

## 50. Verbal mood

1. Mood in broad perspective
2. Verbal mood in complement clauses
3. Verbal mood in other contexts
4. Conclusions
5. References

### Abstract

*Within semantic theory, verbal mood has been analyzed in terms of several theoretical approaches, most notably using the concepts of the possible worlds semantics for modality, but also based on ideas from temporal and nominal semantics. Most semantically-oriented research has focused on the indicative and subjunctive clauses which are selected by a higher predicate, and this paper gives an introduction to several theories developed on these grounds. The paper also briefly surveys work on verbal mood in other contexts, including relative clauses and adjunct clauses.*

### 1. Mood in broad perspective

The term “mood” has been used to discuss a wide range of phenomena in natural language, and it is the purpose of this article to focus on one of them, what we call VERBAL MOOD. One way to define verbal mood is by example: it is the difference between clauses which is marked by indicative or subjunctive verb forms in languages which are traditionally described as having an opposition between such forms (e.g., German and Italian), as well as forms taken to be in the same paradigm as indicative and subjunctive (e.g., optative), and the same or very similar differences in other languages. According to this definition, verbal mood might not be marked on the verb (for example, in Romanian it is marked by a particle), and it might be unclear whether a particular verb form should be seen as marking verbal mood in the intended sense. As we will see below, much research on verbal mood has proceeded based on this kind of definition by example.

We might also define verbal mood on the basis of semantic theory: Verbal mood is a distinction in form among clauses based on the presence, absence, or type of modality in the grammatical context in which they occur. According to much semantic research on the indicative and subjunctive (and as we will see in detail below), these forms mark verbal mood in this sense. An advantage of this type of theoretical definition is that it allows us to automatically relate our thinking about verbal mood to other theoretical issues. Obviously, it draws a link to the analysis of modality (article 58 (Hacquard) *Modality*), a well-developed and central part of semantic theory. But more importantly, it allows us to connect the study of verbal mood to a more general concept of mood, one which extends beyond verbal mood to encompass other phenomena which are sometimes described with the same label.

Though it is the purpose of this article to describe the state of research on verbal mood, as defined above, it is obvious that the concept of mood has been used by linguists to talk about a much wider range of phenomena. It may be useful to describe the broader context briefly. A general definition of “mood”, under which verbal mood would fall as

a subtype, might go as follows: Mood is a distinction (in form, meaning, or use) among clauses based on modal features of meaning in the context (either grammatical or conversational) in which they occur. Besides verbal mood, we can cite at least the following phenomena which seem to fall under the broad definition:

1. **Notional mood** Philosophers and linguists sometimes speak of categories of meaning which bear some intuitive connection to the meanings associated with verbal mood, for example propositions which are taken to be necessary, possible, desired, and so forth. These can be described as “notional moods” (Jespersen 1924: 819–821). Categories divorced from any association with form are unlikely to be an appropriate topic of linguistic study, as Jespersen points out. However, sometimes we find elements or constructions, other than verbal moods, which seem to express the meanings of the same general type as are expressed by verbal moods. For example, dependent modals and infinitives have been treated this way (Palmer 1990, Portner 1997). In a context where the simple term “mood” is used to refer specifically to the indicative-subjunctive contrast, the term “notional mood” is useful to describe a wider range of grammatical forms which are associated with (verbal) mood-like meanings.
2. **Sentence mood** Sentence mood (sometimes referred to as SENTENTIAL FORCE, Chierchia & McConnel-Ginet 1990, Zanuttini & Portner 2003) is the semantic side of the opposition among clause types. Thus we have declarative mood, interrogative mood, and imperative mood, among others. This concept of mood has roots in philosophy of language (Stenius 1967, Searle 1969), and many linguists who use the term “mood” in this way (e.g., Wilson & Sperber 1988, Lohnstein 2000, Zaefferer 2007) develop the perspective of speech act theory. In some theories, sentence mood is closely linked with verbal mood (Lohnstein 2000, Lohnstein & Bredel 2004); the distinction is easily elided in discussions of the imperative, where a verbal mood and sentence mood frequently coincide. Within Native American linguistics, the sentence moods and other notional mood forms are sometimes grouped into a single category (e.g., Moshinsky 1974, Melnar 2004; see point 4 below). The concept of sentence mood seems especially prominent in the German syntax/semantics tradition; see, in addition to the works cited above, Hausser (1980, 1983), Meibauer (1990), and Reis (1999 2003), for example. It has also been studied in cognitive linguistics (Narrog 2005).
3. Many scholars, especially in the philosophy of language tradition, speak of a semantic distinction between SUBJUNCTIVE CONDITIONALS and INDICATIVE CONDITIONALS. In certain languages, the *if* clause of a conditional can be in the subjunctive mood, and this conveys a sense that the proposition expressed by that clause is less likely to be true, less congruent with assumed facts, or something of the sort. We will briefly discuss the role of verbal mood in conditionals in Section 3.3.
4. **Mood in descriptive and typological linguistics** Descriptive and typological studies use the term “mood”, as well as “mode” and “modality”, for a variety of elements whose meanings relate to the modal domain, to sentence mood, and to varieties of subordination. Palmer (2001) mentions several examples, in particular Donaldson (1980). Of the many important works in this area, I mention only a sampling: Axelrod (1993), Bugenhagen (1993), Bhat (1999), Bloomfield (1956), Boas (1911/2002), Bybee (1998), Chafe (1995), de Reuse (1994), Ekdahl & Grimes (1964), Elliot (2000), Fortescue (1984), Foster (1986), Melnar (2004), McGregor & Wagner (2006), Lichtenberk

(1983), Parks (1976), Roberts (1990), Swift (2004), Woodbury (1981), and Zwicky (1985).

Note that terminology is not always used in the same way, and Mithun (1999) describes the situation as follows:

The grammatical distinctions included under the heading *modality* in descriptions of individual languages vary, chiefly because the modal systems themselves have developed differently. Terminology varies as well. In some traditions, inflectional markers of modality are defined as *mood*, in others as *mode*. Further complicating matters is the fact that these terms, particularly *mode*, have sometimes been used for other kinds of distinctions as well, often aspectual. This is due in part to the fact that modal distinctions are often carried by tense or aspect markers.

(Mithun 1999: 171).

The moods/modes discussed in these works have a variety of names descriptive of their meaning or function, for example “desiderative”, “purposive”, and “interrogative” (among many others). We often find the terms “realis” and irrealis” either as labels of particular moods/modes, or as classifications of moods/modes with more specific names. While it is likely that many of these forms could profitably be analyzed within the frameworks used to analyze the indicative and subjunctive, except for Baker & Travis (1997) and Matthewson (2010), discussed below, I am not aware of any formal analyses of specific elements labeled as mood/mode markers in this tradition.

It is not yet clear what range of phenomena, falling under these wide-ranging concepts, constitute a natural class for semantic analysis. As mentioned, this article will focus on the narrower domain of verbal mood.

Given the perspective that verbal mood reflects some modal feature of meaning in the context, it is inevitable that the study of mood would be intertwined with that of the relevant contexts. And indeed, that is what we find. The analysis of mood has proceeded hand in hand with the analysis of grammatical and pragmatic contexts which cause a particular form, like the indicative or subjunctive, to be selected.

In the case of verbal mood, most of the detailed, theoretically precise research has focused on complement clauses, presumably because we have good (which is not to say perfect) theories of the semantics of many of the types of predicates which select indicative or subjunctive clauses. For example, Hintikka (1961) developed the possible worlds analysis of the semantics of belief statements which is now standard in formal semantics, namely the idea that *x believes p* is true in a world *w* iff *p* is true in all of *x*'s belief worlds in *w*. (See Section 2 for further discussion; *x*'s belief worlds in *w* are the ones in which all of *x*'s beliefs in *w* are true.) Theories of verb mood have tried to explain, in terms of this analysis, the mood selection of the verb which expresses belief in a particular language, for example why the complement of *believe* is subjunctive in Italian, (1), or why it is indicative in Spanish, (2).

- (1) Gianni crede            che Maria sia        partita.  
 Gianni believe.indic    that Maria be.subj    left  
 ‘Gianni believes that Maria left.’
- (2) Juan cree                que María se        fue.  
 Juan believe.indic    that María cl        go.indic  
 ‘Juan believes that María left.’

(Note that I will generally only gloss the root and mood of verb forms, since mood is what we're focusing on.) In this paper, we will focus mainly on theories of verbal mood in complement clauses, since this is where the relevant empirical and theoretical issues have been articulated most clearly (Section 2). In Section 3, we will examine ideas about verbal mood in other contexts, in particular root clauses (Section 3.1), relative clauses (Section 3.2), and adjunct clauses (Section 3.3). Finally, Section 4 provides brief conclusions.

## 2. Verbal mood in complement clauses

We begin this section by outlining some aspects of the distribution of subjunctive and indicative mood in complement clauses. (There are many other details which could be enumerated, but we focus on some of the most important patterns here.) Across languages, clauses selected by desiderative, directive, and modal predicates have a strong tendency to appear in the subjunctive:

- (3) Spero        che    sia        felice. (Italian, Portner 1999)  
 hope.indic    that    be.subj    happy  
 'I hope that he is happy.'
- (4) Il    a            ordonné    que    je    parte. (French, Farkas 1992)  
 he have.indic    ordered    that    I    depart.subj  
 'He ordered me to leave.'
- (5) E        posibil    să    fi    venit    Ana. (Romanian, Farkas 1992)  
 be.indic    possible    subj    past    come    Ana  
 'It is possible Ana came.'

These tendencies are not without exception, though; for example, in French one desiderative (*espérer*, 'hope') selects the indicative:

- (6) Jean espère        toujours    que    Marie va    venir. (French, Schlenker 2003)  
 Jean hope.indic    always    that    Marie go.indic come-inf  
 'Jean always hopes that Marie will come.'

There is greater variation in mood selection in other complement clauses. The verb of mental judgment 'believe' selects the subjunctive in Italian, but indicative in many other languages, including Romanian:

- (7) Gianni crede        che    Maria    sia        partita. (Italian, Portner 1999)  
 Gianni believe.indic    that    Maria    be.subj    depart  
 'Gianni believes that Maria will leave.'
- (8) Maria crede        că    Ion    i-a            scris. (Romanian, Farkas 2003)  
 Maria believe.indic    that    Ion    cl-have.indic    written

Emotive factives favor subjunctive in some languages (e.g., French) and indicative in others (e.g., Romanian):

- (9) Marie regrette que Paul soit parti. (French, Farkas 1992)  
 Marie regret.indic that Paul be.subj left  
 ‘Marie regrets that Paul left.’
- (10) Ion e trist că Maria e bolnavă. (Romanian, Farkas 2003)  
 Ion be.indic sad that Maria is.indic sick  
 ‘Ion is sad that Maria is sick.’
- Other types of predicates, including fiction verbs (e.g., ‘dream’), assertion verbs (e.g., ‘say’), factives (other than emotive factives, e.g. ‘know’), and commissives (e.g., ‘promise’), generally favor the indicative across languages:
- (11) L’Anna ha somiat que els pengüins volaven. (Catalan, Quer 2001)  
 the-Anna have.indic dreamt that the penguins fly.indic  
 ‘Anna dreamt that penguins fly.’
- (12) L’Anna diu que els pengüins volaven. (Catalan, Quer 2001)  
 the-Anna say.indic that the penguins fly.indic  
 ‘Anna says that penguins fly.’
- (13) Maria știe că Ion i-a scris. (Romanian, Farkas 2003)  
 Maria know.indic that Ion cl-has.indic written  
 ‘Maria knows that Ion has written.’
- (14) Il promet qu’il partira. (French, Farkas 1992)  
 he promise.indic that-he leave.indic(fut)  
 ‘He promises that he will leave.’

