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The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar

Chung-hye Han
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The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar

Abstract
This dissertation is a cross-linguistic investigation into the structure and interpretation of imperatives and related constructions. We identify universal morphosyntactic principles of imperatives and explain variations in the syntax of imperatives as a consequence of the interaction between the universal principles and the morphosyntactic system of a particular language. Based on these conclusions, we develop a model for the interpretation of imperatives. We show that the syntax of imperatives across languages includes an imperative operator, which is a set of morphosyntactic features. The interaction between a formal universal for the imperative operator and the syntax of a language correctly predicts the cross-linguistic variation in the availability of negative imperatives. We also account for the apparent peculiarity in the syntactic evolution of imperatives in the history of English. The results of our analysis confirm the postulated presence of an imperative operator and provide support for the presence of particular functional projections in the clausal phrase structure in English. We also propose that the morphosyntactic features of the imperative operator have interpretational consequences. We argue that the imperative operator includes a feature that encodes directive force, and another feature that encodes modality of unrealized interpretation. We also argue that subjunctives and infinitivals have an operator whose feature content is in a proper subset relation with that of the imperative operator. By defining the relation of imperatives, subjunctives and infinitivals in this way, we are able to capture the close relation that exists in many languages between these three types of sentences. We also account for the cross-linguistic variation in the syntactic behavior of the imperative subject by developing the idea that the imperative operator selects either an infinitive type or subjunctive type INFL, depending on the language. We define directive illocutionary force as an instruction to the hearer to update a PLAN SET, a set of propositions that specifies the hearer's intentions. Thus, the directive force of the imperative is not a result of inference; it is directly encoded in its logical form.

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The Structure and Interpretation of Imperatives: Mood and Force in Universal Grammar

Chung-hye Han

A Dissertation

in

Linguistics

Presented to the Faculties of the University of Pennsylvania in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

1998

Anthony S. Kroch

Supervisor of Dissertation

George Cardona

Graduate Group Chairperson

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by

Chung-hye Han

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ABSTRACT

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Mood and Force in Universal Grammar

Chung-hye Han

Supervisor: Anthony S. Kroch

This dissertation is a cross-linguistic investigation into the structure and interpretation of imperatives and related constructions. We identify universal morphosyntactic principles of imperatives and explain variations in the syntax of imperatives as a consequence of the interaction between the universal principles and the morphosyntactic system of a particular language. Based on these conclusions, we develop a model for the interpretation of imperatives. We show that the syntax of imperatives across languages includes an imperative operator, which is a set of morphosyntactic features. The interaction between a formal universal for the imperative operator and the syntax of a language correctly predicts the cross-linguistic variation in the availability of negative imperatives. We also account for the apparent peculiarity in the syntactic evolution of imperatives in the history of English. The results of our analysis confirm the postulated presence of an imperative operator and provide support for the presence of particular functional projections in the clausal phrase structure in English. We also propose that the morphosyntactic features of the imperative operator have interpretational consequences. We argue that the imperative operator includes a feature that encodes directive force, and another feature that encodes modality of unrealized interpretation. We also argue that subjunctives and infinitivals have an operator whose feature content is in a proper subset relation with that of the imperative operator. By defining the relation of imperatives, subjunctives and infinitivals in this way, we are able to capture the close relation that exists in many languages between these three types of sentences. We also account for the cross-linguistic variation in the syntactic behavior of the imperative subject by developing the idea that the imperative operator selects either an infinitive type or subjunctive type INFL, depending on the language. We define directive illocutionary force as an instruction to the hearer to update a PLAN SET, a set of propositions that specifies the hearer's intentions. Thus, the directive force of the imperative is not a result of inference; it is directly encoded in its logical form.

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Chapter 1

Introduction

This dissertation is an investigation into the structure and interpretation of imperatives and related constructions across languages. The dissertation has two main goals. First, we identify general morphosyntactic principles of the imperative clause type across languages and endeavor to explain cross-linguistic variation in its realization as a consequence of interaction between the general principles and particular morphosyntactic systems in each language. Second, based on our conclusions regarding the morphosyntax of imperatives, we develop a model for the interpretation of imperatives.

Imperative sentences across languages are formally distinguishable from other sentence types of the language in which they appear: i.e., they have distinctive morphology on the main verb and/or distinctive syntax. Canonically, they express the directive illocutionary force associated with commands and requests. Consequently, the term IMPERATIVE has often been used to refer to a sentence's function rather than its form. Any construction that expresses directive meaning is then classified as an imperative, irrespective of its form. For example, all of the sentences in (1) would be imperatives because they all have approximately the same illocutionary force of order or request.

(1) a. Wash the dishes!

b. You will wash the dishes!

c. Will you wash the dishes, please?

d. You should wash the dishes!

However, we use the term IMPERATIVE to refer exclusively to a sentence's form, and emphatically do not use the term to refer its function. Thus, the only sentence that we classify as an imperative among the examples in (1) is (1a). Its morphosyntax is distinguishable from other examples in (1): it has no overt subject, and the verb is in the bare form. In contrast, the sentences (1b) and (1d) are formally declaratives, and the sentence (1c) is formally an interrogative. Thus, although the sentences in (1) have similar functions, they have different forms.

1.1 Issues and Sketch of the Proposal

The grammatical status of imperative sentences is puzzling, syntactically and semantically. Imperative verbs have little or no inflectional morphology in most languages, even in ones which otherwise exhibit a rich verbal morphology for tense, agreement and mood. They have many distinctive formal (sometimes apparently idiosyncratic) properties that distinguish them from other sentence types of the language in which they appear. For instance, in Italian, Modern Greek, and Spanish, pronominal clitics procliticize in indicatives and subjunctives, but encliticize in imperatives. Also, in these languages, imperatives cannot be negated. Instead, negative commands – that is, prohibitions – are expressed through the use of suppletive subjunctives or infinitivals. In English, empty subjects are not normally allowed in matrix sentences, but are allowed in imperatives. Moreover, while *do*-support is required in a negative declarative only if its main verb is a lexical verb, it is required in all negative imperatives whether the main verb is a lexical verb or an auxiliary verb. The syntactic peculiarities of imperatives are also attested in the historical context. In the history of English, the development of *do*-support in imperatives patterns differently from negative declaratives and interrogatives, as observed by Ellegård (1953). In addition, imperatives do not show uniform formal properties across languages. For instance, while imperatives cannot be negated in some languages, in other languages, English, German, French, and Bulgarian, they can be. Furthermore, while the imperative subject is optional in English, Modern Greek, Bulgarian and Korean, it is obligatorily absent in French, Spanish and Italian.

Semantically, imperative sentences canonically express directives. However, languages

have forms other than the imperative to express directives. For instance, an interrogative such as *Would you open the window?* or a declarative such as *I want you to open the window* can function as directives. In some languages (Modern Greek, Spanish, Italian, Hindi), subjunctives can serve the directive function, and in other languages (German, Italian and Spanish), infinitivals can do so. This situation might lead to the conclusion that the imperative reflects a function of language and that its analysis is purely a matter of pragmatics. But the fact is that most languages have identifiable morphosyntactic forms canonically used to express directives, indicating that the IMPERATIVE is a grammatical category.

Our main proposal is that the syntax of imperatives across languages includes an imperative operator, which is a set of morphosyntactic features. We will argue that the apparently idiosyncratic syntactic properties of the imperatives in a given language, as well as the cross-linguistic variation in their syntax are consequences of the interaction between a particular language's morphosyntactic regularities and the universal formal properties of the morphosyntactic features of the imperative operator. In particular, we will show that the systematic interactions between a formal universal for the imperative operator and the syntax of a language correctly predict the availability of negative imperatives. We also account for the apparent peculiarity in the syntactic evolution of imperatives in the history of English. The results of our analysis of the syntactic development of English imperatives not only confirm the postulated presence of an imperative operator in English but also provide support for a method of characterizing functional projections in the phrase structure of a clause in English. We also propose that the morphosyntactic features of the imperative operator have interpretational consequences. We argue that the imperative operator includes a [directive] feature that encodes directive illocutionary force, and an [irrealis] feature that encodes modality that contributes the interpretation that a certain state is not realized. We also argue that subjunctives and infinitivals across languages has an operator that includes the feature [irrealis], and so is formally a proper subset of the imperative operator. By defining the relation of imperatives, subjunctives and infinitivals in this way, we are able to capture the close interpretational relation that exists in many languages between the three types of sentences. Moreover, we account for cross-linguistic variation in the syntactic behavior of the imperative subject by developing the idea that the [irrealis] feature of the

imperative operator selects either an infinitive type or subjunctive type INFL, depending on the language. Furthermore, by splitting up the feature content of the imperative operator into [directive] and [irrealis], we are led to the conclusion that the logical form of imperatives includes an operator that encodes directive illocutionary force and a proposition that has the modality of unrealized interpretation. We also suggest a way of defining illocutionary force. In particular, we propose that directive force is an instruction to the hearer to update/change a particular module, which we refer to as PLAN SET. This plan set is a set of propositions that specifies the hearer's intentions, and represents the state of affairs that the hearer intends to bring about. According to our analysis, the directive force of the imperative is not a result of pragmatic inference; it is directly encoded in its logical form.

Our treatment of the syntax of imperatives is in line with Potsdam (1997b), who assimilates the phrase structure of English imperatives to that of interrogatives and who argues that the imperative in English has largely regular syntactic behavior within a conventional conception of English clause structure. On the other hand, our treatment of the syntax of imperatives contrasts with other analyses within the generative tradition which take for granted that imperatives have exceptional syntactic properties that are independent of the morphosyntax of the languages in which they appear (cf. Schmerling (1982), Pollock (1989), Beukema and Coopmans (1989), Zhang (1991), Platzack and Rosengren (1996)). Moreover, our treatment of the interpretation of imperatives differs from the generative semantics approach in which the syntax and semantics of imperatives are reducible to those of corresponding performative sentences (cf. Ross (1970), Sadock (1974)). Our approach also differs from the post-generative semantics treatment in which imperatives denote a certain type of proposition and the directive illocutionary force is generated via pragmatic inference (cf. Bolinger (1977), Huntley (1982), Huntley (1984), Davies (1986), Wilson and Sperber (1988)). Our approach is a development of the intuition already laid out in Frege (1960) and Lewis (1976), according to which a sentence is a complex of two components, one that expresses its truth conditional meaning and another that expresses its force, and according to which interpreting the force component involves interaction with the module of language use in discourse. Some of these works will be discussed in more detail in subsequent chapters.

1.2 Theoretical Background

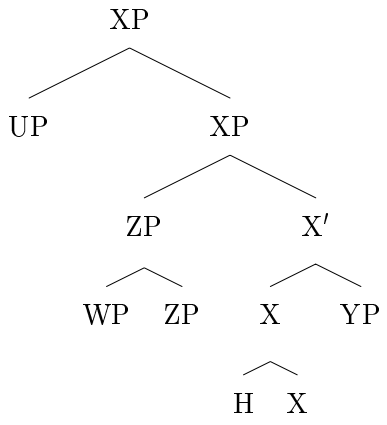
In this section, we introduce some theoretical assumptions which are minimally necessary for understanding the discussion in the following chapters. Our analysis of the imperative is embedded in a generative model of syntax, developed in works whose basis is in the Principles and Parameters framework and the Minimalist Program (Chomsky 1993, 1995). The assumptions we present in this section are especially relevant for the discussions of the morphosyntax of imperatives in Chapters 2, 3 and 4. The aspects of the theory based on morphosyntactic features and their role in syntax are particularly useful for the analysis of imperatives given that imperative verbs in many languages exhibit distinctive morphology. We will motivate the presence or absence of certain functional projections in the phrase structure of imperatives and imperative verb movement to a functional head by appealing to the presence or absence of inflectional morphology on the imperative verb.

1.2.1 Morphosyntactic Features, Functional Projections, Movement

Following the assumptions of the Minimalist program, we assume that the lexicon includes morphosyntactic features as well as lexical items. Further, morphosyntactic features are expressed on the lexical item, e.g., as inflections on the verb. In addition, they give rise to syntactic structure as features on functional heads. That is, both morphosyntactic features and fully inflected lexical items enter into the derivation of a syntactic structure. In order for the derivation to converge (succeed), the features on a functional head and their morphological reflections on a lexical item must be brought together within a defined local configuration at some point in the derivation so that they can be CHECKED. Checking is instantiated by the movement of the lexical item. In effect, then, movement in syntax is driven by morphology.

Feature checking takes place within the CHECKING DOMAIN of the head whose features are being checked. A checking domain of a head includes the Spec position and anything adjoined to the head, its maximal projection, or its Spec. For example, in (2) the checking domain of X includes UP, WP, ZP, and H.

(2)



Typically, a feature of a functional head can be checked when the checking lexical item is in the specifier of the functional head or adjoined to the functional head.

Feature checking can in principle occur at any point in the derivation. However, not all features have the same status regarding when checking must take place. If a feature is STRONG, it must be checked overtly, before the derivation branches off to PF (phonological form) and LF (logical form). The point at which the derivation branches off to PF and LF is called SPELL-OUT. If a feature is WEAK, its checking is delayed by the principle of PROCRASTINATE until the covert syntax: i.e., until the derivation branches off to LF. All features must be checked ultimately because they otherwise cause a derivation to crash. Thus, strong features drive overt movement, and weak features drive covert movement.

In principle, for the purposes of feature checking, it should be enough to move just the necessary features. The assumption is that this is indeed the case at LF: i.e., at LF only the necessary features are involved in movement for feature checking. For example, if a functional head has a weak tense feature which has to be checked against a tense feature on a verb, then at LF, just the tense feature on the verb moves to the functional head, leaving the other features behind. This kind of movement is called FEATURE MOVEMENT. On the other hand, for movement before Spell-Out, the feature that moves carries along all the other features on the verb, including the phonetic features, for PF convergence. For example, if a functional head has a strong tense feature which has to be checked against a tense feature on a verb, then the tense feature on the verb carries along other features as well, thereby having the effect of moving the verb itself. This kind of movement is called

CATEGORY MOVEMENT.[1]

1.2.2 Parametric Difference

In Minimalism, the cognitive system for each particular language consists of a computational system and a lexicon. The computational system consists of generative procedures (derivations) that construct pairs of representations that are interpreted at PF and LF, respectively. In effect, the computational system of a language is a mapping from a set of lexical choices to a pair of PF and LF representations. The assumption is that the principles involved in the computation are universal, and that significant parametric differences between languages are limited to lexical differences, specifically, differences in the features that occupy the functional category nodes. This idea was first explored by Borer (1984). We illustrate this point with the basic parametric differences in word order of tensed clauses between English and French. As shown by Emonds (1978) and further analyzed by Pollock (1989), the relative positions of tensed main verbs and VP-adjoined adverbs are different in English and French. In English the main verb occurs to the right of the adverb, whereas in French the main verb occurs to the left of the adverb. The examples in (3) are from Marantz (1995:372).

(3) a. Elmer often washes his cat.

b. Elmer lave souvent son chat.
Elmer washes often his cat
'Elmer often washes his cat.'

In Minimalism, the word order differences of tensed clauses between English and French are attributed to the strength difference of N-features and V-features in the tense node (T^0). The N-features are those that are checked off against a DP that moves to the specifier of a functional phrase and the V-features are those that are checked off against a verb that adjoins to a functional head. These features may be either weak or strong in a language. In

[1] In Watanabe (1992) and Brody (1995) feature movements are not restricted to LF. They independently propose that empty operator movement or feature movement can take place in the overt syntax depending on the language. For instance, *wh* in-situ phenomenon in languages like Japanese actually involves empty operator movement or feature movement in the overt syntax. For us, it does not matter whether feature movements apply in the overt syntax or at LF, as long as they have applied by LF and before they are subject to interpretation.

English the N-features of T^0 are strong but the V-features are weak. Thus, assuming the VP-internal subject hypothesis (Fukui (1986), Fukui and Speas (1986), Kitagawa (1986), Koopman and Sportiche (1991)), the subject DP has to move from [Spec, VP] to [Spec, TP] before Spell-Out. In contrast, the main verb is permitted to stay in VP before Spell-Out. After Spell-Out, the necessary features of the verb move, adjoining to T^0 at LF. Since English leaves the main tensed verb inside the VP before Spell-Out, it is pronounced to the right of the adverb. In contrast, in French both the N-features and V-features of T^0 are strong. As a result, both the subject DP has to move to [Spec, TP] and the main verb has to move and adjoin to T^0 before Spell-Out. Since French raises the verb to T^0 before Spell-Out, it is pronounced to the left of the adverb.

1.2.3 LF Interface

Following Chomsky (1993, 1995), we assume the inverted Y-model of the grammar (see Figure 1.1). According to this model, lexical resources feed syntactic derivation. At Spell-Out, the syntactic derivation splits and heads toward the two interface levels, PF and LF. The movements that occur before Spell-Out are overt movements that affect the pronunciation of a sentence, whereas the movements that occur after Spell-Out at the LF component are covert movements that do not.

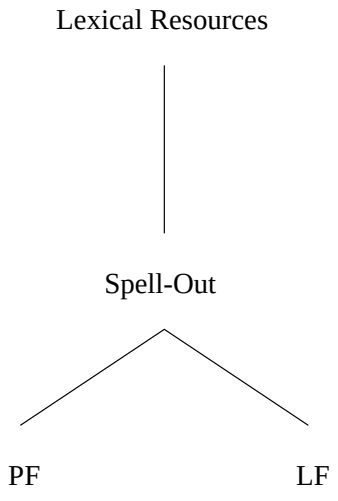


Figure 1.1: Model of the grammar

PF is a level that interfaces with the perceptual-articulatory system, and LF is a level that interfaces with the conceptual-intentional system. All syntactic well-formedness conditions are stated over the output representation of the LF component, which maps onto interpretation. It is the LF component of the grammar that is most relevant for the discussions in this dissertation. In particular, the conclusions we reach with respect to the interpretation of imperatives in Chapter 5 and a related issue of the interpretation of rhetorical questions in Chapter 6 have implications for the nature of the LF interface and for how the representation is derived to which various well-formedness conditions apply.

1.3 Outline of the Dissertation

In Chapter 2, we provide an analysis of cross-linguistic variation in the compatibility between negation and imperatives. One peculiar property of imperatives is that many languages do not allow negative imperatives, expressing prohibition instead by using negative subjunctives or negative infinitivals. However, in other languages, imperatives can be negated. In the literature, this phenomena has been considered to be purely syntactic (cf. Zanuttini 1991, Rivero 1994, Rivero and Terzi 1995, Zanuttini 1997). In contrast to these approaches, we provide an account that appeals to the interpretational aspect of imperatives, which overcomes certain problems in existing approaches while correctly predicting the facts in a larger set of languages. The approach we pursue relies on the proposal that imperatives include an imperative operator in the syntax that encodes directive force and the assumption that the directive force cannot be negated by a negative marker. The proposal is that negative imperatives are not available in some languages because the syntax of the language derives a structure in which the imperative operator encoding the directive force ends up in the scope of negation. We argue that such a structure is ruled out because it maps onto an uninterpretable semantic representation in which the directive force is negated. We also extend the proposed analysis to the domain of interrogatives and explain the availability of negative interrogatives across languages.

Chapter 3 is devoted to an analysis of the syntactic evolution of English imperatives from late Middle English to the Early Modern period, specifically of the increasing frequency of

do-support in negative imperatives. In present day English, *do*-support is required in negative declaratives (*John didn't finish*), questions (*Did John finish?*) and negative imperatives (*Don't talk!*). According to the quantitative data in Ellegård (1953), the rise in the relative frequency of auxiliary *do* in negative imperatives shows different patterns from negative declaratives and questions. In this study, we propose an analysis that accounts for these differences. We show that the rise of *do* in negative imperatives cannot be explained with a phrase structure that has only one INFL projection and one NegP projection, as assumed in Roberts (1985) and Kroch (1989b). We therefore adopt a more articulated phrase structure, along with the assumption that imperatives are not tensed, which is independently motivated by the syntax of Middle English infinitivals. The conclusions reached in this chapter provide evidence for the presence of the imperative operator in the syntax of imperatives and the inventory of functional projections and their relative positioning in the phrase structure of English. We also show that the apparent syntactic peculiarities of English imperatives fall out from the syntactic regularities of the language as a whole, provided we adopt the articulated phrase structure proposed here.

In Chapter 4, we explore the feature content of the imperative operator and how it relates to the operators in subjunctives and infinitivals. We propose that the imperative operator includes [directive] and [irrealis] features, whereas the operators in infinitivals and subjunctives only include an [irrealis] feature. The feature [directive] encodes directive illocutionary force, and is responsible for driving verb movement to C^0. The feature [irrealis] contributes the modality of unrealized interpretation, and selects/requires either subjunctive or infinitive INFL. This proposal accounts for why languages select subjunctives or infinitivals in linguistic contexts where the imperative form is not available. We argue that when the imperative operator which includes [directive] and [irrealis] features is ruled out for some reason, the language selects an operator characterized by a subset of the features defining the imperative operator. This turns out to be either the subjunctive or the infinitive operator (depending on the language), both of which contain the feature [irrealis]. We also show that the syntactic behavior of imperative subjects depends on the type of INFL selected by the imperative operator's [irrealis] feature. If the subjunctive INFL is selected, the subject in imperatives behaves just like the subjects in subjunctives in the language. If the infinitive INFL is selected, it behaves just like subjects in infinitivals in the language.

In Chapter 5, we present a proposal for the interpretation of imperatives. Based on the conclusions we have reached for the syntax of imperatives and the assumption that the meaning of a sentence is a function of the meaning of its parts, we propose that the logical form of imperatives includes two components: one that encodes directive illocutionary force and another that encodes the modality of unrealized interpretation. We define the component that encodes directive force as a function that takes a proposition denoting a set of hypothetical possible worlds and turns it into a directive action. We define a directive action in turn as an instruction to the hearer to change/update a particular module in his/her conceptual space: i.e., to update his/her plan set with a proposition. We also examine the interpretational behavior of imperatives in *imp*(p) *and will*(q) sequences (e.g., *Move and I'll shoot*) and *imp*(p) *or will*(q) sequences (e.g., *Don't move or I'll shoot*) in English and other languages. In particular, we explore how the modality contributed by imperatives allows the modal subordination of subsequent modal sentences. According to our analysis, the directive force of imperatives is not the result of some pragmatic Gricean inference, but is directly encoded in their logical forms.

In Chapter 6, we conclude this dissertation with a case study on how the pragmatics and the output of syntax interact to generate a non-canonical illocutionary force in the domain of RHETORICAL QUESTIONS. While an ordinary question seeks information or an answer from the hearer, a rhetorical question does not expect to elicit an answer. In general, a rhetorical question has the illocutionary force of an assertion of the opposite polarity from what is apparently asked. Under the rhetorical question reading, the *yes-no* questions *Did I tell you that writing a dissertation was easy?* and *Didn't I tell you that writing a dissertation was easy?* respectively assert *I didn't tell you that writing a dissertation was easy* and *I told you that writing a dissertation was easy.* We show that rhetorical questions and ordinary questions do not pattern alike with respect to various well-formedness conditions. We propose a way of deriving the interpretation of rhetorical questions and address why rhetorical questions have the interpretation of an assertion of the opposite polarity. We also argue that the representation over which various well-formedness conditions are stated is the output of a post-LF derivation which is determined via interaction with the interpretational component. We show that a compositional semantics for rhetorical questions is possible by directly mapping this post-LF representation onto the semantic interpretation.

Chapter 2

Cross-linguistic Variation in the Compatibility between Imperatives and Negation

2.1 Introduction

Much work on the syntax of imperatives in Romance and Slavic languages notes that while some languages have negative imperatives, others do not, instead expressing prohibition through the use of suppletive subjunctives or infinitives (Joseph and Philippaki-Warburton (1987), Zanuttini (1991), Zanuttini (1994), Rivero (1994a), Rivero (1994c), Rivero and Terzi (1995), Zanuttini (1997)). The purpose of this chapter is to provide a novel account for the cross-linguistic variation in the compatibility of imperatives and negation. We argue that some languages rule out negative imperatives because the syntax derives a structure which maps onto an incoherent interpretation. This chapter mainly considers data from Italian, Spanish, French, Modern Greek, Bulgarian, Serbo-Croatian, German and English.

In §2.2, we discuss the data and the issues they raise. In §2.3, we discuss previous studies that provide syntactic accounts of the relation between negation and imperatives. In §2.4, we present a puzzle concerning the non-availability of negative imperatives, which previous studies have failed to take into account. In §2.5, we establish that C^0 is the locus

of an imperative operator which attracts the imperative verb. In §2.6, we propose that negative imperatives are ruled out because they have a syntactic configuration which maps onto an uninterpretable representation. Under the proposed analysis, negative imperatives are ruled out not for syntactic reasons but for interpretational reasons. In §2.7, we discuss and account for a potential counterexample to the proposed analysis posed by the existence of negative imperatives in Bulgarian and Serbo-Croatian. In §2.8, we address the issue of why languages that do not allow negative imperatives choose suppletive infinitives or subjunctives to express prohibition. In §2.9, we extend the proposed analysis to negative interrogatives.

2.2 Data and Issues

In Modern Greek and Spanish, imperatives are not compatible with negation. Prohibition must instead be expressed by subjunctives in Modern Greek and subjunctives or infinitives in Spanish.[1]

- Modern Greek

(4) a. *Mi grapse to!
Neg write-2sg.Imp it
'Don't write it!'

b. (Na) mi to grapsis!
NA Neg it write-2sg.Subj
'Don't write it!'

(5) a. *Mi grapsete to!
Neg write-2pl.Imp it
'Don't write it!'

b. (Na) mi to grapsete!
NA Neg it write-2pl.Subj
'Don't write it!'

[1] In Modern Greek, many imperative verbs in the 2nd person plural have the same forms as corresponding subjunctive verbs. One way to distinguish the two forms is through the use of pronominal clitics. In imperatives, clitics encliticize onto the verb, whereas in subjunctives, they procliticize.

- Spanish

(6) a. * ¡No lee lo!
Neg read-2sg.Imp it
'Don't read it!'

b. ¡No lo leas!
Neg it read-2sg.Subj
'Don't read it!'

c. ¡No leer lo!
Neg read-Inf it
'Don't read it!'

(7) a. * ¡No hablad le!
Neg talk-2pl.Imp her
'Don't talk to her!

b. ¡No le habléis!
Neg her talk-2pl.Subj
'Don't talk to her!

c. ¡No hablar le!
Neg talk-Inf her
'Don't talk to her!'

In Italian, imperatives in the 2nd person singular cannot be negated, though imperatives in the 2nd person plural can be. The prohibition in the 2nd person singular is expressed through the use of suppletive infinitives.

- Italian

(8) a. * Non telefona le!
Neg call-2sg.Imp her
'Don't call her!'

b. Non telefonare le!
Neg call-Inf
'Don't call her!'

(9) Non telefonate le!
Neg call-2pl.Imp her
'Don't call her!'

Imperatives in the 2nd person singular have verbal forms unique to the imperative paradigm, whereas imperatives in the 2nd person plural have verbal forms morphologically identical to the corresponding indicative form. For this reason, Zanuttini (1991) refers to 2nd person singular imperatives as TRUE IMPERATIVES and 2nd person plural imperatives as SUPPLETIVE IMPERATIVES.[2]

In French, German, Bulgarian, Serbo-Croatian and English, imperatives are compatible with negation.

- French

(11) a. Ne chante pas!
NE sing-2sg.Imp Neg
'Don't sing!'

b. Ne chantez pas!
NE sing-2pl.Imp Neg
'Don't sing!'

- German

(12) a. Schreib nicht!
write-2sg.Imp Neg
'Don't write!'

b. Schreibt nicht!
write-2pl.Imp Neg
'Don't write!'

[2]In Italian, although imperatives in the 2nd person plural have verbal forms morphologically identical to the corresponding indicative form, they do not have the syntax of indicatives. For instance, pronominal clitics procliticize onto verbs in indicative sentences, but they encliticize in both affirmative and negative imperative sentences. French is like Italian in that many verbs in the 2nd person plural imperative have verbal forms morphologically identical to the 2nd person plural indicative and in that clitics procliticize in indicative sentences, but encliticize in affirmative imperatives. However, French differs from Italian in that clitics procliticize in negative imperatives. Clitic placement is discussed further in §2.5.2.

(10) French

a. Finissez-le!
finish-2pl.Imp-it
'Finish it!

b. Ne le finissez pas!
NE it finish-2pl.Imp Neg
'Don't finish it!'

- Bulgarian

(13) a. Ne četi!
Neg read-2sg.Imp
'Don't read!'

b. Ne četete!
Neg read-2pl.Imp
'Don't read!'

- Serbo-Croatian

(14) a. Ne čitaj!
Neg read-2sg.Imp
'Don't read!'

b. Ne čitajte!
Neg read-2pl.Imp
'Don't read!'

The data considered here raise the following issues.

- Why are imperatives compatible with negation in some languages but not in others?
- In languages like Italian, in which the imperative verbal paradigm has both true and suppletive imperative verbal forms, why are suppletive imperatives compatible with negation, whereas true imperatives are not?
- Why do languages that do not allow negative imperatives choose infinitives or subjunctives as suppletive forms?

2.3 Previous Studies

2.3.1 Zanuttini 1991, 1994, 1997

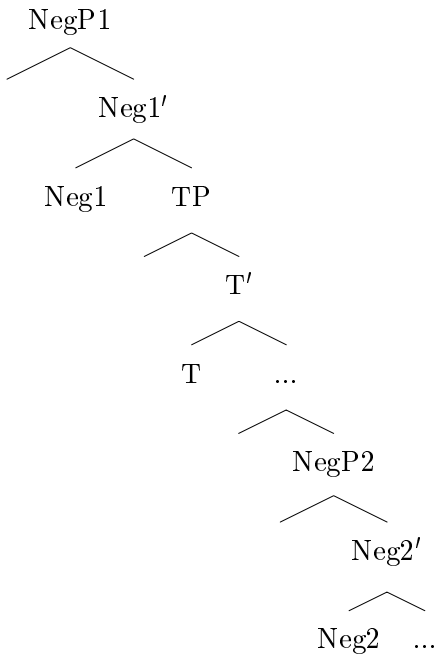
Zanuttini (1991, 1994, 1997) provides an account for Romance of the incompatibility of negation and true imperatives. Her basic claim is that imperatives are defective in that they lack a certain functional category required by a certain type of negation. Hence, languages with this type of negation do not have negative imperatives.

2.3.1.1 Zanuttini 1991

Zanuttini (1991) distinguishes between preverbal negation and postverbal negation in Romance, which differ in their structural position and in their selectional properties. Based on this distinction, she provides an account for (a) why true imperatives are incompatible with preverbal negation in Italian, Spanish and Catalan (among others), (b) why true imperatives are compatible with postverbal negation in Piedmontese, Valdotain and Standard French (among others), and (c) why suppletive imperatives are compatible with preverbal negation in Italian and Catalan.

Zanuttini (1991) proposes that there are two NegP projections in Romance: NegP1 and NegP2. The head of NegP1 hosts the preverbal negation and the head of NegP2 hosts the postverbal negation. Clauses containing both of the NegP projections have the phrase structure in (15).

(15)



According to Zanuttini (1991), Neg1^0, which hosts preverbal negation, must take TP as its complement. That is, preverbal negation must co-occur with a tense projection. But Neg2^0, which hosts postverbal negation, is not parasitic on the presence of a tense projection. That is, its occurrence within a clause is insensitive to the presence of TP. Furthermore, TP is absent in the syntactic representation of true imperatives, whereas it is

present in the syntactic representation of suppletive imperatives.

Zanuttini (1991) argues that true imperatives are incompatible with preverbal negation in Italian and Catalan because preverbal negation requires TP but true imperatives lack TP. In contrast, true imperatives are compatible with postverbal negation in Piedmontese, Valdotain and Standard French (as in (16)) because postverbal negation can occur without tense.

(16) Piedmontese

Parla nen!
talk-2sg.Imp Neg

'Don't talk!' (Zanuttini 1991, 98)

Zanuttini further argues that suppletive imperatives are compatible with preverbal negation in Italian, Spanish and Catalan because TP is present in the syntactic representation of suppletive imperatives, thus meeting the requirement of preverbal negation.

As pointed out by Rivero (1994c), the analysis given in Zanuttini (1991) does not easily extend to Balkan languages such as Modern Greek, Bulgarian, and Serbo-Croatian. These languages all have preverbal negation but they differ in that Modern Greek does not allow negative true imperatives, whereas Bulgarian and Serbo-Croatian do. One would have to claim that TP is absent in the syntactic representation of true imperatives in Modern Greek but present in the syntactic representation of true imperatives in Bulgarian and Serbo-Croatian. Another way out is to claim that the selectional property of Modern Greek preverbal negation on the one hand and Bulgarian and Serbo-Croatian preverbal negation on the other are different, although they have similar morphosyntactic properties. Thus, the preverbal negation of Modern Greek requires TP, while that of Bulgarian and Serbo-Croatian does not. However, this claim cannot be correct. Jespersen (1917) first observed the generalization that if a language expresses sentential negation by means of a preverbal negative marker, it has negative concord: i.e., it allows the co-occurrence of the negative marker with a negative quantifier within VP with the semantic result of one instance of negation. On the other hand, if a language employs a postverbal negative marker, it does not have negative concord.[3] Zanuttini (1991) has shown that this generalization is valid for

[3]There are a few exceptions to Jespersen's generalizations such as Yiddish and Bavarian, whose proper analysis is still uncertain.

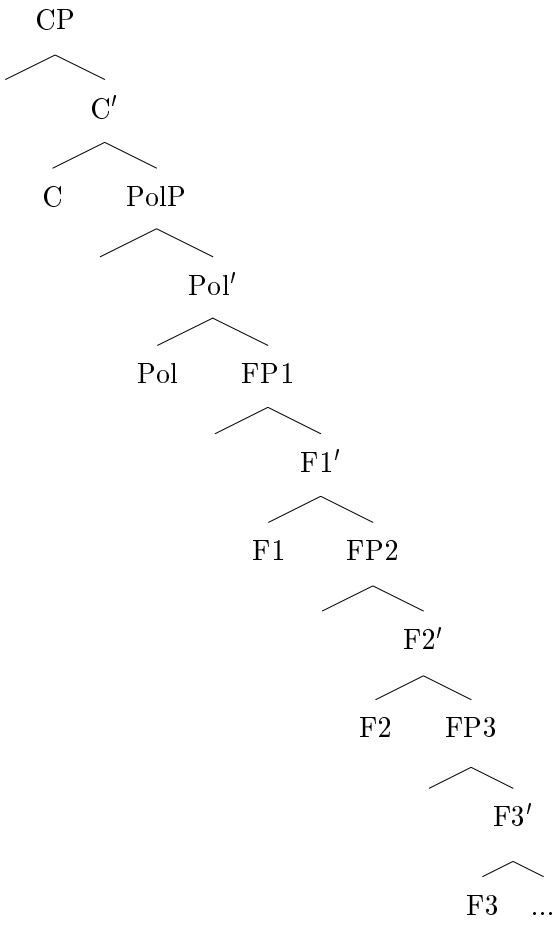
Romance languages. It turns out that this generalization is also valid for Modern Greek, Bulgarian and Serbo-Croatian: negative concord is attested in these languages as well. This suggests not only that the properties of preverbal negation in the three languages are alike, but also that they are identical to those of Romance.

2.3.1.2 Zanuttini 1994

Zanuttini (1994) points out that while suppletive imperatives in most languages show clitic-verb order, those in Italian show the verb-clitic order characteristic of non-finite clauses and true imperatives. She takes the verb-clitic order in the three clause types to suggest that the verb has moved to a functional head higher than the one onto which the clitics have adjoined (in the spirit of Kayne (1991, 1994)). Since Italian shows the same verb-clitic order in suppletive and true imperatives, the verb has moved to a position higher than the clitics in both types of imperatives. However, suppletive imperatives are compatible with preverbal negative marker, whereas true imperatives are not.

Zanuttini (1994) proposes that while the clausal structure containing infinitive, gerundive and suppletive imperative verbs has a full range of functional projections, the clausal structure containing true imperative verbs lacks some of the functional heads because true imperative verbs are morphologically deficient. Specifically, she proposes that clauses with the full range of functional projections have the phrase structure in (17).

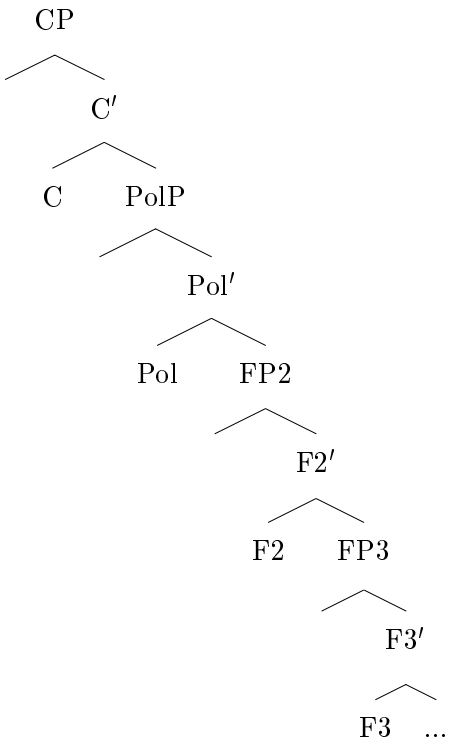
(17)



PolP (Polarity Phrase) is a functional projection whose head contains features that can be positive or negative . If it contains a negative feature, the preverbal negative marker moves to it. If it contains a positive feature, the verb moves to it (at LF). The pronominal clitic left-adjoins to the head of FP2. Italian suppletive imperatives exhibit verb-clitic order because the verb left-adjoins to the head of FP1 and the clitic to the head of FP2.

As for the true imperatives, Zanuttini (1994) proposes that they lack the functional projection FP1, as in (18).

(18)



As in suppletive imperatives, the clitic left-adjoins to $F2^0$. But since true imperatives lack FP1, the option for the verb to left-adjoin to $F1^0$ is not available. According to Zanuttini, the verb-clitic word order comes about in this case because the verb has left-adjoined to Pol^0.

Zanuttini (1994) argues that negative suppletive imperatives are available because the preverbal negative marker adjoins to Pol^0 and the verb adjoins to $F1^0$. But negative true imperatives are not available because the preverbal negative marker adjoins to Pol^0, leaving no place for the verb to adjoin to.

Again, the system proposed by Zanuttini (1994) does not easily extend to Balkan languages. It does not explain why Modern Greek true imperatives are not compatible with negation, whereas Bulgarian and Serbo-Croatian true imperatives are. One would have to say that Bulgarian and Serbo-Croatian true imperatives (unlike Modern Greek true imperatives) have an extra functional projection below PolP whose head can host the verb.

2.3.1.3 Zanuttini 1997

Zanuttini (1997) adopts Cinque's (1998) view that different classes of adverbs occur in a fixed position in the specifier of a different functional head. These functional heads are hierarchically structured. This means that a class of adverbs occurs in a fixed position in a phrase structure of the language, and that the placement of the verb with respect to an adverb is an indication of which functional head the verb occupies.

Following Cinque (1998), Zanuttini (1997) assumes the presence of MoodP as well as TP in the phrase structure of a sentence in Italian, with TP higher than MoodP. Temporal adverbs occupy the specifier of TP, and adverbs such as *forse* ('perhaps') occupy the specifier of MoodP. Moreover, based on the position of the negative marker with respect to temporal adverbs (as in (19a)) and ones assumed to be in the specifier of MoodP (as in (19b)), Zanuttini (1997) assumes that preverbal negation is lower than TP, but higher than MoodP.

(19) Italian

a. Gianni oggi non si sente bene.
Gianni today Neg self feels well

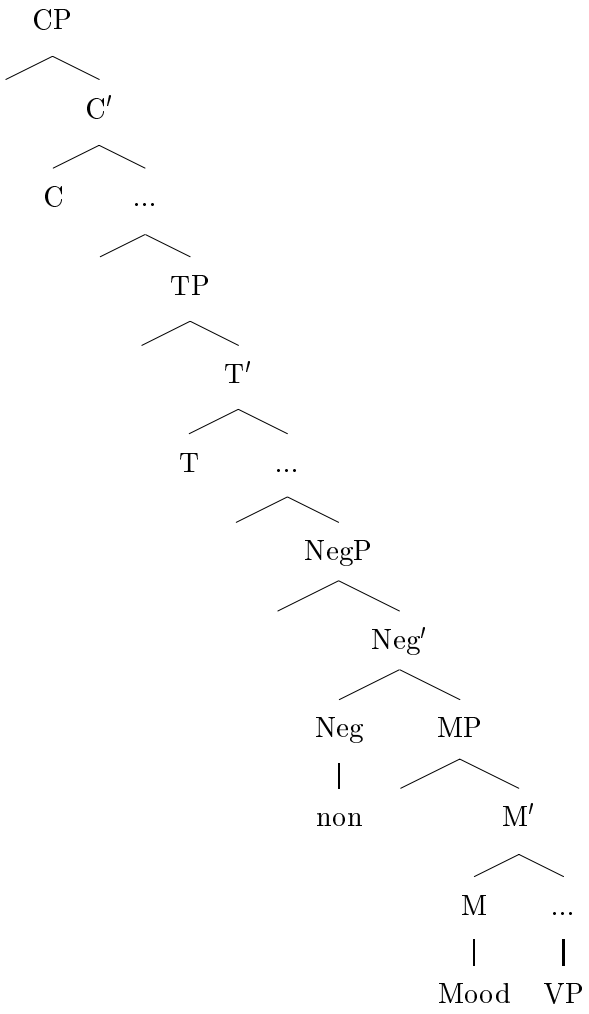
'Gianni isn't feeling well today.'

b. Gianni non ha forse voluto restare.
Gianni Neg has perhaps wanted to-stay

'Gianni didn't perhaps want to stay.'

Further, Zanuttini (1997) revises the analysis of preverbal negation in Zanuttini (1991) and proposes that the preverbal negation *non* subcategorizes for a Mood Phrase, rather than for a Tense Phrase. This yields the following structure for negative sentences in Italian:

(20)



Zanuttini (1997) argues that the verbs in both true and suppletive imperatives in Italian move higher than Mood^0, presumably up to C^0. As supporting evidence, she shows that in both types of imperative, the verb precedes the adverbial *di sicuro* ('definitely'), which is assumed to occupy the specifier of MoodP.

(21) Italian

a. Fallo di sicuro!
do-2sg.Imp-it of sure
'Definitely do it!'

b. * Di sicuro fallo!
of sure do-it
'Definitely do it!'

c. Fatelo di sicuro!
do-2pl.Imp-it of sure
'Definitely do it!'

d. ?* Di sicuro fatelo!
of sure do-2pl.Imp-it
'Definitely do it!'

Furthermore, following Kayne (1992), Zanuttini (1997) observes that when Italian expresses prohibition with the preverbal negative marker followed by an infinitive verb, the verb can either precede or follow the clitic. This variability in the word order is surprising because only verb-clitic order is possible in infinitive clauses in other linguistic contexts. According to Kayne (1992), some northern Italian dialects have an overtly realized verbal form specific to the negative infinitives that express prohibition. In Paduan, for example, prohibition is expressed with the auxiliary verb *stá* followed by the infinitive. In the non-negative form, the presence of this verb is impossible.

(22) Paduan

a. No stá parlare!
Neg aux to-talk
'Don't talk!' (Kayne 1992, 17)

b. * Stá parlare!
aux to-talk
'Talk!' (Kayne 1992, 18)

Based on such data, Kayne (1992) concludes that the negative marker licenses an overt or a covert modal which in turn licenses the infinitive. That is, in standard Italian, the negative marker licenses an empty modal, which in turn licenses the infinitive. In Paduan, the negative marker licenses the auxiliary verb *stá*, which in turn licenses the infinitive. The clitic-verb order in Italian infinitives that express the prohibition can then be seen as an instance of clitic climbing, where the clitic is adjoined to the phonetically unrealized modal.

