \in a(ALT) [p \Rightarrow_s q]. p(s)=1.$$

The intuition about cases like (38) is that they actually do not involve modal semantics; the embedded CP is an indefinite whose restrictor is a set of situations: e.g., in (38) it is the set of situations in which Nastya is smoking, (42a). The subjunctive signals activation of the subdomain alternatives of the indefinite: in (38) we will be considering different subsets of the set of situations in which Nastya smokes, giving rise to the set of alternative propositions in (42b).

- (42) a. **Prejacent P:**  
 ( $\neg$ ) There is a situation of Nastya smoking that Mitya remembers.
- b. **a(ALT):**  
 {( $\neg$ ) There is a situation of N. smoking that Mitya remembers,  
 ( $\neg$ ) There is a situation of Nastya smoking Malboro that Mitya remembers,  
 ( $\neg$ ) There is a situation of Nastya smoking Malboro in the yard that Mitya remembers,...}

In the positive sentence, (38), due to the nature of alternatives the prejacent will be entailed by all the alternatives. This contradicts the contribution of  $O_{ALT}$ , which demands that the prejacent be stronger than its alternatives. However in Strawson-Downward Entailing environments, the prejacent will entail all of the alternatives, thus satisfying the presupposition of  $O_{ALT}$  and leading to a well-formed sentence. Crucially, to derive the correct set of alternatives on this account,  $O_{ALT}$  must attach in the matrix clause. Thus, the mood morpheme, which appears on the embedded complementizer, can't be taken to itself expone  $O_{ALT}$  or  $\sim_{ALT}$ , it must be just reflecting their presence—e.g., expone agreement with the feature that generates the alternatives.

Polarity subjunctives are challenging for both ordering source-based theories and commitment-based theories, as both tie occurrence of subjunctive to the presence of a modal in the structure, or to the properties of an information state associated with an individual anchor. This makes data like (38)-(40) challenging: there does not seem to be any modal involved, and it is unclear how embedding under negation or 'only' should affect the informational state associated with the attitude holder in a way that allows for the subjunctive embedding. At the core of the challenge seems to be the fact that ordering source-based theories and commitment-based theories inherently treat the indicative vs. subjunctive distinction in terms of selection. If mood *restricts* what type of content associated with the situation argument of the verb can be, it is unclear how the environment above the verb could reverse this selectional restriction.

One curious thing about polarity-sensitivity of verbal mood is that it points to an inherent asymmetry between indicative and subjunctive: while there are *polarity subjunctives*, to my knowledge there is no such thing as *polarity indicatives*. I.e., we do not seem to find verbs that in the absence of additional operators obligatorily select for subjunctive, but then start allowing for indicative mood too once they are embedded under additional semantic operators.

### 1.4 Mood in root clauses

Mood morphology that we see in embedded contexts can also appear in root clauses. In (2) we saw an example of this from Greek, (43) shows this in Italian: subjunctive forms in matrix contexts give rise to imperative and optative meanings, blurring the distinction between verbal mood and sentence mood.

(43) *Italian*

a. *Imperative*

Si accomodi qui!  
 3REFL make.comfortable.PRS.SUBJ.3SG here  
 ‘You can make yourself comfortable here (to s.o. one addresses with the formal/polite 3SG.FEM pronoun)’ (Stanislao Zompì, p.c.)

b. *Optative*

Mi deste ragione almeno una volta!  
 1SG.DAT give.IMPF.SUBJ.2PL reason at.least one time  
 ‘If only you agreed with me at least once!’  
 (Stanislao Zompì, p.c.)

Languages seem to vary in whether the same morphology can be used to mark both aspects of modal meanings<sup>21</sup> and also aspects of conversational functions of natural language expressions. For example, English imperatives seem to be restricted to marking aspects of conversational functions:<sup>22</sup>

- (44) a. Call him!  
 b. \*John said (that) call him. (Kaufmann, 2014, ex. (7c))

Mood morphemes show variation in what kinds of modal/conversational meanings they can be associated with. For example, while Russian allows subjunctive mood in root clauses like Italian and Greek, it does not permit imperative interpretations: (45) can be only understood as expressing a wish, but not as requesting/asking the addressee to take action.