Some languages, for example German, may use a subjunctive form in a complement clause when the clause reports someone else’s speech. This use occurs readily with assertion verbs, but is not limited to them (data from Fabricius-Hansen & Saebø 2004: 213).

- (15) Er behauptete, dass jemand das Auto angefahren habe.  
 he claim.indic that somebody the car on-driven have.subj  
 ‘He claimed that somebody had driven into the car,...’

Clauses which serve as the complement of a predicate which typically selects the indicative may switch to the subjunctive under certain circumstances, for example when the matrix clause is negated or questioned, or when the complement clause is portrayed as being less certain (in some sense which remains to be better understood) than one would normally infer. See Farkas (1985, 1992) and Portner (1997, 1999) for discussion.

A traditional view of the semantics of verbal mood is expressed concisely and clearly by Jespersen (1924: 813): “It is much more correct to say that they express certain attitudes of the mind of the speaker towards the contents of the sentence, though in some cases the choice of a mood is determined not by the attitude of the actual speaker, but by the character of the clause itself and its relation to the main nexus on which it is dependent.” Farkas (1985, 1992) discusses a number of earlier approaches to mood selection,

including the analyses of Bolinger (1968), Hooper (1975), and James (1986). Her overview of this work shows the need for a precise, rigorous analysis within a linguistically oriented semantic theory. Subsequently, mainstream work on verbal mood within semantics has been based on the idea that mood selection is to be understood in terms of the same ideas as are used to analyze modal expressions, such as modal verbs and auxiliaries. I will label this line of research the MODAL APPROACH.

The modal approach hypothesizes that mood serves as an indication that the clause is in a particular kind of modal environment. The simplest version of this idea would be that one mood (it would be the subjunctive) occurs when the clause is in the local scope of a modal operator of any kind. It would be fairly accurate to say that such a mood (if it existed) serves to mark a clause as being irrealis, that is as being a clause whose truth or falsity is relevant at a world which need not be the actual world. (The idea that the subjunctive marks irrealis in this broad sense is not correct, as shown by the data in (6)–(14), but it serves to illustrate the modal perspective.) The modal approach obviously has a direct connection to the definition of mood given in Section 1.

While the bulk of semantic research on mood selection has followed the modal approach, certain other ideas have been discussed as well. The most important of these is the claim that verbal mood is to be understood in terms of ideas drawn from nominal semantics, what I will label the INDEFINITE APPROACH. The indefinite approach aims to explain mood distinctions in terms drawn from the theory of noun phrase semantics. This view claims that subjunctives are analogous to indefinite noun phrases, in particular to special indefinites such as *any N* in English. Given that *any* occurs in both negative polarity and free choice contexts (article 64 (Giannakidou) *Polarity items*), the indefinite approach will claim that the distribution of the subjunctive is to be explained in the same terms as explains the distribution of negative polarity or free choice *any*. Of course, we have defined verbal mood in a way which links it to the presence of modal meaning in the context, and so the indefinite approach will take the stance that the distribution of both the relevant indefinites and mood is somehow related to modality. Besides the modal and temporal approaches, some scholars have aimed to explain certain properties of verbal mood in terms of the temporal properties of indicative and subjunctive clauses. I will refer to this line of research as the TEMPORAL APPROACH.

In what follows, we'll discuss all three of these approaches. The modal approach will be covered in two subsections: In 2.1, we'll focus on the most well-known analyses on these lines, the one initially given by Farkas (1985) and later developments of it by her and others. Then, in Section 2.2, we'll consider other modal approaches. In 2.3, we will briefly cover the indefinite and temporal approaches.

Before moving onto these major semantic analyses of mood, it may be helpful to mention other significant work which does not fit readily into the groups mentioned above. Most closely related to the above, we have other work in formal semantics, some of which focuses on particular uses of mood. In this category is the research on the reportative subjunctive (Fabricius-Hansen & Saebø 2004), ideas about mood in centering theory (Bittner 2009), the connection between mood and control (Roussou 2009), and work which links verbal mood to sentence type (Han 1998, Lohnstein & Bredel 2004). There also is a rich history of research on verbal mood in descriptive and functional linguistics (e.g., Halliday 1970, Terrell & Hooper 1974, Lyons 1977, Palmer 1990, 2001, Lunn 1995), and some work in cognitive linguistics (e.g., Travis 2003). Of course there is much other research which discusses mood, but these focus primarily on one of the senses other

than verbal mood mentioned in Section 1. For anyone who aims to be an expert in the semantics of mood, it is important to study all of these sources.

## 2.1. The modal approach of Farkas and colleagues

In order to understand the modal approach to verbal mood, it is necessary to have some background knowledge of two topics: the semantics of modality and the theory of pragmatic presupposition and assertion. I will begin this section by making a few remarks about these two, although readers who would like more detailed discussion should look elsewhere (article 58 (Hacquard) *Modality*, article 91 (Beaver & Geurts) *Presupposition*). Modal theories of mood assume an approach to modality based on possible worlds. Modal operators are treated as quantifiers over possible worlds, and in the most basic such theories based on modal logic, there are two types of quantifiers: a universal modal quantifier  $\Box$  and an existential modal quantifier  $\Diamond$ .

- (16) a. For any world  $w$ ,  $[[\Box S]]^w = 1$  iff  $[[S]]^{w'} = 1$ , for every possible world  $w'$  accessible from  $w$ .  
 b. For any world  $w$ ,  $[[\Diamond S]]^w = 1$  iff  $[[S]]^{w'} = 1$ , for some possible world  $w'$  accessible from  $w$ .

The  $\Box$  can represent any strong modal in natural language (e.g., *necessary*, *must*, *ought*), with the differences among them having to do with which worlds are accessible. For example, if all logically possible worlds are accessible from  $w$ , the modal is interpreted as expressing logical necessity, whereas if the accessible worlds are those in which all the laws of  $w$  are upheld, the modal is interpreted as expressing a particular type of deontic necessity. This distinction can be made explicit using an ACCESSIBILITY RELATION.

- (17) For any world  $w$ ,  $[[\Box S]]^w = 1$  iff  $[[S]]^{w'} = 1$ , for every possible world  $w'$  such that  $R(w, w')$ .

If  $R$  encodes a relation based on knowledge (it is an epistemic accessibility relation), we end up with an epistemic modal, while if it has to do with rules (it is a deontic accessibility relation), we end up with a deontic modal. Similar distinctions can be made among weak modals like *possible*, *might*, and *can*, modeled in terms of  $\Diamond$ . See Portner (2009) and Hacquard (article 58 (Hacquard) *Modality*) for further details. In more sophisticated theories of modality, provision is made for a wider range of types of modals, not just  $\Box$  and  $\Diamond$ ; such theories will be introduced where they become relevant to the analysis of mood (Section 2.2 below).

The semantics of sentence-embedding verbs can, in many cases at least, be understood in terms of this theory of modality. For example, *believe* and *hope* can be understood like this (Hintikka 1961):

- (18) a.  $[[a \text{ believes that } S]]^w = 1$  iff  $[[S]]^{w'} = 1$ , for every world  $w'$  in which everything that  $[[a]]$  believes in  $w$  is true.  
 b.  $[[a \text{ hopes that } S]]^w = 1$  iff  $[[S]]^{w'} = 1$ , for every world  $w'$  in which everything that  $[[a]]$  hopes for in  $w$  is true.

Comparing (18a) to (17), we note that *a believes that* can be seen as a kind of  $\Box$ , where accessibility is defined in terms of the subjects beliefs. That is, (18a) can fit into the mold of (17), if we allow for  $R$  to be the relation which holds between two worlds  $w$  and  $w'$  iff everything which the referent of the subject believes in  $w$  is true in  $w'$ . In this case we call  $R$  a doxastic accessibility relation, and might write it as  $DOX_a$ . Similar remarks hold for (18b), where the relevant accessibility relation would be called bouletic (perhaps represented  $BUL_a$ ).

Modal theories of mood frequently also assume an understanding of the nature of discourse based on Stalnaker's analysis of assertion and presupposition (Stalnaker 1974, 1978). This analysis is also based on possible worlds, with the key constructs being the COMMON GROUND, a set of propositions mutually presupposed by the participants in a conversation, and the CONTEXT SET, the intersection of the common ground, representing the worlds which could be actual, as far as this mutually presupposed information goes. According to this model, assertion can be understood as a speaker's proposing of a new proposition for inclusion in the common ground, and an assertion is successful if it actually is added to the common ground. We represent successful assertion via the "+" operator, as follows:

- (19) a. For any common ground  $CG$ ,  $CG+S = CG \cup \{[[ S ]]\}$ .  
 b. For any context set  $C$ ,  $C+S = C \cap \{[[ S ]]\}$ .

(In (16) we used truth conditions relative to a possible world, but in (19) we require a proposition. The proposition expressed by a sentence,  $[[ S ]]$ , can be defined for present purposes as  $\{w : [[ S ]]^w = 1\}$ .) Since the context set is the intersection of the common ground, (19b) is merely a corollary of (19a), not a separate principle.

The key idea of the approach to mood developed by Farkas (1992, 2003), Giannakidou (1997, 1999, 2009), and Quer (1998, 2001) is that there is an analogy between those verbs which embed indicatives, on the one hand, and the root-level function of assertion, on the other. The various proposals within this tradition attempt to make the analogy between indicative-selecting verbs and assertion precise in different ways. Farkas (1992) claims that indicative-embedding predicates introduce a single world in which their complement is true, while subjunctives introduce a set of worlds (or futures of a world). This perspective intuitively connects indicative embedding verbs to root-level assertion, since when we assert something, we are interested in its truth in a single world, the real world. However, the approach of Farkas (1992) cannot work for the simple reason that we cannot reduce indicative-embedding verbs to introducing a single world; one's beliefs can never identify a single world, but rather can only pick out a set of worlds, a fact accurately represented in the modal semantics (18).