Zanuttini (1997) proposes that both true imperatives and suppletive imperatives in C^0 hosts an imperative feature which has to be checked: it is checked by the verb in positive imperatives and by *non* in negative imperatives. Zanuttini (1997) also argues that the morphological make-up of verbs in true imperatives is defective: true imperative verbs lack

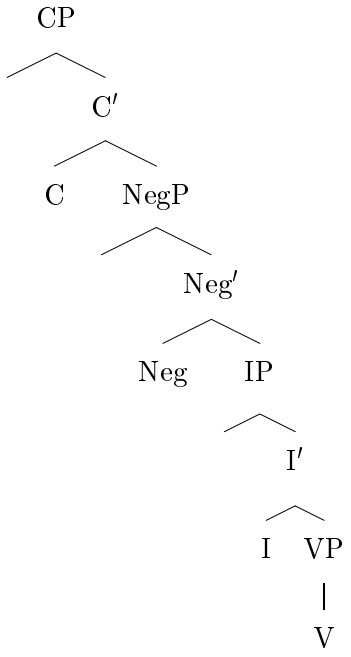
a mood feature, whereas suppletive imperative verbs have such a feature. The requirement that the preverbal negation subcategorizes for MoodP is implemented by either checking the [Mood] feature in $Mood^0$ with a verb that has a mood feature in its morphological make-up or by lexically realizing the [Mood] feature with an (empty or overt) auxiliary verb. In suppletive imperatives with negation, and the verb in the indicative form, [Imp], which is in C^0, is checked by negation, and [Mood] is checked by the verb. In suppletive imperatives with negation and an infinitive verb, [Imp] is checked by negation and [Mood] is checked by an empty modal or an overt modal. Negative true imperatives are ruled out because [Mood] cannot be checked due to the morphologically defective nature of true imperative verbs. In affirmative true imperatives, MoodP is not subcategorized because Neg^0 is absent. This means that MoodP can be absent (as before, the imperative verb can move up to C^0 and check the [Imp] feature).

The analysis in Zanuttini (1997) depends on many stipulations. Given the proposal that Neg^0 subcategorizes for a Mood Phrase, a stipulation is required that all infinitive verbs have a mood feature in their morphological make-up that can check [Mood] and thereby allow embedded negative infinitives. But if infinitive verbs can have a mood feature in their morphological make-up, it is unclear what prevents imperative verbs from having a mood feature as well. In fact, many languages require distinct morphology for imperative verbs, suggesting that this is the lexical manifestation of some sort of mood feature associated with imperative verbs. Moreover, it is not clear why Neg^0 should ever subcategorize for MoodP. Finally, Zanuttini's (1997) analysis does not easily extend to Balkan languages. One would have to argue that while Bulgarian and Serbo-Croatian imperative verbs can check [Mood], Modern Greek imperative verbs cannot.

2.3.2 Rivero 1994c, Rivero and Terzi 1995

The accounts given in Rivero (1994c) and Rivero and Terzi (1995) start from the assumption that Neg^0 projects to NegP in Modern Greek, Spanish, Bulgarian and Serbo-Croatian and that these languages share a phrase structure in which CP dominates NegP, which in turn dominates IP.

(23)



According to Rivero (1994c) and Rivero and Terzi (1995), the cross-linguistic variation in the availability of negative imperatives is due to the properties of the root C^0. In imperative constructions in Modern Greek and Spanish, the root C^0 hosts a strong imperative mood feature that must be checked by the verb before Spell-out. Hence, the imperative verb has to move up to C^0 in overt syntax.

Rivero (1994c) and Rivero and Terzi (1995) take the fact that the object clitic must follow the verb in imperatives to support the claim that imperative verbs move to C^0 in Modern Greek and Spanish. Assuming that clitics adjoin onto an empty functional head (in the spirit of Kayne (1991, 1994)), they argue that imperative verbs bypass this empty head when moving to C^0.

(24) Modern Greek

a. Diavase to!
read-2sg.Imp it
'Read it!' (Rivero and Terzi 1995, 4a)

b. * To diavase!
it read-2sg.Imp
'Read it!'

(25) Spanish

a. ¡Lée lo!
read-2sg.Imp it
'Read it!' (Rivero and Terzi 1995, 4b)

b. * ¡Lo lée!
it read-2sg.Imp
'Read it!'

Rivero (1994c) and Rivero and Terzi (1995) propose that negative imperatives are unavailable in Modern Greek and Spanish because Neg^0 blocks imperative verb movement to C^0. This is because (a) if the verb skipped the intervening head Neg^0, the negative marker in Neg^0 would count as the closest governor for the trace left by the verb, leading to a minimality violation of the ECP, and (b) by assumption, the verb cannot incorporate into Neg^0.

This analysis can be easily extended to explain why negation is incompatible with 2nd person singular imperatives in Italian. As argued by Zanuttini (1991), negative sentences in Italian have a phrase structure in which CP dominates NegP and NegP dominates IP. Moreover, Italian also shows verb-clitic order in imperatives, suggesting that imperative verbs move to C^0.

(26) Italian

a. Telefona le!
call her
'Call her!'

b. * Le telefona!
her call
'Call her!'

Under the analysis proposed by Rivero (1994c) and Rivero and Terzi (1995), negative imperatives (in the 2nd person singular) are not available in Italian because the imperative verb cannot move across Neg^0.

As for the imperative constructions in Bulgarian and Serbo-Croatian, Rivero and Terzi propose that the strong imperative mood feature is located in I^0, rather than in C^0. This means that the imperative verb moves only up to I^0. As supporting evidence, they appeal to the fact that clitics can appear preverbally in imperatives.

(27) a. Serbo-Croatian

Knjige im čitajte!
books to-them read-2pl.Imp

'Read books to them!' (Rivero and Terzi 1995, 17a)

b. Bulgarian

Ela i mi kaži!
come-2sg.Imp and me tell-2sg.Imp

'Come and tell me!' (Hauge 1976, 5 cf. Rivero 1994c, 35)

Rivero and Terzi argue that negative imperatives are available in these languages because imperative verbs do not cross Neg^0, only moving up to I^0.

According to Rivero and Terzi, C^0 cannot be the position associated with directive force of imperatives in Bulgarian and Serbo-Croatian (or any other illocutionary force for that matter) because C^0 serves as the last-resort position to rescue clause-initial clitics. These languages have a phonological constraint against clause-initial clitics. And so, although clitics usually precede the verb, they must occur postverbally when they would otherwise be in a clause-initial position. Thus, clause-initial imperatives show verb-clitic word order.

(28) a. Bulgarian

Četi ja!
read-2sg.Imp it

'Read it!'

b. Serbo-Croatian

Čitaj je!
read-2sg.Imp it

'Read it!'

Rivero and Terzi claim that when there are no other constituents preceding clitics, the verb moves to C^0 as a last-resort device to prevent the clitics from appearing in a sentence-initial position.

Bulgarian and Serbo-Croatian do not behave in the exact same way in avoiding clause-initial clitic pronouns. In Bulgarian, clitic pronouns can occur between Neg^0 and the verb, and are not restricted to second position. On the other hand, in Serbo-Croatian, clitic

pronouns cannot occur between Neg^0 and the verb, and must occupy second position. Thus, Rivero (1994c) classifies Bulgarian as a Tobler-Mussafia language and Serbo-Croatian as a Wackernagel language. No matter what the differences may be, what is important here is that the two languages both have a phonological constraint that rules out clitic pronouns from occurring in a clause-initial position.

The question arises at this point as to whether we can think of verb-clitic order in Romance imperatives as a reflex of the constraint against clause-initial clitics. This question arises because Old Romance had the Tobler-Mussafia law, which rules out sentences with clause-initial clitics. Thus, couldn't we just say that the imperative verb in Romance also move up to I^0, and verb-clitic order in imperatives is a reflex of the Tobler-Mussafia law? We cannot offer such an explanation because Romance languages lost the constraint against clause-initial clitics sometime after the 17th century (see Fontana (1993), Rivero (1997), and references therein). For instance, in present-day Italian and Spanish, declarative sentences with a *pro* subject and a pronominal object clitic show clitic-verb order and not verb-clitic order. Moreover, sentences with a postverbal subject and a pronominal object clitic also show clitic-verb order.

(29) Italian

a. Ti vedo.
you see-1sg.Pres
'I see you.'

b. Lo vede Gianni.
him see-3sg.Pres Gianni
'Gianni sees him.'

(30) Spanish

a. Lo leíste.
it read-2sg
'You are reading it.'

b. Lo vió Juan.
him see-3sg.Past Juan
'Juan saw him.'

The clitic-verb order in (29) and (30) would be impossible if the Tobler-Mussafia law were still in effect.

Returning to the discussion of Rivero and Terzi, their analysis is problematic in that it does not take into account the fact that in both Spanish and Modern Greek, negation has the morphosyntactic properties of clitics, which we discuss in more detail in §2.4. Although negation in Bulgarian and Serbo-Croatian also exhibit clitic properties, the issue does not arise in these languages, for reasons which will become clear in §2.7.

2.4 A Puzzle Posed by the Clitic-like Nature of Negation

In negative sentences in Modern Greek, Spanish and Italian, negation always precedes the verb, and nothing (except for clitics) can intervene between them. That is, negation has the morphosyntactic properties of clitics and is treated as a unit with the verb in overt syntax. Hence, it is not surprising that the verb cannot move across Neg^0 in negative imperatives, under a system that assumes imperative verb movement to C^0 as in Rivero and Terzi's analysis.[4]

But it is puzzling that negative imperatives are not available in Modern Greek, Spanish and Italian, since the verb and negation move as a unit to C^0 in other types of sentences. For instance, in Italian Aux-to-Comp constructions, a participial or infinitival auxiliary (or, more marginally, a subjunctive form) inverts around a subject, as in (31a) (Rizzi (1982)). In a negative Aux-to-Comp construction, the negation and the verb move to C^0 as a unit, as in (31b).

(31) Italian

a. Avendo Gianni fatto questo, ...
having Gianni done this, ...

b. Non avendo Gianni fatto questo, ...
Neg having Gianni done this, ...

In Spanish and Modern Greek, questions can be formed by moving the verb to C^0, resulting in subject-verb inversion. In negative questions, negation and the verb move to C^0 as a unit as well, as in (32).[5]

[4]We assume that clitic negation attaches to the verb in the overt syntax. That is, we are not assuming that cliticization of negation is a pure PF phenomenon.

[5]We assume that Spanish allows verb movement to C^0 in some *wh*-questions (see Torrego (1984)). For

(32) a. Modern Greek

Ti den edose o Yannis stin Meri?
what Neg gave the Yannis to-the Meri
'What didn't Yannis give to Meri?'

b. Spanish

¿Qué no le dió Juan a María?
What Neg to-her gave Juan to Maria
'What didn't Juan give to Maria?'

Given Rivero and Terzi's analysis, the examples in (31b) and (32) are incorrectly expected to be ungrammatical. Moreover, given the behavior of negation and the verb in Aux-to-Comp constructions in Italian and in questions in Spanish and Modern Greek, we expect Neg^0 and the verb to move to C^0 as a unit in negative imperatives as well. But this expectation is not borne out. The puzzle then (under the assumption that imperative verb moves to C^0) is that negative imperatives are ruled out in languages that allow verb movement to C^0 along with negation in other constructions.

2.5 The Locus of Imperative Operator: C^0

In this section, we establish that imperatives have CP structures and that C^0 is the locus of the imperative operator. We establish this indirectly by presenting various arguments from the literature that imperative verbs move to C^0 because C^0 hosts an imperative operator. The analysis that we will propose in §2.6 concerning the (non)-availability of negative imperatives relies on the result established here, which is based mainly on data from English, German, French, Spanish, Italian and Modern Greek.

2.5.1 Subject Position

In German, when an imperative has an overt subject, the verb precedes the subject.

Modern Greek, there is some controversy as to whether verb-movement to C^0 in questions exists at all (see Anagnostopoulou (1994)).

(33) German

a. Schreib du den Aufsatz!
write2sg.Imp you the paper
'You write the paper!'

b. * Du schreib den Aufsatz!
you write-2sg.Imp the paper
'You write the paper!'

In *yes-no* questions, the verb also precedes the subject.

(34) German

a. Schreibst du den Aufsatz?
write you the paper
'Are you writing the paper?'

b. * Du schreibst den Aufsatz?
you write the paper
'Are you writing the paper?'

The fact that the verb must precede the subject in both imperatives and *yes-no* questions suggests that the verb in imperatives is located wherever the verb in *yes-no* questions is.[6]

The question then arises about the location of the verb in *yes-no* questions in German. Den Besten (1989) observes that in German, weak object pronouns preferably occur immediately to the right of the complementizer, but that they can also occur immediately after the subject.

(35) German

a. ..., daß ihm Karl ein Buch geschenkt hat.
..., that to-him Karl a book given has
'... that Karl has given a book to him.' (den Besten 1989, Ch.1, 71a)

b. ..., daß Karl ihm ein Buch geschenkt hat.
..., that Karl to-him a book given has
'..., that Karl has given a book to him.' (den Besten 1989, Ch.1, 71b)

Den Besten (1989) goes on to show that in *yes-no* questions, weak object pronouns occur either immediately after the verb or immediately after the subject.

[6](33b) is acceptable if *du* ('you') is considered to be a vocative pronoun. In this case, the sentence is pronounced with a pause after *du*. (34b) is acceptable as an echo question.

(36) German

a. Werden sich diese Leute verteidigen?
will themselves these people defend
'Will these people defend themselves?'

b. Werden diese Leute sich verteidigen?
will these people themselves defend
'Will these people defend themselves?'

Assuming that the complementizer *daß* is in C^0, and that the possible positions for weak object pronouns are constant across all clause types, den Besten concludes that the preposed verb in *yes-no* questions is in C^0.

It turns out that weak object pronouns in imperatives pattern just like those in *yes-no* questions: i.e., they can occur either immediately after the verb or immediately after the subject.

(37) German

a. Schreib es du!
write-2sg.Imp it you
'You write it!'

b. Schreib du es!
write-2sg.Imp you it
'You write it!'

Thus, we can conclude that the verb in imperatives is located wherever the verb in *yes-no* questions is located, namely C^0.

In English, imperative verbs follow the subject in positive imperatives. But in imperatives with *do*-support, namely, negative imperatives and emphatic imperatives, *do* precedes the subject.[7]

[7] According to Henry (1995), imperatives with an overt subject in Belfast English can have verb-subject order.

(38) a. Go you away. (Henry 1995, Ch.3, 47a)
b. Run somebody to the telephone. (Henry 1995, Ch.3, 48b)

Henry takes such sentences as instances of generalized imperative verb movement to C^0. As we will see in Chapter 3, imperatives in the history of English also show verb-subject order until Early Modern English.

(39) a. You open the door!

b. Don't you talk back to me!

c. Do at least some of you have a try! (Davies 1986, Ch.3, 88)

If the imperative subject occupies [Spec, IP] in the syntax, then the fact that *do* precedes the subject allows us to conclude that *do* is located in a functional head which projects higher than IP. However, if the subject is in [Spec, VP] in the surface syntax, then we cannot make such a conclusion. Potsdam (1997b) provides evidence that the subject in imperatives is indeed in [Spec, IP] and not in [Spec, VP]. We review his evidence, which is based on the behavior of subject-oriented floating quantifiers and on adverb placement in imperatives.

Potsdam (1997b) shows that subject-oriented floating quantifiers are allowed in imperatives.

(40) a. The twins both be here for the pictures! (Potsdam 1997b, Ch.5, 19a)

b. Rhett, Scarlet, and Lassie all get ready for their next scene! (Potsdam 1997b, Ch.5, 19b)

c. My children all come right here, I won't tolerate such misbehavior! (Potsdam 1997b, Ch.5, 19c)

d. You be both waiting for me promptly at 3! (Potsdam 1997b, Ch.5, 21b)

Sportiche (1988) uses subject-oriented floating quantifiers to argue that a sentential subject starts out lower in the clause before ending up in [Spec, IP]. For instance, in the sentences in (41), the subject *all the rebels* starts out together lower in the clause, presumably in [Spec, VP], and *the rebel* moves up to [Spec, IP], stranding *all*.

(41) a. The rebels might all have fled. (Potsdam 1997b, Ch.1, 144)

b. The rebels all fled. (Potsdam 1997b, Ch.1, 145)

The fact that floating quantifiers are allowed in imperatives suggests that subjects of imperatives undergo a similar derivation. They start out together with the quantifier lower in the clause, and then the quantifier is stranded as the subject moves up to [Spec, IP].

Following Jackendoff (1972), Potsdam (1997b) observes that adverbs such as *simply* and *just* occur between the subject and the main verb, and proposes that these adverbs left-adjoin to I′, or to VP or V′.

(42) a. He simply/just is incapable of it. (Potsdam 1997b, Ch.1, 49a)

b. He is simply/just incapable of it. (Potsdam 1997b, Ch.1, 50a)

c. * Simply/just he is incapable of it. (Potsdam 1997b, Ch.1, 51a)

In imperatives, these adverbs cannot occur before the subject either.

(43) There's plenty of room.

a. Everyone simply move to his right a little! (Potsdam 1997b, Ch.5, 32a)

b. * Simply everyone move to his right a little! (Potsdam 1997b, Ch.5, 32b)

(44) a. Don't you just stand there like a bump on a log! (Potsdam 1997b, Ch.5, 33a)

b. * Don't just you stand there like a bump on a log! (Potsdam 1997b, Ch.5, 33b)

If the subject in imperatives occupies [Spec, VP], then the examples in (43b) and (44b) should be grammatical, contrary to the fact. Potsdam (1997b) therefore concludes that imperative subjects occupy [Spec, IP], just like the subjects in other clause types.

Given that imperative subjects occupy [Spec, IP], we can conclude that at least *do* and *don't* in imperatives are in C^0, since they precede the subject, as shown in (39b) and (39c).[8] But lexical verbs are lower in the clause, indicated by the fact that they must follow the imperative subject, as in (39a). We assume that lexical verbs in imperatives move to C^0 at LF. Verb movement and *do*-support in English imperatives will be discussed in more detail in Chapter 3.

2.5.2 Clitic Placement

In French, Italian, Spanish and Modern Greek, a direct object clitic must follow the verb in imperatives, whereas it must precede the verb in other types of constructions, such as indicatives and subjunctives.

[8] See Potsdam (1997a, 1997b) for further evidence for the proposal that *do* and *don't* in imperatives are in C^0.

(45) French

a. Faites le!
do-2sg.Imp it
'Do it!'

b. * Le faites!
it do-2sg.Imp
'Do it!'

(46) Modern Greek

a. Diavase to!
read-2sg.Imp it
'Read it!' (Rivero and Terzi 1995, 4a)

b. * To diavase!
it read-2sg.Imp
'Read it!'

(47) Spanish

a. ¡Lée lo!
read-2sg.Imp it
'Read it!' (Rivero and Terzi 1995, 4b)

b. * ¡Lo lée!
it read-2sg.Imp
'Read it!'

(48) Italian

a. Telefona le!
call her
'Call her!'

b. * Le telefona!
her call
'Call her!'

According to Kayne (1991, 1994), a clitic adjoins to the empty head of a functional projection which projects above I^0. In subjunctives or indicatives, the verb moves to I^0, resulting in clitic-verb order. Adopting Kayne's analysis of the syntax of clitics, Rivero (1994c) and Rivero and Terzi (1995) take the verb-clitic order in imperatives to indicate that the imperative verb moves to C^0, bypassing the empty functional head to which the clitic is adjoined.

2.5.3 Adverbial Placement

Zanuttini (1997) shows that imperative verbs in Italian obligatorily precede the adverbs *pure* and *ben*, which are particles of emphatic affirmation.

(49) Italian

a. Dagli ben una risposta!
give-2sg.Imp-him indeed an answer
'Do give him an answer!' (Zanuttini 1997, Ch.4, 80a)

b. * Ben dagli una risposta! (Zanuttini 1997, Ch.4, 80b)

(50) Italian

a. Fallo pure!
do-2sg.Imp-it indeed
'Go ahead and do it!' (Zanuttini 1997, Ch.4, 81a)

b. * Pure fallo! (Zanuttini 1997, Ch.4, 81b)

In declaratives, main verbs also precede these adverbs. Thus, the fact that the imperative verb obligatorily precedes *ben* and *pure* shows that it moves at least as high as the verb in declaratives does.

(51) Italian

a. Gianni ha ben/pur risposto a Maria.
Gianni has indeed answered to Maria
'Gianni indeed answered Maria.'

b. Gianni lavora ben/pur tutto il giorno.
Gianni works indeed all the day
'Gianni does indeed work all day long.'

Further evidence concerning the position of the verb comes from the placement of *den* and *pure* in Aux-to-Comp constructions. The fact that the imperative verb must precede these adverbs is consistent with the assumption that it is located higher than the verb in declaratives. In Aux-to-Comp constructions, the adverbs under discussion can occur either between the subject and the participle (as in (52a)), or between the auxiliary and the subject (as in (52b)).

(52) Italian

a. ? Avesse Gianni pur/ben capito il problema, ...
had Gianni pur/ben understood the problem, ...
'Even if Gianni had understood the problem, ...'

b. Avesse pur/ben Gianni capito il problema, ...
had indeed Gianni understood the problem, ...
'Even if Gianni had understood the problem, ...'

Crucially, the adverbs can precede the subject, as in (52b). Given that in Aux-to-Comp constructions, the subject is in [Spec, IP] and the auxiliary is in C^0 (Rizzi (1982)), (52b) shows that the adverbs can occur at the left periphery of IP. Thus, the fact that the imperative verb obligatorily precedes these adverbs is consistent with the assumption that the imperative verb is located higher than I^0, where the verb in declaratives is located, and presumably ends up as high as the auxiliary in Aux-to-Comp constructions.

2.5.4 Emphatic Commands

If imperative verbs move to C^0, this movement should be blocked if C^0 is already occupied by some other lexical element. Rivero (1994c) discusses such constructions in Spanish. In Spanish, emphatic commands are expressed with *que* and the subjunctive. Tellingly, the imperative is ruled out in this construction.

(53) Spanish

a. ¡Que escribáis!
that write-2pl.Pres.Subj
'You just write!' (Rivero 1994c, 11a)

b. * ¡Que escribid!
that write-2pl.Imp
'You just write!' (Rivero 1994c, 11b)

The marker *que* is a complementizer in C^0, and it is being used with emphatic force. Since C^0 is already occupied by *que*, imperative verbs cannot be used in emphatic commands.

2.5.5 No Embedded Imperatives

As noted by Sadock and Zwicky (1985) and Palmer (1986), imperatives cannot occur in embedded clauses.

(54) Modern Greek

a. * O Yannis se dietakse grapse.
the Yannis you ordered-2sg write-2sg.Imp
'Yannis ordered you to write.'

b. O Yannis se dietakse na grapsis.
the Yannis you ordered-2nd.sg NA write-2sg.Subj
'Yannis ordered you to write.'

(55) Spanish

a. * Pido que dad-me el libro.
ask that give-2sg.Imp-me the book
'I ask that you give me the book.'

b. Pido que me deis el libro.
ask that me give-2sg.Subj the book
'I ask that you give me the book.'

(56) Italian

a. * Ti ordino che fallo subito.
you order that do-2sg.Imp-it immediately
'I order you to do it immediately.'

b. Ti ordino che lo faccia subito.
you order that it do-2sg.Subj immediately
'I order you to do it immediately.'

(57) French

a. * J'exige que tu finis.
I-require that you finish-2sg.Imp
'I require that you finish.'

b. J'exige que tu finisses.
I-require that you finish-2sg.Subj
'I require that you finish.'

(58) German

a. * Hans schlägt vor, daß du den Aufsatz schreib(e).
Hans suggests that you the paper write-2sg.Imp
'Hans suggests that you write the paper.'

b. Hans schlägt vor, daß du den Aufsatz schreibst.
Hans suggests that you the paper write-2sg.Pres.Ind
'Hans suggests that you write the paper.'

Embedded clauses cannot express illocutionary forces. If imperatives have an operator in C^0 that encodes directive force, it follows that imperatives cannot be embedded. This fact is not conclusive evidence that imperative verbs move to C^0, but it is consistent with the claim that the locus of imperative operator that encodes directive force is in C^0.

2.6 Proposal

Before we present our analysis of the cross-linguistic variation in the compatibility of negation and imperatives, we note that the directive force contributed by the imperative mood cannot be negated by a negative marker. That is, negative imperatives only have a reading in which the directive force has scope over negation, never one in which negation has scope over the directive force. This fact is not specific to imperatives, but holds of interrogatives and declaratives as well. Just as the directive force of an imperative cannot be negated, neither can the question force of an interrogative nor the assertive force of a declarative. That is, a negative interrogative cannot be a non-question, and a negative declarative cannot be a non-assertion.

Indeed, it is difficult to imagine what it would mean to negate directive force. In (59), we simplify the matters a bit and give the closest possible paraphrases we could think of for the reading in which negation takes scope over the directive force as well as for the reading in which the directive force takes scope over negation.

(59) a. Don't call!
$\approx$ It is required that you not call.
$\not\approx$ It is not required that you call.

b. Nobody leave!
$\approx$ It is required that not anybody leave.
$\not\approx$ It is not required that anybody leave.

We propose an account of the cross-linguistic variation in the availability of negative

imperatives based on the fact that the directive force cannot be negated and on the assumption that the imperative operator encoding the directive force is located in C^0. The proposal is that negative imperatives are unavailable in some languages because they derive a syntactic configuration in which negation would take scope over the imperative operator in C^0. These constructions are ruled out because they map onto an inappropriate representation in which the directive force is negated. Under the proposed analysis, negative imperatives are ruled out for interpretational rather than syntactic reasons. In §5.3.4, we provide an account of why the representation in which the directive force is negated by a negative marker maps onto an incoherent interpretation.

2.6.1 Languages without Negative Imperatives

Recall that negative imperatives are not available in Modern Greek, Spanish and Italian (in the 2nd person singular). As shown in §2.5, in all these languages, the imperative verb moves to C^0. We take this to mean that the imperative operator in C^0 attracts the imperative verb. We further assume that when the imperative verb adjoins to C^0, it inherits all the features of the imperative operator in C^0. In effect, the imperative verb assumes the role of the imperative operator as it adjoins onto C^0.

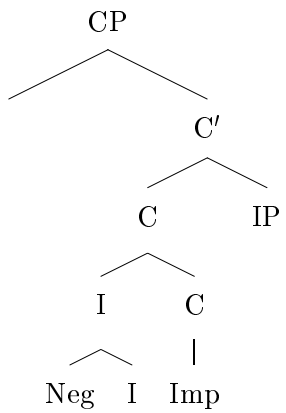
In all three languages, sentential negation is expressed by a preverbal element with the status of a clitic on the verb. This means that the negative marker is treated as a unit with the verb in the overt syntax. Thus, in negative imperatives, we expect the negative marker and the verb to move to C^0 as a unit. However, if it did, the imperative verb, which assumes the role of imperative operator when it adjoins to C^0, would end up within the scope of negation. We illustrate this point using the definition of c-command in Kayne (1994).

(60) Definition of c-command (Kayne 1994:16)
X c-commands Y iff X and Y are categories and X excludes Y (i.e., no segment of X dominates Y) and every category that dominates X dominates Y.

Under the definition of c-command in (60), when negation and the verb adjoin to C^0, negation c-commands the verb because every category that dominates Neg^0 dominates I^0 and no segment of Neg^0 dominates I^0, as shown in (61). The categories that dominate Neg^0 include C' and CP. These categories also dominate I^0. But C^0 and I^0 do not count

because only a segment of I^0 and C^0 dominate Neg^0. On the other hand, the verb does not c-command negation because I^0 does not exclude Neg^0: i.e., a segment of I^0 dominates Neg^0.

(61)



Thus, negation asymmetrically takes scope over the imperative verb, which assumes the function of imperative operator as it adjoins to C^0. The other scope possibility, where the imperative verb takes scope over negation, is ruled out by the syntax. Consequently, the directive force would end up being negated, resulting in an incoherent interpretation.

2.6.2 Languages with Negative Imperatives

Languages with negative imperatives include English, French and German. In German, the verb in imperatives adjoins to C^0, but since negation never forms a unit with the verb, it never ends up in C^0. Since Neg^0 stays low in the clause, it does not take scope over the imperative verb, which assumes the role of imperative operator as it is adjoined onto C^0.

In French, the imperative verb and the negative marker *ne* form a unit, and so when the imperative verb moves to C^0, *ne* ends up there as well. Thus, the proposed analysis seems to predict incorrectly that imperatives should not be compatible with negation in French. A closer look reveals why imperatives and negation are compatible in French after all. French forms sentential negation with *ne ... pas*, where *ne* is a proclitic on the verb. In informal registers, the negative clitic *ne* is not obligatory, indicating that *ne* is pleonastic and that sentential negation is expressed by *pas*. This, then, is why negative imperatives are available in French: the imperative verb moves to C^0 with the pleonastic *ne*, but the true negation *pas* stays low in the clause, as in German. Hence, negation does not take

scope over the imperative verb that assumes the role of the imperative operator as it is adjoined to C^0.

Further, our analysis predicts that *ne* can never be a true negation in imperatives. In French, some verbs can be negated without *pas* in declaratives: they include *oser* ('dare'), *savoir* ('know'), *pouvoir* ('be able to') and *cesser* ('stop'). A negative sentence with these verbs can be formed with *ne ... pas* or *ne* alone, as shown in (62).

(62) French

a. Il ne cesse de parler.
He NE stop to speak
'He does not stop speaking.'

b. Il ne cesse pas de parler.
He NE stop Neg to speak
'He does not stop speaking.'

This means that in negative sentences without *pas*, as in (62a), *ne* is forced to be the true negation. Our prediction is that negative imperatives with these verbs can only be formed with *ne ... pas*, and it is borne out by the facts, as in (63).

(63) French

a. *Ne cessez de parler.
NE stop-2pl.Imp to speak
'Don't stop speaking.'

b. Ne cessez pas de parler.
NE stop-2pl.Imp Neg to speak
'Don't stop speaking.'

One might want to argue that in French, the imperative verb does not move to C^0 in negative imperatives, given that direct object pronominal clitics procliticize in negative imperatives, as pointed out by Schmerling (1975).

(64) French

a. Ne le faites pas!
NE it do-2sg.Imp Neg
'Don't do it!'

b. * Ne faites le pas!
NE do-2sg.Imp it Neg
'Don't do it!'

However, the reason that clitics are proclitics rather than enclitics in negative imperatives may have to do with the clitic-like nature of *ne*, which forces *ne* and the verb to function as a unit in the syntax. Assuming that *ne* precedes the pronominal clitic, which in turn precedes the verb at some point in the derivation, and that there is no intervening landing site for the verb between *ne* and the clitic, when *ne* and the verb move to C^0 as a unit, the clitic is pied-piped along with them, preserving the string order '*ne*-clitic-verb'. But in affirmative imperatives, the verb alone moves to C^0, skipping over the pronominal clitic, resulting in 'verb-clitic' order. The question arises why the verb cannot skip over the clitic and *ne* in negative imperatives. The reason is that the order that would result, 'verb-*ne*-clitic,' is ruled out by an independent constraint of the language that *ne* must precede the verb. This account is supported by the facts of Québec French, where sentential negation is formed only with *pas*, and where negative imperatives are available. In negative imperatives, the pronominal object clitic follows the verb, just as in affirmative imperatives (see Auger (1994)). This shows that the imperative verb in negative imperatives occupies C^0, just as in affirmative imperatives.

(65) Québec French

a. Faites le pas!
do-2sg.Imp it Neg
'Don't do it.'

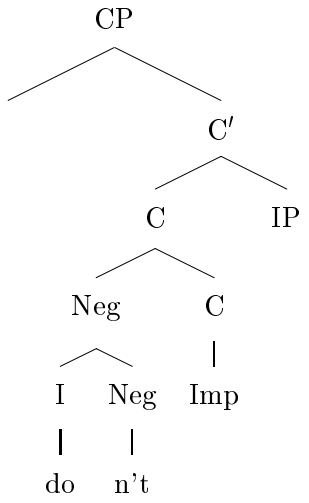
b. * Le faites pas!
it do-2sg.Imp Neg
'Don't do it.'

Given our proposed analysis, negative imperatives are available in Québec French because *pas* is low in the clause and so does not take scope over the imperative operator.

English has two types of negative imperatives: *do not* imperatives, as in *Do not call*, and *don't* imperatives, as in *Don't call*. The explanation for why *do not* imperatives are available is simple: *do* alone moves and adjoins to C^0, and *not* stays low in the clause. As a result, negation does not take scope over the imperative operator of C^0.

In the case of *don't* imperatives, negation forms a unit with *do*. Moreover, as is evident from the order of *don't* and the subject in imperatives (e.g., *Don't you cry*), *don't* occupies C^0. Just as in Spanish, Italian and Modern Greek, in *don't* imperatives, negation and the imperative verb form a unit and adjoin to C^0, the locus of imperative operator. However, unlike Spanish, Italian and Modern Greek, *don't* imperatives are ruled in. Our account of the possibility of *don't* imperatives depends on the assumption that syntactic adjunction is always left-adjunction, following Kayne (1994). This means that the head of the complex *don't* is negation *n't*. Thus, the structure of *don't* imperatives is as in (66).

(66)



In (66), *do* c-commands Neg^0 because every category that dominates I^0 dominates Neg^0, and no segment of I^0 dominates Neg^0. Further, Neg^0 does not c-command *do* because Neg^0 does not exclude I^0 (i.e., a segment of Neg^0 dominates I^0). That is, *do* asymmetrically c-commands Neg^0. Given that *do* assumes the function of the imperative operator as it is adjoined onto C^0, negation does not take scope over the imperative operator, and so the directive force encoded in the imperative operator is not negated. Thus, *don't* imperatives are not ruled out.

2.7 Apparent Counterexamples

In languages like Bulgarian and Serbo-Croatian, clitics encliticize onto the imperative verb, and yet negative imperatives are possible, as shown in (67) and (68).

(67) Bulgarian

a. Četi ja!
read-2sg.Imp it
'Read it!'

b. Ne ja četi!
Neg it read-2sg.Imp
'Don't read it!'

(68) Serbo-Croatian

a. Čitaj je!
read-2sg.Imp it
'Read it!'

b. Ne čitaj je!
Neg read-2sg.Imp it.
'Don't read it!'

These facts appear to be counterexamples to the analysis proposed here because they suggest that although the imperative verb moves to C^0, imperatives are compatible with negation.

But they are only apparent counterexamples because the imperative verb is not in C^0 in the overt syntax. Following Rivero and Terzi (1995), we take the fact that clitics can appear preverbally in imperatives when they are not in a clause-initial position as evidence that the imperative verb is low in the clause. This is shown in (27), repeated here as (69).

(69) a. Serbo-Croatian

Knjige im čitajte!
books to-them read-2pl.Imp
'Read books to them!' (Rivero and Terzi 1995, 17a)

b. Bulgarian

Ela i mi kaži!
come-2sg.Imp and me tell-2sg.Imp
'Come and tell me!' (Hauge 1976, 5 cf. Rivero 1994c, 35)

If imperative verbs do not move to C^0, then how can we explain the fact that clitics encliticize in some imperatives? An answer will be given in §2.7.2.

2.7.1 Imperative Verb Movement to C^0 at LF

Like all other languages, neither Bulgarian nor Serbo-Croatian allow imperatives to occur in embedded clauses. This is consistent with the proposal that C^0 is occupied with an imperative operator.

(70) Bulgarian

a. Ivan nastojava (ti) da govoriš.
Ivan insists (you) da speak-2sg.Subj
'Ivan insists that you speak.'

b. * Ivan nastojava (ti) govorí.
Ivan insists (you) speak-2sg.Imp
'Ivan insists that you speak.'

(71) Serbo-Croatian

a. Ivan insistira da to čitas.
Ivan insists that it read-2sg.Ind
'Ivan insists that you read it.'

b. * Ivan insistira da to čitaj.
Ivan insists that it read-2sg.Imp
'Ivan insists that you read it.'

We therefore assume that Bulgarian and Serbo-Croatian imperatives also have an imperative operator in C^0 and propose that the imperative verb moves and adjoins to C^0 at LF. But since morphological/phonological constraints do not apply at LF, the imperative verb can move alone, stranding the clitic-like preverbal negation. Consequently, Neg^0 does not take scope over the imperative operator, and so negative imperatives are not ruled out.[9]

2.7.2 Is C^0 the Locus of Illocutionary Force Operators?

Recall that Rivero (1994c) and Rivero and Terzi (1995) argue that C^0 cannot host an operator which encodes directive or question force in Bulgarian and Serbo-Croatian. Their claim is that C^0 is the locus for last-resort verb movement to prevent clitics from occupying first position. This claim can be contradicted on two grounds: (i) it can be shown that

[9] As in Chomsky (1995), we assume that LF movement involves feature movement, where only necessary features are attracted by the target. Thus, the imperative operator in C^0 attracts the verbal feature, leaving behind other features.

verbs do not move to C^0 to prevent clitics from occurring in the first position, and (ii) it can be shown that C^0 does indeed have a role in the encoding of illocutionary forces.

If we adopt the account of participle-aux orders in Slavic given by Embick and Izvorski (1997), which extends to verb-clitic orders, we avoid the stipulation that C^0 is reserved for verb movement to prevent clitics from appearing in the first position.

In Slavic, some sentences show participle-aux orders, as in (72).

(72) Slovak

Napísal som list.
written am letter

'I have written a letter.' (Embick and Izvorski 1997, 1)

In addressing the issue of participle-aux word order in Slavic, Embick and Izvorski (1997) argue against a long head movement-based analysis (Lema and Rivero (1989), Rivero (1991), Roberts (1994) and Rivero (1994b)) in which the participle is argued to move to C^0, skipping over the position occupied by the auxiliary, as a last resort operation. For instance, Roberts (1994) motivates participle movement by the need of the clitic auxiliary for a host, and Rivero (1994b) claims that certain auxiliaries in Slavic must be governed, and that this need for government triggers movement of the participle when no other governor is available. According to Embick and Izvorski (1997), such a long head movement-based analysis makes three predictions: (a) as a last resort operation, long head movement, and thus participle-aux order, should only appear in cases in which it is absolutely obligatory, (b) long head movement should show locality effects and satisfy some version of the ECP, just like other cases of head movement, and (c) long head movement, as movement to C^0, should only occur in matrix clauses, because the driving factors for the movement would not be present in embedded clauses, due to the presence of the complementizer. None of these predictions are borne out.

In Serbo-Croatian, participle-aux orders is optional in sentences with non-clitic auxiliaries.

(73) Serbo-Croatian

a. Bejaše sreo Petra.
was met Peter
'He had met Peter.' (Embick and Izvorski 1995, 4a)

b. Sreo bejaše Petra. (Embick and Izvorski 1995, 4b)

In sentences with an auxiliary and two participles, it is possible to have either participle before the auxiliary, as shown by the examples from the past conditional in Czech below:

(74) Czech

a. Byl bych koupil knihy.
been would-1sg bought books
'I would have bought books.' (Embick and Izvorski 1995, 6a)

b. Koupil bych byl knihy. (Embick and Izvorski 1995, 6b)

As seen in (74b), Czech exhibits what would appear on the long head movement account to be non-local head movement: movement of the lower participle over two intervening heads (the auxiliary and the first participle).

In Serbo-Croatian embedded clauses with non-clitic auxiliaries, participle-aux orders are possible.

(75) Serbo-Croatian

On tvrdi da istukao bejaše Jovan Petrovog prijatelja.
he claims that beaten was Jovan Peter's friend

'He claims that Jovan had beaten Peter's friend.' (Embick and Izvorski 1995, 8)

In Bulgarian, participle-aux orders are possible in embedded clauses with clitic-auxiliaries.

(76) Bulgarian

Razbrah če pročel e knigata.
understood that read had book-the

'I understood that he had read the book.' (Embick and Izvorski 1995, 9)

Embick and Izvorski (1997) propose an alternative to the long head movement-based analysis, based on the assumption that Slavic auxiliaries belongs to two groups: clitic

auxiliaries and non-clitic auxiliaries. Clitic auxiliaries have a phonological requirement that an element must occur to their left for support. It is this requirement on clitic auxiliaries that leads to participle-aux orders.[10] The proposal is that participle-aux order can be handled by mechanisms such as the Morphological Merger of Marantz (1988, 1989) (or the Prosodic Inversion of Halpern (1992)) and need not involve syntactic movement. That is, when clitic auxiliaries are stranded by the syntax in a sentence-initial position, Merger operates at a post-syntactic level to invert the stranded clitic auxiliary with an adjacent element, namely the participle, thus satisfying the clitic's need for a host. Extending the account to verb-clitic orders, Embick and Izvorski (1997) argue that clause-initial clitics encliticize onto the adjacent verb at a post-syntactic level, eliminating the motivation for last-resort verb movement to C^0.

Given Embick and Izvorski (1997), we immediately have an explanation for imperatives in which clitics have encliticized onto the imperative verb, as in (67a) and (68a): the clitics have affixed onto the verb in I^0 at a post-syntactic level. Also, clitics procliticize in negative imperatives in Bulgarian, as in (67b), because the presence of *ne* renders Morphological Merger unnecessary.

We still need to explain why clitics encliticize in Serbo-Croatian negative imperatives, as shown in (68b). As pointed out by Rivero and Terzi (1995), in Serbo-Croatian, pronominal clitics cannot intervene between negation *ne* and the verb. This is exemplified by the indicative sentences in (77).

(77) Serbo-Croatian

a. Ne čitate je.
Neg read-2pl.Pres.Ind it
'You are not reading it.'

b. * Ne je čitate.
Neg it read-2pl.Pres.Ind
'You are not reading it.'

Thus, the fact that clitics encliticize in negative imperatives in Serbo-Croatian is simply due to an independent constraint of the language.[11]

[10] Sentences with non-clitic auxiliaries optionally allow participle-aux orders. See Embick and Izvorski (1997) for their analysis of why participle-aux orders are possible with non-clitic auxiliaries.

[11] Macedonian imperatives potentially pose a problem. In Macedonian, clitics procliticize in finite clauses,

The facts from questions in Bulgarian and Serbo-Croatian establish that C^0 does indeed have something to do with encoding illocutionary force. In *wh*-questions, all *wh*-phrases undergo fronting.

(80) a. Bulgarian

Koj kak udari Ivan?
who how hit Ivan
'Who hit Ivan how?'

b. Serbo-Croatian

Ko gdje spava?
who where sleeps
'Who sleeps where?'

The structural position to which the *wh*-phrases move in *wh*-questions is generally argued to be [Spec, CP]. The question relevant here, then, is why the *wh*-phrases move to [Spec, CP] even when there is no clitic (either pronominal or auxiliary) to support. It has been argued that the *wh*-phrases move to [Spec, CP] to be in Spec-head configuration with the question operator in C^0. In Minimalist terms, *wh*-phrases move to [Spec, CP] because they

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but encliticize in non-finite clauses, where non-finite clauses include imperatives and gerunds (Tomić (1996), Legendre (to appear)).

(78) Macedonian

a. Ivan ja vikna.
Ivan her call-3sg.Aor
'Ivan called her.'

b. Vikni ja!
call-2sg.Imp her
'Call her!'

The clitic placement in imperatives suggests that the imperative verb is somewhere high in the clause. However, negative imperatives are available and pronominal clitics encliticize in negative imperatives just as in affirmative imperatives. This suggests that negation and the verb in negative imperatives are also located somewhere high in the clause.

(79) Macedonian

Ne vikaj ja!
Neg call-2sg.Imperf.Imp her

'Don't call her!'

One possible explanation may be that non-finite verbs (including imperative verbs) are located in a functional head below Neg^0 but above I^0 on the surface, deriving (neg)-verb-clitic order. And then the imperative verb moves further to C^0 at LF.

are attracted by Q feature in C^0. Whatever the right answer may be, the obligatoriness of *wh*-movement in *wh*-questions suggests that C^0 is associated with an operator that encodes the illocutionary force of questions.