(45) *Russian*

<sup>21</sup> “Modal meanings” should be understood very broadly here so that we can include embedded polarity subjunctives in addition to other types of embedded verbal mood. Under the alternatives-based approach to them, the modal meaning will be coming from a focus-sensitive operator—it introduces quantification over the set of alternatives.

<sup>22</sup> Though see Crnič and Trinh (2009a,b) for arguments that English allows embedding imperatives.

Otkryla **by** ty dver'!  
 opened **SUBJ** you door  
 ✓ 'I wish you opened the door!', ✗ 'Open the door!'

In languages like Korean, we see a number of different mood morphemes corresponding to different modal/conversational meanings—request, promise, urge to do something together, (46), and these morphemes can be embedded, (47), now conveying the conversational functions of the reported speech act.

(46) *Korean* (Zanuttini et al., 2012, p. 1234)

- a. Cemsim-ul sa-**la**. *imperative*  
 lunch-ACC buy-**IMP**  
 'Buy lunch!'
- b. Cemsim-ul sa-**ma**. *promissive*  
 lunch-ACC buy-**PRM**  
 'I will buy lunch.'
- c. Cemsim-ul sa-**ca**. *exhortative*  
 lunch-ACC buy-**EXH**  
 'Let's buy lunch.'

(47) *Korean* (Zanuttini et al., 2012, p. 1258)

- a. Emma-ka Inho-eykey kongpuha-**la**-ko hasiess-ta.  
 mother-NOM Inho-DAT study-**IMP**-COMP said(honorific)-DEC  
 'Mother told Inho to study.'
- b. Kyoswunim-kkeyse Inho-eykey nayil liphothu-lul  
 professor-NOM Inho-DAT tomorrow report-ACC  
 cwu-**ma**-ko hasiess-ta.  
 give-**PRM**-COMP said(honorific)-DEC  
 'The professor promised Inho that he will give back the report tomorrow.'
- c. Emma-ka Inho-eykey kongpuha-**ca**-ko hasiess-ta.  
 mother-NOM Inho-DAT study-**EXH**-COMP said(honorific)-DEC  
 'Mother exhorted Inho to study together.'

This empirical landscape raises many questions. Why do some mood morphemes show restrictions to root vs. embedded contexts, whereas others do not? Why do we see variation in what kinds meanings mood morphemes have in root clauses? What is the range of interpretations that are cross-linguistically possible, and how do languages select a subset of those?

Let us now consider how different approaches to mood discussed in section

1.2 could be extended to root contexts and provide a unified analysis of mood. First, note that the assumption that modal domains are projected from particulars commits us to the view that if mood morphemes are modals, they must be embedded even in root clauses—in the sense that there must be a situation argument that they are predicated of. It seems plausible to associate this situation argument with the speech event (see Hacquard 2006, 2010. a.m.o.<sup>23</sup>). Both ordering source-based theories and commitment-based theories can then be extended to root clauses—mood morphemes in root contexts will be introducing presuppositions about the content of the speech event. For the ordering source-based theories, the main question will then be what conversational backgrounds can be associated with the speech event, and how they give rise to the observed meanings of mood in root contexts. For commitment-based theories, the speech event will provide the informational state corresponding to the speaker—and the main question is what presuppositions about the speaker’s informational state does mood introduce in root clauses.

Alternatives-based theories could account for mood morphemes in root clauses by assuming that there are alternatives-sensitive operators that exist in root clauses and act on the alternatives to the matrix proposition that has been activated and are signaled by verbal mood. For example, these theories might suggest that the operator  $O^{des}_{ALT}$  that we postulated as part of the meaning of *want*, can actually exist on its own and give rise to optative and/or imperative meanings in matrix contexts. Given the definition we gave in (30), this again would require us to have a syntactically represented speech event from which  $O^{des}_{ALT}$  could extract the modal backgrounds. The biggest challenge for alternatives-based theories however with respect to root clauses is *overgeneration*: there are many focus-sensitive operators that can exist in root clauses that do not trigger subjunctive morphology. For example, we might ask why adding a focus-sensitive element *daže* ‘even’ to the root clause does not trigger subjunctive in Russian (48) or other languages. It seems clear that sensitivity to alternatives that subjunctive displays must be encoded differently from more general focus-sensitivity to avoid overpredicting subjunctive morphology.<sup>24</sup>

- (48) *Daže* [Maša]<sub>F</sub> prišla (\***by**) na večerinku.  
 even Masha came (SUBJ) to party

<sup>23</sup> See also (Rett, 2025) for a recent proposal that all illocutionary content is discourse-anaphoric to the speech event (which she does not take to be represented syntactically).