Giannakidou develops Farkas's ideas using the concept of an INDIVIDUAL MODEL, essentially an accessibility relation. For example, one individual model is  $M_{DOX_a}$ , the set of worlds accessible from the actual world via  $DOX_a$ . Another individual model  $M_E$ (speaker), which picks out the set of worlds compatible with the speaker's actual knowledge. A special class of individual models are the epistemic models; these are the belief models, knowledge models, dream models (the set of worlds in which  $a$ 's dreams come true), and models of a reported conversation. Giannakidou then classifies grammatical contexts in which a clause can appear, such as the complement of a sentence-embedding verb, in terms of the property of VERIDICALITY: A context is veridical

if it entails the truth of a clause in that position in some epistemic model. For example, the complement clause in (20a) is veridical, because the sentence entails that the truth of *it's raining* throughout  $M_{\text{DOX}}(\text{Mary})$ . In contrast, (20b) does not entail the truth of *it's raining* throughout  $M_{\text{DOX}}(\text{Mary})$ .

- (20) a. Mary believes that it's raining.  
 b. Mary hopes that it's raining.

Mood selection is explained in terms of veridicality: veridical contexts select indicative, and non-veridical ones, subjunctive.

Giannakidou's proposal suffers from a number of technical problems. For example, individual models are defined as always being a subset of the context set, but this is clearly impossible for many sentence-embedding verbs (e.g., what you believe, dream, or want is not presupposed to be true). There is also a nagging empirical problem, namely the fact that Greek subjunctive clauses are used under perception, aspectual, and implicative verbs; she suggests that these are not truly subjunctive clauses, despite their outward appearance as such. A more fundamental issue is the fact that it is not made explicit how veridicality is assessed in particular cases. Nothing explains why the only epistemic models are belief models, knowledge models, dream models, and reported conversation models. Moreover, nothing explains why  $M_{\text{DOX}}(a)$  is the relevant individual model when assessing the veridicality of *believe* and *hope*, or how to determine which individual model we should consider with other sentence-embedding predicates.

Although Giannakidou does not predict in an explicit way the relevance of particular individual models to the determination of veridicality with particular predicates, she does provide reasons for her choices. With *believe*, the individual model is simply the accessibility relation used in the semantics of the verb, and a similar reason is appealed to with *dream* and *say*. With regard to desire verbs, however, the individual model should not be simply a buletic accessibility relation, since if it were, the complement clause would indeed be true throughout that model, and only the stipulation that buletic models don't count for veridicality would save the analysis from wrongly predicting the indicative. Giannakidou motivates the choice of a doxastic model as relevant for desire verbs by citing the work of Stalnaker (1974), Asher (1987), and Heim (1992). All of these authors have pursued the idea desire verbs are essentially COMPARATIVE: the semantics of *want* and *hope* involve an ability to compare worlds, making a judgment that some are preferable to others. More precisely, on Heim's analysis, (20b) is true iff, among the worlds in  $M_{\text{DOX}}(\text{Mary})$ , Mary prefers worlds in which it's raining to otherwise similar worlds in which it's not. In terms of Giannakidou's theory, this way of thinking about *hope* suggests that the right individual model to consider when judging veridicality is  $M_{\text{DOX}}(a)$ , and hence motivates the decision to classify it as nonveridical. As we will see, many other scholars agree with the essence of this diagnosis of why subjunctive mood is selected by desire verbs. What's missing in Giannakidou's analysis, however, is a systematic way of linking the lexical semantics of a predicate to the determination of veridicality.

Quer (2001) develops the ideas of Farkas and Giannakidou in a slightly different direction. His key idea is that the subjunctive is triggered by a MODEL SHIFT. According to his view, the default, initial individual model is  $M_E(\text{speaker})$ , the model used for interpreting a root assertion. If we embed a sentence under *believe*, it uses the model  $M_{\text{DOX}}(a)$ , for example in (20a) the individual model representing Mary's beliefs.

(He actually says that a sentence embedded under *believe* uses  $M_E(a)$ , but this would imply that belief entails knowledge.) The two models  $M_E(\text{speaker})$  and  $M_{\text{DOX}}(a)$  are alike, in some respect, and the “shift” from one to the other does not trigger the subjunctive. In contrast, with (20b) the shift is from  $M_E(\text{speaker})$  to a buletic model  $M_{\text{BUL}}(a)$ . These latter two models are different enough that the subjunctive is triggered.

Under Quer’s approach, models should be classified into similarity groups, so that shifts from one group to another can trigger mood choice. Just looking at the data, one concludes that one such group must include the individual models of epistemic, doxastic, fiction, and assertion elements, while the other must include those of desiderative, directive, and modal elements. The question is whether we can say precisely in what way the members of these groups are similar. (Actually, we just need to find a way to say that the members of one group are similar, since we might define the other group as the complement of the similarity group.) Quer suggests that the members of the desiderative-directive-modal group are similar because they have to do with comparison among worlds, as discussed above. Applied to *hope* in (20b), this amounts to “worlds where it’s raining are preferable, according to Mary, to otherwise similar worlds in which it is not.” Unfortunately, this idea about the semantics of desire predicates is not integrated into Quer’s analysis, and indeed it cannot be so long as the analysis relies on the notion of an individual model to represent the semantic properties relevant to mood selection. The problem with individual models is that they are just sets of worlds (or perhaps accessibility relations); as such, they do not have enough structure to represent comparative information about the worlds they pick out. In Section 2.2, we will examine other modal approaches which more fully integrate the comparativity idea into the semantics of mood.

Farkas (2003) further develops the idea that there is something similar about the complement of an indicative-embedding verb and a root assertion. Whereas Giannakidou and Quer represent this in terms of a connection between  $M_E(\text{speaker})$  and the individual model introduced by a verb like *believe*, Farkas fully utilizes Stalnaker’s theory of assertion. Simplifying Farkas’s definitions somewhat, let us assume that a discourse context  $c$  may have, as one part, a context set,  $W(c)$ . According to Stalnaker’s view outlined above, then, assertion of  $S$  in  $c$  involves a proposal to change  $W(c)$  to  $W(c) \cap [[S]]$ . We define a context change as assertive in the following way:

- (21) A context change is ASSERTIVE in  $c$  iff  $c+p = c'$ , where  $c'$  is just like  $c$  except that  $W(c') = W(c) \cap [[S]]$ .

Clearly, assertion is assertive in a discourse context. The idea of Farkas’s analysis is that sentence-embedding verbs are associated with contexts as well, what we may call DERIVED CONTEXTS (Stalnaker 1988, Heim 1992), and indicative is selected for a subordinate clause when that clause is related to a derived context in a way which is similar, in relevant respects, to how a root assertion is related to the discourse context. Thus, contexts play the role of individual models in the theories discussed above.

The way in which Farkas explains the workings of derived contexts is a bit complicated, but we can simplify it in a way which expresses the key ideas. The derived context for *believe* is very similar to the individual model  $M_{\text{DOX}}(a)$ , the only difference being that it is indexed to a world, so that the derived context is the set of worlds compatible with

the subject's beliefs in a given world  $w$ . We may write this  $M_{\text{DOX}}(a,w)$ . The meaning of (20a) involves the assertive update  $M_{\text{DOX}}(a,w)+[[\text{it is raining}]]$ . Things become more complex as we attempt to give the precise meaning for (20a) in a way which treats the whole sentence as asserting in the discourse context. Something like (22) is what's wanted; see Heim (1991) and Farkas (2003) for discussion.

(22)  $c+(20a) = c'$ , where  $c'$  is just like  $c$  except that  $W(c') = W(c) \cap \{w : M_{\text{DOX}}(a,w)+[[\text{it is raining}]] = M_{\text{DOX}}(a,w)\}$ .

Assuming that the context change indicated by "+" in (22) is assertive, the condition  $M_{\text{DOX}}(a,w)+[[\text{it is raining}]] = M_{\text{DOX}}(a,w)$  will only hold if  $M_{\text{DOX}}(a,w) \subseteq [[\text{it is raining}]]$ , so that (22) implements the semantics of *believe* given in (18a). However, by stating it in terms of an assertive context change, Farkas is able to explain in what way the role of *it is raining* in (20a) is similar to a root assertion.

With *hope*, Farkas claims that the complement clause does not relate to its derived context via an assertive update. Instead, it is comparative, or to use Farkas's terminology, evaluative. Unfortunately, Farkas does not define the semantics of this type of predicate in a way which makes precise how comparativity/evaluativity is to work. However, she cites Heim (1992) in a way which suggests that she thinks Heim's semantics for desire predicates would serve the needs of her analysis. This expectation is questionable, however, as Heim's analysis does not make use of a non-assertive update, but rather embeds an assertive update within a more complex statement comparing sets of worlds. We will return to the question of how one might incorporate comparativity into the semantics of the subjunctive in Section 2.2.

One nice feature of Farkas's analysis is that it helps explain why emotive factives select subjunctive in some languages, and indicatives in another. For example, (23) is comparative, in that worlds in which it is raining are ranked as worse than ones in which it is not. Farkas describes this by saying that *be sad* is non-assertive, like *hope*; this explains why a language might choose subjunctive for the complement clause.

(23) Mary is sad that it is raining.

On the other hand, because *be sad* is factive, it shares something with *believe*. Farkas describes this by saying that the complement is DECIDED in its output context. It is not clear to me whether being decided has to do with the complement's status in the discourse context (i.e., presupposed) or in a derived context. If the definition can be worked out, the idea is that *be sad* can select the indicative in some languages because its complement is decided.

To summarize the findings of this section, the approach to mood which began with Farkas's seminal work has developed a set of core ideas in more and more refined ways over the years. It still faces challenges in explaining how the semantics of desire predicates (and that of others like them, such as directives) affects mood choice, but the key idea that they are somehow about evaluating or comparing alternative possible futures is highly appealing. This approach has had important offshoots in the literature, for example Beghelli's (1998) work on the relationship between mood and the interpretation of indefinites. In Section 2.2, we turn to a number of proposals which have much in common with the approach discussed above, but which use somewhat different tools to analyze the semantic basis of mood choice.

## 2.2. Other modal approaches

A number of semanticists working broadly within the modal approach to mood selection have developed analyses based on different ideas about the semantics of subjunctive-selecting verbs from the one assumed by the approach of Section 2.1: (i) Portner (1997) attempts to explain what is distinct about these predicates using situation semantics; (ii) Giorgi & Piansi (1997) build on the ordering semantics for modals developed by Kratzer (1977, 1981); (iii) Villalta (2008) similarly employs ordering, but mixes it with ideas from the theory of focus; and finally (iv) von Stechow (2004) and Schlenker (2003, 2005) sketch some ideas about mood based on the theory of logophoricity and indexicality (see article 61 (Schlenker) *Indexicality and de se*). In what follows, I will briefly examine each of these approaches.