The Bulgarian *li* particle which occurs in *yes-no* questions is argued to be a complementizer in C^0 (Rivero (1993), Rudin (1993), Izvorski et al. (1997)). Further, it is a clitic, requiring a host to their left, just like any other clitic in Bulgarian. Izvorski et al. (1997) argue that in *yes-no* questions the material in I^0, i.e., the main verb or auxiliary, always raises to C^0, via the intervening functional heads, i.e., M^0 and Neg^0, picking up the material in these heads. The resulting complex verbal head then right-adjoins to C^0, where *li* is. When there is no maximal projection in [Spec, CP], unlike (81a), *li* still needs a host. Under such conditions, prosodic inversion (of the type proposed in Halpern (1992)) occurs at PF as a last resort mechanism. Prosodic inversion allows the clitic *li* to encliticize to the right-edge of the following phonological word, i.e., the first stressed element in the verbal complex adjoined to C^0. Usually, this will be the finite verb, as in (81b). But it could be another clitic. For instance, in Bulgarian, a clitic that immediately follows the negative particle *ne* is stressed. In this case, *li* encliticizes to the stressed clitic, as in (81c).

(81) Bulgarian

a. kŭštata li namerixte (vie)?
house-the Q found-2pl you
'Was it the house that you found?' (Rudin 1985, 64)

b. Izparatix li mu kniga?
send-1sg Q him book
'Did I send him a book?' (Rivero 1993, 569)

c. Ne mu li go dadoxte?
Neg him Q it gave-2pl
'Didn't you give it to him?' (Izvorski, King and Rudin 1997, 11)

Given such an account, the behavior of Bulgarian *li* is another case that suggests that C^0 is associated with an operator that encodes the illocutionary force of questions.

Under the simplest theory, if C^0 is the locus of operator that encodes question illocutionary force in a language, it should also be the locus of the operator that encodes directive illocutionary force in that language. Within such a simple theory, the fact that a sentence

cannot be both an imperative and an interrogative follows without any stipulation. Moreover, type theory would be simplified since operators with the same semantic type associate with the same syntactic category.

2.8 Suppletion and Prohibition

In Spanish, infinitive or subjunctive forms are used to express prohibition. In Modern Greek, which has no infinitives, subjunctive forms are used to express prohibition. In Italian, infinitives are used to express 2nd person singular prohibition and indicative forms are used to express 2nd person plural prohibition. The question is why subjunctives, infinitives and indicatives, which are used to express prohibition, are compatible with negation in these languages and why they can be so used.

2.8.1 Spanish and Modern Greek

In Modern Greek, the syntax of matrix subjunctives that express prohibition is similar to that of embedded subjunctives: in both, clitics precede the verb.

(82) Modern Greek

a. O Yannis se dietakse na to grapsis.
the Yannis you ordered-2sg NA it write-2sg.Subj
'Yannis ordered you to write it.'

b. * O Yannis se dietakse na grapsis to.
the Yannis you ordered-2sg NA write-2sg.Subj to
'Yannis ordered you to write it.'

(83) Modern Greek

a. Na min to grapsis.
NA Neg it write-2sg.Subj
'Don't write it.'

b. * Na min grapsis to.
NA Neg write-2sg.Subj it
'Don't write it.'

The facts of Spanish are parallel, as shown below.

(84) Spanish

a. Ordeno que me deis el libro.
order that me give-2pl.Subj the book
'I order you to give me the book.'

b. * Ordeno que deis me el libro.
order that give-2pl.Subj me the book
'I order you to give me the book.'

(85) Spanish

a. ¡No me deis el libro!
Neg me give-2pl.Subj the book
'Don't give me the book!'

b. * ¡No deis me el libro!
Neg give-2pl.Subj me the book
'Don't give me the book!'

We take the fact that subjunctives exhibit clitic-verb order to suggest that the subjunctive verb does not move higher than the functional head to which clitics adjoin. Under this analysis, the subjunctive verb does not move as high as the imperative verb does.

In Spanish, in addition to subjunctives, infinitives can express prohibition. In embedded infinitives as well as in matrix infinitives that express prohibition, the verb precedes the clitic.

(86) Spanish

a. Mando no dar le el libro.
order Neg give-Inf him the book
'I order that the book not be given to him.'

b. * Mando no le dar el libro.
order Neg him give-Inf the book
'I order that the book not be given to him.'

(87) Spanish

a. ¡No dar le el libro!
Neg give-Inf him the book
'Don't give him the book!'

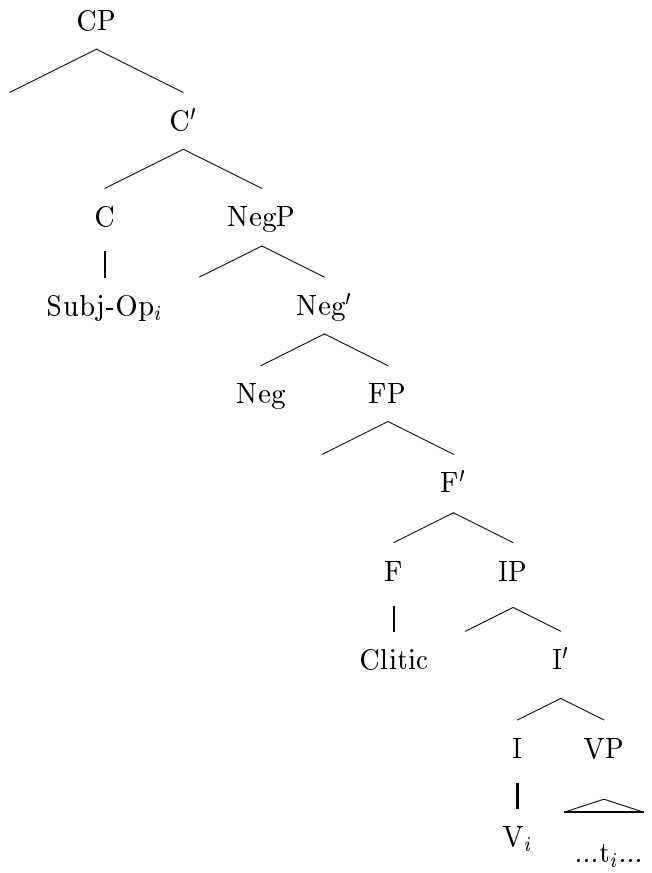
b. *¡No le dar el libro!
Neg him give-Inf the book
'Don't give him the book!'

In order to derive the correct ordering between clitics and the infinitive verb, Kayne (1991) proposes that infinitive verbs adjoin to I′ in languages like Spanish and Italian. In a phrase structure with extended functional projections, this amounts to saying that infinitive verbs move to a functional head that is lower than Neg^0 but higher than the one to which clitics adjoin. It then follows that an infinitive verb must precede clitics. Under such an analysis of infinitives in Spanish, the infinitive verb does not move as high as the imperative verb does.

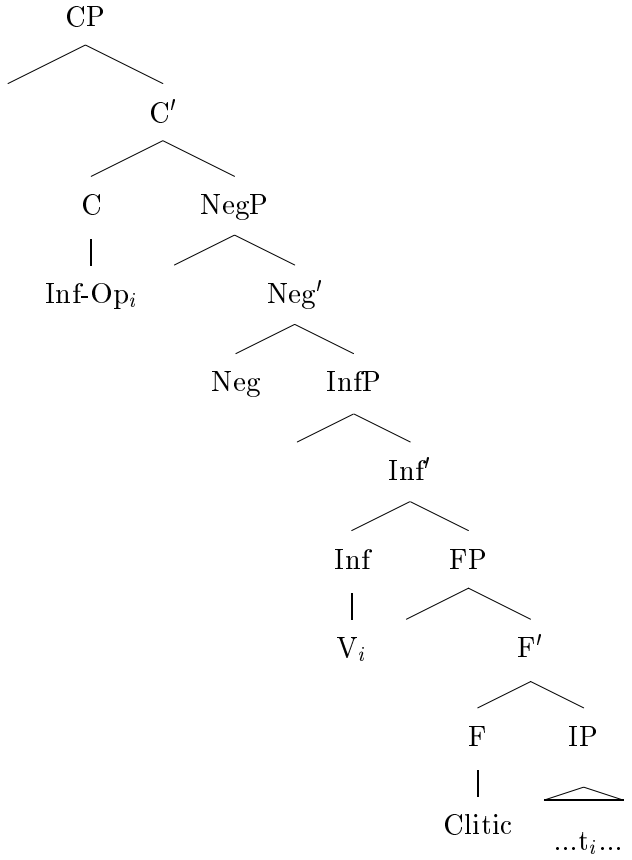
We adopt the proposals in Kempchinsky (1987) and Zanuttini (1991) for the syntax of subjunctives and extend them to the syntax of infinitivals. Kempchinsky (1987) proposes that in Romance, a volitional verb subcategorizes for a subjunctive complement clause with a subjunctive operator, in the same way that a verb subcategorizes for a *wh*-complement with a *wh*-operator. According to Zanuttini (1991), the subjunctive clause selected by a volitional verb contains in C^0 the subjunctive modality feature. The complementizer *that* in English subjunctives is a manifestation of this feature. Along the same lines, we assume that subjunctives/infinitivals have a subjunctive/infinitival operator in C^0 that selects subjunctive or infinitive INFL. We assume that the selection of subjunctive/infinitive INFL by the subjunctive/infinitival operator is instantiated through chain formation. Specifically, in embedded contexts, the volitional verb selects a C^0 which hosts the subjunctive/infinitival operator and this C^0 forms a chain with the subjunctive/infinitive verb in the embedded clause. In matrix contexts, the subjunctive/infinitival operator in C^0 simply forms a chain with the subjunctive/infinitive verb. We take this operator to encode irrealis interpretation. More discussion of the interpretation of subjunctives and infinitivals will be given in Chapter 4.

We represent the chain between the subjunctive/infinitive operator and the subjunctive/infinitive verb by coindexation, as in (88) and (89). Let us refer to the functional head to which infinitive verbs move as Inf^0 for simplicity.

(88) Subjunctives



(89) Infinitives



The subjunctive/infinitival operator does not encode illocutionary force. But it does encode irrealis interpretation. The question then is why negative subjunctives and negative infinitivals can express directive force. The approach we will pursue depends on the fact that all matrix sentences express a certain illocutionary force, thereby performing a certain illocutionary act (Austin (1962), Searle (1969)). When subjunctives and infinitivals are used in matrix contexts, the subjunctive/infinitival operator can generate directive force via inference because directive force is compatible with irrealis interpretation. A more detailed analysis will be given in Chapter 4.

Given the syntax of subjunctives and infinitivals proposed here, subjunctive/infinitive verbs do not move to C^0, and so negation never ends up taking scope over the subjunctive/infinitival operator. This means that the sentence will never end up with an interpretation in which the directive force contributed by the subjunctive/infinitival operator is negated.

2.8.2 Italian

In Italian, 2nd person plural imperatives are suppletive in the sense that they are formally identical to the 2nd person plural indicative form. They do not, however, share the syntax of indicatives. Rather, they behave more like true imperatives. While 2nd person plural imperatives show verb-clitic order, indicatives show clitic-verb order. This is shown in (90) and (91).

(90) Italian

a. Fate lo!
do-2pl.Imp it
'Do it!'

b. Lo fate.
it do-2pl.Ind
'You are doing it.'

(91) Italian

a. Non fate lo!
Neg do-2pl.Imp it
'Don't do it!'

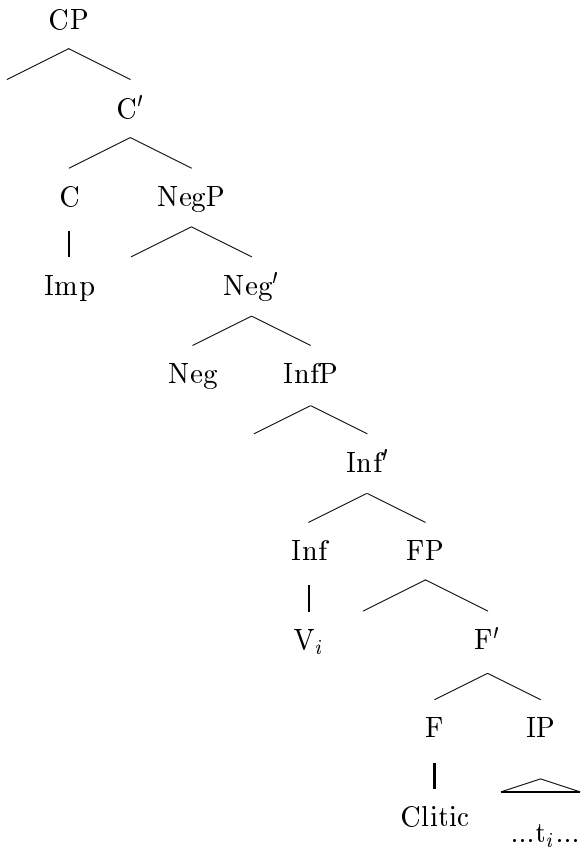
b. Non lo fate.
Neg it do-2pl.Ind
'You are not doing it.'

Further, indicatives can be embedded, but 2nd person plural imperatives cannot.

What is puzzling is that although 2nd person plural affirmative imperatives are just like true imperatives in that they exhibit verb-clitic order and in that they cannot be embedded, they differ from true imperatives in that they can be negated.

We propose that 2nd person plural imperatives have an imperative operator in C^0 and that they have the syntax of infinitivals in that the verb moves up to Inf^0 in the overt syntax, as represented in (92). Then at LF, the verb moves to C^0. If this is correct, it follows that 2nd person plural imperatives have verb-clitic order and that they cannot be embedded.

(92)



However, we need to point out a complication. In 2nd person plural negative imperatives, some speakers allow clitic-verb order as well as verb-clitic order, as in (93).

(93) Italian

a. Non fate lo!
Neg do-2pl.Imp it
'Don't do it!'

b. Non lo fate!
Neg it do-2pl.Imp
'Don't do it!'

Our syntactic analysis of 2nd person plural imperatives cannot derive the word order in (93b). We believe that the availability of (93b) cannot be given a syntactic explanation. The syntax derives the word order in (93a). But the word order attested in (93b) is a remnant of the Tobler-Mussafia law, which prohibits sentence-initial clitics. Old Italian was subject to the Tobler-Mussafia law, but Italian lost this law some time after the 17th

century. That is why in present-day Italian, clitics can occur in the beginning of sentences. We suggest that a remnant of this law is attested in 2nd person plural negative imperatives. Thus, the word order clitic-verb in (93b) is derived by a post-syntactic process that displaces the clitic and places it immediately after the first element of the sentence, which is negation *non*, deriving clitic-verb order.

Under our analysis of the syntax of 2nd person plural imperatives, negation does not take scope over the illocutionary force operator in C^0. The question remains as to why the verb in 2nd person plural imperatives moves only up to Inf^0, whereas the verb in 2nd person singular imperatives moves up to C^0 in the overt syntax. We do not have an answer for this question at this point.

Italian negative infinitivals which express 2nd person singular prohibition constitute another puzzle. In Italian, infinitivals in embedded contexts always show verb-clitic order. However, as pointed out by Kayne (1992) and discussed in detail by Zanuttini (1997), in matrix negative infinitivals which express 2nd person singular prohibition, both verb-clitic order and clitic-verb order are possible, as in (94).

(94) Italian

a. Non far lo!
Neg do-Inf it
'Don't do it!' (Kayne 1992, 4)

b. Non lo fare!
Neg it do-Inf
'Don't do it!' (Kayne 1992, 5)

In Italian dialects like Paduan, an auxiliary verb *stá* occurs in matrix negative infinitivals that express prohibition. Crucially, this auxiliary verb is in the 2nd person singular imperative form, and it cannot occur in infinitives used in any other linguistic contexts, as shown in (95).

(95) Paduan

a. No stá parlare!
Neg aux talk-Inf
'Don't talk!' (Kayne 1992, 17)

b. * Stá parlare!
aux talk-Inf
'Talk!' (Kayne 1992, 18)

Kayne's (1992) explanation is that in matrix negative infinitivals that express 2nd person singular prohibition, the negative marker licenses an empty modal (in Italian) or an overt modal (*stá* in Paduan) in the imperative form, and that this modal in turn takes an infinitive. The unusual clitic-infinitive order displayed in Italian matrix negative infinitivals can be seen as an instance of clitic climbing, where the clitic is not adjoined to the infinitive but to the phonetically unrealized imperative modal.

If negative infinitivals that express 2nd person singular prohibition contain an empty modal or an overt modal *stá* in the imperative form, then these negative infinitivals must have an imperative operator in C^0, which attracts the imperative modal in the overt syntax. However, the analysis proposed here for the (in)compatibility of negation and imperatives appears to predict incorrectly that such constructions should not be available, since the imperative operator would be in the scope of negation if the imperative modal and the negation move as a unit to C^0. A solution to this problem can be provided if the imperative modal behaves similarly to the deontic modal verb *devere*.

In Italian, negative sentences with the deontic modal verb *devere* are ambiguous between the reading in which negation takes scope over the modal verb and the reading in which the modal verb takes scope over negation, although negation c-commands the modal verb on the surface.

(96) Italian

Non devo parlare con te.
Neg must speak-Inf to you

'I must not speak to you.' ($\Box\neg$)

'I don't have to speak to you.' ($\neg\Box$)

In contrast, in English, the reading in which the deontic modal takes scope over negation is expressed with *mustn't* or *shouldn't*, and the reading in which negation takes scope over the modal is expressed with *don't have to*. Thus, the surface order of negation and the deontic modal verb directly reflects the scope information in English: i.e., when the deontic modal

c-commands negation, deontic modality takes scope over negation, and when negation c-commands the deontic modal verb, negation takes scope over deontic modality. The fact that negative deontic modal sentences in English have two different forms with distinctive scope information suggests that in languages like Italian, where one form can express two different scopal interpretations, the distinctive scope information is represented at the level of LF or in semantics. This means that in Italian, at LF or in the semantics, there is a representation in which the deontic modal verb scopes over the negation, even though in the overt syntax, negation takes scope over the modal verb. In such a representation, the negation is passed down through the deontic modal verb.

Negative infinitivals with the empty modal or the overt modal *stá* (in the imperative form) are expected to be available if this modal is like *devere*. The negation and the modal move and adjoin to C^0 in the overt syntax, just as in any other imperative. However, if the modal is like *devere*, then at LF or in semantics, two representations are available for this string: (i) the representation in which the modal takes scope over the negation and (ii) the representation in which the negation takes scope over the modal. The representation in which the negation takes scope over the modal will be ruled out because this is the one in which the negation takes scope over the imperative operator. The representation in which the modal takes scope over the negation is ruled in: the negation does not take scope over the imperative operator in this representation. Since a legitimate LF or a semantic representation is available, negative infinitivals with the empty imperative modal or the overt modal *stá* are not ruled out.

2.9 Extension to Negative Interrogatives

We have proposed that the imperative operator, which encodes directive force, cannot be in the scope of negation. If imperatives involve an operator that encodes illocutionary forces, other sentence types, most obviously interrogatives, must contain a relevant operator as well, namely an interrogative operator. Moreover, it must be the case that an interrogative operator that encodes question illocutionary force cannot be under the scope of negation either. As suggested in §2.7, we assume that all illocutionary force operators are located in C^0. This assumption and the proposed analysis as to why some languages do not allow

negative imperatives predict that languages with verb movement to C^0 in questions and clitic-like sentential negation should not have negative *yes-no* questions. But this prediction is not borne out, as (97) shows.

(97) Spanish

¿No bebió Juan café?
Neg drank Juan coffee

'Didn't Juan drink coffee?'

We explain why negative *yes-no* questions are available by appealing to the interpretational properties of questions.

2.9.1 Negation in *Yes-no*-questions

In a negative *yes-no* question formed with the clitic-like negation *n't* in English (e.g., *Didn't John drink coffee?*), negation *n't* is in C^0, along with an auxiliary verb. In this section, we show that *n't* in negative *yes-no* questions does not behave like true negation. That is, *n't* in *yes-no* questions does not behave as in *n't* in declarative sentences. For instance, in declarative sentences with *can't*, negation has scope over *can*, and in declarative sentences with *shouldn't*, *should* has scope over negation.

(98) a. John can't swim.
It is not the case that John is able to swim. (not > can)

b. John shouldn't swim.
It is obligatory for John to not swim. (should > not)

But if we form *yes-no* questions with the sentences in (98), the difference in the scope possibilities between *can't* and *shouldn't* is lost. As can be seen in (99), both the *yes-no* questions formed with *can't* and *shouldn't* only allow the interpretation in which negation takes scope over the modal.

(99) a. Can't John swim?
Isn't it the case that John can swim? (not > can)

b. Shouldn't John swim?

Isn't it the case that John should swim? (not > should)

Moreover, the intuition is that a negative *yes-no* question $\neg p$? formed with *n't* asks whether p holds. For instance, the question in (100) asks whether John is intelligent.

(100) Isn't John intelligent?

On the other hand, *not* in *yes-no* questions behaves like true negation. In negative questions formed with a modal auxiliary and *not*, the modal always takes scope over negation. This is as we would expect because the modal c-commands the negation.

(101) a. Can John not swim?

Is it possible for John to not swim? (can > not)

b. Should John not swim?

Is it obligatory for John to not swim? (should > not)

Further, the intuition is that a negative *yes-no* question $\neg p$? formed with *not* asks whether $\neg p$ holds. For instance, the question in (102) asks whether John is not intelligent.

(102) Is John not intelligent?

To summarize, *n't* in *yes-no* questions does not behave as true negation in that it behaves differently from *n't* in other linguistic contexts. In contrast, *not* in *yes-no* questions behaves just as in other linguistic contexts. If negation in *yes-no* questions in other languages behaves as in English, then we can explain why negative *yes-no* questions are possible in other languages where verb and negation have moved to C^0 as a unit. We can say that since negation in C^0 in *yes-no* questions does not behave as true negation, it cannot negate the interrogative operator in C^0.

A possible explanation for why negation in C^0 in questions does not behave like true negation can be given by appealing to the semantics of questions. Following Groenendijk and Stokhof (1985), we assume that a *yes-no* question denotes a partition that represents the set of possible answers: namely, the positive and the negative answer. An affirmative *yes-no* question and the corresponding negative *yes-no* question both denote the same partition

because they both have the same set of possible answers. For instance, the questions *Does John drink?* and *Doesn't John drink?* have the same set of possible answers: *John drinks* and *John doesn't drink*. They both denote the same partition in (103).

(103) $[\![Does\ John\ drink?]\!] \equiv [\![Doesn't\ John\ drink?]\!]$

John drinks
John doesn't drink

The reason that *n't* in *yes-no* questions does not behave as true negation may be because it does not make a denotationally relevant contribution. But this cannot be the whole story: even negative *yes-no* questions with *not* and the corresponding affirmative question denote the same partition. For instance, *Does John drink?* and *Does John not drink?* have the same set of possible answers, namely *John drinks* and *John does not drink*, and so both questions denote the same partition in (103). At this point, we are only prepared to say that when negation ends up in C^0 in negative *yes-no* questions, it interacts with the interrogative operator in C^0 in such a way as to generate the interpretational effects described above. We leave open the issue of how to characterize the exact nature of the interaction between negation and the interrogative operator.[12]

2.9.2 A Prediction with respect to Alternative Questions

The analysis presented here makes a prediction with respect to alternative questions. The possible answers to an alternative question, such as *Does John drink coffee or tea?*, are *John drinks coffee* and *John drinks tea*. That is, an alternative question denotes a partition as in (104).

(104) $[\![Does\ John\ drink\ coffee\ or\ tea?]\!]$

John drinks coffee
John drinks tea

The negation in alternative questions must be true negation because it affects the denotation. For instance, an alternative question *Does John not drink coffee or tea?* can be

[12] We will see in Chapter 6 that although negation in *yes-no* questions does not make a denotationally relevant contribution, it does have discourse effects with respect to the speaker's expectation towards the answer.

answered either *John does not drink coffee* or *John does not drink tea.* It denotes a partition as in (105).

(105) ⟦*Does John not drink coffee or tea?*⟧

John does not drink coffee
John does not drink tea

We can see that the partitions in (104) and (105) are different: the propositions in the cells of the partition in (104) are different from those in (105). Thus, negation in alternative questions makes a denotationally relevant contribution.

The prediction then is that alternative questions with negation in C^0 should not be available because such negation does not behave as a real negation, whereas alternative questions with negation low in the clause should be. This prediction is borne out in English.

(106) a. Didn't John drink coffee or tea?

b. Did John not drink coffee or tea?

The question in (106a) cannot have the alternative question reading in which the possible answers are *John didn't drink coffee* and *John didn't drink tea.* It can only be interpreted as a *yes-no* question in which the possible answers are *John drank coffee or tea* and *John didn't drink coffee or tea.* In contrast, the question in (106b) has both the alternative question reading and the *yes-no* question reading, as expected.

The prediction with respect to alternative questions holds in other languages as well. In German, *yes-no* questions have subject-verb inversion and negation can stay low in the clause or it can occur immediately after the verb. Negative *yes-no* questions with lower negation allow the alternative question reading, but those with higher negation allow only the *yes-no* question reading.[13]

[13]The adjacency of negation and the verb in (107b) is not conclusive evidence that negation is in C^0. It may just mean that other constituents have failed to scramble out of VP. If so, then (107b) is a case in which the alternative question reading is not available even though negation is low in the clause, contradicting our prediction. In (107b), the subject NP *Hans* receives focal stress due to the presence of the immediately preceding negation (Beatrice Santorini, p.c.). The focal stress on *Hans* has a direct effect on the interpretation: the question is asking whether Hans as opposed to somebody else did not drink coffee or tea. The answer is affirmative if it is Hans that did not drink coffee or tea, and the answer is negative if it is somebody else that did not drink coffee or tea. Thus, it may be that alternative question reading is ruled out in (107b) due to focus effects.

(107) German

a. Trank Hans den Tee oder den Kaffee nicht?
drank Hans the tea or the coffee Neg
'Did John not drink the coffee or the tea?' (*yes-no*, alternative Q)

b. Trank nicht Hans den Tee oder den Kaffee?
drank Neg Hans the tea or the coffee
'Didn't John drink the coffee or the tea?' (*yes-no* Q)

In Spanish and Modern Greek, subject-verb inversion is optional in *yes-no* questions. While the inverted form with negation has only the *yes-no* question reading available, the non-inverted form with negation allows both the *yes-no* question reading and the alternative question reading.

(108) Modern Greek

a. Den ipie o Yannis kafe i tsai?
Neg drank the Yannis coffee or tea
'Didn't Yannis drink coffee or tea?' (*yes-no* Q)

b. O Yannis den ipie kafe i tsai?
the Yannis Neg drank coffee or tea
'Did Yannis not drink coffee or tea?' (*yes-no*, alternative Q)

(109) Spanish

a. ¿No bebió Juan café o té?
Neg drank Juan coffee or tea
'Didn't Juan drink coffee or tea?' (*yes-no* Q)

b. ¿Juan no bebió café o té?
Juan Neg drank coffee or tea
'Did John not drink coffee or tea?' (*yes-no*, alternative Q)

In Bulgarian, a *yes-no* question can be formed with the question particle *dali* and a non-inverted sentence, or with the question particle *li* and subject-verb inversion. The non-inverted form with negation has both the *yes-no* and the alternative question reading, whereas the inverted form with negation has only the *yes-no* question reading.

(110) Bulgarian

a. Dali Ivan ne pie kafe ili caj?
Dali Ivan Neg drink coffee or tea
'Is Ivan not drinking coffee or tea?' (*yes-no*, alternative Q)

b. Ne pie li Ivan kafe ili caj?
Neg drink li Ivan coffee or tea
'Isn't Ivan drinking coffee or tea?' (*yes-no* Q)

In Serbo-Croatian, an affirmative *yes-no* question can be formed with the question particle *da li* and a non-inverted sentence, or with the question particle *li* and subject-verb inversion. A negative *yes-no* question is formed with the question particle *da li* and a non-inverted sentence. It allows both the *yes-no* question reading and an alternative question reading.

(111) Serbo-Croatian

Da li Ivan ne pije kafu ili caj?
Da li Ivan Neg drink coffee or tea

'Is Ivan not drinking coffee or tea?' (*yes-no*, alternative Q)

In Italian, subject-verb inversion is not allowed in *yes-no* questions, and the negative form allows the alternative question reading.[14]

(112) Italian

Non ha bevuto té o caffé Gianni?
Neg has drunk tea or coffee Gianni

'Did Gianni not drink coffee or tea?' (*yes-no*, alternative Q)

In French, we have argued that *ne* is pleonastic and *pas* is the true negation (see §2.6.2). We therefore expect negative alternative questions to be possible in French, since *pas* is low in the clause. However, an alternative question reading is not available with negative *yes-no* questions, regardless of subject-verb inversion (although the alternative question reading is possible with affirmative *yes-no* questions, regardless of inversion).

[14]In (112), the subject NP *Gianni* is in the postverbal position, indicating that the verb-initial word order is not the result of subject-verb inversion.

(113) French

a. N'as tu pas bu du café ou du thé?
NE-have you Neg drunk some coffee or some tea
'Have you not drunk coffee or tea?' (*yes-no* Q)

b. Tu n'as pas bu du café ou du thé?
you NE-have Neg drunk some coffee or some tea
'Have you not drunk coffee or tea?' (*yes-no* Q)

The unavailability of the alternative question reading in negative *yes-no* questions, despite its availability in affirmative ones, suggests that in French some other factor is responsible for ruling out alternative question reading in the context of negation.

2.10 Conclusion

We have proposed that a language does not allow negative imperatives if the syntax derives a structure in which the imperative operator ends up in the scope of negation. This is because such a syntactic structure maps onto an interpretive representation in which the directive force is negated. But this representation maps onto an incoherent interpretation. We have also proposed that languages choose chain formation mechanisms to avoid deriving the structure in which negation takes scope over the imperative operator. We have extended the proposed analysis to account for the availability of negative interrogatives across languages. The conclusions reached in this chapter have implications for the syntax to semantics mapping in imperatives. Given the proposed analysis, the cross-linguistic variation in the compatibility of negation and imperatives shows that the set of available syntactic structures in a language is restricted by the semantics.

Chapter 3

The Syntactic Evolution of the English Imperative

3.1 Introduction

The purpose of this chapter is to present an analysis of the syntactic evolution of English imperatives from late Middle English to the Early Modern period, specifically of the increasing frequency of *do*-support in negative imperatives. We show that the development of *do* forms in negative imperatives cannot be explained with a phrase structure that has only one INFL projection and one NegP, as assumed in Roberts (1985) and Kroch (1989b). We therefore propose a more articulated phrase structure, which we argue is already necessary to explain the syntax of Middle English infinitivals. The proposed analysis also accounts for both the differences and the similarities attested in the patterns of the development of *do* forms between imperatives and declaratives on the one hand and between imperatives and questions on the other.

In §3.2, we briefly discuss the syntactic evolution of imperatives from Old English to Modern English. We also present the patterns of the development of *do* forms in different linguistic contexts, such as negative and affirmative questions, and negative and affirmative declaratives, and provide an analysis of them as a reflex of the loss of verb movement, as presented in Roberts (1985) and Kroch (1989b). We point out that both analyses as stated fails to account for the statistical patterns in the development of *do* forms in negative

imperatives. In §3.3, we argue that the syntax of negative infinitivals in Middle English can be accounted for if we assume two possible syntactic positions for sentential negation (where one negation is structurally lower than the other) and an intermediate functional projection (FP for convenience) between the two negation projections. The claim is that in Middle English the infinitive verb moves to F^0, bypassing the lower negation. In §3.4, based on the assumption that imperatives do not project a tense phrase (TP), which we assume to be the highest functional projection for tensed sentences, and that English has two possible syntactic positions for sentential negation, we provide an analysis of the development of *do*-support in negative imperatives as a reflex of the loss of V-F movement. In §3.5, we argue that the more articulated phrase structure assumed here enables us to distinguish two types of verb movement: movement over the lower negation and movement over the higher negation. We explore some consequences of the hypothesis that the loss of higher verb movement precedes the loss of lower verb movement in the history of English. In §3.6, we address the question why infinitivals and subjunctives in Modern English do not have *do*-support.

For data relating to the development of *do* forms in various linguistic contexts, we use the online version of the collection of sentences in Ellegård (1953) maintained by Anthony Kroch. The source for the data relating to Middle English infinitivals is the Penn-Helsinki Parsed Corpus of Middle English (PPCME) (Kroch and Taylor (1995)).

3.2 Data and Issues

3.2.1 Development of Imperatives in English: A Short Survey

In Old English (850–1150), imperatives pattern with questions: the verb precedes the pronominal subject in both types of sentences. This is shown in (114) and (115).[1]

(114) Beo ȝu on ofeste.
be you in haste
'Be quick.' (Beo 386)

[1]The full references for the abbreviated text titles in the citations are given in Appendix A.

(115) Hwi sciole we oþres mannes niman?
why should we another man's take
'Why should we take those of another man?' (AELS 24.188)

Following Pintzuk (1991), we assume that pronouns in Old English occur at the CP/IP boundary, so that the fact that the verb precedes the pronominal subject implies that the verb is located in C^0.

In Middle English (1150–1500), the imperative verb also precedes the subject, as shown in (116).

(116) a. Naske ȝe of cunseil.
not-ask you of counsel
(ANCRIWII 58.569)

b. Helpe þou me.
help you me
(EARLPS 150.2290)

c. Seke thou scripturis
seek you scriptures
(NTEST,VII,40.648)

d. Goo ȝe ... ynto þe payne of helle
go you ... into the pain of hell
(MIRK,4.80)

In the case of negative imperatives with the negative adverbial *not*, the subject precedes *not*, and the verb precedes the subject. This is illustrated in (117).

(117) a. Ne hide þou noȝt fram me þyn comaundement.
Ne hide you not from me your commandment
(EARLPS 146.2169)

b. Depart þou nouȝt fro me.
depart you not from me
(EARLPS 24.594)

c. Weppe ȝe not for me, but for yovr chyldorne and for yovrselfe
weep you not for me, but for your children and for yourself
(SIEGE,87.521)

d. medyl ȝe not wyth hym
meddle you not with him
(KEMPE,I,56.218)

The word order in Middle English imperatives also shows that the imperative verb occupies C^0.

In Early Modern English (1500–1710), imperatives show the same word order as in Middle English. But imperatives with *do*-support are also attested. In imperatives with an overt subject and with *do*-support, auxiliary *do* precedes the subject, as shown in (118). In imperatives with an overt subject but without *do*-support, the verb precedes the subject, as shown in (119).

(118) a. Rather, O God! do thou have mercy on us (323 355-8-34)

b. but I will be your good lord, do you not doubt. (361 O:4-2-39)

c. Do you and your fellows attend them in. (361 M:5-1-106)

d. Good brother, do not you envy my fortunate achievement. (361 W:3-1-86)

(119) a. Love ye youre enemys (310 Luke 6-35)

b. And feare ye nott them which kyll the body (310 mt10-28)

c. Forbid ye hym not (310 lk9-50)

d. doubte thou not all thinges rightly orderd be. (356 90-25)

The fact that the imperative auxiliary or main verb precedes the subject suggests that *do* or the verb occupies C^0.

In Modern English (after 1710), negative imperatives require *do*-support. In negative imperatives with an overt subject, auxiliary verb *do* and negation *n't* must precede the subject, as in (120).

(120) a. Don't you worry.

b. Don't anybody move.

An affirmative imperative does not allow *do*-support unless it is an emphatic imperative. In an affirmative imperative with an overt subject, the subject must precede the verb, as in (121).

(121) a. You come here!

b. Nobody move!

In emphatic affirmative imperatives with auxiliary *do* and an overt subject, *do* must precede the subject. This is shown in (122).

(122) a. Do somebody open the window!

b. Do at least some of you show up for the party!

In Modern English imperatives, the data suggest that while auxiliary *do* is located in C^0, the lexical verb is located low in the clause.[2]

We take the fact that either auxiliary *do* or the lexical verb occupies C^0 in imperatives in the history of English as an indication of the presence of an imperative operator in C^0 which drives movement of the verb.

3.2.2 *Do*-support

In Modern English, auxiliary *do* is required in *yes-no* questions, non-subject *wh*-questions and negative declaratives (and of course, negative imperatives).

[2]The distribution of auxiliary *do* and 2nd person subject *you* in Modern English constitutes a puzzle. To state it simply, *do* cannot cooccur with *you* in imperatives, as in (123).

(123) a. * Do you open the window.

b. * Do you not open the window.

This is a puzzle given that such constructions were possible in Early Modern English, as was shown in (118). Although we do not have a complete solution to this puzzle at this point, we believe that a proper solution cannot be a syntactic constraint against the cooccurrence of *do* and *you* in imperatives. We speculate that a solution for the ungrammaticality of the examples in (123) may be due to an incompatibility of the pragmatic functions of *do* and *you*. As was shown in (122), auxiliary *do* in affirmative imperatives contributes emphasis. *Do* is also emphatic in negative declaratives in which *do* and *not* are separated by an adverb, as in (124).

(124) a. John did always not eat well.

b. John did sometimes not bring lunch.

Given this, we conclude that *do* is emphatic in both imperatives in (123). Moreover, the presence of an overt 2nd person subject in imperatives also contributes a certain pragmatic function. Having said this, we speculate that in Modern English the cooccurrence of *do* and *you* in imperatives results in an incoherent interpretation because the pragmatic functions contributed by *do* and *you* in imperatives are incompatible with each other. But imperatives such as those in (123) were possible in Early Modern English because the pragmatic function of *do* in imperatives in Early Modern English differed from that in Modern English. However, further study remains to be done on the exact nature of pragmatic functions contributed by *do* and an overt 2nd person subject *you* in imperatives to substantiate our speculation. See Davies (1986) for a similar approach to the puzzle.

(125) a. Did you finish?

b. What did you finish?

c. I did not finish.

According to Ellegård (1953), auxiliary verb *do* develops out of an earlier causative use. He provides a quantitative study of the development of *do* forms in various constructions using a collection of sentences extracted from texts ranging in time from Old English to the 18th century. Ellegård (1953) shows that as causative *do* is replaced by *make* at the end of the 14th century, the relative frequency of auxiliary *do* starts to increase gradually in various linguistic environments. Figure 3.1 is from Ellegård (1953:162). It plots the relative frequency of *do* forms in affirmative and negative declaratives, affirmative and negative questions, and negative imperatives. After the middle of the 16th century, the frequency of *do* in affirmative declaratives declines steadily until, by 1700, the use of *do* in this environment is prohibited. The frequency of *do* in negative declaratives and both affirmative and negative questions rises continuously and by 1700, *do* is obligatory in these environments.

According to a widespread analysis of Middle English clause structure, questions have V-I-C movement and declaratives have V-I movement. Supporting evidence for this analysis comes from word order facts: in questions the verb precedes the subject, as in (126), and in declaratives the verb precedes *not*, as in (127).

(126) Questions

a. Desyreste thou to come to heuen by pleasure & Ioye? (302 193-7)

b. Herdest thou what they commened of bytwene them? (308 104-13)

c. why ferest thou to take the crosse of shorte penaunce (302 191-36)

d. But what auayleth science without the drede of god? (302 154-23)

(127) Declaratives

a. but he found her not (304 36-4)

b. yet he shewed not the semblaunt (304 110-1)

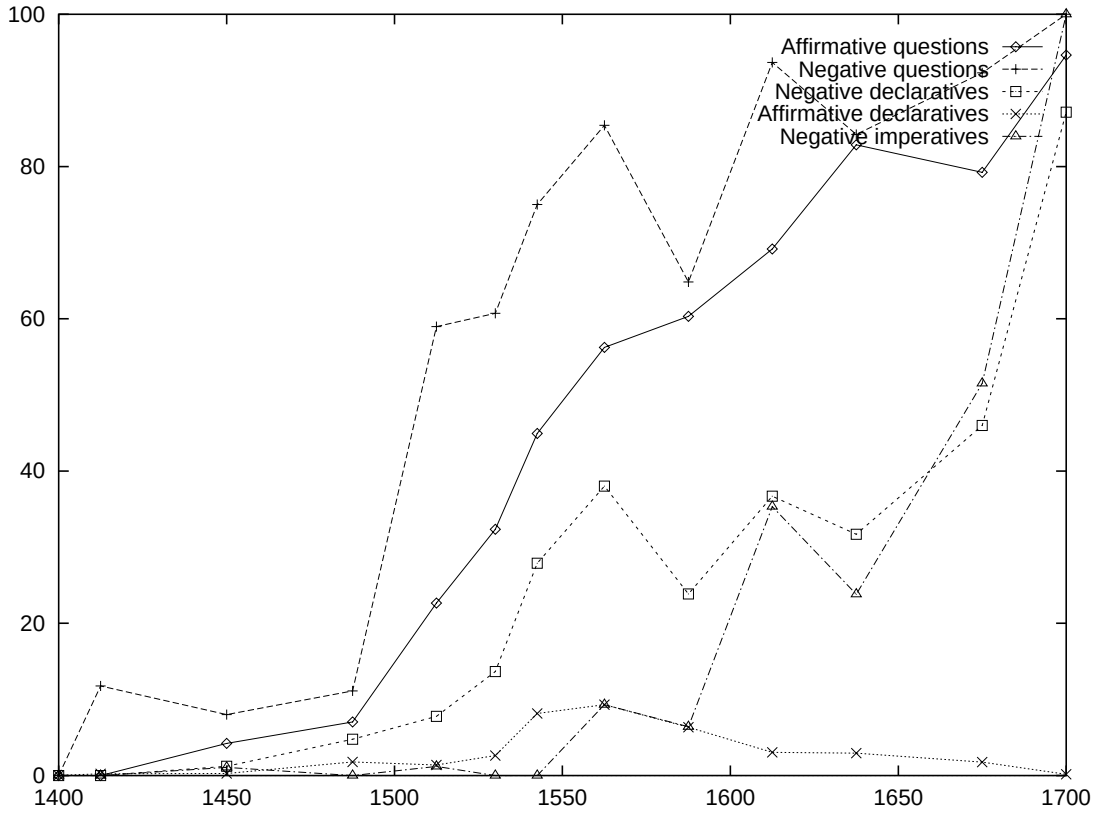


Figure 3.1: Percent of *do* forms in various sentence types (from Ellegård (1953:162))

c. & he gyueth nat hede ne place to the deceyt full persuasions of the enemye (302 201-42)

d. I loke nat for it here (302 211-22)

According to Roberts (1985) and Kroch (1989b), English lost V-I movement for lexical verbs in the middle of the 16th century. When V-I movement was lost, only *be*, auxiliary *have* and modal verbs, such as *can, may, must,* etc. could appear in I^0. Based on the behavior of indicative sentences, Roberts (1985) argues that the rise of *do* forms is a reflex of the loss of V-I movement. As V-I movement was lost, INFL lowering replaced it (or verb movement to I^0 at LF, as in Chomsky (1991, 1993) and so the verb remains in situ. In questions, the requirement that the material in I^0 overtly move to C^0 persists; thus, auxiliary *do* is inserted in I^0 as a last resort device and then moves to C^0. Examples of questions with *do*-support are given in (128).

(128) Questions

a. and wherfore doth the earth sustaine me? (304 25-24)

b. Dyd ye wryte this with your owne hande? (308 96-25)

c. doeste thou enuy to him the monarchye of the thing mortal? (326 109-30)

d. Why doth God erect his throne amongst vs? (347 33-24)

In negative declaratives, negation blocks INFL lowering (or verb movement to I^0 at LF), stranding the material in I^0. Again, auxiliary verb *do* is inserted in I^0 to support the stranded material as a last resort device. Examples of negative declaratives with *do*-support are given in (129).