<sup>24</sup> Chierchia (2013) proposed that there is syntactic agreement between alternatives-sensitive operators and weak NPIs like *any*. It might be that agreement of this sort could also restrict the kinds of focus-sensitive operators that subjunctive morphology can be related to.

‘Even [Masha]<sub>F</sub> came to the party.’<sup>25</sup>

### 1.5 Mood in other environments

In addition to embedded complement clauses and root clauses, we find mood morphemes in a number of other environments. For example, subjunctive is usually the only mood available in **purpose clauses**—adjunct clauses that describe the reason behind some individual performing an action, (49).

- (49) Mitja podnj<sub>al</sub> ruku [čto-**by** /\*čto zadat’ vopros].  
 Mitya raise hand COMP-SUBJ /COMP ask.INF question  
 ‘Mitya raised his hand in order to ask a question.’

Ordering source-based theories can be quite easily extended to such cases if we follow Alonso-Ovalle et al. (2024) and assume that subjunctive can be associated with the modality that targets the goals of the agent of the main event. The resulting meaning in (49) will be that the best circumstantially-accessible worlds compatible with the goals of Mitya in the hand-raising event are worlds where he asks a question. Commitment-based theories could probably postulate a diversity condition similar to that of non-veridicality to account for purpose clauses: the modal base of the circumstantial modal at hand will contain both worlds where Mitya asks a question and those where he won’t. Alternatives-based theories would again need to search for evidence of focus/alternatives-sensitivity, and postulate a focus-sensitive operator located at the edge of the embedded clause that is responsible for licensing subjunctive. We can again ask whether  $O^{des}_{ALT}$ , which we postulated for *want*, might be part of the structure of purpose clauses and account for the subjunctive morphology.

Another environment in which we see subjunctive morphology involves **relative clauses**. We find subjunctive in relative clauses under intentional verbs like ‘find’: such cases of subjunctive have been reported at least in Romanian (Farkas, 1985), Greek (Giannakidou, 1997), Catalan (Quer, 1998), and Russian (Bondarenko, 2022, 2024).<sup>26</sup>

- (50) Ja išču devušku, [kotoraja **by** razgovarivala na vengerskom].  
 I seek young.woman REL.FEM SUBJ speak.PST on Hungarian  
 ‘I am looking for a young woman who speaks Hungarian.’

<sup>25</sup> This sentence is well-formed under an irrelevant conditional meaning: “(If some condition held), even Masha would have come to the party.”

<sup>26</sup> See also (Gärtner, 2000, 2002) for discussion of V2 relative clauses in German, and (Truckenbrodt, 2019) for their relation to French indicative mood.

It seems plausible that semantics of *seek* would make reference to comparison of alternatives (in line with ordering-source based and alternatives-based approaches) and not require commitment of either the matrix subject or the speaker to the truth of the relative clause (in line with the commitment-based approach), and so it seems that all three approaches to mood could be extended with some additional assumptions to account for examples like (50).

Subjunctive mood is also found in free relatives (see ch.4 in Quer 1998):

- (51) Ja s'em [čto **by** ty ni prigotovil].  
 I eat.FUT what **SUBJ** you NEG cook.PST  
 'I will eat whatever you cook.'

Dayal (1997) proposes that the meaning of such constructions involves comparison of alternatives to the world of evaluation which can differ from the actual world only in the denotation of the free relative. So we could paraphrase (51) as "*As far as the speaker is concerned, in all the relevant alternatives to the actual world, the dish being cooked by the addressee is eaten by them.*" For all three approaches, there is a question of what element contributes this modal meaning that we perceive, and the relevant set of alternatives: the main verb of the sentence is extensional, so it cannot be the source of modality. So it seems that either a null modal, or an alternatives-sensitive operator has to be part of the structure of the relative clause in such cases.

Finally, the two most challenging cases of subjunctive morphology in relative clauses are polarity-sensitive subjunctives, (52), and goal-oriented subjunctives in Spanish relative clauses, (53).