Portner (1997) discusses notional mood in English and the subjunctive-indicative contrast in Italian. The analysis of Italian is simpler and more relevant, so we will focus on it. (Recently, Matthewson 2010 develops Portner's approach in an interesting analysis of mood in St'át'imcets.) The essential idea is that there are semantic mechanisms in place which allow a mood morpheme to identify the modal accessibility relation and modal force with respect to which its clause is interpreted, and to place restrictions on them. In this respect, it instantiates the core idea of the modal approach more directly than the theories discussed in Section 2.1. For example, (24a) is analyzed as follows (based on Portner 1997, (68)):

- (24) a. Riteneva che in quella zona fosse facile ritrovare qualche rivoltella.  
 thought.indic that in this area be.subj easy to-find a revolver  
 'He thought that in this area it was easy to find a revolver.'
- b.  $\{s: \text{Ritenere}_{\text{He}}(s) \subseteq [[\text{subj}(\text{in quella zona essere facile ritrovare qualche rivoltella})]]_{s, \text{NEC}, \text{RitenereHe}}\}$

The semantic analysis in (24b) instantiates the modal approach to attitude verbs presented above: it essentially says that (24a) is true (in  $s$ ) iff, in every world accessible via the doxastic accessibility relation  $\text{Ritenere}_{\text{He}}$ , it was easy to find a revolver. However, note that the accessibility relation has the status of a parameter of interpretation for the embedded clause (i.e., the semantic value function  $[[ \ ]]$  depends on it). Portner calls it a MODAL CONTEXT. The presence of the modal context as a parameter allows the subjunctive morpheme to "check" whether that accessibility relation has the right properties for a subjunctive clause.

According to Portner (1997), the Italian subjunctive is the default mood, chosen whenever the indicative is not licensed. The indicative is licensed whenever the modal context (accessibility relation) is PROTOTYPICALLY FACTIVE:

- (25) A modal context  $R$  is prototypically factive iff, for typical situations in the domain of  $R$ ,  $w_s \in R(s)$ .

The modal context for *know* is prototypically factive, since it is strictly factive: if  $s$  is a situation in which I know a proposition, that proposition is true in the world of  $s$ . In contrast, the modal context introduced by *think* (i.e., *ritenere* in (24)) is not treated as prototypically factive, since we frequently think things that are not true. A verb of assertion

like *say* is, however, treated as prototypically factive; in typical situations, we take what people say to be true (although in many situations, we do not).

This way of explaining each verb class reveals another important aspect of Portner's analysis: he does not attempt to provide semantic criteria which apply directly to every case of mood selection. Rather, he proposes that the semantic system provides guidelines for each category, and allows for some arbitrariness in how particular mood-selecting predicates are aligned with them. Thus, on this view, the fact that the Romanian correlate of *believe* selects indicative while the Italian version selects subjunctive reveals not a difference in the semantics per se, but rather only a difference in whether the strictly non-factive predicate is classified as prototypically factive or not - either choice makes sense. Portner makes an analogy to semantically based gender (noun class) systems, the idea being that certain such systems have a semantic basis, but this basis only underlies an actual pattern which contains a fair amount of arbitrariness and idiosyncrasy.

The analysis in terms of (stereotypical) factivity has obvious difficulties with emotive factives: since these are literally factive, they should always take indicative. Portner's proposal about the subjunctive arguments of emotive factives is that they are not actually interpreted as propositional arguments at all. Rather, they pick out events (modeled as a variety of situation); as a result, there is no modal context, and the indicative would not be licensed.

Portner's theory also allows for an explanation of the mood switch under negation. Recall that the complement of a verb which typically embeds the indicative will often be subjunctive when the matrix is negated. According to the analysis, this is because the negation combines with the modal operator in the matrix. In (24), we see that a non-negated matrix verb has a modal force of necessity (that is, it is a universal quantifier); however, when such a verb is negated, as in (25) (Portner's (72)), the negation and necessity combine as in (25a), to yield a force of non-necessity, Neg-NEC, corresponding to absence of a subset relation. The resulting meaning is (25b):

- (25) a. Non sapevo nemmeno che si fosse sposata.  
           not knew.indic not even that refl was.subj married  
           'I didn't even know that she was married.'

b. {s: Know<sub>i</sub>(s)  $\not\subseteq$  [[subj(si essere sposata)]]<sub>s,Neg-NEC,KnowI</sub>}

In order to explain mood selection, the proposal is that the indicative presupposes not just a stereotypically factive modal context, but also a modal force of necessity. The force Neg-NEC therefore triggers subjunctive.

Portner (1997) also makes an attempt to explain the interpretation of mood in root contexts. The ordinary mood of root declaratives clauses is indicative, but as we will see in more detail in Section 3.1, subjunctive is sometimes possible, and gives rise to non-assertive meanings. To explain the fact that assertive clauses use indicative, Portner proposes that such clauses contain an assertion operator with the right properties to trigger indicative. He also discusses the use of indicative in contexts like the following (his (95)); such data were originally pointed out by Farkas):

- (26) I had a dream last night. My friend came to visit me.

The second sentence of (26) is indicative, even though it does not produce a root level assertion. Portner explains this fact by proposing that the modal context introduced by

*dream* can persist in the discourse, and can be used in place of the assertion operator to interpret subsequent sentences. In this way, the modal context introduced by *dream* is like the root-level context of assertion, and triggers indicative. Though the paper does not discuss root subjunctives in Italian in any detail, the status of relevant examples in English is discussed. The idea is that root non-indicatives occur when a modal context of the kind which triggers non-indicative (e.g., one which is not stereotypically factive) is present in the context.

Giorgi & Pinesi (1997) develop a modal account of mood selection which makes an important contribution to our understanding of comparativity. Their analysis is based on Kratzer's (1977, 1981) theory of modality. Kratzer's work differs from simpler possible worlds theories of modality, based on modal logic, in that it makes use of two parameters of interpretation, the MODAL BASE and ORDERING SOURCE. While one should look elsewhere for detailed discussion of Kratzer's theory (article 58 (Hacquard) *Modality*, Portner 2009), some points are essential to understanding Giorgi & Pinesi's analysis. The modal base and ordering source together do the job of which, in simpler theories, is done by the accessibility relation. The modal base can be thought of as identifying the set of worlds relevant to the interpretation of a modal, while the ordering source ranks the relevant worlds as to how well they fit with some criterion. With a deontic modal like (27), for example, the modal base is circumstantial (a set of relevant facts), and the ordering source deontic (a set of relevant rules).

(26) That dog must stay outside.

Simplifying somewhat, the modal operator *must* says that in all of the worlds relevant (according to the modal base) which are best-ranked (according to the ordering), the dog stays outside. For example, the modal base might contain the information that the dog is large, and the ordering source the rule that large dogs do not come inside. In such a context, the best-ranked relevant worlds are all ones in which the dog stays out.

Giorgi & Pinesi's theory connects to comparativity because it is the role of the ordering source to compare worlds. For example, the deontic ordering source compares worlds in terms of how acceptable they are, according to the rules. Thus, when they say subjunctive-selecting predicates in French and Romanian make use of a non-null ordering source, they are in essence saying that comparativity is the reason these predicates trigger subjunctive. Though they do not give a detailed analysis, one can surmise that they hold the following hypotheses: (i) *believe* has a doxastic modal base and a null ordering source; (ii) *say* has an "assertive" modal base and a null ordering source; and (iii) *want* has a doxastic modal base and a buletic ordering source. Note that, if their assumptions about the modal character of each predicate hold, it is predicted that French and Romanian use subjunctive with *want*, and not with *believe* or *say*. This analysis seems not to be consistent with what they say about emotive factives, however. Emotive factives are assumed to have a non-null ordering source (giving the "emotive" meaning), and are correctly predicted to select the subjunctive in French. However, they take the indicative in Romanian. Giorgi & Pinesi appeal to factivity to explain this difference, but it is not clear how the factivity criterion interacts with the ordering source criterion.

In order to account for Italian (as well as several other languages, investigated in less depth), Giorgi & Pinesi propose that another factor, besides whether the ordering source is null, can be relevant. Specifically, they refer to the relationship between the

modal base and the common ground. The doxastic modal base associated with *believe* might, according to Giorgi & Pianesi, have a null intersection with the common ground. In other words, one's beliefs might all be false. In this respect, the doxastic modal base is different from the common ground, and this fact results in Italian 'believe' choosing the subjunctive. As pointed out by Portner (1999), however, this fact is difficult to reconcile with the choice of indicative under verbs of assertion, since it seems easier to never say anything true than to never believe anything true. Giorgi & Pianesi also have an interesting discussion of imagination verbs like *dream*. Such verbs have a null ordering source, and moreover the modal base may persist in discourse, as observed above. Thus, it is like the common ground and triggers indicative.

Overall, Giorgi & Pianesi's theory brings up a range of semantic and pragmatic factors which are plausibly related to mood selection. However, each factor is appealed to only when needed, and it is not clear in the end what form the analysis is meant to take. It could be that the selection properties of each sentence-embedding predicate (or class of predicates) is decided independently, based on any one of the potentially relevant factors; or it could be that a single analysis is meant to apply across a given language to all predicates. However, if the latter is the case, it is not clear how the effects of the various relevant factors are to be assembled into a mood-selection prediction for each predicate.

Villalta (2000, 2006, 2008) also focuses on comparativity as a crucial factor in mood selection. Her analysis makes use of a mechanism like the ordering source to rank worlds, but rather than simply applying the ordering source mechanism of Kratzer (as Giorgi & Pianesi do), she proposes an analysis of subjunctive-selecting predicates in Spanish based on focus semantics.

Consider the following example (from Villalta 2008, (52)):

(27) Marcela wants to go to the picnic.

On the kind of account suggested by Giorgi & Pianesi, this sentence is true if, in every world compatible with Marcela beliefs which is "best" from the point of view of her desires, she goes to the picnic. Villalta points out that this analysis has a problematical consequence in a context where Marcela believes that she can only go to the picnic if she works extra hours. In such a context, (27) should entail (28):

(28) Marcela wants to work extra hours.

However, intuitively (27) may be in such a context, but (28) false.

According to Villalta, the solution to this problem is to give a semantics for *want* which is sensitive to contextual alternatives. Suppose that Marcela's alternative to going to the picnic is going to church. In that case, (27) says roughly that for every world in which she goes to church, there is a more desirable world in which she goes to the picnic, and not vice versa. (It also presupposes that both going to the picnic and going to church are compatible with her beliefs.) Likewise, suppose that the alternative to working extra hours is only working the required number of hours; in that case, (28) says that for every world in which she works the required number of hours, there is a more desirable world in which she works extra hours (and not vice versa). Assuming that the very best worlds are ones in which she works only the required number of hours and yet goes to the picnic, (27) will be true and (28) false.

Given this semantic analysis, it is essential to limit what can be a contextual alternative, since otherwise almost every plausible sentence with *want* would come out false, due to the availability of a better alternative. For example, the picnic may be nice, but an all-expense-paid weekend stay at the best hotel in Paris would be better. Villalta attempts to limit what can count as a contextual alternatives relevant to *want* in one way, by requiring that each alternative be compatible with the subjects beliefs, but this won't be enough; we'd still be able to consider an alternative like "Marcela gets an expense paid weekend in Paris or has smelts for lunch", which is compatible with her beliefs (smelts are on the menu), but still contains worlds better than any picnic. Rather, the real reason this is not a relevant alternative must be that it simply not the kind of alternative which the context makes available.

Villalta motivates the use of contextual alternatives in the semantics of sentence-embedding verbs by linking them to other elements which depend on alternatives. Focus sensitive operators like *only* depend on a set of alternatives for their meaning, and these alternatives are constrained by focus (see article 71 (Hinterwimmer) *Information structure* and Rooth 1992):

(29) Marcela only went [<sub>F</sub> to the picnic].