(129) Negative declaratives

a. They dyde not set theyr mynde on golde or rychesse. (305 35-23)

b. Christ dyd not praye for Iames and Iohan & for the other. (305 319-11)

c. but the shepe did not heare them. (310 jn10-8)

d. He did nott consent to their counsell and dede (310 lk23-51)

Kroch (1989b) provides empirical support for the proposal that the rise of *do* forms is a reflex of the loss of V-I movement by showing that the rate of the rise of *do* forms in various contexts, such as questions, negative declaratives and affirmative declaratives, is the same up to the middle of the 16th century. He also relates the rise of *do* forms to the shift in the position of weak adverbs such as *always* and *never*. In Middle English, weak adverbs usually follow the tensed main verb, whereas in Modern English they occur before it. A widely accepted analysis is that verb-adverb order reflects the verb movement to I^0, whereas adverb-verb order reflects the failure of such movement. Kroch (1989b) shows that the rate of the replacement of verb-adverb order by adverb-verb order is the same as the rate of the rise of *do* forms, indicating that a single grammatical change, namely the loss of V-I movement, is at work.

Comparing the development of *do* forms in negative declaratives and negative imperatives raises an interesting puzzle. The development of *do* forms in the two contexts does not show the same pattern. As can be seen in Figure 3.1, up to the end of the 16th century the relative frequency of *do* in negative imperatives was as low as that in affirmative declaratives. Then after 1600, there was a big change in the development of negative imperatives. The relative frequency of *do* in negative imperatives jumped to the much higher rate found in negative declaratives, and subsequently the two negative environments evolved identically. If *do*-support is triggered when negation intervenes between V^0 and I^0, it is mysterious why the development of *do* forms in negative imperatives pattern with negative declaratives only after 1600.

Moreover, comparing the development of *do* forms in questions and imperatives raises another puzzle. In Middle English, subject-verb inversion is attested in both questions and imperatives, indicating verb movement to C^0 for both types of sentences, as shown in (116) and (126). More supporting examples are given in (130) and (131).

(130) Questions

a. trowyst thou that the Apostle shall delyuer the from myne handys?
trust you that your Apostle shall deliver you from my hands
(190 50-24)

b. how dwelleth the charite of God in hym?
how dwells the charity of God in him
(161 1Jn3-17)

c. Why dudest thou thus?
why dress you thus
(161 3-22)

d. Who schewed the that thou were naked?
who showed you that you were naked
(161 3-17)

(131) Imperatives

a. Ne touche ghe noght
ne touch you not
(161 Col2-21)

b. ryde ye nat aftir that knyght
ride you not after that knight
(243 555-18)

c. helpe þou me.
help you me
(EARLPS,150.2290)

d. Or ellus take þou þe woluyfiste
or else take you the lycoperdon-bovista
(HORSES,91.44)

If *do* support is triggered in questions as a reflex of the loss of V-I movement, as proposed in Roberts (1985) and Kroch (1989b), then we expect to see imperatives pattern with questions with respect to the development of the corresponding *do* forms. However, as can be seen in Figure 3.1, the rate of use of *do* forms in negative imperatives is much lower than the rate of use of *do* forms in questions at all periods prior to the completion of the change. It is only after 1700 that the rate of use of *do* forms in negative imperatives catches up with the rate in questions. As for affirmative imperatives with *do* forms, the relative frequency is extremely low. The relative frequency of *do* in affirmative imperatives never exceeds 1% according to Ellegård (1953), who therefore does not plot them in Figure 3.1. Here are some examples of negative imperatives and affirmative imperatives with *do*-support:

(132) Negative imperatives

a. Sir, do not marvel if I do bless your coming hither (344 21-17)

b. Alas syr kinge Pepyn doo not moue your selfe in Ire (304 46-13)

c. doe not wrong the gentleman, and thy selfe too. (360 I:435)

d. & doe not think I speak this of any affection proceeding from my self to any other (358 G:192-30)

(133) Affirmative Imperatives

a. Rather, O God! do thou have mercy on us (323 355-8-34)

b. Do you let it alone. (350 7-24)

c. Do you and your fellows attend them in. (361 M:5-1-106)

d. Do you study Aristotles Politiques, and write, if you please, Comments upon them (373 O:373-16)

In Modern English, although *do*-support is required in negative imperatives, it is not allowed in (non-emphatic) affirmative imperatives. If both questions and imperatives had verb movement to C^0, then it is mysterious why there should be this asymmetry in the rate of development of *do* forms in questions and negative imperatives. Moreover, if both questions and imperatives had verb movement to C^0, it is even more mysterious why *do* in affirmative imperatives is not categorical, whereas it is in questions.

3.2.3 Issues

We summarize below the issues raised by the data considered so far:

- Why does the development of *do* forms in negative imperatives statistically pattern with negative declaratives only after 1600?
- Why don't affirmative imperatives pattern with questions in Modern English? That is, why don't affirmative imperatives require *do*-support in Modern English?
- Why does the development of *do* forms in negative imperatives statistically pattern with negative declaratives and not with negative questions after 1600?

3.3 Infinitivals in Middle English

Before addressing the issues raised in §3.2, we discuss a new set of data from Middle English negative infinitivals. We will see that the word order attested in negative infinitivals in Middle English provides evidence for the inventory of functional projections and their relative positioning in English phrase structure. We will also see that the questions raised in §3.2 can be given an elegant account if we adopt the phrase structure proposed here.

3.3.1 Infinitive Verb and Negation

In PPCME, we found some negative infinitivals with the order '*not*-(*to*)-verb' (as in (134)) and others with the order '(*to*)-verb-*not*' (as in (135)).

(134) *not*-(*to*)-verb

a. Swyche þynges let brynge to þyn myende þe ornamentes of þyn oratorye,
such things let bring to your mind the ornaments of your chapel
and **not fulfylle** þyn eȝen wit vnlyfsum iaperyes a[n]d vanites.
and not fulfill your eyes with ridiculous frippery and vanities
(AELR3,35.63)

b. ... þat sche wuld vwche-save **nowth to labowre** aȝens ȝw jn þis
... that she would promise not to labour against you in this
matere tyl ȝe kom hom
matter until you come home
(CMPRIV,MPASTON,221.310)

c. ... that they that ben sike of hir body ben worthy to ben hated but
... that they that are sick of their body are worthy to be hated but
rather worthy of pite wel more worthy **nat to ben** hated
rather worthy of pity even more worthy not to be hated
(BOETH,449.C2.379)

(135) (*to*)-verb-*not*

a. **to do noght** all þat he doos for Goddes lufe
to do not all that he does for God's love
(ROLLFL,99.259)

b. **to sorow noght** for hys syn as he sulde do
to sorrow not for his sin as he should do
(ROLLFL,99.260)

c. And herfore monye men vson wel **to come not** in bedde wiþ schetis,
and therefore many men used well to come not in bed with sheets
but [to] be hulude aboue þe bed
but [to] be covered above the bed

(WYCSER,I,479.641)

Table 3.1 provides the number of infinitivals with '(*to*)-verb-*not*' and '*not*-(*to*)-verb' order ranging from early to late Middle English. The reason why we have no tokens in the first two periods is because the prevalent way of forming sentential negation in these periods was with *ne*, which always precedes the main verb. In Old English, sentential negation was formed with *ne* alone. Then in Middle English, both *ne* and *not* came to be used (often in the same sentence), until *ne* is completely replaced by *not* in late Middle English.

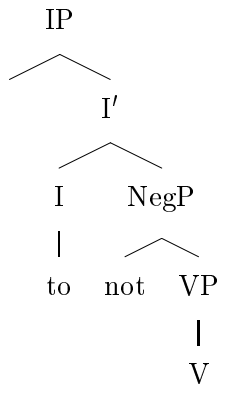
	not-(*to*)-verb	(*to*)-verb-*not*
1150-1250	0	0
1250-1350	0	0
1350-1420	19	6
1420-1500	9	10

Table 3.1: '*not*-(*to*)-verb' and '(*to*)-verb-*not*' order in negative infinitivals

For the counts in Table 3.1, we excluded purpose infinitival clauses in the form of '*not*-*to*-verb'. This is because the *not* in '*not*-*to*-verb' may be negating the entire purpose clause and so may not be a sentential negation of the infinitival clause.

According to Frisch (1997), *not* in Middle English is either a VP-adjoined adverbial, or a sentential negation base-generated either in [Spec, NegP] or as the head of NegP. Let us assume that the infinitive marker *to* originates and stays in a fixed position, namely I^0, and that *not* originates and stays in a fixed position lower than I^0 as an adverbial or as a sentential negation.

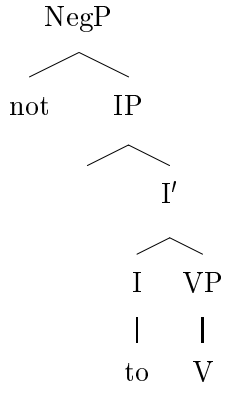
(136)



Given the phrase structure in (136), the word order '(*to*)-verb-*not*' can be derived only if the verb moves across *not* and right-adjoins to I^0. But this is an unattractive solution in that we are forced to admit right-adjunction in syntax. Moreover, the phrase structure in (136) cannot derive the word order '*not*-(*to*)-verb'.

Alternatively, if *to* is in I^0, and *not* originates and stays in a fixed position, then the word order '*not*-(*to*)-verb' suggests that negation is structurally located higher than I^0.

(137)



But if *not* is structurally higher than *to*, as in (137), then there is no way to derive the word order '(*to*)-verb-*not*'.

3.3.2 Two Possible Positions for Negation

If we could say that there are two possible structural positions for negation in the phrase structure of English (see Zanuttini (1991), (1997)), then we can accommodate both the '(*to*)-verb-*not*' and the '*not*-(*to*)-verb' order in Middle English. Motivations for positing two structural positions for negation are present in Modern English as well. In this section,

we discuss what they are and determine where the two negations are located in the phrase structure of a sentence.

In *to*-infinitivals, *not* can either precede or follow *to*, as shown in (138). If *to* is structurally fixed, then the variable word order calls for two possible locations for negation.

(138) a. I promise not to be late.

b. I promise to not be late.

Furthermore, in declaratives with a modal verb, negation *not* can occur either before or after an adverb, or in both positions, as shown in (139).

(139) a. John cannot always agree with his boss.

b. John can always not agree with his boss.

c. John can't always not agree with his boss.

Following Cinque (1998), we assume that adverbs occur in fixed positions. Since *always* occupies the same position in the sentences in (139), the fact that negation *not* can be located above or below the adverb suggests again that there are two possible locations for the negation.[3]

The higher negation has all the properties of sentential negation. It requires *do*-support for lexical verbs (as in (141)), and it licenses NPIs (as in (142)).

(141) a. * John not always agrees with his boss.

b. John does not always agree with his boss.

(142) John will not certainly agree with anyone.

The lower negation also requires *do*-support for lexical verbs (as in (143)), and it also licenses NPIs (as in (144)).[4]

[3] Adverbs such as *always* can occur in two positions: either after an auxiliary verb (as in (139)), or before an auxiliary verb (as in (140)).

(140) He always should check with me first.

[4] Unlike in negative sentences in which *do* is adjacent to *not*, in negative sentences in which *do* is separated from *not* by an adverb, *do* is emphatic, as in (143b). We do not have an explanation for this fact.

(143) a. * John always not agrees with his boss.

b. John does always not agree with his boss.

(144) John will certainly not agree with anyone.

In addition, both the higher negation and the lower negation have similar scope properties. For instance, both the sentences in (145) are ambiguous in that the negation can take either wide scope or narrow scope with respect to the universal quantifier of the subject NP. The ambiguous readings are paraphrased in (146).

(145) a. All of the players will not certainly drop the ball.

b. All of the players will certainly not drop the ball.

(146) a. for all x, x is a player, x will not drop the ball. ($\forall >$ not)

b. It is not the case that for all x, x is a player, x will drop the ball. (not $> \forall$)

Given that the syntactic behavior of the lower negation is similar to that of higher negation, we conclude that the lower negation is a sentential negation, just like the higher negation.

Then where are the higher negation and the lower negation located in the phrase structure of a sentence? The variable word order of negative infinitivals in Middle English suggests an answer. The word order '*not*-*to*-verb' indicates that the higher negation is located immediately above *to*, and the word order '*to*-verb-*not*' suggests that the lower negation is located somewhere below *to*. Let us assume that TP is the highest functional projection for tensed sentences and that in infinitivals TP is either underspecified or does not project at all (following Baltin (1993)). Such a phrase structure for infinitivals reflects the fact that the infinitive does not have tense morphology.[5] Let us further assume that *to* is in a functional head that hosts mood features, namely M^0. Then, the higher negation is immediately above MP, deriving the word order '*not*-*to*-verb'. Supporting evidence for the assumption that infinitivals do not project TP and that infinitival *to* cannot occupy T^0 is provided by Baltin (1993), who points out that negation can never precede finite auxiliaries, as shown in (147).

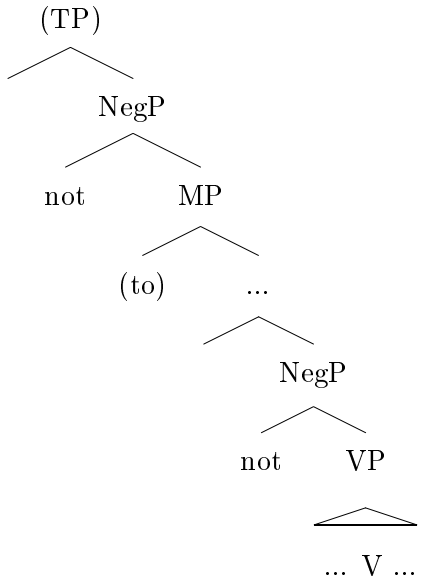
[5]For a different approach in which infinitivals are tensed, see Chomsky (1981), Stowell (1982), Pollock (1989).

(147) a. * John not will leave.

b. John will not leave.

If finite auxiliaries occupy T^0, the highest functional head for tensed sentences, and negation occurs lower than T^0, as we have assumed, then finite auxiliaries cannot follow negation. Further, if *to* also occured in T^0, then *to* should not be able to follow negation. But the fact is that *to* can either precede or follow negation. Thus, *to* cannot be in T^0, and it therefore occupies a functional head lower than T^0.[6] As for the lower negation, we assume that it occupies a position intermediate between MP and VP. The skeletal phrase structure assumed here for English is given in (148).[7]

(148)



3.3.3 Infinitive Verb Movement

We propose that the '*to*-verb-*not*' order in Middle English is derived by the movement of the verb over the lower negation to an intermediate position between M^0 and the lower Neg^0, call it F^0. If infinitives move over the lower NegP, then we expect to find cases in which

[6] The phrase structure assumed here for English is similar to Baltin (1993). The main difference is that in Baltin (1993), AgrOP projects immediately below TP and *to* is placed in $AgrO^0$, whereas we do not assume the existence of AgrP. Instead, we assume that MP projects below TP and *to* is placed in M^0.

[7] Zanuttini (1991) also argues that English has two positions for sentential negation. The analysis proposed here differs from Zanuttini (1991) in that she assumes that the presence of NegP1 is parasitic on the presence of tense phrase, whereas we make no such assumption. As a consequence, unlike the analysis proposed here, Zanuttini is forced to assume that infinitivals project TP.

the infinitive verb precedes *not* and *not* in turn precedes a participle or a direct object. We found such cases in PPCME. This expectation is borne out, as illustrated in (149) and (150).

(149) *to*-verb-*not*-participle

a. and said mayster parson, I praye you **to be not displeasyd** ...
and said master parson I pray you to be not displeased ...
(CAXPRO,88.176)

b. Ha! What it es mykell to be worþi lovyng and **[to] be noght loved**!
ha what it is much to be worth loving and [to] be not loved
(ROLLFL,88.52)

(150) *to*-verb-*not*-direct object

a. **to conforme noght his will** to Gods will, **to gyf noght entent** till hes
to conform not his will to God's will to give not intent to his
prayers ...
prayers ...
(ROLLFL,99.263)

b. But God, of his grete marci, ȝeue to us grace to lyue wel, ... and **to spille**
but God of his great mercy give to us grace to live well ... and to spill
not oure tyme, be it short be it long at Goddis ordynaunce.
not our time be it short be it long at God's ordinance
(PURVEY,I,56.73)

A widely accepted diagnostic for verb movement is adverb placement with respect to the verb. In Middle English finite clauses, adverbs such as *often* and *ever* usually follow the tensed verb, as in (151). If these adverbs are VP-adjoined, then the fact that the tensed verbs precede the adverbs suggests that the verb moves over the adverb.

(151) a. and [he] **suffryd euer** grete penaunce for Goddis sake in weryng of the
and [he] suffered always great penance for God's sake in wearing of the
heyre.
hair
(EDMUND,165.61)

b. Here men **vndurstonden ofte** by þis nyȝt þe nyȝt of synne.
here men understood often by this night the night of sin
(WYCSER,I,477.605)

In Middle English infinitival clauses, adverbs can also follow the infinitive, as shown in (152). This suggests that in Middle English infinitive verbs can also undergo movement.

(152) a. Monye men han a maner **to ete ofte** for to drynke
many men have a manner to eat often in-order to drink

(WYCSER,I,478.631)

b. Þe oþur was þat God wold ȝeue hur þat grace, to hur þat was þe
the other was that God would give her that grace to her that was the
modur of God **to do euer** plesaund seruyse to God.
mother of God to do always pleasing service to God

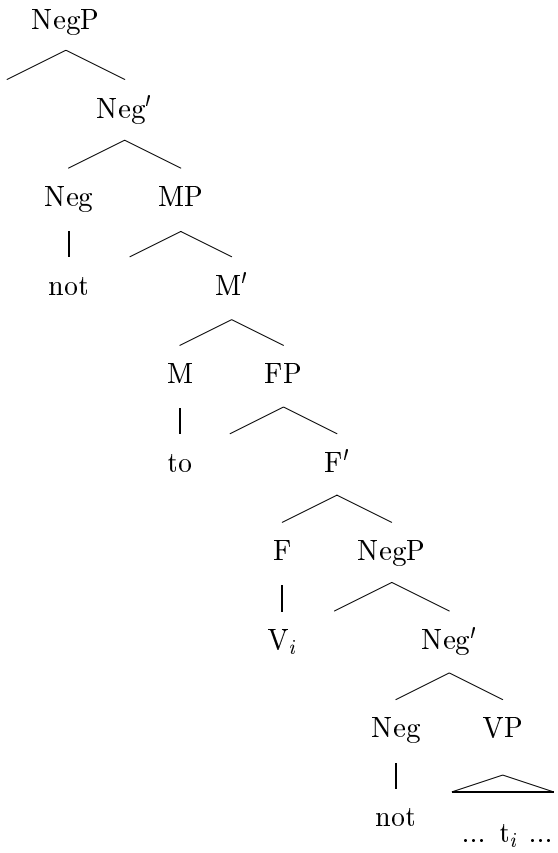
(ROYAL,256.260)

c. for þah neauer nere nan oðer pine bute **to iseon eauer** þe
for though never were no other pain except to see always the
unseli gastes & hare grisliche schape.
wretched spirits and their grizzly forms

(SAWLES,173.107)

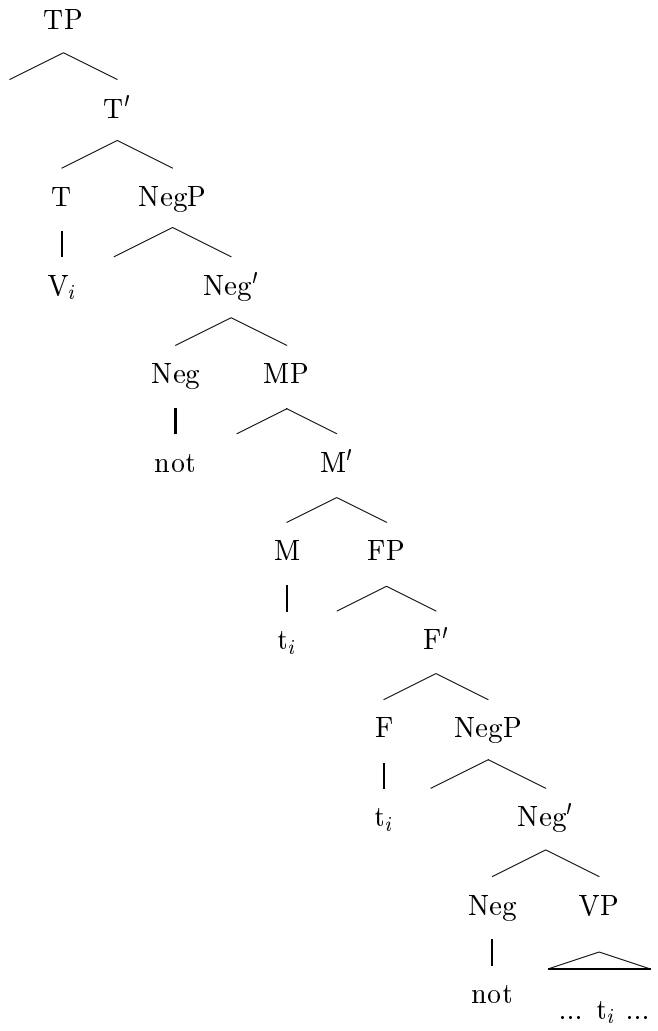
In summary, we have shown that Middle English phrase structure for clauses allows two possible positions for sentential negation based on the data from negative infinitivals. We have also argued that in Middle English, infinitive verbs move over the lower negation to an intermediate position between M^0 and the lower Neg^0. Moreover, we have argued that infinitivals do not project TP and that *to* is in M^0, which is located lower than the higher Neg^0. The phrase structure for infinitivals that we adopt is given in (153). If the proposed analysis is correct, then Middle English infinitivals are like their Modern French counterparts in that the infinitive verb can move to an intermediate functional head (see Pollock (1989) for an account of French infinitivals).

(153)



The phrase structure for tensed sentences in Middle English is similar to that for infinitivals, except that in tensed sentences, TP projects as the highest functional projection and the verb moves all the way up to T^0, as shown in (154).

(154)



The phrase structures in (153) and (154) are consistent with the structures assumed in Kroch and Taylor (1998) for Middle English. As in Kroch and Taylor, we will assume without argument that FP is a projection of aspect that encodes perfectivity or imperfectivity.

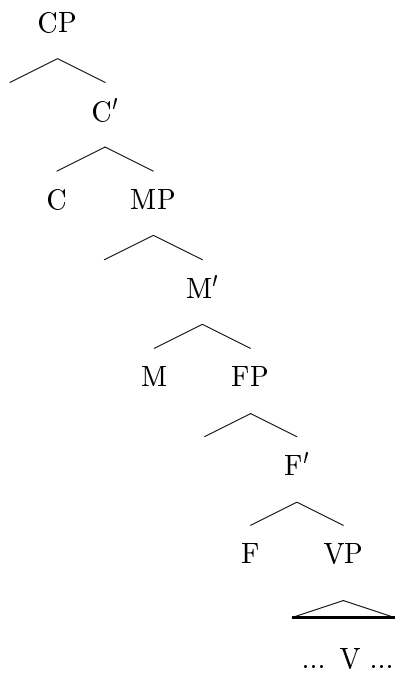
3.4 Development of *Do*-support in Imperatives

3.4.1 Verb Movement in Imperatives

Imperative verbs lack tense in their morphological makeup, just as infinitive verbs do. We take this to mean that either TP is underspecified or does not project at all in imperatives, as represented in (155).[8]

[8]Zanuttini (1991) argues for Romance that imperatives do not project a tense phrase.

(155)



In Old English and Middle English, the word order in imperatives suggests that the imperative verb is in C^0. If we adopt the phrase structure in (155) for imperatives, then the imperative verb moves to F^0, M^0 and then to C^0. Under this analysis, imperatives are similar to infinitivals in that the verb moves to F^0, but they differ in that the verb moves further to C^0.

3.4.2 *Do*-support in Imperatives

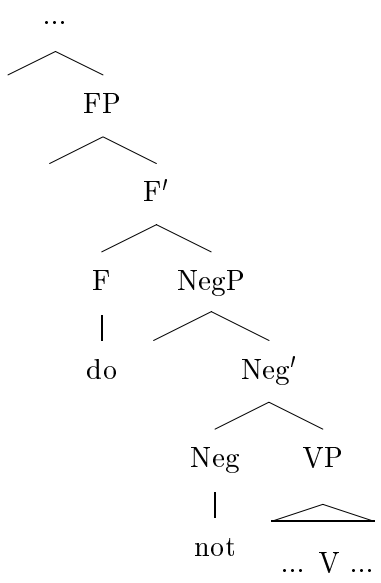
3.4.2.1 Negative Imperatives

As mentioned earlier, the standard view in the literature is that the development of *do*-support is a reflex of the loss of V-I movement for lexical verbs in the history of English. Under the more articulated phrase structure proposed here, we are able to divide up V-I movement into M-T movement and V-F movement, and we can rephrase the loss of V-I movement as either the loss of V-F movement or the loss of M-T movement.

Recall that *do* forms in negative imperatives are almost non-existent before the end of the 16th century, but gain ground rapidly after 1600. We propose that this is a reflex of the loss of V-F movement, which begins at the end of the 16th century. As V-F movement disappears, overt verb movement to C^0 is replaced with LF verb movement to C^0. But

when F^0 and V^0 are separated by negation *do*-support is required as a last resort device since as in Chomsky (1991, 1993), LF verb movement is blocked by intervening negation. This is represented in (156).[9]

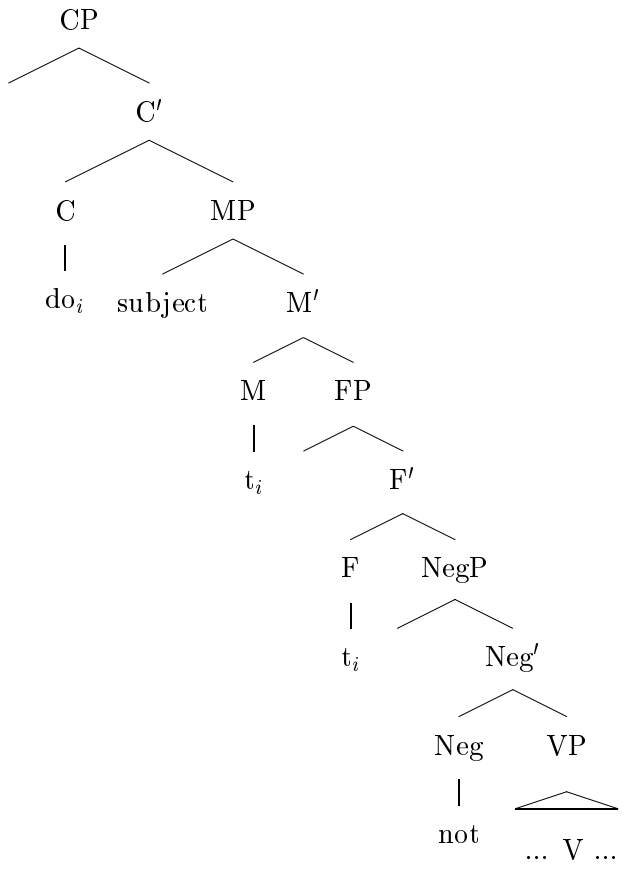
(156)



Auxiliary *do* then moves to C^0, deriving *do*-(subject)-*not*-verb order, as represented in (157). Some examples of negative imperatives with *do*-support are given in (158).

[9] An alternative approach to why *do*-support is required in negative sentences is given in Bobaljik (1995). According to Bobaljik, *do*-support is triggered by a PF adjacency requirement between the morphology in INFL and the verb. Given this approach, we can say that *do*-support is required in negative imperatives because negation blocks PF adjacency between the morphology in the functional heads and the verb.

(157)



(158) a. Do not send me any letters (363 W:212a-33)

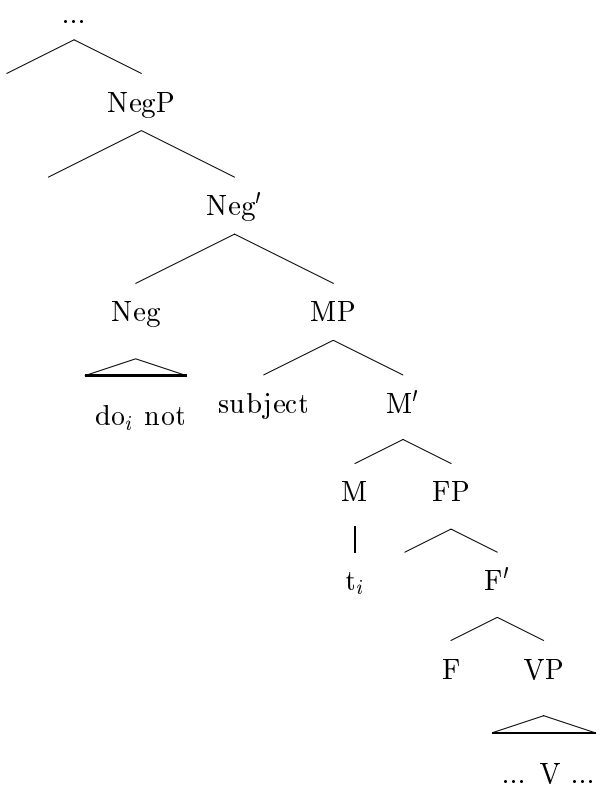
b. but I will be your good lord, do you not doubt. (361 O:4-2-39)

c. Do not bite your thumbs, sir. (364 N:281a-7)

d. Do not come in my husband's sight in mean time. (363 W:228a-45)

The loss of V-F movement requires *do*-support in negative imperatives with higher negation as well: as V-F movement is lost, further verb movement to M^0 and to C^0 is lost as well, and overt verb movement to C^0 is replaced by LF verb movement to C^0. However, when M^0 and C^0 are separated by negation, LF verb movement to C^0 is blocked, and so *do*-support is required. In the spirit of Baltin (1993), we assume that an adjacent verbal element adjoins to the higher negation. Thus, in negative imperatives with *do*-support and higher negation, auxiliary *do* moves and adjoins to the higher negation, as in (159).

(159)



The resulting complex of *do* and negation then moves to C^0 as a unit, deriving the '*do-not*-(subject)-verb' order illustrated in (160).

(160) a. Good brother, do not you envy my fortunate achievement. (361 W:3-1-86)

b. Don't read this, you little rogue, with your little eyes; (379 61-20)

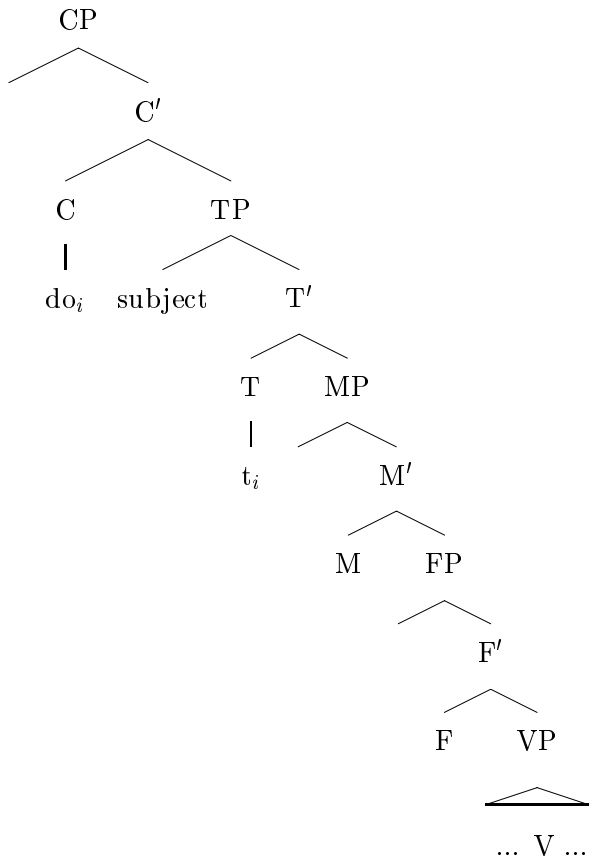
c. but don't lose your money. (379 13-16)

d. Don't lose your money this Christmas. (379 161-21)

3.4.2.2 Affirmative Imperatives

Following Roberts (1985) and Kroch (1989b), we assume that as English lost verb movement for lexical verbs, questions, which require overt verb movement to C^0, resorted to *do*-support. Under the articulated phrase structure assumed here, *do* is inserted in T^0 and then moves to C^0. This is represented in (161).

(161)



Since imperatives also show overt verb movement to C^0, we expect the development of *do* forms in affirmative imperatives to pattern with questions. However, the relative frequency of *do* forms of affirmative imperatives never exceeded 1%. In present-day English, *do* forms are restricted to emphatic affirmative imperatives, as illustrated in (162).

(162) a. Do come early.

b. Do enjoy the movie.

The proposed phrase structure for imperatives differs from that of questions: imperatives do not project tense phrase, whereas questions do. We argue that this is exactly why the development of *do* forms in affirmative imperatives does not pattern with that of questions. In questions, as overt verb movement is lost, the tense feature in T^0 is stranded. But even after the loss of overt verb movement, the requirement that features in T^0 overtly move to C^0 persists. As a last resort device for movement to C^0, the stranded tense feature is supported by *do*, which then overtly moves to C^0. But imperatives contain no functional

head with tense features. This means that once overt verb movement to C^0 is replaced by LF movement, the requirement that features in T^0 move to C^0 cannot apply to imperatives, and so imperatives do not develop *do* forms.

Our analysis reduces the problem of why affirmative imperatives do not allow *do*-support in Modern English to why affirmative declaratives do not do so. It is widely assumed that in English affirmative declaratives, the verb moves to INFL at LF and since there is no blocking category for the movement, *do*-support is not allowed. Given our articulated phrase structure, in affirmative declaratives, the verb moves to T^0 through F^0 and M^0 at LF and no *do*-support is allowed since there is no blocking category for LF verb movement. Affirmative imperatives then do not allow *do-support* for the same reason that affirmative declaratives do not allow *do*-support. Further, affirmative imperatives did not develop a last resort device in which *do*-support takes place either in M^0 or F^0, with further movement of *do* to C^0 for the same reason that affirmative declaratives did not develop a last resort device in which *do*-support takes place either in M^0 or F^0 with further movement to T^0.

3.5 Sequential Loss of Verb Movement

If we assume the articulated phrase structure proposed here, we can imagine at least two different ways in which the loss of verb movement can proceed: (i) the loss of V-F movement and M-T movement begins simultaneously; (ii) the loss of M-T movement historically precedes the loss of V-F movement. We argue that the possibility (ii) makes the correct predictions for English: the loss of M-T movement begins at the beginning of the 15th century, and the loss of V-F movement begins at the end of the 16th century.

In a series of works on syntactic change, Kroch develops a model of change that accounts for the gradual replacement of one form by another form (Kroch (1989a, 1989b, 1994); see also Pintzuk (1991), Santorini (1992), Taylor (1994)). According to Kroch, the gradual change in the relative frequencies of two forms is a reflex of the competition between two grammars, rather than by a series of grammatical reanalyses. A reorganization of the grammar takes place only when one form entirely displaces the other at the endpoint of a change. In particular, Kroch argues that the statistical pattern in the development of *do* forms reflects the competition between the old grammar that has V-I movement for lexical

verbs and the new one that has lost it. In time, the grammar without V-I movement wins, at the expense of the grammar that has V-I movement.

Extending Kroch's grammar competition model to our proposal, we conjecture as to how the loss of M-T and V-F movements proceeds. We hypothesize that at the beginning of the 15th century, the competition between the grammar with M-T movement and the one without such M-T movement begins. Before the grammar with M-T movement completely loses out, the competition between the grammar with V-F movement and the one without such V-F movement begins at the end of the 16th century. The grammar without V-F movement is constrained not to have M-T movement, since the loss of lower verb movement prevents the verb from moving higher up. Thus, at this point, competition between three grammars is taking place: one grammar with both M-T and also V-F movement, a second grammar with V-F movement but no M-T movement, and a third grammar with neither V-F nor M-T movement.

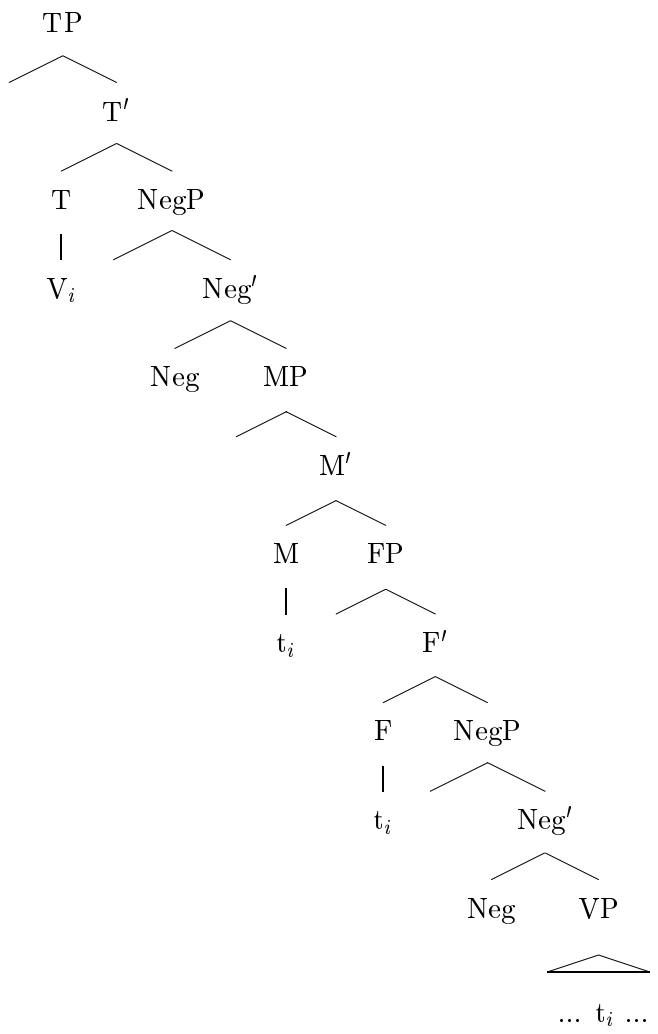
In what follows, we will discuss some of the consequences of the hypothesis that the loss of M-T movement precedes the loss of V-F movement in the history of English.

3.5.1 *Do*-support in Negative Imperatives and Negative Declaratives

As shown in Figure 3.1, by 1575, the relative frequency of *do* forms in negative declaratives is almost 40%, whereas the frequency of *do* forms in negative imperatives is remarkably low. But at the end of the 16th century, the frequency of *do* forms in negative imperatives suddenly rises, and around 1600, the development of *do* forms in negative imperatives is roughly the same as in negative declaratives.

Given the articulated phrase structure proposed here, in declaratives in Middle English, the verb moves all the way up to T^0, as represented in (154) (repeated below as (163)).

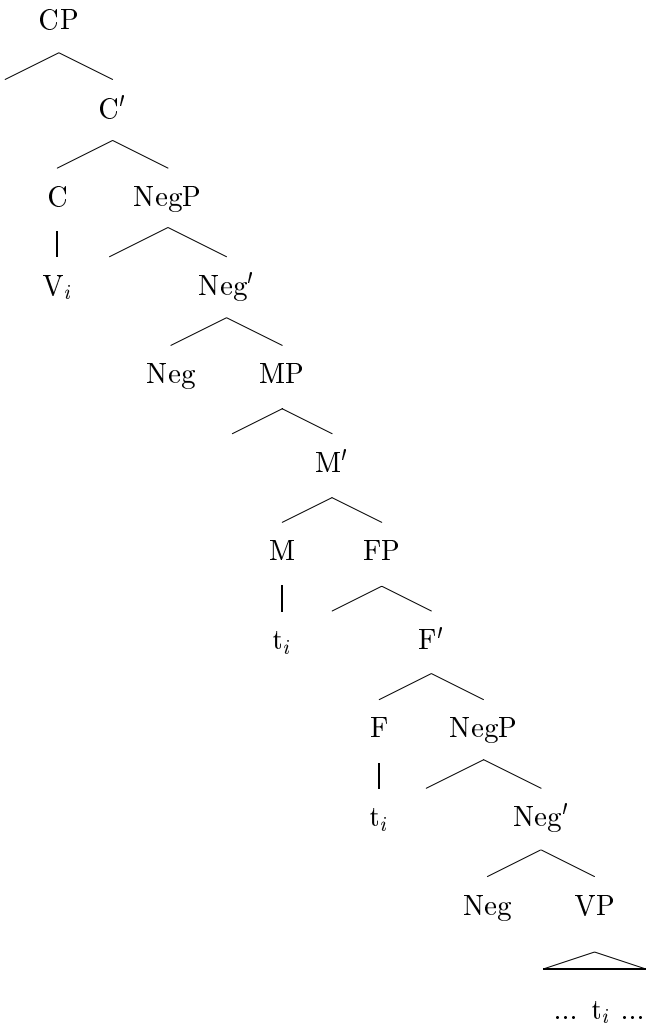
(163)



Negative declaratives formed with higher negation require *do*-support when M-T movement is lost. Moreover, all negative declaratives, whether formed with higher or lower negation require *do*-support when V-F movement is lost. If the loss of M-T movement begins at the beginning of the 15th century, we expect to find *do*-support in negative declaratives much before 1575. And this is indeed what we see in Figure 3.1.

On the other hand, in our phrase structure for imperatives, TP is underspecified or does not project at all. Thus, in imperatives in Middle English, the verb moves to F^0 and to M^0 and then directly to C^0, as represented in (164).

(164)



The absence of T^0 in imperatives means that the loss of M-T movement has no consequences for the development of *do* forms in negative imperatives. But the loss of V-F movement does. If the loss of V-F movement begins at the end of the 16th century, we do not expect to find much *do*-support in negative imperatives before 1600. As shown in Figure 3.1, our expectation is supported.

Another difference between negative declaratives and negative imperatives has to do with the development of *do* forms with *be* and auxiliary *have*. While negative imperatives require *do*-support with these verbs, negative declaratives prohibit it. Ellegård's data contains 2 negative imperatives with *be* in 17th century, and both of them have *do*-support. We found no negative declaratives with *do*-support on *be* and auxiliary *have*.

(165) Negative Imperatives

a. Well then, don't be so tedious, Mr. Presto (379 107-5)

b. I mean decently, don't be rogues (379 174-17)

(166) Negative Declaratives

a. It is not the tears of our own eyes only, but of our friends also, that do exhaust the current of our sorrows (372 104-10)

b. for I had not then hard of any alteration in this shire which the said letters of commaundment did forbid. (324 273-119-6)

The standard view of why negative declaratives with an auxiliary verb prohibit *do*-support is that auxiliary verbs undergo movement. The question then is why auxiliary verbs in imperatives do not undergo movement, hence requiring *do*-support when negated. The answer lies in the presence or the absence of the tense projection. That is, auxiliary verbs can undergo movement only when the clause is tensed. Following Chomsky (1995), let us think of movement as attraction. Then tense features in T^0 attract auxiliary verbs, allowing them to move up to T^0. If there is no tense projection, then there is no tense feature to attract auxiliary verbs. We have assumed that imperatives are not tensed. That is, imperatives do not project a tense phrase. This means that auxiliary verbs cannot be attracted by tense features, and so they must remain in situ.[10]

3.5.2 *Do*-support in Questions and Negative Declaratives

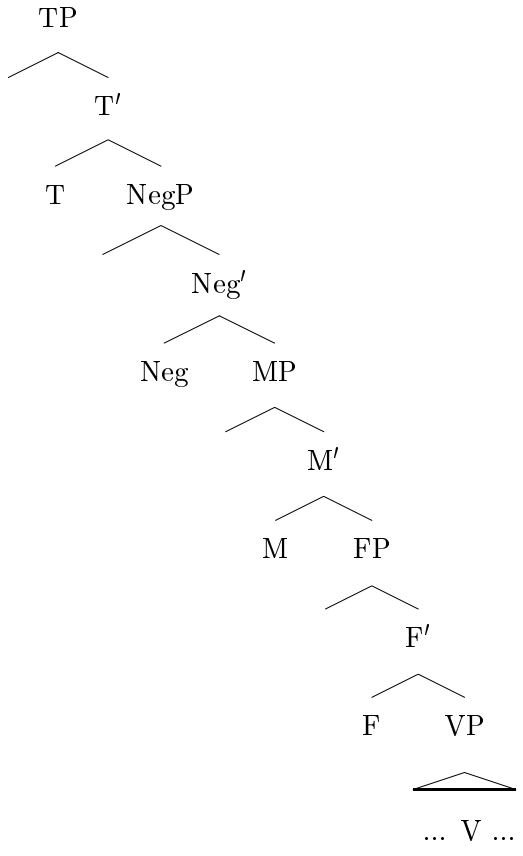
Figure 3.1 shows that *do*-support was much more favored in questions than in negative declaratives. By 1575, while the frequency of *do* forms is 40% in negative declaratives, it is almost 60% in affirmative questions and almost 90% in negative questions. The difference in the frequency of *do* forms in questions and negative declaratives can be explained if the loss of M-T movement precedes the loss of V-F movement.