- (52) \*(Tol'ko) Mitja videl devušku,  
 only Mitya saw girl  
 [kotoraja **by** zanimalas' skalolazaniem].  
 REL.FEM **SUBJ** do.PST rock-climbing  
 'Only Mitya saw a girl that did rock-climbing.'
- (53) Sol compró un libro  
 Sol buy.PST.PFV.IND.3SG a book  
 [que tuviera muchas páginas].  
 that have.PST.**SUBJ**.3SG many pages  
 'Sol bought a book and, given her goals, it had to have many pages.'  
 (Alonso-Ovalle et al., 2024, p. 164)

Both of these cases involve *extensional environments*: in (52) we infer that Mitya saw a girl who did rock-climbing, and in (53)—that the book Sol bought

had many pages. The propositions described by the relative clauses in (52)-(53) are thus veridical with respect to the the speaker’s informational state, and (52) is even factive due to the presupposition of *only* that the prejacent is true. On the commitment-based approaches to mood, we would expect to see indicative in such contexts, and the subjunctive marking that we see is unexpected.

Ordering source-based theory can successfully apply to the case in (53): Alonso-Ovalle et al. (2024) argue that in this case we are dealing with a goal-oriented modal that gets its conversational backgrounds from the agentive event described by the verb. It will have a harder time however explaining the cases like (52), where we are again seeing polarity-sensitivity: without *only* or other entailment-reversing operator, this sentence does not allow subjunctive morphology inside of the relative clause.<sup>27</sup> With such operators, subjunctive becomes an option, which is surprising given that they do not contribute modality.

Alternatives-based theories would need to make adjustments similar to those they need for purpose clauses in order to account for the data like in (53). As for the polarity-sensitive relative clauses, Bondarenko (2022, 2024) shows that they can be accounted for with no additional assumptions once we have an account of polarity-sensitive subjunctives with verbs like ‘remember’ sketched above. Subjunctive mood will activate the subdomain alternatives to the relative clause proposition, and  $O_{ALT}$ —the operator we independently need for licensing weak NPIs—would ensure that subjunctive will be licensed in relative clauses only in SDE environments.<sup>28</sup>

## 1.6 On contributions of mood morphemes

Let us revisit the question of the contribution of the mood morphology. Mood morphemes have been proposed to directly encode the semantics associated with them: e.g., to denote modals (Portner and Rubinstein, 2020) or the squiggle operator interpreting focus alternatives (Villalta, 2008). However, approaches

<sup>27</sup> There is an irrelevant possible parse of the sentence without *only* related to the use of subjunctive in conditionals: we can understand it as saying “*Mitya saw a girl that [if certain conditions were met] would have done rock-climbing*”.

<sup>28</sup> In Russian, there is at least one more environment where we see subjunctive morphology: subjunctive morphology is used in forming one class of weak NPI items, together with specificity morpheme *-to*, expletive negation *ni* and the verb ‘be’ in past tense:

Každyj, kto sdelaet na uroke [kakoj **by** to ni bylo] doklad,  
 everyone who do.FUT on lesson what.kind SUBJ SPEC NEG be.PST presentation  
 polučit xorošuju ocenku.  
 get.FUT good grade

‘Everyone who will do any presentation during the lesson will get a good grade.’

which make such a direct link face an empirical issue: we find cases in which attributing such semantics to the mood morpheme itself gives wrong prediction about the meaning of the sentence. For example, consider Spanish relative clauses embedded under ‘want’ (Alonso-Ovalle et al., 2024):

- (54) Marta quiere [que Pedro se enamore de una  
Marta want.PRS.IND.3SG that Pedro SE fall.in.love.PRS.SUBJ.3SG of a  
estudiante [que viva en Northampton]].  
student that live.PRS.SUBJ.3SG in Northampton  
‘Marta wants for Pedro to fall in love with a student (any student) who  
lives in Northampton.’ (Alonso-Ovalle et al., 2024, (71) p. 166)

Alonso-Ovalle et al. (2024) show that (54) can have a single-modal reading, (55), according to which only the higher subjunctive is interpreted.

- (55) a. **Two-modal reading:**  
All Pedro’s most desirable worlds  $w$  are such that in  $w$  Pedro falls in love with an  $x$  such that:  $x$  is a student in  $w$  and  $x$  lives in Northampton in all Pedro’s most desirable worlds.  
b. **Single-modal reading:** All Pedro’s most desirable worlds  $w$  are such that in  $w$  Pedro falls in love with an  $x$ :  $x$  is a student in  $w$  and  $x$  lives in Northampton in  $w$ .