Example (29) says that the only thing Marcela did, out of the relevant alternatives, is go to the picnic. All of the relevant alternatives involve her going someplace, as a result of focus on the PP. Likewise, Villalta claims, *want* is focus sensitive. Indeed, she proposes that all subjunctive-selecting predicates in Spanish are focus sensitive, though one should consider the arguments carefully. For example, she proposes that the following example shows *demand* to be focus sensitive (her (81)–(82)):

(30) His father demanded that Ted MARRY Alice.

(31) His father demanded that Ted marry ALICE.

Consider a context (based on Dretske 1972) in which Ted's father's has stipulated that Ted will only receive his inheritance if he's married (but it doesn't matter who he marries). Villata's claim is that, in such a situation, (30) is true, but (31) false. However, it seems to me that both are false (though perhaps (30) is less misleading). Villalta also makes the intriguing proposal that the subjunctive is chosen when an indicative-selecting predicate is negated, because negation is also focus sensitive. However, this wrongly predicts that subjunctive is licensed even under root negation, or (as she notes) in embedded clauses under any focus sensitive operator.

One way of seeing the significance of this discussion of contextual alternatives is to notice that, in Villalta's analysis, the contextual alternatives do much of the work which is done by the modal base (or accessibility relation) in other modal analyses. That is, the alternatives do the work of carving out the space of possible worlds which are relevant. For example, with (28), one of the contextual alternatives is "work only the required number of hours". There are worlds in which she works only the required number of hours and goes to the picnic (although these worlds are not compatible with Marcela beliefs), and hence (28) is false.

Having observed this connection between the role of contextual alternatives and that of the modal base, a strategy for solving the problem posed by (27)–(28) for Giorgi &

Pianesi's analysis comes into view: Villalta's argument against such an account arose from the fact that the doxastic modal base delimited the range of relevant worlds. Therefore, (27) means that the best doxastically accessible worlds are ones in which she goes to the picnic, and since these are ones in which she works extra hours, (28) is entailed. But if a wider set were relevant (specifically worlds where she goes to the picnic but doesn't work extra hours), (28) would not follow from (27). The reason contextual alternatives solve the problem in Villalta's account is that they make relevant such worlds. But alternatively, it should be possible to make such worlds relevant in the competitor theory, simply by choosing a different modal base.

Schlenker (2003, 2005) and von Stechow (2004) outline a theory of mood based on the idea that mood has a meaning similar to that of grammatical person. This work, which builds primarily on data from German, French, and English, is based on the idea that logical forms contain variables referring to possible worlds, and that mood features place restrictions on the interpretation of these variables. It should be clear how this approach makes mood analogous to person: we can think of a pronoun as simply a variable, with the first person feature, for example, restricting the reference of that variable to the speaker.

The broader research agenda of which these authors' work on mood forms a part primarily focuses on indexicals. Schlenker has done important work on expanding our understanding of the semantics of indexicals from the rather simple system of English to a wider range of languages, in particular languages with logophoric and shiftable indexicals. For example, a shiftable person marking is one whose interpretation can be tied not to the actual context of utterance (as is familiar from English, where *I* always refers to the speaker of the sentence), but rather to an individual which plays a role analogous to the speaker in an embedded clauses. Schlenker (2002) gives the following Amharic example:

- (32) *jon jəgna nə-ññ yil-all*  
*John hero be.PF-1sO 3M.say-AUX.3M*  
 'John says that he is a hero.'

Note that the first person marking on the embedded verb *be* indicates reference to the referent of the matrix subject (John), not the speaker. (For arguments that this agreement is really a kind of first person, see Schlenker's work.) Schlenker's analysis of this data is that the matrix verb *say* creates a derived context with respect to which the embedded clause is interpreted, and John counts as the speaker of that context. Amharic's first person elements may refer to the speaker of the derived context, unlike those in English, which always relate to the root, i.e. utterance, context.

Given the intuition that a shiftable indexical like that in Amharic relates to a derived context in a way parallel to how an English-type indexical relates to the root context, it is clear why an extension to mood is attractive. We have seen repeatedly within the tradition of the modal approach the idea that indicative indicates that a local operator creates a context which is somehow similar to a root-level utterance context, or that that subjunctive indicates that a local operator creates a context which is somehow different from a root-level utterance context. Treating mood as placing a person-like restriction on a world variable raises the hope of making these intuitions precise within the context of a broader theory.

The version of this approach proposed by von Stechow treats the subjunctive in German as feature which requires that the world variable of an embedded clause be bound by the embedding verb. This restriction explains the meanings available to the following (his (122)):

- (33) a. Ich dachte, Ihre Yacht sei/wäre länger als sie ist.  
 I thought your yacht be.subj longer than it be.indic.  
 ‘I thought your yacht was longer than it is.’
- b. #Ich dachte, Ihre Yacht sei/wäre länger als sie sei/wäre.  
 I thought your yacht be.subj longer than it be.subj.  
 ‘I thought your yacht was longer than it is.’

These examples differ in the mood choice of the verb in the comparative clause. The English translation, ‘I thought that your yacht was longer than it is’, is ambiguous. The first reading, rendered with the indicative in German by (33a), means that the speaker thought that the yacht was a certain length, and that length is greater than its actual length; the second, rendered with subjunctive in (33b), means that the speaker thought something impossible of the yacht, that its length (whatever that may be) is greater than its length. According to von Stechow’s analysis, the interpretation in (33b) follows because the world argument in both the complement clause and the *than* clause is bound by *thought*, so that they refer to the same world. Hence the semantics comes out as “in all worlds  $w'$  compatible with the speaker’s beliefs in  $w$ , the yacht’s length in  $w'$  is greater than its length in  $w'$ .” In contrast, in (33a) the world variable in the *than* clause can be bound by a root level operator, and so refers to the actual world. As a result, the sentence means “in all worlds  $w'$  compatible with the speaker’s beliefs in  $w$ , the yacht’s length in  $w'$  is greater than its length in  $w$ .” While von Stechow’s analysis nicely accounts for the contrast in (33), he does not attempt to extend it to a general analysis of mood in German.

Schlenker’s analysis is somewhat more ambitious. He considers a wider range of constructions in several languages, with a focus on French, though he does not develop as complete and methodical an analysis as some of the theories discussed above. Like Portner, Schlenker considers the subjunctive to be the default mood, and identifies a particular licensing condition for the indicative which reflects the intuition that it is used when the clause’s semantic context is relevantly like that of a root assertion.

According to Schlenker, the indicative introduces a presupposition that the reference of a world variable is in the context set of the discourse or in the set of worlds which plays an analogous role in a derived context. He locates context sets with respect to events, via a function  $CS$ . Thus, if  $e^*$  is an event of someone speaking in a conversation,  $CS(e^*)$  is the context set of that conversation. Derived contexts work similarly: if  $e$  is a propositional attitude event (for example, an event of someone believing),  $CS(e)$  is the set of worlds compatible with that attitude (e.g., compatible with that person’s beliefs). The function  $CS$  can apply to any relevant event, including events of saying, lamenting, and wanting. Given such a function, the presupposition of the indicative, written  $w\{CS(e)\}$ , indicates that world  $w$  (the world with respect to which the clause is evaluated) is in the context set associated with event  $e$ . As for the choice of event,  $e$  is not grammatically determined, but rather identified with some event available in the grammatical context.

In a simple root clause,  $e$  is identified with the speech event  $e^*$  (as it’s the only event around which has a context set) and  $w$  with the actual world  $w^*$ . In the case of (34), this

leads to the presupposition that the actual world is in the context set. The subjunctive cannot be used, because a principle of Maximize Presupposition says that presuppositions must be marked if they are met. (Examples are from Schlenker 2005.)

- (34) Il pleut.  
 it rains.indic  
 ‘It’s raining.’
- (35) Jean pense qu’il pleut.  
 Jean thinks that-it rains.indic  
 ‘Jean thinks that it’s raining.’
- (36) Jean espère qu’il pleut.  
 Jean hope that-it rains.indic  
 ‘Jean hopes that it is raining.’

If the indicative is present in the complement of *think*, as in (35), *e* is identified with the thinking event and *w* quantified over by the matrix verb; as a result, the presupposition is that every world compatible with what Jean thinks is compatible with Jean’s beliefs. Finally, Schlenker considers *espérer* ‘hope’, which selects the indicative in French, as seen in (36). (*Vouloir* ‘want’ selects the subjunctive.) Here the event of the indicative presupposition is the hoping event, so the sentence presupposes that every world compatible with what Jean hopes is compatible with what he believes—in effect, that one can only hope for what one believes possible. *Hope* does have presupposition roughly of this kind, a fact also discussed by Portner (1992).

While Schlenker’s theory provides an interesting way of looking at facts like those in (34)–(36), it fails to truly explain mood selection in these cases because nothing in the theory determines which event is used to generate the indicative presupposition. Note that in (35) and (36), the matrix verb’s event was chosen. But in other subordinate clauses (for example, with *nier* ‘deny’), the indicative presupposition can be based on the utterance event *e\**. If *e\** were chosen in (35), we’d end up with a presupposition that everything John thinks is compatible with the discourse context set, and in (36), the resulting presupposition would be that everything Jean hopes is compatible with the discourse context set. Schlenker tries to rule out the latter, saying that “In general, there need be no relation between what Jean hopes and what the speaker or addressee take for granted” (Schlenker 2005: 26), but this is the fact to be explained. Since this reading is not contradictory, the analysis predicts that it should be available when the subjunctive is present. Even more to the point, the analysis seems to predict that, if *e\** is chosen and the resulting presupposition is not met, subjunctive would not be ruled out by Maximize Presupposition. (It would not be out-competed by the indicative, because the indicative is not licensed on the logical form under consideration, the one based on  $CS(e^*)$ ). Hence, the subjunctive should be possible.

### 2.3. Other theories: the indefinite approach and the temporal approach

The central idea of the indefinite approach to verbal mood is that mood marks an opposition parallel to one of those marked by definiteness in the nominal domain. For example,

Giannakidou (1997, 1999) argues that the subjunctive mood in Greek is licensed by the same semantic property, nonveridicality, as a large class of polarity items. Given that the special indefinite *any*, and its correlate in other languages, is a canonical polarity item (and the one which figures most prominently in her discussion), this theory draws a close connection between mood and indefiniteness.

Baker & Travis (1997) argue for an even more direct link between mood and definiteness. They consider a three-way opposition among verbal forms in Mohawk, proposing that these indicate definiteness (*wa'*-, 'factual'), indefiniteness (*v*-, 'future'), and negative polarity (*a*-, 'optative') in the description of an event. The factual morpheme, which is argued to mark definiteness, is used to give a past interpretation to root clauses, and may be used in the complements of verbs like *think* and *know*. The future morpheme, argued to indicate indefiniteness, gives future meaning in root clauses, is used in generic conditional sentences, and is found in the complement of *wish* and *promise*, and can also be used with *think* and *know*. The optative morpheme is seen as a negative polarity version of the future.