In questions, the loss of M-T movement leads to *do*-support in T^0, and *do* moves to C^0. On the other hand, in negative declaratives, the loss of M-T movement does not

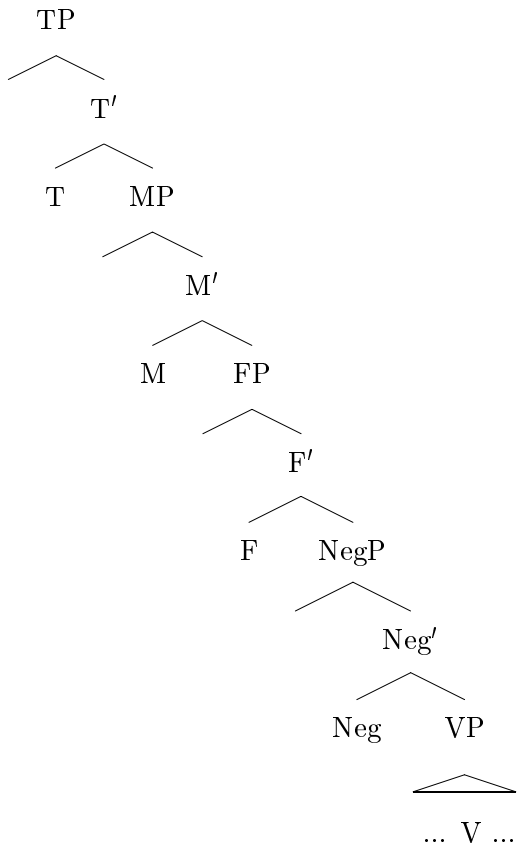
[10]Modal verbs such as *must, can, might, should,* etc. cannot occur in imperatives. If modal verbs are merged in T^0 and if imperatives do not project tense phrase, then we expect modal verbs to be barred from imperatives.

necessarily correlate with the development of *do*-support because negative declaratives have two possible analyses. That is, a negative declarative can be formed with negation either in the higher NegP or the lower NegP position, as schematized in (167).

(167) a.



b.



During the period in which M-T movement is being lost and before the period in which the loss of V-F movement begins, if (167a) is chosen, then *do*-support is required, as in (168), and if (167b) is chosen, then *do*-support is not required, as in (169). This explains why the frequency of *do* forms in negative declaratives is much lower than in questions.

(168) a. I doubt sir, that this Pillorie fellowe doth not heare you at all. (338 149-4)

b. In this kind of Oration, wee doe not purpose wholy to praise any bodie (338 29-9)

c. I do not withdrawe my handes to bestow them vnto hard labour (326 152-36)

d. nor he dothe not upbraide vnto the sinful person his of him self, procedynge offences (326 180-18)

(169) a. The stocke feeleth not the flatterynge to be hydde (326 86-9)

b. O my Pelargus, I sawe not or spied not the before (326 105-35)

c. And yet I speake not this, but that both these are right necessary (338 9-30)

d. And yet they thought not this fore Law sufficient enough (338 45-37)

When V-F movement is lost after 1600, both analyses in (167) require *do*-support and so the frequency of *do* forms in negative declaratives rises rapidly.

The proposed analysis also explains why the development of *do* forms in negative imperatives patterns with that of negative declaratives and not with that of negative questions after 1600. In negative questions, *do*-support takes place because of the requirement of overt tense feature movement to C^0, and due to the presence of negation which blocks LF verb movement. When V-F movement is lost, the requirement for overt tense feature movement to C^0 does not apply in imperatives since imperatives are not tensed. The only reason for *do*-support in negative imperatives is therefore the presence of negation, which blocks LF verb movement. We have seen that *do*-support in negative declaratives is also due to the presence of negation. Hence, it is not surprising that negative imperatives pattern like negative declaratives with respect to the development of *do* forms after 1600.

Two questions remain: (a) why is the frequency of *do* forms in negative questions always higher than in affirmative questions prior to the completion of the change, and (b) why does the frequency of *do* forms drop suddenly in negative questions and in negative declaratives during 1560–1590. We can only posit conjectures in addressing these questions. In negative questions, *do*-support serves two functions: a last resort device for verb movement to C^0 and a last resort device for problems related to negation. But in affirmative questions, *do*-support serves only one function: as a last resort device for verb movement to C^0. Hence, negative questions seem to provide a more favorable environment for *do*-support than affirmative questions. As for why the frequency of *do*-support dropped so suddenly in negative questions and negative declaratives during 1560–1590, we conjecture that the lower negation gained ground in this period due to the loss of M-T movement. As M-T movement is lost, *do*-support takes place in T^0 when there is an intervening negation between M^0 and T^0. The idea is that selecting lower negation may have been more favorable than inserting *do* in T^0 as a last resort device. If the loss of V-F movement does not begin until the end of

the 16th century, then we expect the frequency of *do*-support to drop in the latter half of the 16th century. Moreover, if the loss of V-F movement begins at the end of the 16th century, we expect the frequency of *do*-support in negative questions and negative declaratives to rise again after 1600. And this is exactly what happened, as shown in Figure 3.1. Questions still remain as to why the use of lower negation gains ground as M-T movement is lost and why the frequency of *do* forms drops again in negative sentences during 1610–1640.

3.6 No *Do*-support in Infinitivals and Subjunctives

In this section, we address the question of why infinitivals and subjunctives in Modern English do not have *do*-support. For subjunctives, we limit the discussion to mandative subjunctives which occur as embedded clauses under directive verbs, such as *require, demand, insist, suggest,* etc., as exemplified in (170).

(170) a. I demand that John finish the homework.

b. I insisted that John stay.

c. I suggested that she leave soon.

3.6.1 Infinitivals

The loss of V-F movement in infinitivals did not lead to the development of *do*-support in negative infinitivals. We do not expect *do*-support in negative infinitivals formed with higher negation because there is no verb movement to C^0 (neither in the overt syntax nor at LF). Further, if, as V-F movement disappeared, the infinitive *to* in M^0 attracts the features in F^0, then *do*-support is not expected in negative infinitivals formed with lower negation. This is because the feature content of F^0 is in effect being supported by *to* in M^0.

3.6.2 Subjunctives

In Middle English, the subjunctive form of verbs were inflected and exhibited a present/past tense distinction (Mossé (1952)). Moreover, the subjunctive verb underwent movement, indicated by the fact that it precedes negation, as in (171).

(171) a. But beware ye **be nat** defoyled with shame, trechory, nother gyle,
but beware you be not defiled with shame treachery nor guile
(MALORY,46.37)

b. Þer-uore ich þe rede wel þet þou **ne musy naȝt** to moche hit uor to
therefore I you advise well that you ne spend not too much it for to
zeche uor þou myȝtest lyȝtliche guo out of þe riȝte waye.
seek because you might easily go out of the right way
(AYENBI,I,104.108)

In Modern English, subjunctive verbs are in their bare stem form and exhibit no present/past tense distinction. They require an overt subject, and auxiliary verbs as well as lexical verbs must stay in situ. This is indicated by the fact that both auxiliary and lexical verbs follow negation in negative subjunctives, as shown in (172) and (173).

(172) a. *I suggest that you be not late.

b. *I insist that John be not invited to the party.

c. *I insisted that John stay not.

d. *I demanded that she leave not yet.

(173) a. I suggest that you not be late.

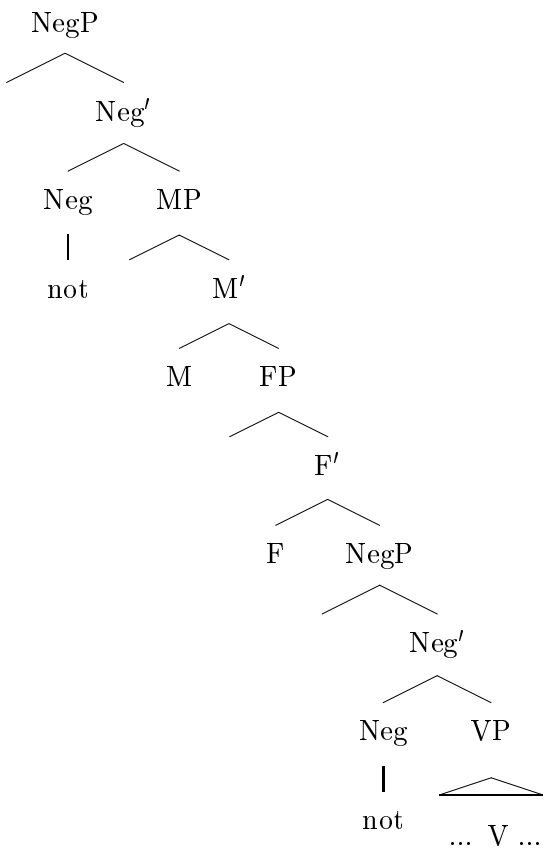
b. I insist that John not be invited to the party.

c. I insisted that John not stay.

d. I demanded that she not leave yet.

We take the disappearance of the present/past tense distinction in subjunctives as an indication that they stopped projecting TP at some point after Middle English. Furthermore, we take the fact that subjunctives require an overt subject to indicate that the feature content of M^0 assigns nominative case, licensing an overt subject. Thus, the phrase structure of subjunctives (though not the feature content of M^0) looks just like that of infinitivals, as represented in (174).

(174)



Given the phrase structure in (174), we can explain why auxiliary verbs as well as lexical verbs must stay in situ in subjunctives. As V-F movement is lost, lexical verbs remain in situ. Moreover, since there is no tense projection, there is no T^0 to attract auxiliary verbs. Thus, auxiliary verbs remain in situ as well.

Roberts (1985) takes the fact that in British English complement clauses of directive verbs can contain modals (as in (175)) to indicate that subjunctives project TP.

(175) a. I insist that John should take the exam.

b. I demanded that the witness should be present at the hearing.

Roberts argues that subjunctive clauses are structurally analogous to the complement clauses in (175). The only difference is that complement clauses in (175) have an overt modal *should* in T^0, whereas subjunctives have a covert modal in T^0. We agree with Roberts that complement clauses in (175) project TP and that *should* is in T^0. But we do not agree with his further conclusion. Clauses with *should* can occur in matrix contexts, as shown in (176), but subjunctives cannot, as shown in (177).

(176) a. John should take the exam.

b. We should invite John to the party.

(177) a. * John take the exam.

b. * The witness be present at the hearing.

To block subjunctives from occurring in matrix contexts, one would have to resort to a stipulation that clauses with a covert modal in T^0 cannot occur in matrix contexts. In contrast, our proposal treats subjunctives as structurally parallel to infinitivals. Thus, we expect subjunctives and infinitivals to behave alike in many ways, including the distributional restriction to embedded contexts.

If we adopt the phrase structure in (174) for subjunctives, we expect subjunctives not to have *do*-support for the same reason that infinitivals do not. We revise the proposal in Roberts (1985) that subjunctives have a covert modal in T^0, and assume instead that the locus of the covert modal is M^0. This covert modal is similar to the *to* of infinitivals. The difference is that the covert modal assigns nominative case, whereas *to* assigns null case. Recall our proposal that *to* in infinitivals attracts the feature content of F^0. We extend this proposal to the covert modal in subjunctives. Moreover, in subjunctives, the verb does not move to C^0 either in the overt syntax or at LF. Thus, negative subjunctives, just like negative infinitivals, do not allow *do*-support.

A potential problem with adopting the phrase structure in (174) for subjunctives is that deriving the correct word order is not straightforward for negative subjunctives formed with the higher negation. If the subject is in [Spec, MP], then the phrase structure wrongly derives *not*-subject-verb order. A way out of this problem is to assume that the subject moves to the higher [Spec, NegP] or adjoins to the higher NegP for reasons of predication, as Zanuttini (1991) assumes for the Romance languages. Another potential problem with our proposal concerning subjunctives is that we allow nominative case assignment in a tenseless clause. However, as we will see in §4.4, languages such as Korean and Japanese can have nominative case marked subjects in non-finite clauses. Also, in German, matrix infinitivals with directive function can have a subject marked with nominative case, as illustrated in (178).

(178) German

Jeder mal herhören!
everybody-Nom once listen

'Everybody listen up!'

Thus, our proposal that tenseless INFL in subjunctives assigns nominative case receives some independent support.

3.7 Conclusion

We have argued that the syntax of Middle English infinitivals can be explained if we assume two possible positions for sentential negation and an intermediate functional projection (FP) between the mood phrase (MP) and the verb phrase (VP). We have been assuming that FP is a projection of aspect, following Kroch and Taylor (1998). We were able to account for the patterns of *do*-support in various sentence types based on the articulated phrase structure that we have proposed for Middle English. In particular, we have proposed that the development of *do*-support in negative imperatives is a reflex of the loss of V-F movement. That is, as V-F movement was lost, the verb in imperatives moves to C^0 at LF. In negative imperatives, *do*-support is required as a last resort device because negation blocks LF verb movement. We have also argued that the differences and similarities attested in the statistical patterns of the development of *do* forms between imperatives and questions, between imperatives and declaratives, and between questions and declaratives can be explained if the loss of M-T movement precedes the loss of V-F movement in the history of English. We have also proposed that infinitivals and subjunctives do not develop *do*-support because the elements in M^0 in these clauses attract and support the feature content of F^0, rendering *do*-support unnecessary.

Chapter 4

Feature Content of the Imperative Operator

4.1 Introduction

The discussions and conclusions reached in the previous two chapters on cross-linguistic variation in the availability of negative imperatives and the evolution of the syntax of imperatives in the history of English led us to posit an imperative operator in C^0 across languages. We have also found it convenient to posit a subjunctive operator and an infinitival operator for subjunctives and infinitivals, respectively. In this chapter, we will further explore the content of these operators. We will assume that the operators are sets of features and identify their feature content. This way of looking at the issue will help us to account for the close relation between imperatives, subjunctives and infinitivals that exists across languages as well as for cross-linguistic variation in the syntactic behavior of the imperative subject.

We propose that the imperative operator includes [directive] and [irrealis] features, and that the infinitival and the subjunctive operators include only the [irrealis] feature. The feature [directive] encodes directive illocutionary force, and it is responsible for driving verb movement to C^0 either before Spell-Out or at LF, depending on the language. The feature [irrealis] contributes unrealized interpretation, and it selects/requires either subjunctive or infinitive INFL. We show that the syntactic behavior of the imperative subject depends

on what type of INFL the feature [irrealis] selects in the language. If subjunctive INFL is selected, the imperative subject behaves just like subjunctive subjects in the language, and if infinitive INFL is selected, then it behaves just like the subjects of infinitivals. Our proposal also accounts for why languages select subjunctives or infinitivals in linguistic contexts where the imperative form is not available. We will argue that when the imperative operator which includes [directive] and [irrealis] features is ruled out for some reason in a particular language, the language selects an operator whose feature content is in a subset relation, which is a subjunctive or an infinitival operator that includes the [irrealis] feature.

This chapter is organized in the following manner. In §4.2, we observe that imperatives cannot be embedded across languages and that many languages use subjunctives or infinitivals in embedded clauses of reported directives. We discuss what this implies for the proper characterization of imperative, subjunctive and infinitival operators. In §4.3, we address the question of why languages select subjunctives or infinitivals in linguistic contexts where imperatives are ruled out or not available. We also address the issue of how subjunctives and infinitivals in matrix contexts generate directive illocutionary force. We argue that while the directive force of imperatives is directly encoded, the directive force of subjunctives and infinitivals is generated through inference. We also consider and reject an alternative account in which subjunctives and infinitivals that express directive force also have an illocutionary force operator that encodes directive force. In §4.4, we argue that the syntactic status of the empty subject in English imperatives is PRO, whose reference is determined by the interpretive property of the imperative operator. Implications of the proposed analysis for Control Theory are also discussed. We also provide an analysis of cross-linguistic variation in the syntactic behavior of imperative subjects.

4.2 Feature Content of Imperative Operator

4.2.1 A Feature that Indicates Directive Illocutionary Force

Any matrix sentence expresses some illocutionary force. But when the same sentence is embedded, it loses its illocutionary force. For instance, a matrix declarative which is an assertion ceases to be an assertion when embedded. Similarly, a matrix interrogative which is a question ceases to be a question when it is embedded.

(179) a. John is intelligent.

b. Mary thinks that John is intelligent.

(180) a. Is John intelligent?

b. I don't know whether John is intelligent.

A standard way of defining the semantics of declaratives and interrogatives is by identifying their semantics with that of the corresponding embedded clauses. The main motivation for this approach is to allow a compositional semantics of sentences. Under this view, a declarative denotes a proposition which is a set of worlds in which that proposition is true, and an interrogative denotes a set of possible answers which can be thought of as a partition on the set of possible worlds (see Karttunen (1977), Groenendijk and Stokhof (1985)). Given this approach, the illocutionary forces expressed in matrix contexts are explained as the result of pragmatic inference or reasoning.

Although this approach has been quite successful in the domain of interrogatives and declaratives, extending it to imperatives is not straightforward. This is because imperatives differ from declaratives and interrogatives in that languages simply do not allow imperatives to be embedded (as noted by Sadock and Zwicky (1985) and Palmer (1986)). Many languages use subjunctives or infinitivals in the embedded clauses of reported directives.

(181) English

a. Give me the book!

b. *I demand that give me the book.

c. I order you to give me the book.

d. I demand that you give me the book.

(182) Modern Greek

a. Grapse.
write-2sg.Imp
'Write!'

b. *O Yannis se dietakse grapse.
the Yannis you ordered-2sg write-2sg.Imp
'Yannis ordered you to write.'

c. O Yannis se dietakse na grapsis.
the Yannis you ordered-2nd.sg NA write-2sg.Subj
'Yannis ordered you to write.'

(183) Spanish

a. ¡Habla le!
talk-2sg.Imp her
'Talk to her!'

b. * Pido que habla le.
ask that talk-2sg.Imp her
'I ask that you talk to her.'

c. Pido que le hables.
ask that her talk-2sg.Subj
'I ask that you talk to her.'

(184) Italian

a. Fallo!
do-2sg.Imp-it
'Do it!'

b. * Ti ordino che fallo.
you order that do-2sg.Imp-it
'I order you to do it.'

c. Ti ordino che lo faccia.
you order that it do-2sg.Subj
'I order you to do it.'

(185) French

a. Finis!
finish-2sg.Imp
'Finish!'

b. * J'exige que tu finis.
I-require that you finish-2sg.Imp
'I require that you finish.'

c. J'exige que tu finisses.
I-require that you finish-2sg.Subj
'I require that you finish.'

(186) German

a. Sei nicht zu aufdringlich !
be-2sg.Imp Neg too pushy
'Don't be too pushy!'

b. * Hans empfiehlt, daß Du nicht zu aufdringlich sei.
Hans suggests that you not too pushy be-2sg.Imp
'Hans suggest that you not be too pushy.'

c. Hans empfiehlt, daß Du nicht zu aufdringlich seist.
Hans suggests that you not too pushy be-2sg.Subj
'Hans suggests that you not be too pushy.'

Languages like Korean appear to pose a counterexample to the constraint against embedding imperatives because the sentence particle that occurs in imperatives *-la* can appear in embedded clauses. However, on closer look, the morphology on the verb in imperatives differs from the verb in the corresponding embedded constructions.

(187) Korean

a. Ppalli o-ala.
quickly come-Imp
'Come quickly.'

b. * Na-nun Mary-eykey ppalli o-ala-ko myenglyengha-yess-ta.
I-Top Mary-to quickly come-Imp-Comp order-Past-Dec
'I ordered Mary to come quickly.'

c. Na-nun Mary-eykey ppalli o-la-ko myenglyengha-yess-ta.
I-Top Mary-to quickly come-la-Comp order-Past-Dec
'I ordered Mary to come quickly.'

The imperative in (187a) cannot be embedded as it is, as shown in (187b). The similarity between *-ala* in (187a) and *-la* in (187c) might be taken to indicate that Korean allows embedded imperatives, but the embedded form lacks the morphology that is essential in making a sentence into an imperative, namely *-a-*. The crucial character of *-a-* in matrix imperatives is illustrated in (188). The corresponding embedded construction cannot have *-a-*, as shown in (187b), and must have *-la*, as shown in (189).

(188) Korean

a. ppalli o-a.
quickly come-Imp
'Come quickly.'

b. * ppalli o-la.
quickly come-la
'Come quickly.'

c. * ppalli o.
quickly come
'Come quickly.'

(189) a. Na-nun Mary-eykey ppalli o-la-ko myenglyengha-yess-ta.
I-Top Mary-to quickly come-la-Comp order-Past-Dec
'I ordered Mary to come quickly.'

b. * Na-nun Mary-eykey ppalli o-ko myenglyengha-yess-ta.
I-Top Mary-to quickly come-Comp order-Past-Dec
'I ordered Mary to come quickly.'

In other words, the marker *-la* is a sentence-final particle that can occur in imperatives, but does not suffice to mark a sentence as imperative. On the other hand, *-a-* alone can make a sentence an imperative, but cannot appear on embedded verbs. Thus, Korean is not a counterexample to the generalization that languages do not allow embedded imperatives.

The fact that languages do not have embedded imperatives and that it is matrix clauses that express illocutionary force leads us to believe that the imperative operator has a feature that encodes illocutionary force. We refer to this feature as [directive], because imperatives canonically express directive illocutionary force.

4.2.2 A Feature that Indicates Selectional Restrictions on INFL

Recall from §4.2.1 that many languages use subjunctives or infinitivals in the embedded clauses of reported directives, and that embedded clauses do not express illocutionary force. The two facts together imply that if the force-indicating feature is stripped away from the imperative operator, the remaining features derive a subjunctive or an infinitival clause type. In other words, in addition to the [directive] feature that encodes directive illocutionary force, the imperative operator contains the feature necessary to derive subjunctives or infinitivals.

We refer to the feature that is necessary to derive subjunctives or infinitivals as [irrealis]. The term 'irrealis' is intended to capture the intuition that the proposition denoted by these subjunctives and infinitivals describes an unrealized situation. What we mean by this will become clearer once we consider the interpretation of subjunctives and infinitivals below. We assume that the [irrealis] feature requires/selects an INFL with the feature content associated with subjunctive or the infinitival clauses. We will refer to this INFL as subjunctive or infinitive INFL, respectively.

In the literature, different types of subjunctives and infinitivals have been identified. Stowell (1982) identifies two types of infinitivals for English, Quer (1998) identifies two types of subjunctives for Romance, and Portner (1992) identifies three types of subjunctives for English. In the following sections, we briefly present their discussions of the properties of different types of infinitivals and subjunctives and determine which types of infinitivals and subjunctives have the INFL selected by the [irrealis] feature. We propose that the same type of subjunctive or infinitive INFL occurs in imperatives.

4.2.2.1 Two types of infinitivals

According to Stowell (1982), the temporal properties of infinitivals in control environments are different from those in ECM and raising contexts. He argues that infinitivals in control environments have UNREALIZED tense: that is, the tense of the infinitival complement is understood as being unrealized with respect to the tense of the matrix. This means that the event time of infinitival clauses is future with respect to the event time of the matrix clause, as shown in (190).

(190) a. Jenny remembered [PRO to bring the wine].

b. John convinced his friends [PRO to leave].

On the other hand, Stowell argues that the temporal interpretation of infinitivals in ECM and raising environments is completely determined by the semantics of the superordinate verb.

(191) a. I expect [John to win the race].

b. I remember [John to be the smartest].

c. John$_i$ appears [t$_i$ to like poker].

Since one normally expects things about the future, the tense of the infinitival in (191a) is understood as future with respect to the matrix tense.[1] And since one normally remembers things about the past, the tense of the infinitival in (191b) is understood as past with respect to the matrix tense. Finally, the meaning of the verb *appear* forces the event time of the infinitival clause to be contemporaneous with the matrix event time.

Stowell's explanation for this phenomenon is based on two assumptions: (a) a tense operator ends up in COMP at some point in the derivation, and (b) infinitivals in control contexts project CP, whereas infinitivals in ECM and raising contexts do not. Consequently, the infinitival clauses that project CP will have an independent temporal interpretation (specifically, of future-oriented unrealized tense interpretation), whereas the temporal interpretation of infinitival clauses that do not project CP depends on that of the matrix clause.

4.2.2.2 Two types of subjunctives

According to Quer (1998), subjunctive complements in Romance can be divided into two types, depending on the selecting element. Extending Stowell (1993), Quer (1998) observes that negation and the question operator select POLARITY SUBJUNCTIVES, while directive verbs, modals, volitional verbs and verbs of causation select INTENSIONAL SUBJUNCTIVES. Quer (1998) identifies four properties with respect to which the two types of subjunctives differ. Although he distinguishes subjunctive complements in Romance as intensional subjunctives or polarity subjunctives, this is simply a matter of terminological convenience. The main point of his proposal is that there is only one type of subjunctive, and that the way it behaves depends on the selecting element. Thus, the behavior of subjunctive complements depends on the character of the matrix predicate, rather than reflecting some intrinsic property of the complement itself. Keeping this in mind, we briefly present Quer's

[1] Stowell (1982) is not concerned with infinitivals with perfect *have*, such as *I expect John to have won the race*. In this sentence, the event time denoted by the infinitival is past with respect to the event time of the matrix verb.

discussion of how intensional and polarity subjunctives differ. Quer (1998) uses Catalan examples, but the analysis is argued to apply to the Romance languages in general.

First, intensional subjunctives display tense restrictions, in that a past subjunctive under a present matrix verb yields ungrammaticality. Polarity subjunctives display no such tense restrictions.

(192) Catalan

a. * Vull que acabés la tesi.
want-1sg.Pres that finish-3sg.Past.Subj the dissertation
'I want her/him to finish the dissertation.'

b. No recorda que en Miquel treballés.
not remember-3sg.Pres that the Miquel work-3sg.Past.Subj
'S/he doesn't remember that Miquel worked.'

Second, intensional subjunctives do not alternate with indicatives, but polarity subjunctives do (modulo interpretational differences).

(193) Catalan

a. * Vull que acaba la tesi.
want-1sg.Pres that finish-3sg.Pres.Ind the dissertation
'I want him/her to finish the dissertation.'

b. No recorda que en Miquel treballa.
not remember-3sg.Pres that the Miquel work-3sg.Pres.Ind
'S/he doesn't remember that Miquel works.'

Third, intensional subjunctives are restricted to the immediately embedded context of the selecting predicate, whereas polarity subjunctives can appear in consecutively embedded complements of the selecting predicate.

(194) Catalan

a. * Vull que creguin que ens agradi.
want-1sg that believe-3sg.Subj that us please-3sg.Subj
'I want them to believe that we like it.'

b. No crec que pensi que li convingui.
not believe-1sg that think-3sg.Subj that him be-convenient-3sg.Subj
'I don't believe that s/he thinks that it's convenient for him/her.'

Fourth, intensional subjunctives tend to display a ban on coreference between the matrix and the embedded subject. But polarity subjunctives do not generally show such an obviation effect.

(195) Catalan

a. * pro_i vull que pro_i la convidi.
pro_i want-1sg that pro_i her invite-1sg.Subj
'I want to invite her.'

b. pro_i no crec que pro_i la convidi.
pro_i not think-1sg that pro_i her invite-1sg.Subj
'I don't think that I will invite her.'

What is most relevant for us is the fact that past tense intensional subjunctives are ruled out in present tense matrix clauses. Quer (1998) argues that this is because selecting predicates introduce a set of future alternatives. For this reason, the event time of intensional subjunctives only follows the event time of the matrix clause. But a past tense embedded under a matrix present would imply that the future eventuality precedes the matrix event, a contradictory situation.

Portner (1992) identifies three types of subjunctives in English: mandatives, counterfactuals and optatives.

(196) a. I demand that you be there. (mandative)

b. I wish that he were here. (counterfactual)

c. Long live the king. (optative)

He groups together mandative and optative subjunctives and notes their future-orientation. That is, the event time of mandative subjunctives is future with respect to the event time of the matrix predicate, and that of optative subjunctives is future or near-future with respect to the utterance time. According to Portner (1992:155), subjunctives denote "a set of desirable alternatives to the reference situation," "a set of demand-alternatives to the reference situation," or "a set of counterfactual-alternatives to the reference situation."

4.2.2.3 Irrealis of subjunctives and infinitivals

Infinitivals with unrealized tense (in the sense of Stowell (1982)), intensional subjunctives in Romance (as identified by Quer (1998)), and mandative subjunctives in English (as identified by Portner (1992)) share the property that the situations they denote are unrealized at the event time of their matrix clauses (which are their reference points), and that the time in which they can be realized is understood to be future with respect to the event time of the matrix clause. For the rest of this chapter, we use the term 'subjunctive' and 'infinitival' to refer only to the types with unrealized interpretation, unless otherwise specified.

We propose that subjunctives and infinitivals have an operator (that is, a subjunctive operator or infinitival operator) in C^0 with the feature [irrealis]. We assume that this [irrealis] operator is selected by the matrix predicate, and that it in turn requires/selects subjunctive or infinitive INFL. The procedure by which a matrix predicate selects a certain type of C^0, which in turn selects a certain type of INFL, is the standard way of dealing with mood selection in complement clauses (Kempchinsky (1987), Zanuttini (1991), Laka (1994)).

Returning to imperatives, we propose that the [directive] feature of the imperative operator selects the [irrealis] feature. The feature [irrealis] in turn selects subjunctive INFL of the kind involved in intensional subjunctives in Romance or mandative subjunctives for English, or it selects infinitive INFL of the kind involved in deriving infinitivals with an unrealized tense interpretation.

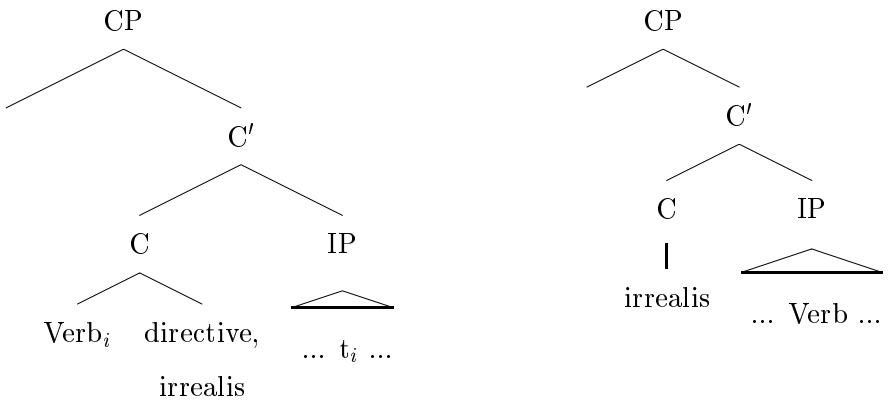
4.2.3 Syntactic Consequences of [directive] and [irrealis]

Let us summarize our proposal so far.

- The imperative operator includes the features [directive] and [irrealis].
- The subjunctive operator and infinitival operator include an [irrealis] feature.
- The feature [directive] encodes directive illocutionary force, and the feature [irrealis] contributes unrealized interpretation.
- The feature [irrealis] requires/selects subjunctive INFL or infinitive INFL.

In Chapters 2 and 3, we showed that the syntax of imperatives differs from that of subjunctives and infinitivals, at least in Italian, Spanish, Modern Greek and English. We argued that the imperative operator drives verb movement to C^0 either before Spell-Out or at LF depending on the language, whereas the subjunctive operator or the infinitival operator forms a chain with the verb in INFL. We can identify the feature content in C^0 in these languages as the source for the syntactic difference between imperatives on the one hand and subjunctives and infinitivals, on the other. We represent the syntax of imperatives and subjunctives/infinitivals as in (197).

(197) Imperatives Subjunctives/infinitivals



We propose that the feature [directive] is responsible for driving verb movement to C^0 in imperatives. In subjunctives and infinitivals, the subjunctive/infinitival operator in C^0 does not contain [directive], prohibiting verb movement to C^0. But the operator includes the [irrealis] feature, which is responsible for selecting subjunctive or infinitive INFL. The selecting process is instantiated by chain formation between the operator and the selected INFL, as discussed in §2.8.

4.3 Subjunctives and Infinitivals with Directive Function

4.3.1 Describing the Problem

In many languages, when imperative forms are ruled out or are not available, subjunctive or infinitival forms are used instead to serve the directive function. Thus, in the chapter on cross-linguistic variation in the compatibility between negation and imperatives, we saw

that some languages do not allow negative imperatives. Instead, prohibition is expressed with negative subjunctives or infinitivals. For instance, to express prohibition, Modern Greek selects negative subjunctives, and Spanish selects negative subjunctives or negative infinitivals. We repeat the examples from Chapter 2 in (198) and (199).

(198) Modern Greek

a. * Mi grapse to!
Neg write-2sg.Imp it
'Don't write it!'

b. (Na) mi to grapsis!
NA Neg it write-2sg.Subj
'Don't write it!'

(199) Spanish

a. * ¡No lee lo!
Neg read-2sg.Imp it
'Don't read it!'

b. ¡No lo leas!
Neg it read-2sg.Subj
'Don't read it!'

c. ¡No leer lo!
Neg read-Inf it
'Don't read it!'

In addition, some Modern Greek verbs do not have imperative forms: e.g., verbs corresponding to *be*, *know*, etc. In order to express a command with these verbs, subjunctive forms with subjunctive syntax are used.

(200) Modern Greek

a. Na ise etimos!
NA be-2sg.Subj ready
'Be ready!'

b. Na kseris to mathima!
NA know-2sg.Subj the lesson
'Know the lesson!'

We have proposed that imperatives have an imperative operator in C^0 whose feature contents include [directive] and [irrealis], whereas subjunctives and infinitivals have a subjunctive or infinitival operator, respectively, in C^0 and include the [irrealis] feature. The feature content of the subjunctive/infinitival operator is a proper subset of the feature content in the imperative operator ($\{[\text{irrealis}]\} \subset \{[\text{directive}], [\text{irrealis}]\}$). This fact allows us to explain why languages choose subjunctives or infinitivals (and not some other clause type) to serve the directive function in linguistic contexts where imperatives are ruled out. In this section, we use data from Modern Greek and Spanish for illustration.

4.3.2 Analysis

We propose that if the imperative operator is ruled out in some linguistic context, the language selects an operator whose feature content is in a subset relation. This is the subjunctive or the infinitival operator with [irrealis] feature. Thus, in Modern Greek, subjunctives serve the function of directive when no imperative form is available. And in Spanish, subjunctives or infinitivals serve the function of directive when the corresponding imperative forms are ruled out.

The question arises of how subjunctives and infinitivals can end up with directive force when the subjunctive and infinitival operators only include the feature [irrealis]. Since the [directive] feature is not present in these operators, one would expect subjunctives and infinitivals to generate only an unrealized interpretation. We propose that directive force is generated in this case through pragmatic inference. Like all matrix clauses, the subjunctive and infinitival matrix clauses in Modern Greek and Spanish express some illocutionary force, thereby performing some speech act. Although subjunctive and infinitival operators do not include a force-indicating feature, directive illocutionary force is generated via pragmatic inference by virtue of the fact that they are in matrix contexts. For this reason, we will call this analysis an INFERENCE-BASED ANALYSIS. We claim that directive force can be generated because it is compatible with the unrealized interpretation contributed by the feature [irrealis]. Thus, in Modern Greek, 2nd person negative subjunctives express prohibition, and 2nd person subjunctives with the verbs corresponding to *be* and *know* express commands. And in Spanish, negative infinitivals and 2nd person negative subjunctives express

prohibition.

Table 4.1 summarizes our analysis. If the [directive] feature is included in the morphosyntactic features of the operator in C^0, then imperative syntax is derived, and directive force is directly encoded in the syntax. If the [directive] feature is not included in the morphosyntactic features of the operator in C^0, then subjunctive or infinitival syntax is derived, and the presence of directive force is inferred.

Morphosyntactic features in C^0	Syntax	Direct interpretation	Inference
[directive], [irrealis]	imperative	directive force, unrealized	—
[irrealis]	subjunctive, infinitival	unrealized	directive force

Table 4.1: Morphosyntactic features and directive force

4.3.3 Predictions

4.3.3.1 Affirmative subjunctives and directive force

If 2nd person negative subjunctives can generate directive force through pragmatic inference, their affirmative counterparts should be able to as well. This is indeed the case. In Modern Greek, 2nd person affirmative subjunctives are considered to be a more polite, formal and indirect way of expressing requests than 2nd person affirmative imperatives.

(201) Modern Greek

a. Grapse!
write-2sg.Perf.Imp
'Write!'

b. Na grapsis.
NA write-2sg.Perf.Subj
'I request that you write.'

Imperatives have the [directive] feature in the imperative operator in C^0, and so directive force is directly encoded in the syntax. But subjunctives do not have the [directive] feature in the subjunctive operator in C^0. The directive force of subjunctives is indirectly generated

through pragmatic inference. Therefore, 2nd person affirmative subjunctives are a more indirect way of expressing requests, and indirectness is generally perceived as politeness.

In Spanish, 2nd person affirmative subjunctives can also have directive force. But in contrast to Modern Greek, they express emphatic commands, rather than polite requests.[2]

(202) Spanish

a. ¡Que te calles!
that Refl hush-2sg.Subj
'Hush!'

b. ¡Que subas!
that come-up-2sg.Subj
'Come up!'

2nd person affirmative subjunctives cannot express polite requests in Spanish for the independent reason that Spanish does not form polite expressions with 2nd person forms. In general, Spanish uses 3rd person forms to express polite formal expressions. For polite requests, Spanish uses formal imperatives, whose verbal forms are identical to 3rd person subjunctive forms, but whose syntax is same as 2nd person imperatives in that pronominal clitics occur after the verb, as shown in (203a). For formal polite prohibitions, Spanish uses 3rd person negative subjunctives, and pronominal clitics occur before the verb, just as with any other subjunctive, as shown in (203b).

(203) Spanish

a. Hable le.
speak-2sg.Imp(formal) her
'Please, speak to her.'

b. No le hable.
Neg her speak-3sg.Subj
'Please, do not speak to her.'

[2]In Spanish, while 2nd person affirmative subjunctives that express emphatic commands require complementizer *que*, 2nd person negative subjunctives that express prohibition do not. When a 2nd person negative subjunctive occurs with *que*, it is interpreted as an emphatic prohibition. The obligatoriness of *que* in 2nd person affirmative subjunctives may be a reflection of a surface licensing constraint on subjunctives: i.e., subjunctives can occur only in subordinate contexts. That is, it may be that for a 2nd person affirmative subjunctive, *que* provides a subordinate context, whereas for a 2nd person negative subjunctive, *que* is not required unless emphatic interpretation is called for because the presence of negation is enough to provide a subordinate context. We will not pursue this issue any further.

4.3.3.2 Cancellation of directive force

If matrix 2nd person subjunctives can generate directive force through pragmatic inference, then in some contexts, it should be possible to cancel the directive force and to generate some other illocutionary force with unrealized interpretation. This prediction is borne out for affirmative 2nd person subjunctives, which can express wishes, in both Modern Greek and Spanish, as in (204).

(204) a. Spanish

¡Que complas muchos más años!
that count-2sg.Subj many more years
'May you have many more years!'

b. Modern Greek

Na zisis!
NA live-2sg.Subj
'May you live!'

It is hard, however, to get a wish reading for 2nd person negative subjunctives. This is a problem for our inference-based analysis, which we return to in §4.3.4.

Another prediction is that if 2nd person subjunctives can be used in matrix contexts and receive their illocutionary force via pragmatic inference, then so should subjunctives in other person forms. This also holds. For instance, in both Modern Greek and Spanish, 3rd person subjunctives can be used in matrix contexts to express wishes or deontic modality.

(205) Spanish

a. ¡Que viva el rey!
that live-3sg.Subj the king
'Long live the king!'

b. Que entre y que se caliente.
that enter-3sg.Subj and that Refl get-warm-3sg.Subj
'He should come in and get warm.'

(206) Modern Greek

a. Na zisi o Yannis!
NA live-3sg.Subj the Yannis
'May Yannis live!'

b. Na grapsi kapios.
NA write-3sg.Subj somebody
'Somebody should write.'

What about infinitivals in Spanish? Can infinitivals be used in matrix contexts to serve functions other than prohibition? The use of infinitivals in matrix contexts seems very limited. Affirmative infinitivals can express directive force, but they are usually used in short directions, as in notices to the public. It must be pointed out that negative infinitivals as well are used to express prohibition less productively than negative subjunctives. Infinitivals in matrix contexts can also be used to express exclamations of surprise, as shown in (207d).

(207) Spanish

a. ¡Callar!
hush-Inf
'Hush!'

b. Adiós, hija. Conservar se.
good-bye daughter take-care-Inf Refl
'Good bye, daughter. Take care of yourself.'

c. Dirigir se dentro.
apply-Inf Refl within
'Apply within.'

d. ¿Abandonar le? ¡Nunca!
abandon-Inf him never
'Abandon him? Never!'

4.3.4 An Alternative Analysis

An alternative to the inference-based analysis would be to argue that matrix subjunctives and matrix infinitivals that express directive force actually contain an operator that encodes that force. In other words, languages like Spanish and Modern Greek have constructions that look just like 2nd person subjunctives and infinitivals on the surface, but differ from these clause types in that they have an operator which includes a feature [directive]. The problem with this analysis is that the required feature cannot be the same feature as the [directive] of the imperative operator because the morphosyntax of subjunctives/infinitivals

that express directive force differs from that of imperatives: imperatives have verb movement to C^0, whereas subjunctives/infinitivals do not, and the morphology on the verb in imperatives and subjunctives/infinitivals differs as well.

A refinement of the approach just rejected assumes that languages can have two different instantiations of the [directive] feature: weak and strong. For the sake of discussion, we will refer to the weak and strong directive feature as [directive′] and [directive], respectively. We could then say that the [directive] feature attracts verb movement to C^0 in the overt syntax and is reflected in the unique imperative morphology on the verb. On the other hand, the [directive′] feature does not attract verb movement to C^0 until LF and, being weak, is not morphologically reflected on the verb. Only the [irrealis] feature is reflected on the verb in the form of subjunctive or infinitive morphology. Under this analysis, matrix subjunctives and infinitivals that express directive force only appear to be subjunctives and infinitivals. In reality, they are imperatives.

According to the analysis under discussion, a language can have two imperative operators that serve the same function: one that includes the features [irrealis] and [directive], and another that includes [irrealis] and [directive′]. We will therefore refer to this analysis as the TWO-IMPERATIVE-OPERATOR ANALYSIS. At first blush, this analysis does not seem to fit well with a theory of morphology that assumes that morphological formatives are subject to the BLOCKING EFFECT (Aronoff (1976)). The blocking effect refers to the general principle of morphology which excludes MORPHOLOGICAL DOUBLETS, or coexisting formatives that are not functionally differentiated. In particular, the presence of an irregular form in a paradigmatic slot blocks the appearance of the regular form that would have occupied that slot under the relevant morphological rule. For instance, in English, the suffix *-ness* turns adjectives into nouns.

(208) a. good - goodness

b. happy - happiness

But in some cases, words formed with *-ness* do not sound natural.

(209) clear - ?clearness

According to Aronoff, **clearness* is blocked by the existence of another form, *clarity*, which

is formed with the exceptional suffix *-ity*.