The possibility of such a reading poses a problem for associating the modal meaning with the mood morpheme itself, as then we would expect each of the two morphemes in (54) to contribute the modal displacement. Alonso-Ovalle et al. (2024) propose that subjunctive only *reflects* the presence of a modal, and does not denote the modal itself, and suggest that it can be viewed as agreement with a modal as proposed for modal concord by Zeijlstra (2007).<sup>29</sup>

Directly linking mood morphemes and associated meanings runs into issues if we assume the alternatives-based approach as well. (Bondarenko, 2024, p. 31) provides an argument for this from Russian doubling of the Russian subjunctive particle *by* under *want*, (56), where the particle directly attaches to the focused constituent in addition to attaching to the complementizer.

<sup>29</sup> A similar argument can be construed with counterfactual conditionals which can involve subjunctive morphology in both antecedents and consequents (see, e.g., von Stechow and Iatridou 2023) but only have a single-modal interpretation.

- (56) Ja xoču, čto-**by** Lena [FUTBOL]<sub>F</sub> **by** smotrela,  
 I want COMP-SUBJ Lena soccer SUBJ watch.PST  
 a ne figurnoe katanie.  
 and not ice-skating  
 ‘I want Lena to watch [SOCCER]<sub>F</sub>, not ice-skating!’

Since there is only one focus-sensitive operator in this sentence (part of the meaning of ‘want’), we expect to only see a single mood morpheme if it directly denotes the squiggle operator (Villalta, 2008) or the focus-sensitive operator itself, *contra* to fact. Associating mood morphemes with either  $\sim_{ALT}$  or  $ALT$  would also pose issues for the treatment of polarity subjunctives, because we would then expect subjunctive morphology to occur in the matrix clause instead of the embedded one. Thus, these data suggest that we should rather view verbal mood as agreement with some higher modal elements.<sup>30</sup>

There is another question related to the issue of the contribution of mood morphemes. In many languages, some or all environments in which mood morphemes occur exhibit additional restrictions on tense and aspect. For example, in (56) the verb in the embedded clause must bear “fake” (not interpreted) past tense morphology. Some uses of the subjunctive *by* particle also occur with “fake” imperfective aspect (see Bondarenko 2022). This combination (*subjunctive particle + past tense + (sometimes imperfective)*) is an instance of *X-marking* (von Fintel and Iatridou, 2023): a morphosyntactic combination associated with counterfactual conditionals as well as a variety of other environments.<sup>31</sup> If a language has X-marking which involves more than a special mood marker, we can ask what is the contribution, if any, of the X-marking sans the mood morpheme? For example, what, if anything, does the fake past tense which always accompanies Russian *by* contribute to the meaning of the subjunctive clauses? A fully compositional account of such combinations of morphemes related to modal meanings is yet to be developed.

<sup>30</sup> An anonymous reviewer points out that there is yet another way to think about the contribution of mood: that it is a feature on world pronouns (Schlenker, 2003; von Stechow, 2004). Such a view might allow us to draw parallels between licensing in the temporal domain and mood licensing.

<sup>31</sup> For discussion of X-marking in German, see (Wimmer, 2020, 2024; Sode, 2023b, 2025). Antecedent X-marking in German has been also treated as agreement (Grønn, 2009; Grønn and von Stechow, 2009, 2011), in line with the idea that mood-marking morphemes do not themselves encode modal meanings.

### **1.7 Concluding remarks**

This chapter provided a very brief overview of some ideas in the literature on verbal mood and its relation to modality. I focused on three broad approaches to the contribution of verbal mood: ordering source-based theories, commitment-based theories, and alternatives-based theories. It seems safe to say that the notion of *comparison* plays an important role in mood selection in all theories, but they have very different ways of how exactly its role is implemented. Much more work, both empirical and theoretical, needs to be done to determine what type of theory is best at accounting for the wide range of mood phenomena that we find cross-linguistically. One of the big challenges that faces ordering source-based theories and commitment-based theories is polarity-sensitivity in subjunctive licensing. Alternatives-based semantics for mood has a big overgeneration problem and needs to develop a theory of which alternatives-sensitive operators license subjunctives, which do not, and why, as well as examine cases which on the face of it do not involve focus-sensitivity.

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