The intuition behind Baker & Travis's analysis can be most easily seen by looking at generic conditionals (their (8), with glosses simplified):

- (37) Toka    v-kenvsko'    akaret,    v-yukhrewahte'    ake-nistvha.  
           if        fut-steal        cooke        fut-punish        my-mother  
           'If I steal/stole a cookie, my mother will punish/punishes/would punish me.'

According to the theory, the *v*- morpheme makes each clause into an indefinite description of an event. An implicit generic operator binds an event variable, giving rise to the meaning represented in (38):

- (38) GEN<sub>e,x</sub> [cookie(x) & steal(me, x, e)] [∃e'[M(e)=e' & punish(my-mother, me, e')]]

The function M "matches" each event *e* (of stealing) with another (punishing) event *e'*.

In simple root clauses, *v*- indicates the event occurs in the future, while *wa'*- indicates that it occurs in the past. This distinction is linked to definiteness by the idea that, from the perspective of any point in time, there is a single past but multiple futures (The Branching Time model: Dowty 1979, Kamp & Reyle 1993). As a result of this asymmetry, one can talk about the past by referring (using the indefinite *wa'*-) to a past event, but in order to talk about the future, one must quantify over the various futures, and this quantification requires the indefinite *v*-. However, despite the intuitive link between past and definiteness, and between future and indefiniteness, the theory does not motivate as strong a link between these concepts as we find in the grammar of Mohawk. On the one hand, it is not clear why *v*- cannot be used to create an indefinite description of past events. On the other, the reasoning which is meant to rule out definite reference to future events involves some unclear assumptions about the relationship between possible worlds and past or future events. In any case, one can refer to future events (*I look forward to the publication of this volume!*), so if the analysis is to be maintained, something very specific must be said about Mohawk.

In order to compare Baker & Travis's analysis to other theories of mood, we should consider how it explains the distribution of mood morphemes in complement clauses. Baker & Travis hypothesize that the definiteness or indefiniteness of a complement

clause must match the semantics of the selecting predicate. The complement of *want*, for example, is claimed to require an indefinite description of an event. A definite description of an event (that is, a complement clause marked by *wa'*-) would indicate that what is wanted is a definite past event, and this is incompatible with the future-oriented lexical semantics of *want*. In contrast, *think* is compatible with either an indefinite or definite description of the complement clause's event, since one can think about past or future events. This discussion indicates that the distribution of *wa'*- and *v*- in complement clauses is explained by their temporal entailments, and as such, their proposal has a close affinity with the temporal approach to mood selection more generally. We turn to the temporal approach next.

The temporal approach has been pursued mainly in the syntax literature (Picallo 1984, 1985, Progovac 1993), but has also had some influence in semantic studies (von Stechow 1995, Giannakidou 2009). These analyses aim to explain the fact that subjunctive clauses often have a more restricted temporal interpretation than indicative clauses. For example, the complement of *want* must be interpreted as present or future relative to the time of wanting, while the complement of *know* can be past, present, or future relative to the time of knowing:

- (37) a. Mary wants for it to be raining/to rain.  
 b. Mary knows that it was raining/is raining/will rain.

The central idea of all of these analyses is that the subjunctive *is*, or *is* associated with, a tense morpheme which is dependent on a higher temporal operator in the sentence. For Picallo, the relationship is one of anaphora: the subjunctive clause's tense is anaphoric to a higher tense. For Progovac and von Stechow, the relationship follows from the need for the subjunctive clause's tense to delete under identity with a higher tense. For Giannakidou, the subjunctive marker introduces a time variable which must be bound by a lambda operator in the complementizer position; in the case of a complement clause, the lambda abstraction results in a property of times which serves as the argument of the higher predicate. While Giannakidou does not discuss the temporal interpretation of indicative complements in detail, they would presumably not be temporal properties, since they need to be somehow different from subjunctives; however, such a proposal would run contrary to work on the semantics of tense in such contexts (Ogihara 1996, 2007, Abusch 1997). One problem which faces all of these versions of the temporal theory is that the temporal properties which motivate the idea of a dependent tense only hold with selected subjunctives, not with those triggered by negation or in adjunct clauses, for example, a fact pointed out by Raposo (1986), Suñer & Padilla-Rivera (1987), Suñer (1986), and Quer (1998). The temporal interpretation of non-selected subjunctives is still rather poorly understood.

While the temporal approach furthers our understanding of the temporal interpretation of subjunctive clauses, it does not provide an explanation of the distribution of subjunctive and indicative forms. The reason for this is that it does not explain why the special dependent tense would be especially associated with subjunctive contexts. For example, as far as our current understanding goes, there's no reason why one cannot know a fact with the temporal properties which would result from subjunctive marking; this would be to know something which is necessarily present or future with respect to the time of the knowing. Nor is there a reason why one cannot want something with the temporal properties which would result from indicative marking; indeed, since indicative

is compatible with future meaning, it should be possible to express meanings equivalent to what we get with the subjunctive. Nevertheless, though the temporal theory probably does not fare well as an independent theory of verbal mood, the works in question make an important contribution to our understanding of the temporal semantics of complement clauses. In other words, we will eventually need to combine our analysis of the contribution of indicative and subjunctive themselves with an analysis of the temporal semantics of indicative and subjunctive clauses which are selected by a higher predicate, and the works cited above provide an essential foundation for this project.

### 3. Verbal mood in other contexts

#### 3.1. Root clauses

Verbal mood shows a correlation with sentence type: Both declarative and interrogative clauses are expressed using the indicative, while imperative clauses show variation. Many languages have a distinct imperative form, often classified as a mood, and we also find indicative, subjunctive, and infinitive clauses in this clause type, even in languages which have a dedicated imperative form. For example, the Italian imperative employs a distinct imperative form in ordinary second person singular imperatives, (38a), a form of the indicative in the second person plural, (38b), subjunctive in the (formally third person) polite imperative (38c), and infinitive in the negative imperative (38d) (data from Zanuttini 1997: 106–108).

- (38) a. Telefona!  
 call.imp.2sg  
 ‘Call [her]!’
- b. Telefonatele tutti i giorni!  
 call.indic.2pl-her every the days  
 ‘Call her every day!’
- c. Lo dica pure!  
 it say.subj.3sg indeed  
 ‘Go ahead and say it!’
- d. Non telefonare! / Non le telefonare!  
 neg call-inf-her / neg her call-inf  
 ‘Don’t call her!’

Forms of the imperative clause type drawn from a distinct verbal paradigm are sometimes called “true imperatives”, while those identical to indicatives, subjunctives, or infinitives are called “suppletive imperatives”.

Languages differ in which verbal mood is used for various kinds of suppletive imperatives. For example, Spanish uses subjunctive in the second person plural, as seen in (39) (data from Rivero 1994):

- (39) a. Den-me el libro!  
 give.subj.2pl-me the book  
 ‘Give me the book!’

- b. Que me den el libro!  
 that me give.subj.2pl the book  
 'Give me the book!'

The data above illustrate the fact that suppletive imperatives often show special syntactic properties. For example, the indicative in (38b) has the clitic *le* following the verb, rather than preceding it as would be the case in a declarative, and the infinitive in (38d) allows either verb-clitic or clitic-verb order, although only the former is possible in other contexts. Example (39b) illustrates the possibility of using an overt complementizer with a suppletive imperative. It is likely that certain suppletive imperatives contain non-overt structure which is relevant to the semantics; for example, Kayne (1992) argues that the infinitive form illustrated in (38d) is embedded under a null element, and that the clitic-verb order, when it occurs, is the result of clitic-climbing onto the null element. See Rivero (1994), Zanuttini (1997) and Han (1998) for discussion.

This is not the place to explore the syntax and semantics of imperatives in any detail (for discussion, see article 67 (Han) *Imperatives*). However, there is an issue for the semantics of mood which should be addressed. The widespread use of subjunctives and infinitives for imperative (or at least imperative-like) meaning has led many researchers to assume that subjunctives have a special affinity for directive interpretations. For this reason, they have sought to connect the directive semantics of imperatives to the analysis of the semantics of subjunctives in the theory of verbal mood; see, for example, Portner (1997), Han (1998), and Schlenker (2005). The general idea is that the directive meaning of imperatives is a subcase of the range of meaning compatible with subjunctives generally, so that it is natural for subjunctive form to be recruited for imperatives. However, while this way of looking at the situation leads us to expect that a root subjunctive can be used with an imperative-like communicative meaning, it does not capture the intuition that suppletive imperatives really are imperatives. And although other uses of root subjunctive are possible, for example to express supposition and astonishment, as in (40), it does not explain why these are less common (Italian data from Moretti & Orvieto 1981, cited in Portner 1997):

- (40) a. L'avesse anche detto lui. (de Lampedusa, *Il gattopardo*)  
 it-have.subj also said he  
 'Suppose he had said it too.'
- b. Che sia nel bagno? (Cassola, *Una relazione*)  
 that be.subj in-the bath  
 'She's in the bath?!'

From a broader perspective, the main puzzle posed by root contexts for the theory of verbal mood is why root indicatives (especially declaratives) are very flexible in their discourse function, while imperatives and root subjunctives are more restricted. Truckenbrodt (2006) has pointed out that root declaratives can be easily used to assert, to ask a question, and to impose a requirement, thus covering the range of functions associated with interrogatives and imperatives (data from Truckenbrodt 2006: 259).

- (41) a. It is raining.  
 b. Is it raining?  
 c. You will go home now.

In contrast, root imperatives cannot have such a range of meaning, and can only achieve the perlocutionary effects of assertion and asking by very indirect means, as seen in (42).

- (42) a. Believe me when I say that it is raining.  
 b. Please tell me whether it is raining (because I want to know).

The same may be said for root subjunctives—as illustrated in this section, their range of functions in root clauses is quite restricted. In order to explain the interpretation of verbal moods in root clauses, the theory of mood must be linked with the theory of sentence types within an analysis of discourse semantics. As mentioned in Section 1, there is quite a bit of research work on sentence types; see Lohnstein (2000), Ginzburg & Sag (2001), Zanuttini & Portner (2003), Portner (2004), Schwager (2005), Truckenbrodt (2006), Zaefferer (2007) for recent discussion and pointers into the broader literature.

### 3.2. Relative clauses

Quine pointed out the semantic interest of alternations between indicative and subjunctive in relative clauses (Quine 1956: 177):

- (43) a. Procuro un perro que habla.  
 seek a dog that talk.indic  
 ‘I am looking for a dog that talks.’  
 b. Procuro un perro que hable.  
 seek a dog that talk.subj  
 ‘I am looking for a dog that talks.’

Quine describes the example in (43a) as having the “relational sense”, and provides the logical form (44a), and (43b) as having the “notional sense”, (44b):

- (44) a.  $\exists x[x \text{ is a dog} \ \& \ x \text{ talks} \ \& \ \text{I seek } x]$   
 b. I strive that  $\exists x[x \text{ is a dog} \ \& \ x \text{ talks} \ \& \ \text{I find } x]$

Roughly speaking, (43a) entails the existence of a talking dog, while (43b) does not. Quine did not suggest any analysis of the subjunctive, of course, but only used the example to begin discussion of the problem of scope interactions between quantifiers and propositional attitudes.