The question of the blocking effect does not arise for negative sentences under the two-imperative-operator analysis, because the imperative operator that includes the [directive] feature is ruled out in negative contexts for the reason given in Chapter 2. Thus, the only available option is the imperative operator with [directive′]. This operator derives a structure that looks just like subjunctives for Modern Greek, and subjunctives or infinitivals for Spanish. But the question of the blocking effect does arise for affirmative sentences. However, neither of the proposed imperative operators blocks the other because they do not have the same function. As discussed in §4.3, in Modern Greek, 2nd person affirmative subjunctives express polite requests, whereas affirmative imperatives express direct commands. Under the two-imperative-operator analysis, this means that the imperative operator with [directive′] generates a polite request reading, and the imperative operator with [directive] generates a direct command reading. In Spanish, we saw that 2nd person affirmative subjunctives express emphatic commands, affirmative infinitivals are used in short directions as in public notices, and affirmative imperatives express neutral commands. In other words, the imperative operator with [directive] generates a neutral command reading, and the imperative operator with [directive′] generates slightly different readings. At this point, one may find it problematic that in Spanish [directive′] derives both structures that look like subjunctives and like infinitivals. Presumably, the two clause types differ in other features, and it is this difference that is reflected in the different morphosyntax and different interpretational functions. As shown in Chapter 2, the infinitive verb moves higher than the subjunctive verb in the phrase structure of Spanish. Moreover, unlike subjunctives, both affirmative and negative infinitivals are usually used in short directions, as in public notices.

Compared to the inference-based analysis, one of the strengths of the two-imperative-operator analysis is that it captures the intuition that the directive force expressed by 2nd person negative subjunctives in Modern Greek and Spanish and negative infinitivals in Spanish is quite direct without any apparent inference. Further, our analysis of Italian 2nd person plural imperatives in §2.8.2 is not problematic under the two-imperative-operator analysis. In §2.8.2, we proposed that in 2nd person singular imperatives, the verb moves up to C^0, whereas in 2nd person plural imperatives, the verb overtly moves to a functional head lower than C^0, moving to C^0 only at LF. According to the two-imperative-operator analysis,

the situation in Italian is expected to be possible. All we have to say is that in Italian, 2nd person singular and plural imperatives have the strong and weak directive feature, respectively. In contrast, the inference-based approach to Italian imperatives is problematic because Italian ends up being the only language with two different instantiations of the imperative operator.

On the other side of the balance sheet, we must point out several facts that make us suspicious of the two-imperative-operator analysis. As observed in §4.3, matrix subjunctives in Modern Greek and Spanish and infinitivals in Spanish can serve functions other than directive, such as wishes, deontic statements and surprise. Thus, we would not want to say that all matrix subjunctives and infinitivals have an imperative operator with the feature [directive′]. Further, we would not want to say that there are other operators with different feature content, generating different interpretations, and yet all deriving structures that are identical to subjunctives or infinitivals. But if inference is necessary to interpret matrix subjunctives and infinitivals as wishes or deontic statements, and if it is possible to interpret 2nd person subjunctives and infinitivals as directives via inference, then conceptual economy forces us to reject the two-imperative-operator analysis, despite its attractive properties. In addition, given that illocutionary force is not encoded in embedded contexts, the two-imperative-operator analysis requires a stipulation concerning embedded subjunctives and infinitivals. Specifically, subjunctives and infinitivals in matrix contexts would be required to have a force-indicating feature, whereas those in embedded contexts would be prohibited from having one – despite their morphologically identical forms.

A question that arises for both the inference-based analysis and the two-imperative-operator analysis is why a language should have imperatives at all given that subjunctives and infinitivals can serve the directive function. However, this is not a question specific to the issue at hand. We know that languages in general have different ways of expressing the same thing. For instance, the sentences in (210) mean roughly the same thing.

(210) a. John ate an apple.

b. It is an apple that John ate.

c. What John ate is an apple.

d. An apple, John ate.

It has been shown that sentences that seem to express the same thing have different discourse functions and so cannot be felicitously used in the same discourse context (Prince (1978, 1984, in press)). In fact, we have seen that imperatives, subjunctives and infinitivals have different discourse functions as well. Thus, the situation that a language has imperatives as well as subjunctives and infinitivals to express directives is an example of a more general phenomenon that is pervasive in natural language.

4.4 The Subjects of Imperatives

We have argued that the imperative operator includes the feature [irrealis], which selects either a subjunctive or an infinitive INFL. We will refer to imperatives with subjunctive or infinitive INFL as 'subjunctive type' imperatives and 'infinitive type' imperatives, respectively.

So far, we have been assuming, without explicit argument that languages have two options for deriving the imperative structure: infinitive type imperatives have an infinitive INFL, and subjunctive type imperatives have a subjunctive INFL. In this section, we provide empirical support for our proposal. In particular, we tie the syntactic status of imperative subjects in a language to whether the language has subjunctive or infinitive type imperatives, or both.

Languages vary with respect to the syntactic status of subjects in imperatives. The subjects in Italian, French and Spanish must be covert. In other languages such as English, German, European Portuguese, Modern Greek, Bulgarian, Korean, Japanese and Chinese, imperative subjects can be either covert or overt. In addition, in some languages, the syntactic behavior of imperative subjects seems idiosyncratic compared to those in other clause types in the language. For instance, neither English, German nor French allow empty subjects except in imperatives.

In what follows, we first provide an analysis for the optionality of imperative subjects in English. We then provide an analysis of cross-linguistic variation in the syntactic status of subjects in imperatives. According to our analysis, the apparently idiosyncratic syntactic behavior of imperative subjects in some languages turns out to be predictable given the syntax of the language as a whole.

4.4.1 Optionality of Imperative Subjects in English

In English imperatives, subjects can be overt or covert. It is plausible to posit that the empty subject in imperatives corresponds to the 2nd person pronoun, based on the well-known and straightforward evidence from binding and tag-question formation in (211) and (212).

(211) a. Behave yourself/yourselves.

b. * Behave himself/myself/ourselves/themselves.

(212) a. Be quiet. Will you?

b. * Be quiet. Will he/I/they/we?

But what kind of empty category is the covert 2nd person pronoun in imperatives? Is it a trace of some kind, *pro* or PRO? Or is it some other kind of empty category that is restricted to imperatives? According to Schmerling (1975), imperatives are a sentence type in their own right, with certain formal properties peculiar to them, and the covert subject in imperatives is the result of a special deletion rule that is not a subcase of any general phenomenon of the language. Beukema and Coopmans (1989) claim that the covert subject in imperatives is the *wh*-trace of an empty topic operator. Beukema (1992) and Potsdam (1997b) argue that it is *pro*. Platzack and Rosengren (1996) propose that imperatives have no true syntactic subjects, but have a null actor argument in [Spec,VP] referred to as *imppro*. Moreover, according to them, an overt 2nd person pronoun in imperatives is not the overt realization of *imppro*, but is rather an addressee argument in the specifier of the phrase that heads *imppro*. Platzack and Rosengren refer to the overt 2nd person pronoun as an IMPERATIVE PRONOUN and derives its overtness from pragmatic considerations.

The claim that the covert subject in imperatives is either the trace of an empty topic operator or *pro* entails the unattractive conclusion that English allows these empty categories only in imperatives. Likewise, the claim that imperatives have *imppro*, which is not a true syntactic subject, or that the covert subject in imperatives is the result of a special subject deletion rule applying only to imperatives entails the unattractive conclusion that English has a fourth empty category that occurs only in imperatives.

4.4.2 Two Types of Imperatives

We propose that English allows both subjunctive type and infinitive type imperatives, and further, that subjunctive type imperatives have overt subjects, whereas the infinitive type imperatives have empty PRO subjects. Our analysis of English imperatives is supported by the fact that in other languages both subjunctive and infinitive INFL are consistent with directive interpretation, as we saw in §4.3. We emphasize that this does not mean that the syntax of imperatives on the one hand, and subjunctives and infinitivals on the other is identical. Rather, as discussed, the [directive] feature in the imperative operator drives verb movement to C^0 at LF, and the [irrealis] feature in the imperative operator selects either the subjunctive or the infinitive INFL. In contrast, subjunctives and infinitivals have an operator in C^0 that only includes the [irrealis] feature, which does not drive movement of the verb. We will see that the morphosyntactic difference between imperatives and subjunctives/infinitivals is reflected in the presence versus absence of *do*-support in negative imperatives and negative subjunctives/infinitivals.

4.4.2.1 Subjunctive type imperatives

(Mandative) subjunctives occur as embedded clauses under directive verbs, such as *require, demand, insist, suggest,* etc., as exemplified in (213).

(213) a. I demand that John finish the homework.

b. I insisted that John stay.

c. I suggested that she leave soon.

The obligatoriness and morphological form of the subject indicate that subjunctive INFL assigns nominative case. Moreover, neither auxiliary nor lexical verbs undergo V-I movement in subjunctives. That is why auxiliary verbs must follow *not* and lexical verbs do not require *do*-support in connection with negation.

(214) a. *I suggest that you be not late.

b. *I insist that John be not invited to the party.

c. *I insisted that John do not stay.

d. *I demanded that she do not leave yet.

(215) a. I suggest that you not be late.

b. I insist that John not be invited to the party.

c. I insisted that John not stay.

d. I demanded that she not leave yet.

The syntax of imperatives with an overt subject is similar to that of subjunctives. In these imperatives, auxiliary as well as lexical verbs are prohibited from undergoing V-I movement. But the presence of [directive] in the imperative operator in C^0 forces verb movement to C^0 at LF, requiring *do*-support for both auxiliary and lexical verbs with negation.[3]

(216) a. Don't you be late.

b. Don't you leave yet.

c. Don't anybody move.

Since the syntax of imperatives with an overt subject is similar to that of subjunctives, the subject in imperatives is licensed in the way it is licensed in subjunctives: namely, INFL assigns nominative case.[4]

[3] According to Bobaljik (1995), *do*-support is triggered by a PF adjacency requirement between inflectional morphology in INFL and the lexical verb in English. If we adopt this analysis, we can say that *do*-support is required in negative imperatives because negation blocks the PF adjacency requirement between the morphology in C^0 and the lexical verb. Since both auxiliary and lexical verbs in imperatives stay in-situ, negation blocks the adjacency requirement between the morphology in C^0 and the verb for both types of verbs. Thus, *do*-support is required for auxiliary as well as lexical verbs in negative imperatives.

[4] We leave open the question of how our analysis of imperatives can be extended to account for the syntax of *let*-constructions, such as in (217).

(217) a. Let's go home.

b. Let us go see a movie.

c. Don't let's go see a movie.

For an account of the syntax of these constructions, see Davies (1986), Clark (1993a), and Potsdam (1997b).

4.4.2.2 Infinitive type imperatives

Infinitivals occur as the complements of control verbs, such as *promise, persuade, order,* etc.

(218) a. John promised to return the books.

b. John persuaded Mary to return the books.

These infinitivals have an empty PRO subject. Following Chomsky (1993), we take this to mean that infinitive INFL assigns null case to PRO, thereby licensing it. In infinitivals, as in subjunctives, neither auxiliary nor lexical verbs undergo V-I movement, as shown by the fact that auxiliary verbs follow negation and lexical verbs with negation do not require *do*-support.

(219) a. John promised Mary to not be late.

b. * John promised Mary to be not late.

(220) a. The commander ordered the sergeant to not move.

b. * The commander ordered the sergeant to do not move.

The syntax of imperatives with an empty subject is similar to the syntax of infinitivals, which is consistent with their both having an infinitive INFL. In these imperatives, neither auxiliary nor lexical verbs undergo V-I movement. But as in the subjunctive type imperatives, in infinitive type imperatives, the imperative operator in C^0 includes [directive] feature which forces verb movement to C^0 at LF. *Do*-support is therefore required for both auxiliary and lexical verbs with negation.

(221) a. Don't be late.

b. Do not move.

c. Don't cause any trouble.

Since imperatives with an empty subject have infinitive INFL, the syntactic status of the subject in these imperatives is PRO. Imperatives have future-oriented temporal interpretation: that is, the situation described by an imperative in general is not realized at the

utterance time, but can be realized in the future. Given this future-oriented temporal interpretation, our proposal that the empty subject in imperatives is PRO is consistent with Stowell's (1982) observation that infinitivals with PRO, as opposed to ones in raising or ECM environments, have unrealized future-oriented interpretation.

The question now arises of how the reference of PRO is identified as 2nd person. In the literature, the theory concerned with the reference of PRO is called CONTROL THEORY. There are two different approaches to control theory. Under one approach, which we call the MODULAR APPROACH, control theory is argued to be a separate module of the grammar (Chomsky (1981), Lasnik (1992)). PRO is both pronominal and anaphoric, and it must be ungoverned. PRO is controlled by (thereby coreferential with) the higher NP that c-commands it. A PRO that has no controller has arbitrary interpretation (indicated as hence PRO_{arb}). Another approach, which we call the BINDING APPROACH attempts to assimilate control theory to binding theory (Bouchard (1984), Koster (1984), Borer (1989)). According to this approach, there are two types of PRO, pronominal and anaphoric. Pronominal PRO (that is, PRO_{arb}) refers freely, just like any pronoun, whereas anaphoric PRO must be bound by its antecedent.

Under the modular approach, the absence of a syntactic controller of the empty subject in imperatives wrongly predicts an interpretation as PRO_{arb}. Under the binding approach, PRO in imperatives is predicted to be pronominal, and so it should refer freely. However, the reference of PRO is restricted to 2nd person, suggesting that PRO in imperatives is anaphoric PRO.

We tackle this problem by extending the account in Bhatt and Izvorski (to appear) of PRO_{arb} to imperatives. Extending the analysis in Epstein (1984), Bhatt and Izvorski (to appear) propose that PRO_{arb} must be controlled by a generic implicit argument in the immediately higher predicate . Otherwise, there is no PRO_{arb} interpretation available. The predicates in (222) have an implicit argument paraphrasable as *for someone*. This implicit argument is interpreted generically because the entire sentence is generic. Hence, PRO_{arb} is licensed. The examples in (222), (223) and (224) are from Bhatt and Izvorski (to appear) (B&I, for short).

(222) a. [PRO$_{arb}$ to walk alone at night] is dangerous. (B&I, 15a)

b. [PRO$_{arb}$ writing haiku] is fun. (B&I, 21a)

c. It is difficult [PRO$_{arb}$ to dance the tango]. (B&I, 20b)

d. Ships are sunk [PRO$_{arb}$ to collect insurance]. (B&I, 28a)

In (223), either there is an explicit argument which is not generic, as in (223a,b), or the implicit argument is not generic, as in (223c-e). Hence, PRO$_{arb}$ is not licensed.

(223) a. [PRO$_i$ to walk alone at night] is dangerous for Elena$_i$. (B&I, 15b)

b. It is difficult for Isabella$_i$ [PRO$_i$ to dance the tango]. (B&I, 24b)

c. Yesterday, [PRO writing this poem] was fun. (B&I, 23a)

d. Yesterday, [PRO to write haiku] on the grass was fun. (B&I, 22a)

e. This ship was sunk [PRO to collect insurance]. (B&I, 30a)

In (224), the matrix predicates have no implicit argument, and so PRO cannot have an arbitrary interpretation. Indeed, the sentences are ungrammatical altogether, due to the lack of a controller for PRO.

(224) a. * It is certain [PRO to leave early]. (B&I, 26a)

b. * It is sure [PRO to eat ice cream]. (B&I, 26b)

c. * [PRO leaving early] is certain. (B&I, 27a)

d. * [PRO eating ice cream] is likely. (B&I, 27b)

Bhatt and Izvorski's analysis is semantic in nature in that it appeals to the interpretational property of the sentence in which PRO$_{arb}$ is licensed. They show that PRO$_{arb}$ is licensed in generic sentences with a predicate that has implicit arguments. We propose to extend the analysis given by Bhatt and Izvorski to the domain of imperatives by appealing to the fact that the imperative operator has an implicit addressee argument, which is contributed by the meaning of the [directive] feature in the imperative operator. A sentence with directive force must be aimed at an addressee. We discuss this issue further in the next chapter when we discuss the interpretation of the imperative operator. For now, let us

say simply that the imperative operator has an implicit addressee argument, which controls the PRO subject, assigning 2nd person reference to it.

Once we appeal to the interpretational component to predict the correct reference for PRO, we immediately realize that syntax plays a minimal role in control theory. This is evident in cases where PRO and its antecedent are not structurally related, as in (225). Such cases provide independent motivation for an appeal to the interpretational component in determining the reference of PRO. Examples (225a-c) are from Bouchard (1984).

(225) a. Tom$_i$ felt embarrassed. [PRO$_i$ pinching elephants] was a mistake.

b. [PRO$_i$ to finish his work on time] is important for a child's$_i$ development.

c. Mary$_i$ thought I$_j$ said that [PRO$_{i,j}$ to see each other/ourselves] would be difficult.

d. [PRO$_i$ to see a movie alone] is boring for John$_i$.

e. [PRO$_i$ talking to John] is hard for Mary$_i$.

Moreover, even the cases of obligatory control that are supposed to demonstrate the syntactic character of control can be argued to involve some semantics.

(226) a. The commander ordered the sergeant$_i$ [PRO$_i$ to leave].

b. John$_i$ promised his advisor [PRO$_i$ to finish the paper].

c. John persuaded Mary$_i$ [PRO$_i$ to finish the paper].

In (226), the controller of PRO happens to be present syntactically in each matrix clause, and it happens to c-command PRO. But the way the reference of PRO is determined can be given a semantic account: namely, the semantics of the higher predicate plays an important role in determining the reference of PRO. In (226a), when the commander gives an order to the sergeant, the sergeant is assumed to carry out the order, hence the reference of PRO is the sergeant. In (226b), when John makes a promise with his advisor, John is assumed to carry out the promise, hence PRO is coindexed with John. In (226c), when John persuades Mary to do something, Mary is assumed to carry out the action that she has been persuaded to do, hence PRO is coindexed with Mary.[5]

[5]There have been attempts to appeal to the interpretational component to predict the correct antecedent for PRO in cases of obligatory control. Lasnik (1988) shows that some instances of obligatory control in

Our analysis of the assignment of 2nd person reference to PRO subjects in imperatives implies that although the distribution of PRO is determined by the syntax (PRO is restricted to the subject position of infinitival clauses), its interpretational content is determined by the semantics of the sentence in which it occurs. Thus, the domain of control theory is more abstract than previously thought, for all types of PRO.

To summarize, English imperatives are distinguished into two types: those with subjunctive INFL and those with infinitive INFL. Subjunctive type imperatives have an overt subject because subjunctive INFL licenses nominative case, and infinitive type imperatives have a PRO subject because infinitive INFL assigns null case. According to our analysis, the apparent anomaly that imperatives are the only matrix clause type in English to allow both overt and covert subjects follows straightforwardly from independently motivated facts of the language.

4.4.3 Other Languages

Recall that there is cross-linguistic variation with respect to the syntactic status of subjects in imperatives. We propose that the syntactic status of imperative subjects in a language depends on what type of syntactic structure the language selects for the imperative.

German is similar to English in that imperatives are the only matrix context in which subjects can be deleted.

English seem to require that the theta-roles of PRO and its antecedent be identical. He argues that the matrix subject and the PRO subject of the infinitival complement of *serve* must both bear the instrument role.

(227) a. The ice served [PRO to chill the beer].

b. * Edison served [PRO to invent the light bulb].

In the grammatical (227a), the matrix and the embedded subjects both bear the instrument role. In contrast, (227b) is ruled out because the matrix subject bears the agent role, whereas the embedded subject the instrument role. Lee and Kaiser (1994) argue that all instances of obligatory control in Korean require both PRO and its antecedent to bear identical theta-roles. For instance, in (228), PRO can only be coindexed with the matrix object because they have identical theta-roles (here, theme).

(228) Korean

Jiho-ka$_i$ Minho-lul$_j$ [PRO$_{*i/j/*k}$ kukcang-ey ka-la-ko seltukha-yss-ta.
Jiho-Nom Minho-Acc PRO theatre-Loc go-Comp persuaded

'Jiho persuaded Minho to go to the theatre.'

(229) German

a. Schreib den Aufsatz!
write-2sg.Imp the paper
'Write the paper!'

b. Schreib du den Aufsatz!
write-2sg.Imp you the paper
'You write the paper!'

And just as in English, in German, infinitivals prohibit overt subjects, whereas subjunctives require overt subjects.

(230) German

a. Ich möchte [PRO den Aufsatz schreiben].
I want PRO the paper write-Inf
'I want to write the paper.'

b. * Ich möchte [ich den Aufsatz schreiben].
I want I the paper write-Inf
'I want to write the paper.'

(231) German

a. Hans empfiehlt, [daß du nicht zu späet kommst].
Hans recommends that you not too late come-2sg.Subj
'Hans recommends that you not come too late.'

b. * Hans empfiehlt, [daß *pro* nicht zu späet kommst].
Hans recommends that *pro* not too late come-2sg.Subj
'Hans recommends that you not come too late.'

We extend the analysis for imperative subjects in English to German. That is, just as in English, the imperative operator in German selects either the infinitive or the subjunctive INFL. Selecting infinitive INFL requires a covert subject whose syntactic status is PRO, whereas selecting subjunctive INFL requires an overt subject.[6]

Italian, French and Spanish do not allow an overt subject in imperatives. In French, imperatives can have a disjunctive subject pronoun in the 2nd person: *toi* for singular, and *vous* for plural, as shown in (232).

[6]German differs from English in having overt verb movement to C^0. It therefore requires no last resort device similar to the English *do*-support for negative imperatives.

(232) French

a. Choisis un numéro, toi!
choose-2sg.Imp a number you-2sg.Disj
'Choose a number, you!'

b. Vous, choisissez un numero!
you-2pl.Disj choose-2pl.Imp a number
You, choose a number!'

However, these disjunctive subject pronouns are not the structural subject of the imperative.[7] This becomes clear when we consider other environments in which disjunctive subject pronouns can occur: immediately before the subject, immediately after the subject if the subject is a noun, and at the end of the clause if the subject is a pronoun.

(233) French

a. Moi, j'aime bien voyager, mais mon frère, lui, préfère rester à la maison.
I-Disj I like travel but my brother he-Disj prefers stay at the house
'Personally I like traveling, but my brother prefers to stay at home.'

b. Tu y vas souvent, toi?
you go there often, you-Disj
'Do you go there often?'

Just as in (233), disjunctive subject pronouns in imperatives occur either in the beginning or the end of the clause, and they express emphasis.

Infinitivals in French, Italian and Spanish cannot have an overt subject. We illustrate this point with examples from French.[8]

(234) French

a. Jean veut PRO/*il gagner.
Jean wants PRO/*he win-Inf
'Jean wants to win.'

[7] In contrast to conjunctive pronouns which are clitics on the verb, disjunctive pronouns are separated from the verb.

[8] French, Italian and Spanish do not have ECM constructions. Thus, infinitivals in these languages can only have a PRO subject.

b. Jean lui a ordonné de PRO/*elle chanter.
Jean her has order to PRO/*she sing-Inf
'Jean ordered her to sing.'

We therefore propose that imperatives in French, Italian, and Spanish have the syntactic structure of infinitivals. They have infinitive INFL, and so only PRO is licensed, whose reference is determined by the interpretational property of the imperative operator, as argued in the previous section.

European Portuguese allows imperatives to have an overt subject, as shown in (235).

(235) European Portuguese

a. Lava (tu) os pratos!
wash-2sg.Imp you-sg the plates
'(You sg.) wash the dishes!'

b. Lavai (vós) os pratos!
wash-2pl.Imp you-pl the plates
'(You pl.) wash the dishes!'

Some infinitivals in European Portuguese can be inflected, and these inflected infinitivals can have an overt subject, as discussed by Raposo (1987). It turns out that directive verbs such as *mandar* 'order' can take inflected infinitival complements and as expected, they can have either an overt or a covert subject, as in (236).

(236) European Portuguese

Eu mandei lavarem (eles) os pratos.
I ordered wash-3pl.Inf (they) the plates

'I ordered them to wash the plates.'

If we assume that imperatives in European Portuguese have the syntactic structure of infinitivals of the inflected kind, the availability of overt subjects, as in (235), is exactly what we predict.

In Balkan languages such as Modern Greek, Bulgarian, and Serbo-Croatian, imperative subjects can be either covert or overt.

(237) Modern Greek

Grapse (esi)!
write-2sg.Imp you

'You write!'

As is well-known, the Balkan languages do not have infinitives. The closest constructions to infinitivals in these languages are subjunctives, and the subjects of subjunctives in these languages can be either overt or covert. We illustrate this point with examples from Modern Greek in (239). In particular, when the subject of the complement subjunctive clause is co-indexed with the indirect object of the matrix clause, as in (239b), the complement subject is usually covert, in which case it has been argued to be *pro* (Philippaki-Warburton (1987), Iatridou (1993), Varlokosta and Hornstein (1993)). But it can be overt for emphasis or contrastiveness.[9]

(239) Modern Greek

a. O Yannis protine na grapsi (afti).
the Yannis proposed NA write-3sg.Subj she
'Yannis proposed that she write.'

b. O Yannis se dietakse na grapsis (esi).
the Yannis you order NA write-2sg.Subj you
'Yannis order you to write.'

We propose that imperatives in the Balkan languages have subjunctive INFL. Thus, the imperative subject is optional, and the syntactic status of the covert subject is *pro*. Infinitive

[9]There are other types of subjunctive clauses in Modern Greek in which the subject must be covert, as shown in (238).

(238) Modern Greek

a. Ton vlepo *ec* na tiganizi psaria.
him see *ec* NA fry-3sg.Subj fish
'I see him fry fish.'

b. Ksero *ec* na kolimbao.
know *ec* NA swim-1sg.Subj
'I know how to swim.'

The syntactic status of the covert subject in these types of subjunctives is disputed. Iatridou (1993) and Varlokosta and Hornstein (1993) argue that it is PRO, whereas Philippaki-Warburton (1987) argues that it is *pro*.

type imperatives are impossible in these languages due to the absence of infinitival clauses in general.

In Korean, subjects in imperatives can be either covert or overt.

(240) Korean

a. (ne-ka) pang-ul chengsoha-yla!
you-Nom room-Acc clean-Imp
'(You) clean the room!'

b. Chelswu-ya, (ne-ka) pang-ul chengsoha-yla!
Chelswu-Voc you-Nom room-Acc clean-Imp
'Chelswu, (you) clean the room!'

One might think that the 2nd person pronoun in (240a) is a vocative subject not structurally related to the imperative. However, we can see that it is the structural subject of the imperative because it has a nominative case marker. In Korean, vocative subjects, marked with *-ya*, can co-occur with an overt or a covert subject in imperatives, as shown in (240b).

Accordingly, we cannot claim that Korean imperatives have the syntactic structure of subjunctives, or that of either subjunctives or infinitivals, because Korean does not have a mood category that corresponds to the subjunctive of Indo-European languages. However, Korean does have several types of embedded clauses that cannot have a tensed verb. We take these clauses to correspond to the infinitivals of the other languages that we have discussed. What is relevant is that the infinitivals in Korean allow both overt and covert subjects, as in (241) (Heycock and Lee (1989)).

(241) Korean

a. [salamtul-i/PRO cakicasin-ul cimyunghanun-kes-un] elyep-ta.
people-Nom/PRO oneself-Acc nominate-fact-Top difficult-Pres.Decl
'To nominate oneself is difficult.'

b. na-nun [John-i$_j$ party-ey ka-tolok] *pro*$_j$ seltukhayessta.
I-Top John-Nom$_j$ party-to go-as-to *pro*$_j$ persuade-Past.Decl
'I persuaded John to go to the party.'

c. na-nun [PRO$_j$ party-ey ka-tolok] John-ul$_j$ seltukhayessta.
I-Top PRO$_j$ party-to go-as-to John-Acc$_j$ persuade-Past.Decl
'I persuaded John to go to the party.'

We claim that imperatives have the syntactic structure of infinitivals in Korean and that they allow both covert and overt subjects because infinitivals in Korean allow both options.

The facts of Japanese are similar to those of Korean. In Japanese, the imperative subject can be either overt or covert. When an imperative has an overt subject, it takes a nominative case marker. Further, the nominative case marked subject in imperatives can be preceded by a vocative noun phrase. Thus, the overt subject is truly the structural subject of the imperative.

(242) Japanese

a. (omae-ga) tabe-ro!
you-Nom eat-Imp
'(You) eat!'

b. Nobo-yo, omae-ga tabe-ro!
Nobo-Voc, you-Nom eat-Imp
'Nobo, you eat!'

As in Korean, the subject of Japanese infinitivals can be overt or covert, as in (243) (Heycock and Lee (1989)).

(243) Japanese

a. watasi-wa [otooto-ga uti-e kaette-kite] hosi-i.
I-Top brother-Nom home-to return want-Pres
'I want my brother to go back home.'

b. watasi-wa [PRO uti-e kaette-kite] hosi-i.
I-Top PRO home-to return want-Pres
'I want to go back home.'

If Japanese imperatives have the syntactic structure of infinitivals, then we expect them to allow overt as well as covert subjects, just as in infinitivals.[10]

[10]Contrary to Korean (see §4.2.1), Japanese apparently allows embedded imperatives.

(244) Japanese

a. syouko-o inmetu-siro!
evidence-Acc destroy-Imp
'Destroy the evidence!'

b. Akira-wa Takasi-ni syouko-o inmetu-siro-to meireisita.
Akira-Top Takasi-Dat evidence-Acc destroy-Imp-Comp ordered
'Akira ordered Takasi to destroy the evidence.'

In Chinese, it is a bit difficult to determine whether imperatives exist as a grammatical category because Chinese has no mood/tense morphology on the verb. Sentences are formed with a bare verb form and it can be assertions with present or past temporal interpretation or commands, depending on the context.

(246) Chinese

Ní zǒu.
you walk

'You walked.'

'You are walking.'

'You walk!'

However, facts from negation provide evidence that Chinese does have the imperative as a grammatical category. When the negative marker *bié* occurs in a matrix clause, it can only take 2nd person subject pronoun (which can be covert) and the sentence can only have a directive function. This is illustrated in (248).[11]

(245) Japanese

a. tabe-runa!
eat-not.Imp
'Don't eat!'

b. Akira-wa Takasi-ni tabe-runa-to meireisita.
Akira-Top Takasi-Dat eat-not.Imp-Comp ordered
'Akira ordered Takasi to not eat.'

In (244) and (245), the endings on matrix and embedded verbs are identical. Thus, Japanese seems to pose a counterexample to the generalization that imperatives cannot be embedded. One possibility of preserving the generalization is to say that [directive] feature in the imperative operator is not marked with distinctive morphology in Japanese. That is, the imperative operator with both [directive] and [irrealis] features and the operator with only [irrealis] feature are instantiated with the same morphology on the verb. Further study on Japanese verbal morphology is required in order to evaluate this proposal.

[11]When *bié* occurs in an embedded clause, it can only occur if the matrix predicate is a directive predicate, as in (247).

(247) Chinese

a. tā mìngling wǒ bié dǎ lánqiú.
3sg order I not play basketball
'S/he ordered me not to play basketball.'

b. * wǒ zhīdao tā bié chū guó.
I know 3sg not exit country
'I know that s/he did not leave the country.'

It looks like *bié* requires a licenser: it is licensed either by [directive] feature in the imperative operator or a directive predicate. Thus, when *bié* occurs in a matrix context, it is licensed by [directive] feature in the

(248) Chinese

a. (ni) bié dǎ rén!
you don't hit person
'(You) don't hit anyone!'

b. (ni) bié dòng!
you don't move
'(You) don't move!'

c. * ta bié dǔ.
3sg don't gamble
'He shouldn't gamble.'

According to our informants, the presence/absence of an overt subject makes no difference in meaning in the sentences in (248). That is, the sentences with an overt subject are no more emphatic than the ones with a covert subject. Moreover, the overt subject *ni* is not a vocative subject. A vocative subject in Chinese is followed by a pause. But in the sentences in (248), when *ni* is present, it is not necessarily followed by a pause, indicating that it is a structural subject of the sentences in which it occurs.

As mentioned earlier, Chinese does not have tense morphology. A bare verb form is used for both present and past temporal interpretation. Moreover, Chinese freely allows covert subjects in other sentence types, as in (249). If we take the absence of tense morphology to mean that the clause is infinitival, then all Chinese sentences are infinitivals, and they all allow covert subjects.

(249) Chinese

a. (wǒ) xǐhuan chī píngguǒ.
I like eat apple
'I like to eat apples.'

'I liked to eat apples.'

b. (ni) qú?
you go
'Are you going?'

'Did you go?'

imperative operator and so it can only take a 2nd person pronominal subject and the sentence in which it occurs can only have a directive function. On the other hand, when *bié* occurs in an embedded context, it is licensed by a directive predicate in the matrix clause and since embedded clauses do not have directive illocutionary force, it can occur with a 3rd person subject.

Imperatives are no different. As infinitivals, they allow covert subjects just like any other sentence type in Chinese.

In summary, we have argued that the syntactic behavior of the imperative subject is predictable, and that it depends on what type of syntactic structure the language selects for the imperative. The subjects of infinitive type and subjunctive type imperatives behave like the subjects of other infinitival and subjunctive clauses, respectively, for a given language. Table 4.2 summarizes this section, clearly showing that the value for the imperative subject in a given language is identical to the value for the subject of the clause type selected by the imperative of that language.

	Imperative subject	Imperative syntax	Infinitival subject	Subjunctive subject
English, German	overt, empty	subjunctive, infinitival	empty	overt
French	empty	infinitive	empty	overt
Italian, Spanish	empty	infinitive	empty	overt, empty
European Portuguese	overt, empty	infinitive (inflected)	overt, empty	overt, empty
Modern Greek, Bulgarian, Serbo-Croatian	overt, empty	subjunctive	—	overt, empty
Korean, Japanese, Chinese	overt, empty	infinitive	overt, empty	—

Table 4.2: Subjects and syntactic structure of imperatives

4.5 Conclusion

In this chapter, we argued that the imperative operator includes the features [directive] and [irrealis], whereas the subjunctive and infinitival operators include the feature [irrealis]. Based on this proposal, we explained why languages select subjunctives or infinitivals in linguistic contexts where imperatives are ruled out or are not available, and we showed that while the [directive] feature encodes directive force in imperatives, subjunctives and

infinitivals generate directive force through pragmatic inference. We argued that the syntactic status of the empty subject in imperatives in English is PRO, and that its reference is determined by the interpretational property of the imperative operator. We discussed the interpretational content of PRO in obligatory control constructions that are standardly assumed to show that control is mainly a syntactic phenomenon, and we suggested that even here the interpretational component plays an important role in determining the reference of PRO. The proposed analysis implies that the domain of Control Theory, which predicts the reference of PRO, is more abstract than previously thought. Finally, we identified the source of cross-linguistic variation in the syntactic behavior of imperative subjects as the type of syntactic structure that a language selects for the imperative. Depending on whether a language selects the infinitive or the subjunctive type, the imperative subject behaves like the subject of an infinitival or subjunctive in the language in question. In sum, our analysis captures the close relation among imperatives, infinitivals and subjunctives that exists across languages, and it accounts for the syntactic behavior of the imperative subject in a given language in a predictable way.

Chapter 5

Interpreting Imperatives: the Contribution of Mood and Force

5.1 Introduction

In this chapter, we present a way of interpreting imperatives based on the conclusions we have reached about their syntax. We have argued that while subjunctives and infinitivals have a subjunctive/infinitive operator in C^0 that includes only the [irrealis] feature, imperatives have an imperative operator in C^0 whose feature contents include both [irrealis] and [directive]. We have also argued that [irrealis] selects subjunctive or infinitive INFL and contributes the unrealized interpretation, and that [directive] drives verb movement to C^0 either before Spell-Out or at LF (depending on the language) and encodes directive illocutionary force. Given the semantic principle of compositionality, according to which the meaning of a whole is a function of the meaning of its parts, our syntactic analysis of imperatives implies that both the semantics of the propositional type for subjunctives or infinitivals and the semantics of directive force contribute in deriving the interpretation of imperatives.

According to our analysis, the directive force of imperatives is not the result of Gricean reasoning or inference, but is directly encoded in their logical form. We propose that the directive force of imperatives turns the sentence into a DIRECTIVE ACTION, which we in turn define as an instruction to the hearer to update his/her PLAN SET. A plan set is a set

of propositions that specify the hearer's intentions, and it represents the state of affairs that the hearer intends to bring about. We will show that these definitions yield quite interesting linguistic results.

This chapter is organized as follows. In §5.2, we propose that the logical form of imperatives contains two components: one component encodes directive force, and the other encodes modality that contributes unrealized interpretation. We also propose a way of interpreting the two components. In §5.3, we discuss some of the consequences of the proposed analysis. In §5.4, we investigate the interpretational behavior of imperatives in discourse and explore how the modality in imperatives allows modal subordination of subsequent modal sentences.

5.2 Logical Form of Imperatives

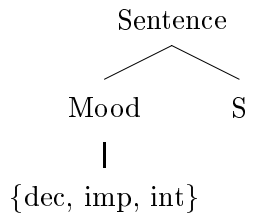
5.2.1 Force in the Logical Form

Although Frege viewed truth as the key concept of the theory of meaning, he was also aware that understanding the meaning of a sentence involves more than just knowing its truth conditions (Frege (1960)). Frege asserted that a sentence is a complex of two components: a component that expresses its thought (sense), and a component that expresses its force, where to know the sense of a sentence is to know under what conditions it is true, and to know the force of a sentence is to know the conventions of its use in discourse. According to Frege, there are linguistic expressions which serve as force-indicators of a sentence, playing the part of an assertion sign, a question sign, or a command sign. Thus, in addition to the signs for sentential operators such as negation and conjunction that contribute to the sense of the sentence, he proposed that signs for force-indicating expressions are also necessary.

Lewis (1976) expresses a similar opinion. According to Lewis (1976), a sentence should be divided into two components: the sentence radical and the mood. The sentence radical specifies a state of affairs, and the mood determines whether the speaker is declaring that the state of affairs holds, commanding that it hold, or asking whether it holds. Lewis's use of the term 'mood' corresponds to our use of 'force.' Lewis represents a sentence as in (250). S is the category for sentence radicals, and the Mood category can be instantiated by either declarative (dec), imperative (imp) or interrogative (int). Thus, force-indicating

symbols are part of the syntax of a sentence.

(250)



According to Lewis, sentence radicals have truth-values as extensions, and functions from possible worlds to truth-values as intensions. The entire apparatus of model-theoretic semantics pertains to sentence radicals and constituents thereof. The semantics of mood is something entirely different. It interacts with rules of language use in discourse.

We believe that the syntax of imperatives across languages indeed shows that the imperative directly encodes the information that it has directive force. We have identified this information as a morphosyntactic feature [directive] included in the imperative operator located in C^0. We have also argued that the imperative operator includes an [irrealis] feature which selects subjunctive or infinitive INFL. The feature [irrealis] encodes modality which contributes unrealized interpretation. Based on the syntactic information, we can represent the logical form of imperatives as in (251). This logical form is the output of syntax and serves as the input to interpretation.

(251) Logical form of imperatives:
$directive(irrealis(p))$

In this logical form, *directive* corresponds to the force-indicator of Frege and Lewis, and $irrealis(p)$ corresponds to the sentence radical that expresses the sense and intension of Frege and Lewis. We can say that $irrealis(p)$ denotes a set of hypothetical possible worlds in which p is satisfied. Further, the speaker is agnostic as to whether the real world is included in this set of possible worlds. In other words, as far as the speaker is concerned, it is possible for the real world to be included in this set but s/he does not know whether it is. In general, the set of possible worlds denoted by $irrealis(p)$ is restricted to future-oriented possible worlds due to the meaning of *directive*. The interpretation of *directive* will be discussed in §5.2.2.

Our proposal for the logical form of imperatives differs from the approach that imperatives merely denote a certain type of proposition. Bolinger (1977) argues that imperatives are a type of bare infinitival that denotes hypothetical situations. Huntley (1984) and Davies (1986) argue that imperatives denote propositions that specify potential situations. Wilson and Sperber (1988) argue that imperatives denote propositions that specify possible and desirable situations, where the situation is either desirable to the speaker or the hearer. According to all these studies, the directive illocutionary force expressed by imperatives is the result of pragmatic reasoning and inference based on discourse contexts. However, if imperatives simply denote a certain type of proposition, the fact that they cannot be embedded remains mysterious (recall §4.2.1). Our approach provides a straightforward explanation for this fact: the logical form of imperatives includes an operator that expresses directive illocutionary force, and since embedded clauses do not express illocutionary forces, imperatives cannot be embedded. Moreover, under the pragmatic approach, it is unclear why so many languages have special morphosyntactic forms for the expression of directives. Under our approach, imperatives are grammatically specified to express directive force, whereas reasoning and inference play a role in explaining the variability of directive forces that can be expressed by imperatives.

5.2.2 Speech Acts

Now we need to define what *directive* means. In effect, *directive* is responsible for expressing directive force, thereby making a sentence into a directive speech act such as commanding, ordering, and requesting. As first articulated in detail in Austin (1962) and systematically explored in Searle (1969, 1976), sentences are not used just to say things, but rather actively to do things. The action performed by uttering a sentence is called a SPEECH ACT. In so-called performative sentences, the act being performed is explicitly expressed in the matrix clause: for instance, *I hereby christen this ship the H.M.S. Flounder*, *I declare war on Zanzibar*, and *I apologize* perform christening, declaring and apologizing, respectively. Declaratives canonically perform the speech act of assertion, interrogatives, the speech act of request for information, and imperatives, the speech act of directive. Sentences also perform indirect speech acts, where a sentence performs a speech act that is not canonically

associated with it. For instance, a declarative *Your services are no longer needed here* can perform the act of firing someone, and a rhetorical question *Who has Sam ever liked?* can express the assertion *Sam has never liked anyone.*

Since Austin (1962) and Searle (1969), there have been many works on speech act theory from the linguistic and computational perspectives. Some of the early works on speech act theory in linguistics pursued the PERFORMATIVE HYPOTHESIS, according to which all sentences can be reduced to performatives (Ross (1970), Sadock (1974)). That is, every sentence has a higher performative clause in its underlying structure, where the subject of this clause is first person singular, the indirect object second person singular, and the verb is drawn from a delimited set of performative verbs and is in the indicative active simple present tense form. For instance, the underlying structures of imperatives, interrogatives and declaratives contain the higher performative clause *I order you*, *I ask you*, and *I assert to you*, respectively. The claim is that after a certain number of transformations, the correct surface forms for imperatives, interrogatives and declaratives are derived. Such a performative analysis implies that no special theory of illocutionary force and speech acts is needed because illocutionary force is fully specified by the meaning of the performative clause itself. However, many problems with the performative analysis have surfaced, leading to the conclusion that it is not feasible. For instance, according to the performative analysis, a declarative sentence and the corresponding performative sentence should have the same truth-conditions. But our intuition says otherwise. While the sentence in (252a) is true by virtue of the fact that the speaker has uttered it, the sentence in (252b) is simply false.

(252) a. I hereby assert to you that the world is flat.

b. The world is flat.

Another problem comes from adverb placement: for instance, certain adverbs can occur in performative sentence, but not in the corresponding imperative, as in (253). Moreover, the imperative and the corresponding performative sentence modified by an adverb do not mean the same thing, as in (254). In (254a), the adverb *frankly* is modifying the verb *order*. But in (254b), it is not clear what *frankly* is modifying.

(253) a. I hereby order you to polish your boots.

b. * Hereby, polish your boots

(254) a. I frankly order you to go home.

b. ? Frankly, go home.

If an imperative and the corresponding performative sentence have the same D-structure, and so the same meaning, we would not expect such asymmetries. A way of handling these problems is to stipulate that covert performative clauses are not visible for truth-conditional purposes and adverbial modification. But then acknowledging that sentences with covert performative clauses differ from sentences with overt performative clauses is the same as acknowledging a theory of illocutionary force which cannot be reduced to anything else.