More recently, linguists have focused more on the contribution of the subjunctive itself in this type of contrast. The essential idea is that the subjunctive in a relative clause is licensed when the noun phrase containing the clause is dependent on an operator which would trigger the subjunctive in a complement clause. For example, Beghelli (1998) provides the following example from Italian:

- (45) a. Gianni voleva un dottore che era comprensivo.  
 Gianni wanted a doctor that was.indic understanding.  
 ‘Gianni wanted a doctor who was understanding.’

- b. Gianni voleva un dottore che fosse comprensivo.  
 Gianni wanted a doctor that was.subj understanding.  
 ‘Gianni wanted a doctor who would be understanding.’

If we think of the relevant kind of dependency as scope, we can say that the indicative is used in (45a) because the complement is interpreted outside the scope of the verb *voleva*, while the subjunctive is triggered in (45b) because it is inside the verb’s scope. The exact treatment of this contrast depends both on the analysis of subjunctive licensing, and on the treatment of the dependency relation. See Farkas (1985, 1992), Kampers-Manhe (1991), Quer (1998, 2001), Giannakidou (1999), and Panzeri (2006) for discussion.

### 3.3. Adjunct clauses

Finally we turn to the distribution of verbal mood in adjunct clauses. Among adjunct clauses, verbal mood has been studied most extensively, by far, in *if* clauses. There is a tradition in philosophy and logic of distinguishing two types of conditional sentences, INDICATIVE CONDITIONALS and SUBJUNCTIVE CONDITIONALS. The reason for this terminology can be seen in a language like Catalan or Spanish, where we find *if* clauses containing either mood (Catalan data from Quer 1998: 235):

- (46) a. Si arriben a l’hora, aconseguiran entrades.  
 if arrive.indic.pres at the-time get.fut tickets  
 ‘If they arrive on time, they will get tickets.’
- b. Si arribessin a l’hora, aconseguirien entrades.  
 if arrive.subj.past at the-time get.cond tickets  
 ‘If they arrived on time, they would get tickets.’
- c. Si haguessin arribat a l’hora, haurien aconseguit entrades.  
 if have.subj.past arrived at the-time have.cond gotten tickets  
 ‘If they had arrived on time, they would have gotten tickets.’

The sentence with an indicative *if* clause, (46a), implies that they might very well arrive on time, while the version which uses subjunctive, (46b), suggests that it is unlikely they will arrive on time. Further changing the *if* clause to contain a subjunctive past perfect, as in (46c), creates a sentence about a hypothetical past event of arriving on time, and implies that such an event did not occur. Examples like (46c) are often referred to as COUNTERFACTUAL CONDITIONALS, though as pointed out as early as Anderson (1951), they do not entail counterfactuality. We can group the two kinds of conditionals expressed with subjunctive antecedents in Catalan under the label UNREAL CONDITIONALS (cf. Palmer 2001), and oppose them to the REAL CONDITIONAL (46a).

Despite the link which we observe between subjunctive and unreal conditionals in (46), Iatridou (2000) argues that the unreal meaning is conveyed not by the subjunctive, but rather by the past tense/aspect morphology. She shows that, across languages, tense/aspect forms are used to convey unreal meaning. (We see this connection clearly in English, cf. the translations in (46).) Subjunctive only occurs in unreal conditionals in combination with a past form. A language like French, which has a present form of the subjunctive but not a past one, uses a past form of the indicative to express meanings like (46b–c). Thus, it

appears that the subjunctive in (46b–c) is licensed by some feature of the sentence associated with unreal or counterfactual meaning, but does not contribute such meaning to the sentence. As far as I know, there has been no work attempting to link the licensing conditions for the subjunctive in (46b–c), in languages which have it, with the broader theory of mood selection. There has, of course, been a great deal of work on the semantic distinction between real and unreal conditionals (see article 59 (von Stechow) *Conditionals* for references), but in light of preceding discussion, this research should probably be seen as really concerning the contribution of tense/aspect forms, not verbal mood.

Apart from *if* clauses, there has been very little work on the semantics of verbal mood forms in adjunct clauses. A fairly extensive discussion of Catalan is provided by Quer (1998), focusing on concessive clauses. However, while this work establishes a foundation for further study, he does not provide a semantic analysis or even specific hypotheses about the role of mood in these constructions.

#### 4. Conclusions

Research on the semantics of verbal mood has largely reached a conclusion on two key intuitions about the indicative-subjunctive contrast: First, it is to be explained in terms of modal properties of the context in which a clause occurs. Second, the indicative is licensed on contexts which are somehow similar to root assertion, and the subjunctive in contexts which are somehow different. The literature shows us a range of ideas for how to best understand what is common to those contexts which license each mood. Work on the semantic contribution of mood in root contexts, relative clauses, and adjunct clauses is at a much more primitive state of development, and is ripe for future study. In the long run, semanticists will need to understand the connections between verbal mood and mood in the various other senses described in Section 1.

#### 5. References

- Abusch, Dorit 1997. Sequence of tense and temporal de re. *Linguistics & Philosophy* 20, 1–50.
- Anderson, Alan Ross 1995. A note on subjunctive and counterfactual conditionals. *Analysis* 11, 35–38.
- Asher, Nicholas 1987. A typology for attitude verbs and their anaphoric properties. *Linguistics & Philosophy* 10, 125–197.
- Axelrod, Melissa 1993. *The Semantics of Time. Aspectual Categorization in Koyukon Athabaskan*. Lincoln, NE: University of Nebraska Press.
- Baker, Mark & Lisa Travis 1997. Mood as verbal definiteness in a tenseless language. *Natural Language Semantics* 5, 213–269.
- Beghelli, Filippo 1998. Mood and the interpretation of indefinites. *The Linguistic Review* 15, 277–300.
- Bugenhagen, Robert 1993. The semantics of irrealis in the Austronesian languages of Papua New Guinea. A cross-linguistic study. In: Ger P. Reesink (ed.). *Topics in Descriptive Austronesian Linguistics*. Leiden: Vakgroep Talen en Culturen van Zuidoost-Azie en Oceanie, University of Leiden, 1–39.
- Bhat, D. N. Shankara 1999. *The Prominence of Tense, Aspect and Mood*. Amsterdam: Benjamins.
- Bittner, Maria. 2009. Tense, Mood, and Centering. Ms. New Brunswick, NJ, Rutgers University. [http://www.rci.rutgers.edu/~mbittner/pdf%20files%20for%20web%20bittner09\\_tmc.pdf](http://www.rci.rutgers.edu/~mbittner/pdf%20files%20for%20web%20bittner09_tmc.pdf). December 29, 2010.
- Bloomfield, Leonard 1956. *Eastern Ojibwa, Grammatical Sketch, Texts and Word List*. Ann Arbor, MI: The University of Michigan Press.

- Boas, Franz 1911/2002. Introduction. In: Franz Boas. *Handbook of American Indian Languages. Part 1*. Washington: Smithsonian Institution, Bureau of American Ethnology, 1–83 Reprinted: Thoemmes Press, 2002. Bristol, UK.
- Bolinger, Dwight 1968. *Aspects of Language*. New York: Harcourt, Brace & World.
- Bybee, Joan 1998. 'Irrealis' as a grammatical category. *Anthropological Linguistics* 40, 257–271.
- Chafe, Wallace 1995. The realis-irrealis distinction in Caddo, the northern Iroquoian languages, and English. In: J. Bybee & S. Fleischman (eds.). *Modality in Grammar and Discourse*. Amsterdam: Benjamins, 349–365.
- Chierchia, Gennaro & Sally McConnell-Ginet 1990. *Meaning and Grammar: An Introduction to Semantics*. Cambridge, MA: The MIT Press.
- de Reuse, Willem Joseph 1994. *Siberian Yupik Eskimo. The Language and its Contact with Chukchi*. Salt Lake City, UT: University of Utah Press.
- Donaldson, Tamsin 1980. *Ngiyambaa: The Language of the Wangaaybuwan*. Cambridge: Cambridge University Press.
- Dowty, David 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- Dretske, Fred I. 1972. Contrastive statements. *Philosophical Review* 81, 411–437.
- Ekdahl, Muriel & Joseph E. Grimes 1964. Terena verb inflection. *International Journal of American Linguistics* 30, 261–268.
- Elliot, Jennifer 2000. Realis and irrealis: Forms and concepts of the grammaticalisation of reality. *Linguistic Typology* 4, 55–90.
- Fabricius-Hansen, Cathrine & Kjell Johan Saebø 2004. In a mediative mood: The semantics of the German reportative subjunctive. *Natural Language Semantics* 12, 213–257.
- Farkas, Donka 1985. *Intensional Descriptions and the Romance Subjunctive Mood*. New York: Garland.
- Farkas, Donka 1992. On the semantics of subjunctive complements. In: P. Hirschbühler & K. Koerner (eds.). *Romance Languages and Modern Linguistic Theory*. Amsterdam: Benjamins, 69–104.
- Farkas, Donka 2003. Assertion, belief, and mood choice. Paper presented at the *Workshop on Conditional and Unconditional Modality*, Vienna, Austria.
- Fortescue, Michael K. 1984. *West Greenlandic*. London: Croom Helm.
- Foster, Michael K. 1986. Updating the terminology of tense, mood, and aspect in northern Iroquoian descriptions. *International Journal of American Linguistics* 52, 65–72.
- Giannakidou, Anastasia 1997. *The Landscape of Polarity Items*. Doctoral dissertation. University of Groningen.
- Giannakidou, Anastasia 1999. Affective dependencies. *Linguistics & Philosophy* 22, 367–421.
- Giannakidou, Anastasia 2009. The dependency of the subjunctive revisited: Temporal semantics and polarity. *Lingua* 119, 1883–1908.
- Ginzburg, Jonathan & Ivan A. Sag 2001. *Interrogative Investigations: The Form, Meaning, and Use of English Interrogatives*. Chicago, IL: The University of Chicago Press.
- Giorgi, Alessandra & Fabio Pianesi 1997. *Tense and Aspect: From Semantics to Morphosyntax*. Oxford: Oxford University Press.
- Halliday, Michael 1970. Functional diversity in language as seen from a consideration of modality and mood in English. *Foundations of Language* 6, 322–361.
- Han, Chung-hye 1998. *The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar*. Ph.D. dissertation. University of Pennsylvania, Philadelphia, PA.
- Hausser, Roland R. 1980. Surface compositionality and the semantics of mood. In: J. Searle, F. Kiefer, & M. Bierwisch (eds.). *Speech Act Theory and Pragmatics*. Dordrecht: Reidel, 71–95.
- Hausser, Roland R. 1983. The syntax and semantics of English mood. In: F. Kiefer (ed.). *Questions and Answers*. Dordrecht: Reidel.
- Heim, Irene 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9, 183–221.