Other works on speech act theory start from the assumption that illocutionary force is an aspect of meaning that cannot be reduced to matters of truth conditions. According to this approach, all utterances not only serve to express propositions, which are subject to truth-conditional semantics, but also express a certain illocutionary force, thereby performing certain actions called speech acts. The proper characterization of illocutionary force is provided by specifying the set of felicity conditions for each force. These felicity conditions specify under what conditions a certain illocutionary force can be achieved. This approach entails that the theory of illocutionary force and speech acts belongs in the realm of pragmatics and not in truth-conditional semantics. Many recent works on speech act theory in computational linguistics start with the assumption that utterances are actions and provide a model of the way hearers infer speaker's intention and respond accordingly from observing the speaker's speech acts (Allen (1983), Cohen and Levesque (1992)).

5.2.3 Interpreting Directive Action

We take the position that traditional truth-conditional semantics cannot be expressive enough to model the meaning of illocutionary force and the corresponding speech act. But here, rather than defining illocutionary force and the corresponding speech act in terms of felicity conditions under which they can be appropriately used, our goal is to suggest a more direct way to interpret them, from which the felicity conditions are made to follow.

Our main concern is to interpret the notions 'directive force' and 'directive action.' But once we do this, a similar approach should be extendible to interpreting the question force of interrogatives and the assertive force of declaratives.

We believe that an appropriate way of defining 'directive action' is to use the concept of INSTRUCTION. We propose that by performing a directive action, the speaker instructs the hearer to update a particular module which we call the PLAN SET. A hearer's plan set is a set of propositions that specifies his/her intentions which represents the state of affairs the hearer intends to bring about. Thus, an imperative, $directive(irrealis(p))$, is an instruction to the hearer to add p to his/her plan set. The notion of plan presupposes that the planner has the ability to carry out the plan. In imperatives, since the speaker is instructing the hearer to update the plan set, the hearer is, in effect, the planner. Hence, issuing this instruction implies that the speaker believes that the hearer has the ability to bring about p. If the hearer updates the plan set with p, then the hearer intends to bring about the situation described by p. Moreover, a plan is a future-oriented notion: if you are planning to bring about the situation described by p, then the situation is not realized at the time that p is planned and it can be realized in the future. Thus, it makes sense for *directive* to take $irrealis(p)$ as its argument because the future-orientation of *directive* is compatible with the unrealized interpretation contributed by *irrealis*. Further, if the speaker tells the hearer to plan to bring about the situation described by p, the implication is that the speaker wants the situation described by p to be brought about.

5.2.4 Variability in the Illocutionary Force of Imperatives

Given our definition of directive force and directive action, an imperative canonically expresses such directives as order, command, or request.

(255) Order, command

a. Stand at ease! (a commander in the army to his soldiers)

b. Take down this poem. (a teacher to her class)

c. Clean that mess up at once! (a mother to her child)

(256) Request

a. Please bring me some water.

b. Open the window, would you please?

But imperatives can also express illocutionary forces that do not seem to be straightforwardly directives, such as permissions, wishes, threats and dares. For instance, in a context in which someone knocks on your door and you reply by uttering *Come in*, you are not usually ordering or requesting the knocker to come in, but rather giving him/her the permission to do so.

Sentences in general can be used to perform INDIRECT SPEECH ACTS. For instance, although interrogatives canonically perform the speech act of requesting information, they can also perform the indirect speech act of requesting action. For instance, *Can you open the window?* has the literal force of a question requesting information as to whether the hearer has the ability to open the window, but it can also have an indirect force of a request to open the window. We argue that imperatives, just like other sentence types, can also be used to perform indirect speech acts, and we adopt the approach that sentences can be used this way by virtue of conversational implicatures arising from Gricean inference in certain discourse contexts (see Gordon and Lakoff (1971), Grice (1975), Searle (1975)). Since the description of the inference process is beyond the scope of this work, here we can only make brief and informal remarks.

In a context in which a person A has expressed the desire and intention to perform p, the implication is that A already has p in her plan set. For instance, if A knocks on your door, then A is expressing her desire and intention to come in. That is, by knocking on your door, A is implying that her plan is to come in. By uttering *Come in!* in this context, you are acknowledging A's plan, rather than instructing A to update her plan set. It may be that if an imperative $directive(irrealis(p))$ is uttered in a context in which it is already known that the hearer has p in the plan set, then it performs the speech act of permission as an indirect speech act.

An imperative such as *Have a nice day!* expresses a wish in general. A person does not usually have a control over having a nice day. She may have the desire and intention of having a nice day, but bringing about this state of affairs is not completely up to her.

It will depend on events that are not always under her control. For instance, she may be hit by a cyclist and fall, thereby her day is ruined. It may be that an imperative $directive(irrealis(p))$ can be used to perform the speech act of wishing as an indirect speech act if it is known that the hearer does not have control over realizing p.

Imperatives that have the force of threats or dares express the opposite of what they literally mean. For instance, the second imperative in the sequence *Go ahead. Hit me. Then you'll be sorry!* is actually expressing that the speaker is warning the hearer not to hit him/her. This is not specific to imperatives. Declaratives can also express the opposite of their literal meaning when they are used ironically or sarcastically. In (257), what B is actually saying is that Clinton is not smart.

(257) a. A: Clinton messed up again.

b. B: Yeah, he is really smart. (sarcastic)

Imperatives that express threats and dares are comparable to declaratives that express irony and sarcasm. Just as we would not want to complicate the literal meaning of declaratives to handle uses as in (257b), we would not want to complicate the literal meaning of imperatives to handle the former. Instead, they should be handled by Gricean reasoning and inference.

5.2.5 Extension to Declaratives and Interrogatives

It is difficult to determine whether declaratives explicitly mark assertive force in the syntax or whether the force is the result of pragmatic inference. This is because the morphosyntax of declaratives in matrix contexts is identical to that of reported assertions in embedded contexts. For instance, (258a) and the embedded clause in (258b) have the same word order and verbal morphology.

(258) a. The world is flat.

b. The king believes that the world is flat.

However, whether or not assertive force of a declarative is encoded in its logical form, we need to define what assertive force means. By analogy to the way we have defined directive force, an assertive force of a declarative can be defined as an instruction to the hearer to

update his/her BELIEF SET with the proposition expressed by the declarative. A belief set of a hearer is a set of propositions that represents what is believed to be true.

What about interrogatives? At least in English, interrogatives in matrix context exhibit subject-verb inversion, whereas indirect questions in an embedded context do not. This may be an indication of the presence/absence of a question force-indicating operator in syntax. There are also other facts that indicate the presence of a force-indicating operator in matrix interrogatives. As pointed out in §2.9, a negative *yes-no* question in which both the negation and the verb are in C^0 as a unit and a negative *yes-no* question in which the negation is lower in the clause have different interpretational effects, although they both denote the same partition in which one block represents the positive answer p and the other block represents the negative answer $\neg p$, assuming the semantics of questions in Groenendijk and Stokhof (1985). The intuition is that the former implies that the speaker is asking whether p holds, and the latter implies that the speaker is asking whether $\neg p$ holds. For instance, the question in (100) (repeated here as (259a)) asks whether John is intelligent and the question in (102) (repeated here as (259b)) asks whether John is not intelligent.

(259) a. Isn't John intelligent?

b. Is John not intelligent?

If we posit the presence of an interrogative operator in C^0 that encodes question force, we may have a partial explanation as to the interpretational asymmetry between (259a) and (259b). We can say that even though the two questions denote the same thing truth-conditionally, they have different implications due to the difference in the way negation and the interrogative operator interact depending on where the negation is located with respect to the interrogative operator. That is, when negation ends up in C^0, where the interrogative operator is, the negation interacts with the interrogative operator to generate the interpretational effects described above. On the other hand, when negation is lower in the clause in interrogatives, it does not interact with the interrogative operator in C^0, and these interpretational effects are absent. However, further study is required to determine the exact nature of the interaction between negation and the interrogative operator and its effects on interpretation.

Without further argument, we assume that interrogatives have an interrogative operator that encodes question force in the syntax, and we define question force in terms of the instruction concept. As in Groenendijk and Stokhof (1985), we assume that a question 'p?' denotes a partition that represents the set of possible answers: namely the positive answer p and the negative answer $\neg p$. Given this, simplifying matters a bit, we suggest that the question force is an instruction to the hearer to retrieve the proposition that represents the true answer (based on her beliefs about the state of affairs) from the partition and plan to notify the speaker of the proposition that has been retrieved. Thus, if p is retrieved from the partition, then the hearer is instructed to update his/her plan set with a proposition *I tell the speaker p*. More on the illocutionary force of interrogatives will be presented in Chapter 6 where we discuss interpretation of rhetorical questions.

5.3 Consequences

5.3.1 Issuer of the Directive

The meaning of directive force in the logical form of imperatives encodes that it is the speaker who issues the directive. The prediction is that as a reply to an imperative, a question as to who issued the directive should never come up. But the felicity of the interaction in (260) seems to contradict this prediction.

(260) a. A: Leave!

b. B: Who says so?

On a closer look, what B is asking is not who issued the directive, but who is responsible for A's issuing the directive. B may also be asking whether the speaker has the authority to issue the directive. The question in (260b) has these interpretations exactly because the imperative operator encodes that the speaker issues the directive.[1]

[1]The original issuer of a directive expressed by an imperative may not be the speaker. For instance, in a military context, a lieutenant can issue an order in the form of an imperative which was originally issued by a colonel. Although the lieutenant, who is the speaker, is not the original issuer of the order, s/he is still the issuer of the order. Moreover, in a palace, assume that a chancellor says to you *Bow down! The emperor demands it.* Here, the original issuer of the order is the emperor. But the chancellor is still issuing an order by way of transmitting the emperor's order.

5.3.2 Target of the Directive

In imperatives, the speaker issues the directive to an addressee (or addressees). This is clearly so in cases where imperatives have overt 2nd person subjects, or empty subjects that are understood to be 2nd person. An apparent counterexample to this generalization is the fact that imperatives can have 3rd person subject NPs in English.

(261) a. Nobody move.

b. Everybody get out as quick as he/you can.

c. Somebody pay the bill.

d. The boy in the corner stand up.

However, on a closer look, as pointed out by Stockwell et al. (1973), even in the imperatives in (261), the subject referent is in some sense being addressed by the speaker. Evidence that the subjects in imperatives are being addressed by the speaker comes from examples like the following. The examples in (262) show that the subject in the tag question must be in the 2nd person, even though the subject in the preceding imperative is in the 3rd person. The examples in (263) show that the 3rd person subjects of imperatives are anaphorically related to a 2nd person pronoun in the subsequent sentences.

(262) a. * The boy in the corner stand up, will he?

b. The boy in the corner stand up, will you?

(263) a. Nobody$_i$ move. I am begging you$_i$/*him$_i$/*them$_i$.

b. Somebody$_i$ pay the bill. I am begging you$_i$/*him$_i$/*them$_i$.

This property is captured by the proposal that the directive force encodes the information that the speaker issues the directive to the addressee.

5.3.3 Future Orientation

Imperatives in general have future orientation. This can be shown by the fact that imperatives are compatible with future oriented adverbials, but not with past oriented adverbials.

(264) a. Finish your homework tomorrow.

b. * Finish your homework yesterday.

In addition, even adverbs that are not necessarily future-oriented can only be future-oriented in imperatives. For instance, *now* and *tonight* can occur in linguistic contexts that are not future-oriented, as shown in (265). In fact, *tonight* can even be past-oriented, as in (265b).

(265) a. John is eating now.

b. John finished his homework tonight.

But when *now* and *tonight* occur in imperatives, they can only be future-oriented. In particular, *now* in (267) means something similar to *from now on*.

(266) a. Behave yourself when the guests arrive tonight.

b. Finish your homework tonight.

(267) a. Behave yourself now.

b. Finish your homework now.

Moreover, as observed by Katz and Postal (1964), tag questions that follow imperatives are most natural with auxiliary *will*, providing a support for future orientation of imperatives.

(268) a. Behave yourself, will you?

b. Behave yourself, won't you?

Bolinger (1977) argues that auxiliary *will* in tags following imperatives does not refer to futurity, but rather to willingness, and that the tag *will you* is paraphrasable as *are you willing to*. Even so, if you are willing to do p, you do p in the future. Hence, the futurity of *will* remains.

The future orientation of imperatives is captured by our proposal that the logical form of imperatives encodes future-orientation. That is, in $directive(irrealis(p))$, the meaning of *directive* encodes future-orientation, thereby restricting the denotation of $(irrealis(p))$ to the set of future-oriented possible worlds.

Imperatives, however, can also refer to the present, as noted by Bolinger (1977).

(269) a. Please, be thinking about me.

b. (Holding a lottery ticket, a person utters the following imperative)
Please be the right number.

Bolinger also claims that imperatives can refer to past events and provides the examples in (270) as supporting evidence.

(270) a. Don't have three-fourths of the whiskey drunk already.

b. Please, do have made that call by six o' clock.

However, these examples actually refer to the present state as indicated by the use of present perfect. Imperatives can refer to the present when they express the speaker's wish. The examples in (269) and (270) express the speaker's wish concerning the present, and they can be felicitously used only if the speaker does not know whether the situation described by the imperative has been realized or not. We have already pointed out that imperatives can be used to express a wish as an indirect speech act. In this case, the denotation of $(irrealis(p))$ is not restricted to the set of future-oriented possible worlds. It can denote a set of possible worlds that describe what the current state might be like.

5.3.4 Negation and Directive Force

The directive force contributed by the imperative operator cannot be negated. In a negative imperative, negation does not have scope over the directive force. Rather, the directive force always has scope over the negation. We illustrate this point in (271) and (272).

(271) Don't go.
$\approx$ It is required that you not go.
$\not\approx$ It is not required that you go.

(272) Nobody move.
$\approx$ It is required that not anybody move.
$\not\approx$ It is not required that anybody move.

In Chapter 2, we explored the impossibility of negated illocutionary force to account for the cross-linguistic variation in the compatibility between imperatives and negation. Our

proposal is that languages do not allow negative imperatives if the imperative operator in C^0 ends up in the scope of negation because the directive force contributed by the imperative operator ends up being negated, resulting in an incoherent interpretation.

In the logical form of imperatives that we have proposed, $directive(irrealis(p))$, *directive* takes the logical form as its argument. We have proposed that *directive* is a function that instructs the hearer to update his/her plan set with the proposition p. In effect, it is a non-truth-conditional operator that returns a non-truth-conditional object. On the other hand, negation is a truth-conditional operator that operates on a proposition and returns a proposition. Thus, it is impossible for negation to operate on illocutionary forces. That is why a representation in which negation takes scope over an illocutionary force operator results in an incoherent interpretation.

According to Dummett (1973), Frege asserted that a sign for illocutionary force cannot meaningfully occur within the scope of sentential operators such as negation, but can attach only to a complete sentence as a whole. However, Dummett argues that illocutionary force signs can be negated and provides as evidence what he believes to be natural language expressions with negated illocutionary force. In particular, he claims that the case is very clear in imperatives. He believes that permissive *may* involves negating the force sign in imperatives. For him, if the force sign in a negative imperative is negated, the corresponding natural language expression is a permission sentence with the modal verb *may*, as represented in (273). The exclamation ! is a sign indicating directive force.

(273) You may do X $\equiv$ not!(you do not do X)

However, we do not believe that this is a valid proposal. The permission sentence *You may do X* is an indicative sentence with a modal verb *may*. Nothing compels us to represent this sentence with a negated directive force sign. We could very well represent it with an assertive force sign which takes scope over a permissive modal operator. In (274), $||$ is a sign indicating assertive force, and P is the permissive modal operator.

(274) You may do X $\equiv ||P$(you do X)

In particular, the equivalence in (273) crucially depends on the equivalence between $\neg!\neg\phi$ and $P\neg\neg\phi$, where P is a permissive modal operator, in analogy to the equivalence

between $\neg\Box\neg\phi$ and $\Diamond\neg\neg\phi$ in modal logic.[2]

(275) a. $\neg!\neg\phi \equiv P\neg\neg\phi$

b. $\neg\Box\neg\phi \equiv \Diamond\neg\neg\phi$

If this is correct, then the equivalences in (276) should hold as well.

(276) a. $!\neg\phi \equiv \neg P\phi$

b. $\neg!\phi \equiv P\neg\phi$

That is, my directing $\neg\phi$ should be the same as my not permitting ϕ, and my not directing ϕ should be the same as my permitting $\neg\phi$. But this is dubious. Consider the interaction in (277).

(277) a. A: I don't want to leave yet.

b. B: Ok. Then, don't leave.

In this context, the imperative *Don't leave* uttered by B does not mean the same as *I am not permitting you to leave.* Rather, it means something similar to *I am permitting you to not leave.* Furthermore, the equivalence in (276b) cannot be valid either. For example, if I do not order you to leave, this does not mean that I am giving you permission to not leave.

Dummett's permission sentences involve two instances of negation: one that negates the directive force, and another one that negates the propositional content. We might then expect an imperative with double negation to generate a permissive reading. But this does not occur. The imperative in (278a) is a request to close the window and the imperative in (278b) is a request to finish the cake. The permissive readings *you may close the window* and *you may finish your cake* are not available for the imperatives in (278).

(278) a. Don't not close the window.

b. Don't not finish your cake.

Further, it is well known that an affirmative imperative can express a permission depending on the context. Although the imperatives in (279) do not involve any negation, they can perfectly well express permissions.

[2]For explanations of definitions used in modal logic, see Hughes and Cresswell (1996).

(279) a. Come in. (as a reply to a knock on the door)

b. A: Can I open the window?

B: Sure. Open it.

We therefore do not believe that permission sentences are natural language expressions for negated directive force. Instead, we accept Frege's intuition that force-indicating signs cannot be in the scope of negation.

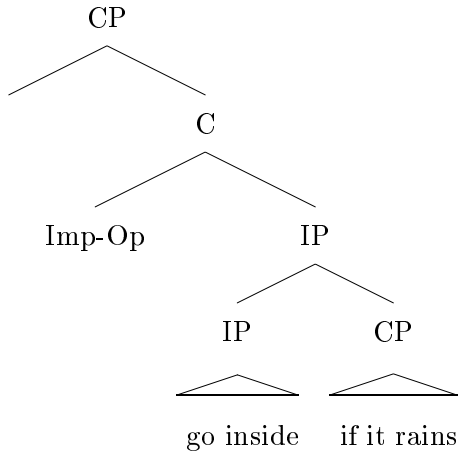
A question arises at this point as to the scope possibility of other truth-conditional operators and force-indicating operators. We conclude this subsection with a brief discussion on this issue, limiting it for simplicity to the directive-force indicating operator. We believe that the arguments carry over to other force-indicating operators. Let us first consider the scope possibilities of the conditional operator and the directive force-indicating operator in conditional imperatives, as in (280).

(280) a. Go inside if it rains.

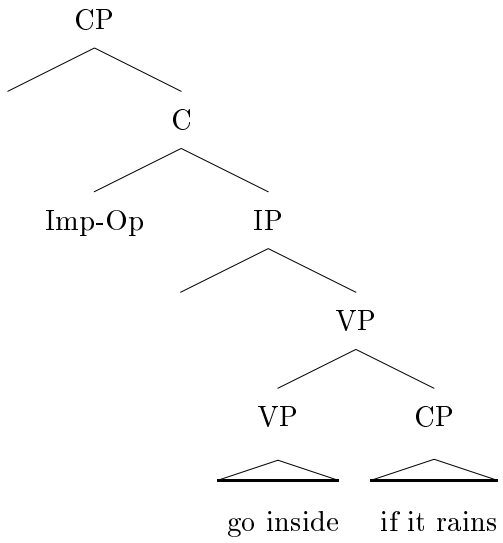
b. If it rains, go inside.

For (280a), we can say that the entire sentence is a CP and the imperative operator which encodes directive force is in C^0, and the conditional clause *if it rains* is an adjunct clause that is right adjoined to IP or to VP, as illustrated in (281a) and (281b).

(281) a.

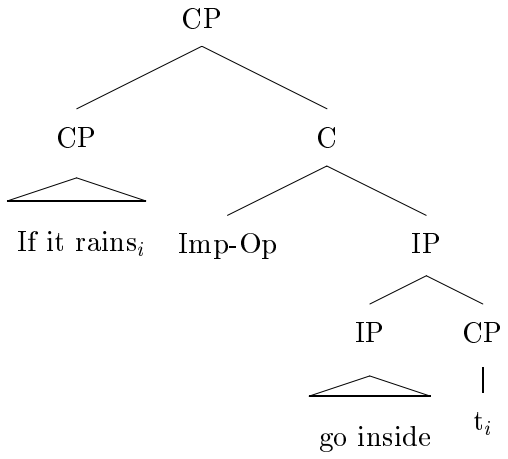


b.

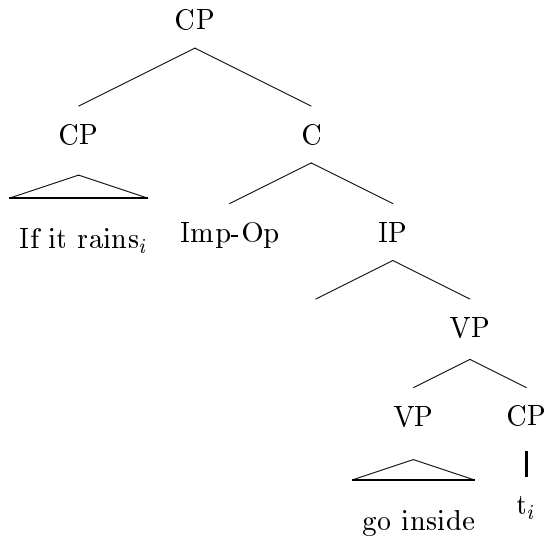


For (280b), we can say that its structure is just like that of (280a), except that the conditional clause has topicalized to the left periphery of the sentence. The conditional clause then reconstructs to its original position for interpretation. This is illustrated in (282).

(282) a.



b.



Thus, imperative operator scopes over the entire sentence in both of the conditional imperatives in (280).

Other truth-conditional operators that require attention are *and* and *or*. In natural language, these operators can coordinate entire sentences (as in (283)) as well as subconstituents of a sentence (as in (284)).

(283) a. Eat an apple or eat an orange.

b. Have dinner and watch a movie.

(284) a. Eat an apple or an orange.

b. Buy beer and wine.

The sentences in (284) are examples of NP coordination. For these sentences, we can just say that the entire sentence is a CP with the imperative operator in C^0. And so the imperative operator has scope over the entire sentence. But we cannot say the same thing for the examples in (283). In (283), two imperatives are coordinated in each example. The verbs in each conjunct are in the imperative form. In effect, in (283), *and* and *or* have scope over two imperatives. Given this fact, we restrict the truth-conditional operators that cannot scope over illocutionary-force operators to negation and the conditional operator.

5.3.5 Speaker's Belief in the Realization of the Situation Described by the Proposition

Speakers believe that the state of affairs described by the proposition of an imperative is realizable. Hence, it is infelicitous to follow an imperative with a sentence that expresses the speaker's belief that the situation described by the proposition of the imperative will not be realized.

(285) # Eat this fish! But you won't.

Moreover, imperatives with individual-level stative predicates are infelicitous because the states of affairs described by individual-level statives are not something that can be realized unless they have already been realized.[3]

(286) a. # Be tall.

b. # Have blue eyes.

This property is captured by our proposal that the directive force encodes the information that the speaker believes that the addressee has the ability to bring about the state of affairs described.

5.3.6 Agentivity

Imperatives are in principle agentive. That is, the situation described by the imperative presupposes an agent who is responsible in bringing it about (unless the imperative is used to express a wish as in (269b)). That is why imperatives with individual-level predicates are infelicitous as shown in (286): i.e., the situation described by an individual-level predicate is not something that an agent can bring about under normal circumstances. According to our definition of the logical form of imperatives $directive(irrealis(p))$, the situation described by the imperative, p, is a plan. Since plan is something that is carried out by an agent, we expect the situation described by p in imperatives to be agentive.

[3]The sentences in (286) can be felicitous if the speaker is a fairy godmother or if the speaker is expressing a wish.

5.3.7 Truth

Imperatives cannot be said to be true or false. Since imperatives denote directive actions, and since a directive action is an instruction to the hearer to update his/her plan set, it does not make sense to predicate truth or falsity of an imperative.

In contrast, we can say that a declarative is either true or false. We have suggested that a declarative canonically performs an assertive act, which can be defined as an instruction to the hearer to update his/her belief set with a proposition. A belief set is a description of what the hearer believes the state of affairs to be like. Thus, a declarative that performs an assertive act can be said to be true if the proposition associated with it is consistent with the hearer's belief set, and false if the proposition associated with it is not consistent with the hearer's belief set.

5.4 Imperatives in Discourse

In this section, we discuss the interpretational behavior of imperatives in discourse. In particular, we will see how the modality of imperatives effect the interpretation of subsequent modal sentences.

5.4.1 Issues

When an imperative is followed by the disjunction *or* and a sentence of the form $will(p)$, the first sentence has directive force and the second has a conditional-like interpretation in which the interpretation of the sentence depends on the negation of the proposition of the first sentence.

(287) Come to the party, or John will be unhappy.
$\approx$ Come to the party. If you don't come to the party, John will be unhappy.

When an imperative is followed by the conjunction *and* and a sentence of the form $will(p)$, the first sentence does not have directive force. The entire sequence has a conditional-like interpretation in which the interpretation of the second sentence depends on the first sentence.

(288) Be late, and you'll miss the train.

≈ If you are late, you'll miss the train.

5.4.2 A Previous Study: Clark 1993b

Clark (1993b) provides an account of the interpretation of the sequences *imp*(p) *and will*(q), and *imp*(p) *or will*(q) by appealing to the pragmatic principle of relevance and the semantics of imperatives proposed by Wilson and Sperber (1988). According to Wilson and Sperber, imperatives denote propositions that specify possible and desirable situations, where the situation is either desirable to the speaker or the hearer.

5.4.2.1 *imp(p) and will(q)*

The sequence in (289) has directive force: it is a request for the hearer to come closer.

(289) Come closer, and I'll give you five pounds.

Clark argues that the imperative in the first conjunct is responsible for the directive force in (289). In (289), the imperative in the first conjunct expresses that the speaker regards the state of affairs described as desirable from her own point of view. This utterance will have the force of a request. Given a context which contains the assumption communicated by the first conjunct (that the speaker wants the hearer to come closer), the most likely and relevant interpretation that comes to the hearer's mind for the second conjunct would be *I'll give you five pounds if you come closer.* This is so because 'the processing effort involved is not unjustifiable.' The effect of the entire sequence is to direct the hearer to come closer.

The sequences in (290) and (291) do not have directive force.

(290) a. Come one step closer, and I'll shoot.

b. Open the Guardian, and you'll find three misprints on every page.

(291) a. Catch the flu, and you'll be ill for weeks.

b. Life was hard in those days. Say one word out of turn, and they'd dock you a week's wages.

With respect to the sequences in (290), Clark claims that the first conjunct in (290a) can be interpreted as something like *you want to come closer and you think you can.* The most accessible interpretation consistent with the principle of relevance for the second conjunct is something like *I'll shoot when you come closer.* Since being shot is not a desirable situation in normal circumstances, the effect of the entire sequence is to dissuade the hearer from coming closer. As for (290b), the interpretation of the first conjunct is something like *you might think that it is possible and desirable that you open the Guardian at some time.* The most accessible interpretation consistent with the principle of relevance for the second conjunct is something like *you'll find three misprints on every page when you open the Guardian.* Since finding misprints is neither desirable nor undesirable, the effect of the entire sequence amounts to an offer of information.

As for the sequences in (291), Clark argues that the first conjuncts in the sequences are not imperatives, although they appear to be so, and the sequences should be treated as truth-conditionally equivalent to conditionals. Some of the reasons given by Clark as to why the first conjuncts in (291) are not imperatives are: (i) the subject can be understood to be generic (as in (291a)), (ii) when an overt *you* occurs in examples like (291a), it is the weak unstressed form rather than the strong, stressed form which are found in imperatives, (iii) these constructions can be taken to refer to past events as in (291b), whereas imperatives are future-oriented.

However, examples in (290) can also have an overt 2nd person subject, and when they do, it is the weak unstressed form, and not the strong, stressed form which is found in imperatives. This is shown in (292). Moreover, the subject in (292b) can be understood as generic.

(292) a. You come one step closer, and I'll shoot.

b. You open the Guardian, and you'll find three misprints on every page.

Thus, the imperatives in (290) and (291) should not be thought of as two different types of constructions as Clark does. They should be given a unified account.

5.4.2.2 *imp(p) or will(q)*

The imperative in the sequence $imp(p)$ *or* $will(q)$ has directive force, and the second conjunct $will(q)$ has a conditional-like interpretation, $\neg p \rightarrow will(q)$, as in (293).

(293) Go away, or I'll push you downstairs.
$\approx$ Go away. If you do not go away, I'll push you downstairs.

To account for the interpretation of sequences such as (293), Clark (1993b) argues that a sequence of sentences $p \vee q$ in general has the logical form '$p \wedge (X \vee q)$' where X is a variable slot to be filled by some proposition which is pragmatically inferred from p. In (293), the hearer recovers something like *It is potential and desirable that you go away. X or I'll push you downstairs.* The variable slot X is filled by *you will go away* because this proposition is related to the one which is explicitly expressed by the first clause and so it can be pragmatically inferred from it. In other words, the content of X is pragmatically accommodated with the contextually salient proposition. And then, by converting $X \vee q$ to $\neg X \rightarrow q$, the conditional interpretation is derived *If you do not go away, I will push you downstairs.* The effect of the entire sequence is to direct the hearer to go away. Note that Clark (1993b) does not directly convert $p \vee q$ to $\neg p \rightarrow q$. This is because such a direct conversion would result in a wrong interpretation. That is, (293) would end up with an interpretation paraphrasable as *It is potential and desirable that you go away. If it is not potential and desirable that you go away, then John will be unhappy.*

Under Clark's account, the value for X in '$p \wedge (X \vee q)$' is determined by pragmatic reasoning and inference. Thus, we would expect the content of X to be variable depending on the context. Moreover, if an imperative $imp(p)$ means *It is potential and desirable that* p, then there is no reason why we could not infer *It is desirable that* p or *It is potential that* p from $imp(p)$. But the fact is that the content of X can only be p. This suggests that the mechanism involved in determining the value of X is automatic and should not depend on pragmatic inference or reasoning.

5.4.3 *imp(p) and will(q)*

5.4.3.1 Imperatives?

The imperative in the sequence *imp*(p) *and will*(q) does not have directive force and the entire sequence simply has conditional-like interpretation. It may appear that the imperative in some instances of the sequence *imp*(p) *and will*(q) has directive force. However, the directive force comes not from the imperative itself, but from the implicatures arising from the entire sequence in a certain context. Given the sequence *Come closer and I'll give you 5 pounds*, the entire sequence has the effect of persuading the hearer to come closer in a context where the speaker believes that the hearer wants to acquire 5 pounds. The directive force is canceled in a context in which acquiring 5 pounds is to be avoided. The way in which directive force is implied in some instances of *imp*(p) *and will*(q) is similar to the way it is implied in conditionals such as *If you come closer, I'll give you 5 pounds* in some discourse contexts.

If *imp*(p) in the sequence *imp*(p) *and will*(q) does not have directive force, then we are faced with a problem. According to the interpretation of imperatives given earlier, imperatives should have directive force. But this is not so for imperatives in *imp*(p) *and will*(q). Either the interpretation of imperatives that we have given earlier is wrong, or the imperative in *imp*(p) *and will*(q) sequence is not really an imperative, but merely an IMPERATIVE-LIKE CONSTRUCTION. Here, we argue for the second approach by showing that although the imperative-like constructions all look like imperatives on the surface, there are many properties that distinguish them from true imperatives. We will also show that languages with distinctive imperative morphology on the verb either allow *imp*(p) *and will*(q) sequence under the conditional reading only in a limited way, or prohibit *imp*(p) *and will*(q) sequence under the conditional reading altogether.

First, while imperatives can have *do* for emphasis, imperative-like constructions cannot.

(294) a. Do put the light on.

b. Do come one step closer.

c. Do open the Guardian.

(295) a. * Do put the light on, and you'll see better.

b. * Do come one step closer, and I'll shoot.

c. * Do open the Guardian, and you'll find three misprints on every page.

Second, strings that are not acceptable as imperatives are perfectly acceptable as imperative-like constructions, as noted in Davies (1986).

(296) a. ? Know the answer.

b. ? Doubt that you will succeed.

c. * Be 7 ft. tall.

(297) a. Know the answer, and you'll get an A.

b. Doubt that you will succeed, and you won't.

c. ? Be 7 ft. tall, and you can play in the NBA.

Third, also noted in Davies (1986), while imperative-like constructions can contain NPIs, imperatives cannot.

(298) a. * Come any closer.

b. * Lift a finger to help her.

c. * Say one word to anyone about this.

(299) a. Come any closer, and I'll shoot.

b. Lift a finger to help her, and you'll be sorry.

c. Say one word to anyone about this, and I'll never forgive you.

Fourth, as noted by Clark (1993b), while the covert subject in imperative-like constructions, which has the content of 2nd person, can have impersonal, generic interpretation, the covert subject in imperatives can only refer to an addressee (or addressees).

(300) a. Wash yourself every day, and your skin gets dry.

b. Catch the flu, and you'll be miserable for days.

Fifth, as noted by both Davies (1986) and Clark (1993b), in contrast to imperatives, imperative-like constructions may be interpreted with past time reference.

(301) a. * Say one word out of turn in those days.

b. * Take a holiday in those days.

(302) a. Life was hard in those days. Say one word out of turn, and they'd dock you a week's wages.

b. Take a holiday in those days, and you were regarded as a spendthrift.

Sixth, imperatives can have indefinite quantifiers such as *someone, everyone, nobody* as subjects, whereas imperative-like constructions cannot.

(303) a. Nobody help her!

b. Everybody come to the party!

c. Someone open the window.

(304) a. * Nobody help her, and she will fail.

b. * Everybody come to the party, and she will be happy.

c. * Someone open the window, and we'll get some fresh air.

Finally, negated imperative-like constructions are degraded, unlike negative imperatives.

(305) a. Don't show up on time.

b. Don't you worry so much.

(306) a. ? Don't show up on time, and you'll miss the beginning of the movie.

b. * Don't you worry so much, and you'll be happier.

5.4.3.2 Other languages

Imperatives in Korean, German and Modern Greek are formed with distinctive imperative morphology on the verb.

In German and Modern Greek, although judgments vary across speakers, a generalization that emerges is that $imp(p)$ *and* $will(q)$ sequences are possible under the conditional-reading only when $imp(p)$ can be a well-formed imperative by itself.

(307) German

a. Ruf sie an, und sie freut sich bestimmt.
call-Imp her Part and she makes-happy Refl certainly
'Call her, and she's sure to be happy.'

b. Komm (du) bloß einen Schritt näher, und ich schieße.
come-Imp you only one step closer and I shoot
'Come one step closer, and I'll shoot.'

c. ? Verspäte dich nur mal fünf Minuten, und du fliegst aus der Klasse raus.
delay-Imp Refl only once five minutes and you fly out-of the class out
'Come just five minutes late, and you'll be kicked out of the class.'

d. ?? Erwisch die Grippe, und du fühlst dich tagelang elend.
catch-Imp the flu and you feel Refl days-long miserable
'Catch the flu and you'll feel miserable for days.'

e. * Sei 2 m groß, und du kannst in der Nationalliga spielen.
be-Imp 2 m big and you can in the national-league play
'Be 2 m tall, and you can play in the national league.'

f. * Rühr einen Finger, um ihr zu helfen, und du wirst es bereuen.
lift-Imp a finger, Prep her to help and you will be sorry
'Lift a finger to help her, and you will be sorry.'

(308) Modern Greek

a. Pare tis tilefono, ke tha xari.
talk-Imp her telephone and Fut happy
'Talk to her on the telephone, and she will be happy.'

b. Ela pjo konda, ke tha se pirovoliso.
come-Imp more close and Fut you shoot
'Come closer, and I'll shoot you.'

c. Ela 5 lepta argotera, ke ise ektos taksis.
come-Imp 5 minutes later and are out class
'Come 5 minutes late, and you are out of the class.'

d. ?? Griposou, ke meta ise kathilomenos sto krevati meres.
get-flu-Imp and then are stuck in-the bed days
'Catch the flu, and you are stuck in bed for days.'

e. * Ekino ton kero i zoi itan diskoli. Lege kati lathos, ke se
that the time the life was hard. say-Imp something wrong and you
apoliane.
fired
'Life was hard in those days. Say something wrong, and they would fire you.'

For instance, the imperatives in (307a-c) and (308a-c) are all fine by themselves: it is perfectly reasonable to request someone to make a call, someone to come closer and someone to come five minutes late. However, the imperatives in (307d,e) and in (308d) do not sound so felicitous by themselves: it is odd to request someone to catch the flu, and it is very strange to tell someone to be 2 meters tall. The imperative in (308e) is out under a generic reading with past tense reference, which is forced by the context. Moreover, the imperative in (307f) is out due to the presence of an NPI. The corresponding imperatives and their grammaticality judgment are given in (309) and (310). The fact that *imp*(p) *and will*(q) sequences under conditional-reading degrade if *imp*(p) is ill-formed by itself in German and Modern Greek suggest that *imp*(p) is being interpreted as a real imperative in both languages.

(309) German

a. Ruf sie an.
call-Imp her Part
'Call her.'

b. Komm (du) bloß einen Schritt näher.
come-Imp you only one step closer
'Come just one step closer.'

c. Verspäte dich nur mal fünf Minuten.
delay-Imp Refl only once five minutes
'Come just five minutes late.'

d. ?? Erwisch die Grippe.
catch-Imp the flu
'Catch the flu.'

e. * Sei 2 m groß.
be-Imp 2 m big
'Be 2m tall.'

f. * Rühr einen Finger, um ihr zu helfen.
lift-Imp a finger, Prep her to help
'Lift a finger to help her.'

(310) Modern Greek

a. Pare tis tilefono.
talk-Imp her telephone
'Talk to her on the telephone.'

b. Ela pjo konda.
come-Imp more close
'Come closer.'

c. Ela 5 lepta argotera.
come-Imp 5 minutes later
'Come 5 minutes late.'

d. ?? Griposou.
get-flu-Imp
'Catch the flu.'

e. * Lege kati lathos.
say-Imp something wrong
'Say something wrong.' (generic, past tense reference)

The apparent conditional reading in (307a-c) and (308a-c) can be attributed to MODAL SUBORDINATION. Following Roberts (1989), the interpretation of a modal sentence in MODAL SUBORDINATION depends on some set of contextually given propositions. In other words, a modal sentence is modally subordinated if the determination of the MODAL CONTEXT depends on the proposition contributed by a preceding modal sentence or some contextually salient proposition, where the modal context of a sentence can be thought of as the set of possible worlds with respect to which the sentence is interpreted. This means that a modally subordinated sentence ends up with a conditional-like interpretation in which the antecedent corresponds to the proposition contributed by the preceding modal sentence or some salient proposition. In $imp(p)$ *and* $will(q)$ sequences, both conjuncts are modal sentences, providing the perfect environment for modal subordination. The imperative $imp(p)$ in the first conjunct has the modality of unrealized interpretation. It provides a modal context, a set of hypothetical possible worlds in which p is satisfied, and $will(q)$ in the second conjunct is evaluated with respect to this modal context. Thus, the interpretation

of $will(q)$ is modally subordinated to the proposition contributed by $imp(p)$, resulting in a conditional-like reading $if\ p, q$.

Given this approach, $imp(p)$ in $imp(p)$ *and* $will(q)$ in German and Modern Greek is interpreted as a real imperative with directive force, unlike in English. And the modality of $imp(p)$ allows modal subordination of the subsequent modal sentence $will(q)$. Then, the question is how sequences such as (307b,c) and (308b,c) are possible, since the imperatives in these sequences clearly express the exact opposite of what they literally mean. All of these sequences imply that the speaker does not want the hearer to bring about the situation described by the imperative. But as pointed out earlier, natural language allows sentences to be used in a sarcastic and ironical way. Thus, it is not surprising that imperatives are not exempted from being used in such a way.

Korean prohibits $imp(p)$ *and* $will(q)$ sequences under the conditional reading altogether.

(311) Korean

a. * Sue-eykey cenwhahayla. kuliko Sue-ka cohahal-kesita.
Sue-to call-Imp and Sue-Nom happy-Fut-Decl
'Call Sue, and she will be happy.'

b. * Pwul-ul kyela. kuliko pang-i palkacil-kesita.
light-Acc turn-on-Imp and room-Nom become-bright-Fut-Decl
'Turn on the light, and the room will become bright.'

c. * Cokum-man wumcikyela. kuliko ssonta.
little-only move-Imp and shoot-Decl
'Move a little bit, and I'll shoot.'

d. * Kamki-ey kelyela. kuliko myechil tongan kosaynghal-kesita.
flu-at catch-Imp and days during miserable-Fut-Decl
'Catch the flu, and you will be miserable for days.'

e. * Khi-ka khela. kuliko nongku senswu-ka toyl swuissta.
height-Nom big and basketball player-Nom become can-Decl
'Be tall, and you can become a basketball player.'

In Korean, if *kuliko* ('and') is replaced with *kulemyen* ('then'), the first three sequences in (311a-c) become well-formed, but the ones in (311d,e) remain ill-formed.

(312) Korean

a. Sue-eykey cenwhahayla. kulemyen Sue-ka cohahal-kesita.
Sue-to call-Imp then Sue-Nom happy-Fut-Decl
'Call Sue. If you do, she will be happy.'

b. Pwul-ul kyela. kulemyen pang-i palkacil-kesita.
light-Acc turn-on-Imp then room-Nom become-bright-Fut-Decl
'Turn on the light. If you do, the room will become bright.'

c. ? Cokum-man wumcikyela. kulemyen ssonta.
little-only move-Imp then shoot-Decl
'Move a little bit. If you do, I'll shoot.'

d. * Kamki-ey kelyela. kulemyen myechil tongan kosaynghal-kesita.
flu-at catch-Imp then days during miserable-Fut-Decl
'Catch the flu. If you do, you will be miserable for days.'

e. * Khi-ka khela. kulemyen nongku senswu-ka toyl swuissta.
height-Nom big then basketball player-Nom become can-Decl
'Be tall. If you are, you can become a basketball player.'

In (312a-c), the imperatives are interpreted as true imperatives with directive force, and the second conjuncts are modally subordinated to the first conjuncts, generating conditional-like interpretation. The sequences in (312d,e) are ill-formed because the imperatives are ill-formed: it is odd to direct someone to catch the flu or to be tall. Hence, *imp*(p) *then will*(q) sequences in Korean behave just like *imp*(p) *and will*(q) sequences in German and Modern Greek. However, Korean differs from the other two languages in not allowing modal subordination in *imp*(p) *and will*(q) sequences.

5.4.3.3 Syntax and semantics of imperative-like constructions

Returning to English, let us determine the syntax and semantics of imperative-like constructions.

Imperative-like constructions differ from imperatives in that they do not allow *do*, and only marginally allow *don't*.[4]

[4] Clark (1993b) claims that imperative-like constructions form negatives with *not* rather than *don't* or *do not*. Clark gives the examples in (313) as supporting evidence.

(313) a. John was a big part of my life. Not see him again, and I knew I'd never forgive myself.

b. My lecturer is a real tyrant. Not show up on time, and he'll throw you out of the course.

(314) a. * Do put the light on, and you'll see better.

b. ? Don't show up on time, and you'll miss the beginning of the movie.

c. * Don't you worry so much, and you'll be happier.

Moreover, imperative-like constructions differ from imperatives in that they allow only 2nd person subjects. This is shown in (304), repeated below as (316), and in (317).[5]

(316) a. * Nobody help her, and she will fail.

b. * Everybody come to the party, and she will be happy.

c. * Someone open the window, and we'll get some fresh air.