- Hintikka, Jaakko 1961. Modality and quantification. *Theoria* 27, 110–128.
- Hooper, Joan B. 1975. On assertive predicates. In: J. Kimball (ed.). *Syntax and Semantics 4*. New York: Academic Press, 91–124.
- Iatridou, Sabine 2000. The grammatical ingredients of counterfactuality. *Linguistic Inquiry* 31, 231–270.
- James, Francis 1986. *Semantics of the English Subjunctive*. Vancouver, BC: University of British Columbia Press.
- Jespersen, Otto 1924/1992. *The Philosophy of Grammar*. London: Allen & Unwin. Reprinted (With a new Introduction and Index by James D. McCawley): Chicago, IL: The University of Chicago Press, 1992.
- Kamp, Hans & Uwe Reyle 1993. *From Discourse to Logic*. Dordrecht: Kluwer.
- Kampers-Manhe, Brigitte 1991. *L'Opposition Subjonctif/Indicatif dans les Relatives*. Doctoral dissertation. University of Groningen.
- Kayne, Richard S. 1992. Italian negative infinitival imperatives and clitic climbing. In: L. Tasmowsky & A. Zribi-Hertz (eds.). *De la Musique à la Linguistique. Hommages à Nicolas Ruwet*. Ghent: Communication and Cognition, 300–312.
- Kratzer, Angelika 1977. What “must” and “can” must and can mean. *Linguistics & Philosophy* 1, 337–55.
- Kratzer, Angelika 1981. The notional category of modality. In: H.-J. Eikmeyer & H. Rieser (eds.). *Words, Worlds, and Contexts*. Berlin: de Gruyter, 38–74.
- Lichtenberk, Frantisek 1983. *A grammar of Manam*. Honolulu: University of Hawaii Press.
- Lohnstein, Horst 2000. *Satzmodus – kompositionell. Zur Parametrisierung der Modusphrase in Deutschen*. Berlin: Akademie Verlag.
- Lohnstein, Horst & Ursula Bredel 2004. Inflectional morphology and sentence mood in German. In: H. Lohnstein & S. Trissler (eds.). *The Syntax and Semantics of the Left Periphery*. Berlin: Mouton de Gruyter, 235–264.
- Lunn, Patricia V. 1995. The evaluative function of the Spanish subjunctive. In: J. Bybee & S. Fleischman (eds.). *Modality in Grammar and Discourse*. Amsterdam: Benjamins, 429–449.
- Lyons, John 1977. *Semantics*. Cambridge: Cambridge University Press.
- Matthewson, Lisa 2010. Cross-linguistic variation in modality systems: The role of mood. *Semantics and Pragmatics* 3, 1–74.
- McGregor, William B. & Tamsin Wagner 2006. The semantics and pragmatics of irrealis mood in Nyulnyulan languages. *Oceanic Linguistics* 45, 339–379.
- Meibauer, Jörg 1990. Sentence mood, lexical category filling, and non-propositional *nicht* in German. *Linguistische Berichte* 130, 441–465.
- Melnar, Lynette R. 2004. *Caddo Verb Morphology*. Lincoln, NE: University of Nebraska Press.
- Mithun, Marianne 1999. *The Languages of Native North America*. Cambridge: Cambridge University Press.
- Moretti, Giovanni & Giorgio Orvieto 1981. *Grammatica Italiana*. Perugia: Editrice Benucci.
- Moshinsky, Julius 1974. *A Grammar of Southeastern Pomo*. Berkeley, CA: University of California Press.
- Narrog, Heiko 2005. Modality, mood, and change of modal meanings: A new perspective. *Cognitive Linguistics* 16, 677–731.
- Ogihara, Toshiyuki 1996. *Tense, Attitudes, and Scope*. Dordrecht: Reidel.
- Ogihara, Toshiyuki 2007. Attitudes without monsters: A Japanese perspective. In: C. Tancredi et al. (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) XVI*. Ithaca, NY: Cornell University. <http://research.nii.ac.jp/salt16/proceedings.html>. December 29, 2010.
- Palmer, Frank 1990. *Modality and the English Modals*. New York: Longman.
- Palmer, Frank 2001. *Mood and Modality*. 2nd edn. Cambridge: Cambridge University Press.
- Panzeri, Francesca 2006. Subjunctive relative clauses. In: P. Denis et al. (eds.). *Proceedings of the 2004 Texas Linguistics Society Conference*. Somerville, MA: Cascadilla Press, 60–68.

- Parks, Douglas R. 1976. *A Grammar of Pawnee*. New York: Garland.
- Picallo, M. Carme 1984. The Infl node and the null subject parameter. *Linguistic Inquiry* 15, 75–101.
- Picallo, M. Carme 1985. *Opaque Domains*. Ph.D. dissertation. City University of New York, New York.
- Portner, Paul 1997. The semantics of mood, complementation, and conversational force. *Natural Language Semantics* 5, 167–212.
- Portner, Paul 1999. The semantics of mood. *Glott International* 4, 3–9.
- Portner, Paul 2004. The semantics of imperatives within a theory of clause types. In: K. Watanabe & R. B. Young (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) XIV*. Ithaca, NY: Cornell University, 235–252.
- Portner, Paul 2009. *Modality*. Oxford: Oxford University Press.
- Progovac, Ljiljana 1993. The (mis)behavior of anaphora and negative polarity. *The Linguistic Review* 10, 37–59.
- Quer, Josep 1998. *Mood at the Interface*. The Hague: Holland Academic Graphics.
- Quer, Josep 2001. Interpreting mood. *Probus* 13, 81–111.
- Quine, Willard van Orman 1956. Quantifiers and propositional attitudes. *Journal of Philosophical Logic* 53, 177–187.
- Raposo, Eduardo 1986. Some asymmetries in the binding theory in Romance. *The Linguistic Review* 5, 75–110.
- Reis, Marga 1999. On sentence types in German. An enquiry into the relationship between grammar and pragmatics. *Interdisciplinary Journal for Germanic Linguistics and Semiotic Analysis* 4, 195–236.
- Reis, Marga 2003. On the form and interpretation of German wh-infinitives. *Journal of Germanic Linguistics* 15, 155–201.
- Rivero, Maria-Luisa 1994. Negation, imperatives and Wackernagel effects. *Rivista di Linguistica* 6, 39–66.
- Roberts, John R. 1990. Modality in Amele and other Papuan languages. *Journal of Linguistics* 26, 363–401.
- Roussou, Anna 2009. In the mood for control. *Lingua* 119, 1811–1836.
- Schlenker, Philippe 2002. Indexicality, logophoricity, and plural pronouns. Handout, November 2002, UCLA and Institut Jean-Nicod.
- Schlenker, Philippe 2003. A plea for monsters. *Linguistics & Philosophy* 26, 29–120.
- Schlenker, Philippe 2005. The lazy frenchman's approach to the subjunctive (speculations on reference to worlds and semantic defaults in the analysis of mood). In: T. Geerts, I. van Ginneken & H. Jacobs (eds.). *Romance Languages and Linguistic Theory 2003: Selected papers from "Going Romance"*. Amsterdam: Benjamins, 269–310.
- Schwager, Magdalena 2005. *Interpreting Imperatives*. Doctoral dissertation. University of Frankfurt.
- Searle, John 1969. *Speech Acts*. Cambridge: Cambridge University Press.
- Stalnaker, Robert 1974. Pragmatic presupposition. In: M. Munitz & P. Unger (eds.). *Semantics and Philosophy*. New York: New York University Press, 197–213.
- Stalnaker, Robert 1978. Assertion. In: P. Cole (ed.). *Syntax and Semantics 9: Pragmatics*. New York: Academic Press, 315–332.
- Stalnaker, Robert 1987. *Inquiry*. Cambridge, MA: The MIT Press.
- Stalnaker, Robert 1988. On the representation of context. *Journal of Logic, Language and Information* 7, 3–19.
- von Stechow, Arnim 1995. Lexical decomposition in syntax. In: U. Egli et al. (eds.). *Lexical Knowledge in the Organization of Language*. Amsterdam: Benjamins, 81–177.
- von Stechow, Arnim 2004. Binding by verbs: Tense, person and mood under attitudes. In: H. Lohnstein & S. Trissler (eds.). *The Syntax and Semantics of the Left Periphery*. Berlin: Mouton de Gruyter, 431–488.
- Stenius, Erik 1967. Mood and language game. *Synthese* 17, 254–274.

- Suñer, Margarita 1986. On the referential properties of embedded finite clause subjects. In: I. Bordelois, H. Contreras & K. Zagona (eds.). *Generative Studies in Spanish Syntax*. Dordrecht: Foris, 183–203.
- Suñer, Margarita & José Padilla-Rivera 1987. Sequence of tenses and the subjunctive, again. *Hispania* 70, 634–642.
- Swift, Mary D. 2004. *Time in Child Inuktitut. A Developmental Study of an Eskimo-Aleut Language*. Berlin: Mouton de Gruyter.
- Terrell, Tracy & Joan Hooper 1974. A semantically based analysis of mood in Spanish. *Hispania* 57, 486–494.
- Travis, Catherine 2003. The semantics of the Spanish subjunctive: Its use in the natural semantic metalanguage. *Cognitive Linguistics* 14, 47–69.
- Truckenbrodt, Hubert 2006. On the semantic motivation of syntactic verb movement to C in German. *Theoretical Linguistics* 32, 257–306.
- Villalta, Elisabeth 2000. Spanish subjunctive clauses require ordered alternatives. In: B. Jackson & T. Matthews (eds.). *Proceedings of Semantics and Linguistic Theory (= SALT) X*. Ithaca, NY: Cornell University, 239–256.
- Villalta, Elisabeth 2006. *Context Dependence in the Interpretation of Questions and Subjunctives*. Doctoral dissertation. University of Tübingen.
- Villalta, Elisabeth 2008. Mood and gradability: An investigation of the subjunctive mood in Spanish. *Linguistics & Philosophy* 31, 467–522.
- Wilson, Deirdre & Dan Sperber 1988. Mood and the analysis of non-declarative sentences. In: J. Dancy, J. Moravcsik & C. Taylor (eds.). *Human Agency: Language, Duty and Value*. Stanford, CA: Stanford University Press, 77–101.
- Woodbury, Anthony 1981. *Study of the Chevak Dialect of Central Yup'ik Eskimo*. Ph.D. dissertation. University of California, Berkeley, CA.
- Zaefferer, Dietmar 2007. Deskewing the Searlean picture: A new speech act ontology for linguistics. To appear in: *Proceedings of the Annual Meeting of the Berkeley Linguistics Society (= BLS) 32*. Berkeley, CA: Berkeley Linguistics Society.
- Zanuttini, Rafaella 1997. *Negation and Clausal Structure. A Comparative Study of Romance Languages*. Oxford: Oxford University Press.
- Zanuttini, Rafaella & Paul Portner 2003. Exclamative clauses: At the syntax-semantics interface. *Language* 79, 39–81.
- Zwicky, Arnold M. 1985. The Hidatsa mood markers. *International Journal of American Linguistics* 51, 629–630.

*Paul Portner, Washington, DC (USA)*