(317) a. Buy yourself a new dress, and you will be happy.

b. Miss this train, and you will be late.

Even when the subject is interpreted as generic, it is understood to have 2nd person reference, as shown in (318) and (319).

(318) a. * Wash oneself everyday, and one's skin will get dry.

b. * Wash one's hair everyday, and one's hair will become dry.

(319) a. Wash yourself everyday, and your skin will get dry.

b. Wash your hair everyday, and your hair will become dry.

---

c. The safety drill is important. Not listen, and it'll be your own fault if you get into trouble.

However, the native speakers of English that we have consulted absolutely did not allow negative imperative-like constructions without *do*-support.

[5]Bolinger (1977), Davies (1986) and Clark (1993b) claim that imperative-like constructions that are used with conditional function can have subjects other than 2nd person. Some of the examples they provide as supporting evidence are given in (315).

(315) a. Miss this train, and we'll never get there on time. (Clark 1993b)

b. Buy myself a new suit, and my wife raises the roof. (Bolinger 1977)

c. Shake down too many people, and they get caught. (Bolinger 1977)

d. Tell myself that it's true, and I end up believing it. (Bolinger 1977)

e. Find myself a place to live, and I'll soon settle down. (Davies 1986)

f. Get themselves organized, and they'll soon start making a profit. (Davies 1986)

However, none of the native speakers of English that we have consulted found them to be possible.

Based on these facts, we propose that imperative-like constructions have a syntax similar to that of imperatives, but that imperative-like constructions lack some of the feature content that imperatives have in the imperative operator in C^0. Specifically, we claim that imperative-like constructions lack the feature content that is responsible for illocutionary force. Thus, imperative-like constructions are just like imperatives in having an operator in C^0 that includes an [irrealis] feature, but they differ in that the operator in C^0 has a defective [directive] feature. The defective [directive] feature encodes the information that the subject is the addressee, but it does not encode illocutionary force.[6]

The question that arises at this point is why English has defective imperatives, whereas languages such as Korean, Modern Greek and German do not. A plausible answer, we conjecture, is that English uses bare verb forms for imperatives, whereas German, Korean, and Modern Greek have distinctive morphology for imperative verbs. In English, the absence of some of the morphosyntactic features associated with the imperative operator would have no effect on the bare verbal form. But in languages with distinctive morphology on the verb for imperatives, the absence of some of the morphosyntactic features of imperative operator would likely to have an effect on the verbal form. Thus, in these languages, there are no defective imperatives that look just like imperatives.

Given this analysis, we expect negative imperative-like constructions to require *do*-support, just like true negative imperatives. We have seen that this is indeed the case, as in (314). But we have also seen that negative imperative-like constructions in general degrade, and that emphatic *do* cannot occur in affirmative imperative-like constructions. Our explanation for this is that the presence of *do* in imperative-like constructions forces them to have directive force (more in affirmative imperative-like constructions than in negative imperative-like constructions), for the reasons which not yet known to us. But since they cannot have directive force by definition, imperative-like constructions with *do* degrade or are ruled out altogether.

[6]Our account of imperative-like constructions is similar to that given in Davies (1986): imperative-like constructions lack directive force. But the two accounts differ as to why. We have argued that the lack of directive force in imperative-like constructions reflects the defective feature content in the operator in C^0. In contrast, Davies argues that imperative-like constructions have the same morphosyntax as imperatives and that the presence of directive force in imperatives and its absence in imperative-like constructions are due to pragmatic inference. Further, our analysis implies that addressee reference of the subject is independent of the directive force.

Recall that imperative-like constructions can have overt subject *you*, as in (292) (repeated below as (320)). This is expected if the syntax of imperative-like constructions is similar to imperatives except that they lack the feature content that expresses directive force.

(320) a. You come one step closer, and I'll shoot.

b. You open the Guardian, and you'll find three misprints on every page.

Further, recall that subjects in imperative-like constructions are restricted to 2nd person pronominals, whereas imperatives can have indefinite quantifiers such as *someone, everyone, nobody* as well as 2nd person pronominals as subjects, as shown in (303) and (304). This asymmetry is unexpected given our proposal that both the syntax of imperatives and of imperative-like constructions encodes the information that the subject refers to the addressee. We believe that this asymmetry reflects the presence/absence of the directive force: while the presence of the directive force in imperatives allows indefinite quantifiers to be compatible with addressee reference, its absence in imperative-like constructions prohibits indefinite quantifiers from being compatible with addressee reference, thereby restricting the subject to 2nd person. In addition, 2nd person subject in imperative-like constructions can have impersonal generic interpretation, unlike in imperatives. Again, we believe that this difference is due to the lack of directive force in imperative-like constructions.

As for the semantics of imperative-like constructions, they express what imperatives express, except for the illocutionary force. This means that they can denote a set of unrealized future-oriented possible worlds in which the proposition expressed by the construction is satisfied. Further, the absence of illocutionary force implies that imperative-like constructions can denote any proposition, including one describing a situation that the hearer has little or no control over bringing about, as in (297), repeated here as (321).

(321) a. Know the answer, and you'll get an A.

b. Doubt that you will succeed, and you won't.

c. ? Be 7 ft. tall, and you can play in the NBA.

Moreover, since an imperative-like construction lacks directive force, the set of possible worlds denoted by it is not restricted to future-oriented possible worlds. Thus, such a

construction can denote a set of hypothetical past-oriented possible worlds. This explains why imperative-like constructions may be interpreted with past time reference, as shown in (302), repeated here as (322).

(322) a. Life was hard in those days. Say one word out of turn, and they'd dock you a week's wages.

b. Take a holiday in those days, and you were regarded as a spendthrift.

5.4.3.4 Interpreting *imp(p) and will(q)*

We will use dynamic semantics in interpreting *imp*(p) *and will*(q) sequences. Dynamic semantics is a good framework for this purpose because it provides a procedural and compositional way of interpreting sequences of sentences in discourse.

In dynamic semantics, the meaning of a sentence is not defined by its truth conditions, but rather by how the sentence changes (or updates) the semantic agent's information state situated in a discourse context (Groenendijk and Stokhof (1991), Groenendijk et al. (1996)).

We define a discourse model M as a tuple $\langle W, S, F, A\rangle$, where W is a set of possible worlds, S is a set of information states, F is an interpretation function, and A is an accessibility relation referent system. An information state s is a set of pairs of a possible world and an accessibility relation referent system A. The accessibility relation referent system A is the same for all pairs in an information state.[7]

(323) a. $M \equiv_d \langle W, S, F, A\rangle$

b. $s \equiv_d \{\langle w, A\rangle \ : \ w \in W\}$

The interpretation function F takes a proposition p and returns a set of worlds that satisfies that p.

(324) $F(p) \equiv_d \{w : \ w \in p\}$

[7] An information state can be identified with different things, depending on what aspect of information change potential is being modeled. In Groenendijk and Stokhof (1991), an information state is identified with a set of pairs of assignment functions to provide an analysis of pronominal co-reference, in particular donkey anaphora and intersentential anaphora. In Groenendijk et al. (1994, 1996), an information state is identified with a set of POSSIBILITIES which is a triple of a possible world, a REFERENT SYSTEM and an assignment function to account for how a sentence changes the information about the world and about the discourse.

The accessibility relation referent system A is a tuple $\langle R, V, Pow(W)\rangle$, where R is a function from V to $Pow(W)$, V is a set of variables v, and $Pow(W)$ is the power set of a set of worlds. The system A is extended by introducing a variable v in V and associating it with a set of worlds in $Pow(W)$. The system A plays an important role in interpreting a modal sentence and its subsequent modal sentences.[8]

(325) a. An accessibility relation referent system A:
$A \equiv_d \langle R, V, Pow(W)\rangle$, where R is a function from V to $Pow(W)$, V is a set of variables, $Pow(W)$ is a power set of a set of worlds.

b. Extending A:
A is extended by introducing a variable v in V and associating it with a set of worlds in $Pow(W)$ by function R.

A semantic agent's information can grow in two ways: by eliminating possible worlds and by extending A. The possible worlds that are inconsistent with the new information are eliminated from the information state. In addition a modal sentence can introduce a new variable v in V and associate it with a set of worlds in $Pow(W)$. We call this set of worlds a HYPOTHETICAL INFORMATION STATE. We can think of hypothetical information states as being ACCESSIBLE from the actual information state, where the term ACCESSIBLE is defined as in modal logic. Subsequent modal sentences can be interpreted with respect to this hypothetical information state. This is what is involved in the so-called MODAL SUBORDINATION phenomenon (Roberts (1989)).

We will assume that a sentence ϕ is a partial function, $[\phi]$, from information states to information states, as in update semantics (Groenendijk et al. (1994), Groenendijk et al. (1996), Beaver (1995)). We use the notation $s[\phi]$ to refer to the result of updating s with ϕ, and $s[\phi][\psi]$ to refer to the result of first updating s with ϕ, and next updating $s[\phi]$ with ψ.

In dynamic semantics, a conjunction is simply a sequence of updates on information states.

[8]The accessibility relation referent system A is comparable to the REFERENT SYSTEM defined in Groenendijk et al. (1994, 1996). The referent system is a function from a finite set of variables to a set of discourse entities and is used to keep track of possible pronominal anaphoric relations.

(326) $s[\phi \wedge \psi] = s[\phi][\psi]$

In order to derive the correct interpretation for *imp*(p) *and will*(q) sequences, we need to extend the update function of conjunctions and allow them to be updates on hypothetical information states as well. What this means will become clear as we discuss an example.

Let us interpret the sequence in (327).

(327) Put the light on, and you'll see better.

The claim is that the first sentence *Put the light on* denotes a set of hypothetical possible worlds, where the proposition of the construction is satisfied.[9] Assume a discourse model $M = \langle W, S, F, A \rangle$, as defined above. Given an information state s, updating s with *Put the light on* extends the accessibility relation referent system A: i.e., a variable v is introduced in V and it is associated with a hypothetical information state s' in $Pow(W)$, by function R. This hypothetical information state s' is a set of possible worlds that is just like the set of possible worlds in the actual information state s except that in s' the proposition *You put the light on* is satisfied. Then, the sentence *You'll see better* is interpreted. This sentence contains a modal verb *will*. This means that it should be interpreted with respect to a contextually salient modal context (Roberts (1989)). This modal context is provided by the hypothetical information state s'. Subsequently, this hypothetical information state s' is updated with the proposition *You see better*. More formally, we can implement this process by co-indexing the variable introduced by *You'll see better* with that introduced by *Put the light on*. This is a way of dealing with modal subordination in dynamic semantics. In a sense, in dynamic semantics, a sentence is modally subordinated to a preceding sentence if its modal context is anaphorically related to the modal context of the preceding sentence (Portner (1994), Stone (1997)).

The information update functions of *imp*(p) *and will*(q) can be defined as in (328).

(328) $s[imp_v(p) \textit{ and } will_v(q)] = \{\langle w, A' \rangle :$ there exists A such that A' is an extension of A & $\langle w, A \rangle \in s$ & for all $w \in s'$, where $s' = s[p] = R(v)$, $w \in s'[q]\}$

[9] We have proposed that the logical form of an imperative includes a component that encodes directive force and a component that encodes modality, as in *directive*(*irrealis*(p)). The dynamic semantics assumed here cannot handle illocutionary force. Thus, the interpretational procedure given here for imperatives handles only up to the modal component of the imperatives, *irrealis*(p).

This kind of update simulates the update process of the antecedent and then the consequent of conditionals: the antecedent defines the modal context and the consequent updates this modal context. Hence, if the proposed way of deriving the interpretation of *imp*(*p*) *and will*(*q*) sequences is correct, we have an explanation for why they end up with a conditional-like interpretation. Moreover, we also have a partial explanation for the licensing of NPIs in imperative-like constructions like (299), since NPIs are also licensed in the antecedent of a conditional, as shown in (329).

(329) a. If you lift a finger to help her, you'll be sorry.

b. If you make any noise, I'll hit you.

We can say that NPIs are licensed in imperative-like constructions because they end up with similar semantics as an antecedent of a conditional, through the process of modal subordination. However, we cannot say that we have fully accounted for the fact that NPIs are licensed in imperative-like constructions because modal subordination is not sufficient to license NPIs in general.

5.4.4 *imp(p) or will(q)*

The *imp*(*p*) in *imp*(*p*) *or will*(*q*) sequence is a real imperative with directive force. This is supported by the fact that it can have *do* for emphasis, requires *do* for negation and does not license NPIs.

(330) a. Do come to the party, or John will be unhappy.

b. Don't you show up, or John will be unhappy.

c. * Lift a finger to help her, or you'll be sorry.

The question is how *will*(*q*) in *imp*(*p*) *or will*(*q*) ends up with a conditional-like interpretation where the antecedent is the negation of the proposition of the imperative. In order to account for the interpretation of *imp*(*p*) *or will*(*q*) sequences, we need to define an information update instruction for disjunction *or* in dynamic semantics.

(331) $s[\phi \vee \psi] = \{\langle w, A\rangle \in s \ : \ \langle w, A\rangle \in s[\phi] \ or \ \langle w, A\rangle \in s[\psi]\}$

According to the definition in (331), first s is updated with ϕ, and then the update effects of ϕ on s is undone and s is updated with ψ. The update effects of ϕ on s is not inherited to ψ.

As an example, let us interpret the sequence in (287), repeated here as (332).

(332) Come to the party, or John will be unhappy.

$\approx$ Come to the party. If you don't come to the party, John will be unhappy.

First, the imperative *Come to the party* is interpreted. Given an information state s, updating s with the imperative extends the accessibility relation referent system A by introducing a variable v in V and associating it with a hypothetical information state s' in which the proposition *You come to the party* is satisfied. Due to the update function of disjunction *or*, the update effects of the imperative cannot be inherited to subsequent sentences. Now, we need to interpret *John will be unhappy.* Since the update effect of the imperative is not inherited, the hypothetical information state s' is not accessible to *John will be unhappy* as its modal context. That is, *John will be unhappy* cannot be interpreted with respect to s'. The variable introduced by *John will be unhappy* has to be associated with a set of worlds in which the proposition *You come to the party* is not satisfied. As a result, the complement of s', s'', becomes accessible, where s'' consists of a set of worlds in which *You do not come to the party* is satisfied. Thus, *John will be unhappy* updates s'', deriving the conditional interpretation *If you do not come to the party, John will be unhappy.* Disjunction *or* is different from logical $\vee$, as defined here. Its function of blocking the inheritance of information update functions of the previous sentence has the effect of partitioning the hypothetical information states into two, resulting in an exclusive interpretation.

According to the analysis presented here, an $imp(p)$ *or* $will(q)$ sequence implies that the modal context of $will(q)$ describes a state of affairs not desired by the speaker. This is because the set of worlds evoked by the imperative is implied to describe a state of affairs desired by the speaker, according to the interpretation of the imperative operator defined earlier, and $will(q)$ evokes a set of worlds that is the complement set evoked by the imperative. Assuming that one does not desire contradictory state of affairs under normal circumstances, if p is desired, then $\neg p$ is not desired. If so, then $imp(p)$ *or* $will(q)$ sequences in which $will(q)$ implies that the set of worlds in which $\neg p$ is true is desirable are predicted

to be infelicitous. This prediction is borne out.

(333) # Pass the exam, or I will reward you.

In (333), the imperative has the effect of causing the hearer to believe that his/her passing the exam is desired by the speaker. Due to the update function of *or*, the subsequent sentence is interpreted with respect to a modal context in which the addressee has not passed the exam, which is not desired by the speaker. But then, it is odd for the speaker to reward someone who has acted contrary to the speaker's desire, since under normal circumstances, rewarding someone implies that the person has done a desirable deed.

5.5 Conclusion

In this chapter, we have proposed a way of interpreting imperatives. We have argued that the logical form of imperatives includes two components: one that encodes directive illocutionary force and another that encodes the modality of unrealized interpretation. We defined the component that encodes directive force as a function that takes a proposition that denotes a set of hypothetical possible worlds and turns it into a directive action. We defined a directive action in turn as an instruction to the hearer to update a plan set with a proposition. According to our analysis, the directive force of imperatives is not the result of Gricean inference, but is directly encoded in their logical forms. We have also examined the interpretational behavior of imperatives in $imp(p)$ *and* $will(q)$ sequences and $imp(p)$ *or* $will(q)$ sequences, concluding that $imp(p)$ in the first type of sequence in English is not a true imperative in that it does not express directive force, whereas $imp(p)$ in the second type of sequence is a real imperative with directive force. We also showed that in languages with distinctive imperative morphology on the verb, $imp(p)$ in $imp(p)$ *and* $will(q)$ sequences is a true imperative. In addition, we have explored how the modality contributed by imperatives allows for the modal subordination of subsequent modal sentences.

Chapter 6

Deriving the Interpretation for Rhetorical Questions

6.1 Introduction

In the chapter on the interpretation of imperatives, we saw that although imperatives canonically express various directive illocutionary forces, they can also express illocutionary forces that do not seem to constitute a straightforward directive, such as wishes, threats and dares. In order to account for the variation in illocutionary forces associated with imperatives, we appealed to Gricean reasoning. The situation is more or less similar in the case of interrogatives. Interrogatives canonically express question force, but they can also express requests, and in some cases, known as RHETORICAL QUESTIONS, they can even express assertions.

In this chapter, we present a case study of how the pragmatics and the output of syntax interact to generate a non-canonical force in the case of rhetorical questions. While an ORDINARY QUESTION seeks information or an answer from the hearer, a rhetorical question does not expect to elicit an answer. In general, a rhetorical question has the illocutionary force of a strong assertion of the opposite polarity from what is apparently asked (Sadock (1971, 1974)). That is, a rhetorical positive question has the illocutionary force of a negative assertion, and a rhetorical negative question has the illocutionary force of a positive assertion. Consider the questions in (334).

(334) a. What has John ever done for Sam?

b. What hasn't John done for Sam?

Under the rhetorical question reading, the *wh*-questions in (334) assert *John has done nothing for Sam* and *John has done everything for Sam*, respectively.[1]

(335) a. Did I tell you that writing a dissertation was easy?

b. Didn't I tell you that writing a dissertation was easy?

Under the rhetorical question reading, the *yes-no* questions in (335) respectively assert *I didn't tell you that writing a dissertation was easy* and *I told you that writing a dissertation was easy.*

The main goals of this chapter are (i) to show that rhetorical questions and ordinary questions do not pattern alike with respect to various well-formedness conditions, (ii) to address the question of why rhetorical questions are interpreted as an assertion of the opposite polarity from the surface form, given the semantics of questions in Groenendijk and Stokhof (1985), and (iii) to account for the formal properties of rhetorical questions. We will conclude that the interaction between the output of syntax (LF) and pragmatics derives an interpretational representation over which various well-formedness conditions are stated.

Sadock (1971, 1974) argues that a rhetorical question is semantically equivalent to an assertion of the opposite polarity from what is apparently asked, followed by a tag question with a falling intonation. Other studies on rhetorical questions include Linebarger (1987), Progovac (1993), Lee (1995) and Gutiérrez-Rexach (1997). They are mainly concerned with accounting for the licensing of negative polarity items (NPIs) in rhetorical questions. In this study, we add new observations with respect to the behavior of NPIs in rhetorical questions. But more importantly, we explain why rhetorical questions have the interpretation that they do. The NPI licensing facts follow directly from the proposed analysis.

In §6.2, we show that rhetorical questions have the formal properties of assertions rather than of questions. We also show that NPI licensing in ordinary questions and rhetorical questions is not the same. In §6.3, we review some of the previous works on rhetorical

[1]In this chapter, we limit the discussion of *wh*-questions to those with argument *wh*-phrases.

questions: Sadock (1971, 1974), Progovac (1993) and Lee (1995). In §6.4, we briefly discuss the semantics of questions and semantics of *wh*-words that we are assuming. In §6.5, we address the question of why a rhetorical question has the illocutionary force of an assertion of the opposite polarity. In §6.6, we propose a way of deriving the interpretation of rhetorical questions. Based on the proposed system, we provide an account of formal properties of rhetorical questions including NPI licensing facts in §6.7. In particular, in §6.7.3 and §6.7.4, we provide further evidence for the proposed account from the interpretation of rhetorical questions containing a deontic modal and from the behavior of postverbal negative constituents in rhetorical questions in Italian, a negative concord language. In §6.8, we show that under the proposed analysis the interpretation of rhetorical questions can be derived compositionally.

6.2 Formal Properties of Rhetorical Questions

6.2.1 Rhetorical Questions as Assertions

Sadock (1971, 1974) provides tests to show that rhetorical *yes-no* questions are formally assertions and that they differ formally from information-seeking ordinary *yes-no* questions. As an introductory item, *after all* can occur with rhetorical *yes-no* questions, but not with ordinary *yes-no* questions. For instance, the question in (336) can only be interpreted as a rhetorical question.

(336) After all, do phonemes have anything to do with language?

A rhetorical *yes-no* question can be followed by a *yet*-clause, but an ordinary *yes-no* question cannot. Therefore, the question in (337) can only be interpreted as a rhetorical question.

(337) Do phonemes have anything to do with language? Yet people continue to believe in them.

Rhetorical *yes-no* questions do not allow phrases such as *by any chance*, which signal ordinary information-seeking questions. The question in (338) can only be an ordinary question.

(338) Does Arthur, by any chance, know anything about syntax?

Extending Sadock's tests to rhetorical *wh*-questions yields the same results as for rhetorical *yes-no* questions. The introductory item *after all* can occur with rhetorical *wh*-questions, but not with ordinary *wh*-questions. For instance, (339) can only be interpreted as a rhetorical question.

(339) After all, who helped Mary?

While rhetorical *wh*-questions can be followed by a *yet*-clause, ordinary *wh*-questions cannot. The question in (340) is felicitous only if it is interpreted as a rhetorical question.

(340) Who helped Mary? Yet she managed everything by herself.

The parenthetical *by any chance* can occur with ordinary *wh*-questions, but not with rhetorical *wh*-questions. The question in (341) can only be interpreted as an ordinary question.

(341) Who helped Mary, by any chance?

Finally, Sadock (1974:126) shows that when a rhetorical *wh*-question is used as a parenthetical, it can be in the form of a nonrestrictive relative clause, as shown in (342a). But when an ordinary *wh*-question is used as a parenthetical, it cannot be reduced to a nonrestrictive relative clause, but must have the form of a conjunct. This is shown in (342b,c).

(342) a. Symbolic logic, which who cares about anyway, is awfully tough.

b. * Symbolic logic, which by the way who invented, isn't my cup of Postum.

c. Symbolic logic – and by the way who invented it? – isn't my cup of Postum.

6.2.2 NPI Licensing

Ordinary *yes-no* questions are known to license weak NPIs, such as *any* (Ladusaw (1980), Linebarger (1987), Progovac (1993), Higginbotham (1993)).[2]

[2]Zwarts (1996) makes a distinction between weak and strong NPIs. Weak NPIs include *any* and *ever*. They can be licensed by any downward entailing operator, such as *few NP*, or *less than four NP*. Strong NPIs include *lift a finger, budge an inch,* etc. and can only be licensed by negative elements such as *no* or *not*.

(343) a. Did anybody visit John?

b. Did John visit anyone?

However, ordinary *yes-no* questions do not license strong NPIs, such as *lift a finger* and *budge an inch*. *Yes-no* questions with strong NPIs can only have a rhetorical question reading.

(344) a. Did John lift a finger to help Sam?

b. Did John budge an inch when Sam was in trouble?

For example, (344a) can only be interpreted as an assertion of the speaker's belief that John didn't lift a finger to help Sam.

As for NPI licensing in argument *wh*-questions, Han and Siegel (1997) point out that when the trace of the *wh*-phrase c-commands the weak NPI, both the ordinary question reading and the rhetorical question reading are available (as in (346)), whereas when this c-command relationship does not hold, only the rhetorical question reading is available (as in (347)).[3]

(346) a. Who$_i$ t_i has ever been to Seoul?

b. Who$_i$ t_i said anything interesting at the seminar?

(347) a. What$_i$ has Sam ever contributed t_i to the project?

b. What$_i$ did anybody say t_i at the seminar?

For instance, (346a) can be interpreted either as a question about visitors to Seoul, or as an assertion of the speaker's belief that no one has been to Seoul. However, (347a) can only be interpreted as an assertion that Sam has not contributed anything to the project.

Just like ordinary *yes-no* questions, ordinary *wh*-questions do not license strong NPIs. *Wh*-questions with strong NPIs can only be interpreted as rhetorical questions.

[3] A possible counterexample to this generalization is found in Linebarger (1980:153).

(345) Which books have any students complained about?

Note that the trace of the *wh*-phrase does not c-command the NPI *any students* in (345). According to Linebarger, the question in (345) does not have to have a rhetorical question reading; it would be appropriate as an ordinary information-seeking question if, for example, I am making up a reading list for a course and want to know which books have elicited complaints in the past. The fact that the *wh*-phrase is D-linked may be responsible for the availability of the non-rhetorical reading.

(348) a. Who lifted a finger to help Mary?

b. Who budged an inch when you were in trouble?

(348a) can only be interpreted as an assertion that no one helped Mary.

While an ordinary negative question can contain a weak NPI, a rhetorical negative question cannot. The questions in (349) and (350) are good under the ordinary question reading. For example, (349a) can be a question that asks whether John visited anyone or not, and (350a) can be a question about visitors to Seoul. However, the questions in (349) and (350) do not have the rhetorical question reading. For example, (349a) cannot mean that John visited someone, and (350a) cannot mean that everybody has been to Seoul.

(349) a. Didn't John visit anyone?

b. Didn't anyone visit John?

(350) a. Who hasn't ever been to Seoul?

b. Who didn't say anything interesting at the seminar?

The fact that rhetorical negative questions do not license NPIs is quite surprising. This means that the negation that is present in the surface string of rhetorical negative questions does not function as the licenser of NPIs. It suggests that the NPI licensing condition applies at a more abstract level, where the representation of rhetorical negative questions does not contain a licenser for NPIs.

6.3 Previous Studies of Rhetorical Questions

6.3.1 Sadock (1971, 1974)

Sadock (1971, 1974) is mainly concerned with rhetorical *yes-no* questions. He argues that they are semantically similar to tag questions with falling intonation and proposes that both types of questions share similar D-structures. For instance, for Sadock, the questions in (351) and in (352) have similar D-structures.

(351) a. Syntax isn't easy, is it?

b. Is syntax easy?

(352) a. Syntax is easy, isn't it?

b. Isn't syntax easy?

The polarity of the tag in tag questions corresponds to the polarity of the corresponding rhetorical questions. Moreover, the polarity of the body in tag questions corresponds to the polarity of the assertion expressed by the corresponding rhetorical questions.

Sadock proposes that the D-structure of a tag question is a conjunction of an assertive and an interrogative clause in that order. Furthermore, the D-structure of the corresponding rhetorical question is a conjunction of an interrogative clause and an assertive clause in that order. The D-structures of the questions in (351) and (352) are given below. Sadock uses a higher abstract performative to specify the illocutionary force.

(353) a. [$_S$ [$_S$ Speaker-declare-Syntax isn't easy] [$_S$ Speaker-ask-Is syntax easy]] (tag-question)

b. [$_S$ [$_S$ Speaker-ask-Is syntax easy] [$_S$ Speaker-declare-Syntax isn't easy]] (rhetorical question)

(354) a. [$_S$ [$_S$ Speaker-declare-Syntax is easy] [$_S$ Speaker-ask-Isn't syntax easy]] (tag-question)

b. [$_S$ [$_S$ Speaker-ask-Isn't syntax easy] [$_S$ Speaker-declare-Syntax is easy]] (rhetorical question)

In order to derive the correct surface string, Sadock claims that at S-structure, part of the second conjunct of a tag question, but all of the second conjunct of a rhetorical question undergoes deletion. But if the D-structures of both tag questions and rhetorical questions are conjunctions of an assertive and an interrogative clause and the only difference is the ordering of the conjuncts, the asymmetry in the deletion of second conjuncts is mysterious.

Moreover, Sadock would have to say that in rhetorical questions with a strong NPI, the NPI is licensed by the negation in the deleted assertive conjunct. For instance, given Sadock (1971, 1974), *give a damn* in (355a) is licensed by the negation in the second conjunct in (355b).

(355) a. Does John give a damn about syntax?

b. [$_S$ [$_S$ Speaker-ask-Does John give a damn about syntax] [$_S$ Speaker-declare-John doesn't give a damn about syntax]]

Assuming that strong NPIs are licensed if they are in the c-command domain of negation, NPI licensing in rhetorical questions ends up being a special case. That is, in the first conjunct of rhetorical questions, strong NPIs are licensed even though they are not c-commanded by the licensing negation. Even if we accept that NPI licensing in rhetorical questions is a special case, the prediction is that tag questions that have a negative tag should be able to license an NPI in the body as well. But this prediction is not borne out, as shown in (356a).

(356) a. * John gives a damn about syntax, doesn't he?

b. [$_S$ [$_S$ Speaker-declare-John gives a damn about syntax] [$_S$ Speaker-ask-Doesn't John give a damn about syntax]]

If tag questions and rhetorical questions have similar D-structure and similar semantics, it is mysterious why there should be asymmetry in NPI licensing.

6.3.2 Progovac (1993)

Progovac (1993) is mainly concerned with accounting for NPI licensing in various types of constructions. She argues that NPIs are similar to anaphors in their need for licensing by a local antecedent and proposes an account of the licensing of polarity items that combines a modified version of the downward entailment approach of Ladusaw (1980) and the Binding Theory of Chomsky (1981), as extended by Aoun (1985, 1986) to include both A and A'-binding. She extends the proposed analysis to NPI licensing in rhetorical *wh*-questions.

The claim is that NPIs are subject to Principle A of the Binding Theory. A potential binder for NPIs is either the local negation or an empty polarity operator generated in [Spec, CP]. Further, only NPIs that undergo Quantifier Raising at LF can be licensed by the empty polarity operator. This means that while weak NPIs such as *ever* and *any* can be licensed by the empty polarity operator in [Spec, CP], strong NPIs such as *budge an inch* and *lift a finger*, which are not quantifiers, can only be licensed by local negation. In

principle, the empty polarity operator (Op) is generated in [Spec, CP] of all clauses, but is filtered out in upward entailing clauses by the following filter.

(357) *Op in an upward entailing clause

Thus, in (358a), local negation binds and licenses the NPI *anyone*. In (358b), an empty polarity operator is generated in [Spec, CP] of the complement clause. Since the complement clause of *forget* is not an upward entailing environment, the operator is not filtered out and is hence able to bind and license the NPI *anyone*. In (358c), the NPI *anything* does not have a binder and so is not licensed because there is no local negation and the empty operator cannot be generated in the absence of a [Spec, CP] position.

(358) a. John did not see anyone.

b. Mary forgot that anyone visited her on Monday.

c. * Mary forgot anything.

In (359a), the strong NPI *lift a finger* is licensed by local negation. But in (359b), since the strong NPI *lift a finger* cannot raise at LF, it is not licensed even though an empty polarity operator is present in [Spec, CP].

(359) a. Sue did not lift a finger to help John.

b. * Sue forgot that Mary lifted a finger to help John.

According to Progovac, *wh*-questions come out as upward entailing (adopting the definition of Karttunen (1977)). This is so because every true answer to (360b), which is of the form *x has a cat* entails a true answer to (360a), which is of the form *x has a pet*. But every true answer to (360a) does not entail a true answer to (360b). Thus, it is surprising that *wh*-questions license NPIs.

(360) a. Who has a pet?

b. Who has a cat?

Progovac proposes that *wh*-words are ambiguous between NPIs and true question words, based on the fact that in languages like Chinese and Serbo-Croatian, *wh*-words can serve

as NPIs. She claims that in principle, a *wh*-question starts with both a *wh*-operator and an empty polarity operator in [Spec, CP]. When the question does not contain an NPI, the empty polarity operator is suppressed, and the *wh*-word is a true question word. The *wh*-operator binds and merges with the *wh*-word, and the question is interpreted as an ordinary information-seeking question. But when the question contains an NPI, it requires the empty polarity operator to license the NPI. In this case, the *wh*-operator is suppressed, and the *wh*-word is forced to be an NPI word. The empty polarity operator binds and merges with the NPI *wh*-word, licensing the NPI *ever* as well, and the question is interpreted as a rhetorical question. (362) demonstrates the interpretational process for the *wh*-question with an NPI in (361):

(361) Who did Mary ever visit in Seoul?

(362) a. [$_{CP}$ WH-Op Polarity-Op who [$_{C'}$ did Mary ever visit in Seoul?]]

b. [$_{CP}$ Polarity-Op who [$_{C'}$ did Mary ever visit in Seoul?]]

c. [$_{CP}$ Polarity-Op anyone [$_{C'}$ did Mary ever visit in Seoul?]]

d. [$_{CP}$ no one [$_{C'}$ did Mary ever visit in Seoul?]]

Progovac assumes that the merger of the *wh*-word and the empty polarity operator in [Spec, CP] takes place prior to the application of the filtering process. Otherwise, the empty polarity operator would be precluded from appearing in the clause in the first place.

Progovac (1993) accounts for the rhetorical question reading of *wh*-questions with weak NPIs. But her system cannot account for the ordinary information-seeking reading that is available in some *wh*-questions with weak NPIs: she wrongly predicts that all *wh*-questions with NPIs can only have rhetorical question reading. Furthermore, as observed in Horn and Lee (1995), her analysis wrongly predicts that strong NPIs cannot occur in rhetorical questions, since they cannot undergo Quantifier Raising. Moreover, since it is the presence of an NPI that triggers the suppression of the *wh*-operator, Progovac wrongly predicts that rhetorical *wh*-questions without NPIs cannot exist. A more general system that can account for the syntactic and semantic properties of rhetorical questions with or without NPIs would be preferable.

6.3.3 Lee (1995)

According to Lee (1995), argument rhetorical *wh*-questions cannot license subject position NPIs, whereas object position NPIs or verbal NPIs, such as *budge an inch*, are licit.

(363) a. * Who did anyone see?

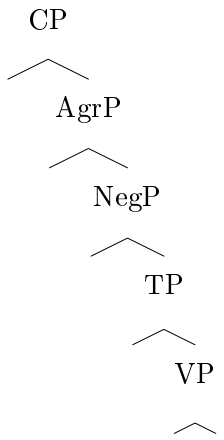
b. * What did anyone buy?

(364) a. Who said anything to you?

b. Who budged an inch to help Bob?

Lee notes that the grammaticality of (363a,b) improves when the NPI *anyone* is focused. But she marks them ungrammatical assuming that focused forms are syntactically distinct from non-focused ones. She assumes a basic tree structure in which NegP appears above VP but below the surface subject position, in the spirit of Pollock (1989).

(365)



Lee argues that argument *wh*-phrases in rhetorical questions activate NegP by moving through its specifier on the way to [Spec, CP]. The activated NegP is then able to license NPIs that appear below it, but not ones above it. So object and verbal NPIs can be licensed, but subject NPIs cannot.

The presence of an overt negation in declarative sentences triggers *do*-support in English, as in (366).

(366) John did not say anything.

If an account of *do*-support is adopted that appeals to PF adjacency requirement between the main verb and the inflection on INFL, as in Bobaljik (1995), then Lee correctly predicts that *do*-support should not be triggered in (367a) under the rhetorical question reading. This is because negation in rhetorical questions is covert, and so the inflection in INFL and the main verb are adjacent to each other at PF.

(367) a. Who said anything interesting at the seminar?

b. * Who did say anything interesting at the seminar?

However, if we adopt an account of *do*-support according to which *do*-support is required in negative declaratives because negation blocks LF verb movement to INFL, as in Chomsky (1991, 1993), then Lee (1995) wrongly predicts that the question in (367a) should trigger *do*-support under the rhetorical question reading. Since negation in rhetorical questions is structurally located in the same position as in negative declaratives, according to Lee, LF verb movement should be blocked in rhetorical questions as well and so *do*-support should be triggered.

Furthermore, Lee assumes that the examples in (363) are ungrammatical because the NPI has to be focused in order for such cases to have a rhetorical question reading. However, all rhetorical questions have to be uttered with a focus on some constituent or other. Hence, we believe that the examples in (363) are just as grammatical as those in (364). An adequate analysis should be able to account for the fact that argument *wh*-questions with subject NPIs can have a rhetorical question reading.

6.4 Semantics of Questions and *Wh*-words

6.4.1 Semantics of Questions

Let us define, as in Groenendijk and Stokhof (1985), the denotation of a question as a function which partitions the set of all possible worlds. The partition represents the set of propositions which are possible answers, including the negative answer. That is, each block of the partition corresponds to the set of possible worlds in which one of the possible answers is true. For instance, the *yes-no* question *Does John drink?* returns the bipartition in (368).

(368) ⟦*Does John drink*?⟧

John drinks
John doesn't drink

One block of the partition represents the positive answer, and the other block represents the negative answer.

Assuming that the domain of universe contains three individuals *Mary*, *John* and *Bill*, the *wh*-question *Who drinks?* returns the partition in (369).

(369) ⟦*Who drinks*?⟧

Everybody drinks
Mary, Bill drink
Mary, John drink
John, Bill drink
Mary drinks
Bill drinks
John drinks
Nobody drinks

Each block in the partition represents a possible answer, and one of them contains the true answer.

6.4.2 Semantics of *Wh*-words

The semantics of questions in Groenendijk and Stokhof (1985) suggests an algebraic account of the possible values for *wh*-words, as in Szabolcsi and Zwarts (1993) and Gutiérrez-Rexach (1997). For instance, in (369), given that the domain of universe contains three individuals *Mary*, *John* and *Bill*, the possible values for the *wh*-word *who* is the power set of the set containing the three individuals, including the empty set and the unit set.

(370) {{Mary, Bill, John}, {Mary, Bill}, {Mary, John}, {John, Bill}, {Mary}, {Bill}, {John}, ∅}

The power set in (370) is closed under intersection, union, and complement. That is, intersection, union and complement are defined for every element in the power set. This

means that the result of intersection and union for any two elements in the power set and the result of the complement of any element in the power set are included in the power set. For instance, the intersection of {Mary, Bill, John} and {Mary, Bill} is {Mary, Bill}, the intersection of {Mary} and {Bill} is the empty set, the complement of {Bill} is {Mary, John}, the union of {John} and {Bill} is {John, Bill}. This is exactly what the domain of a power set boolean algebra is like.

A power set boolean algebra is a six-tuple $\langle B, 1, 0, \cap, \cup, ' \rangle$, where B is the domain of the algebra, 0 and 1 are elements of B, corresponding to the empty set and the unit set respectively, $\cap$ and $\cup$ are binary functions corresponding to intersection and union, and $'$ is a unary function corresponding to the complement, and B is closed under the three functions. 1 and 0 are also called the top element and the bottom element, respectively. Thus, we can say that a *wh*-word, such as *who* and *what*, is a variable that ranges over the domain of context which is structured as in a power set boolean algebra. We illustrate the power set boolean algebra whose domain is the power set of {Mary, Bill, John} in Figure 6.1.[4]

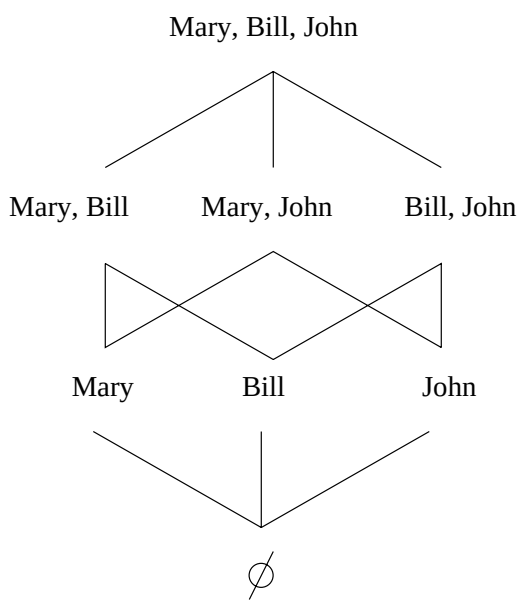


Figure 6.1: Boolean algebraic structure

[4]See Keenan and Faltz (1985) for an application of boolean algebra to natural language semantics.

Further, we assume that a *yes-no* question includes a covert *wh*-word that has the semantics of *whether*. This assumption is motivated by the obligatory presence of *whether* in indirect *yes-no* questions. Moreover, in some languages such as Yiddish, the word corresponding to *whether*, which is overt in indirect questions, is optionally overt in direct *yes-no* questions.

(371) a. John asked me whether Mary smokes.

b. * John asked me Mary smokes.

(372) Yiddish

a. (Tsi) reykhert Miryam?
whether smokes Miryam
'Does Miryam smoke?'

b. Shmuel hot mikh gefregt, tsi Miryam reykhert.
Shmuel has me asked whether Miryam smokes
'Shmuel asked me whether Miryam smokes.'

The semantics of *yes-no* questions in Groenendijk and Stokhof (1985) suggests that *whether* is a variable ranging over a domain with two elements: a positive polarity and a negative polarity. That is, the possible values for *whether* are either the positive or the negative polarity. If we think of the positive polarity as truth (1) and the negative polarity as falsity (0), then the set $\{0, 1\}$ is closed under conjunction ($\wedge$), disjunction ($\vee$), and complement ($'$). This is exactly how the domain of a two algebra is like.

A two algebra is a six-tuple $\langle 2, 1, 0, \wedge, \vee, ' \rangle$, where 2 is $\{0, 1\}$, 1 (which is the top element) corresponds to truth, 0 (which is the bottom element) corresponds to falsity, $\wedge$ and $\vee$ are binary functions corresponding to conjunction and disjunction, respectively, and $'$ is a unary function that corresponds to complement. The domain of two algebra is closed under these functions, as shown in (373).

(373) $1 \wedge 1 = 1$

$1 \wedge 0 = 0 \wedge 1 = 0 \wedge 0 = 0$

$1 \vee 1 = 1 \vee 0 = 0 \vee 1 = 1$

$0 \vee 0 = 0$

$1' = 0$

$0' = 1$

Thus, we can say that *whether* is a variable that ranges over positive and negative polarity and is structured as in a two algebra. We illustrate two algebra with Figure 6.2.

Figure 6.2: Two algebraic structure

6.4.3 The Source of Negation in Rhetorical Questions

Given the semantics of *wh*-words in *wh*-questions assumed here, a *wh*-word is a variable that ranges over a domain of context which has the structure of a power set boolean algebra. Thus, the domain of a *wh*-word includes the empty set. Moreover, *whether* is a variable that ranges over a domain that includes a positive polarity and a negative polarity. The empty set ($\emptyset$ in Figure 6.1) and the negative polarity (0 in Figure 6.2) contribute the model-theoretic equivalent of negation in the language.

6.5 An Assertion of the Opposite Polarity

Recall that rhetorical questions are interpreted as assertions of opposite polarity from what is apparently asked. We propose that the negation contributed by the semantics of *wh*-words is responsible for the polarity reversal in the interpretation of rhetorical questions.

That is, the polarity reversal in the interpretation of rhetorical questions is the result of the principle in (374).

(374) In rhetorical questions, *wh*-words denote the bottom element in their denotational domains.

a. In rhetorical *yes-no* questions, *whether* denotes the negative polarity.

b. In rhetorical *wh*-questions, the *wh*-phrase denotes the empty set.

Then the question is 'Why?' To put it differently, why shouldn't the *wh*-phrase in rhetorical *wh*-questions always denote some non-empty set, and why shouldn't *whether* in rhetorical *yes-no* questions always denote the positive polarity?

6.5.1 *Yes-no* questions

It turns out that ordinary questions also have polarity reversal effects in terms of the speaker's expectations towards the answer. Ordinary negative *yes-no* questions implicate that the speaker expects a positive answer.

(375) a. Didn't John finish the paper?

b. Speaker's expectation: John finished the paper.

In general, a positive *yes-no* question has no implications as to the speaker's expectations towards the answer. However, sometimes it implicates the speaker's expectations towards the answer, and when it does, it implicates that the speaker expects a negative answer.

(376) a. Did John finish the paper?

b. Speaker's expectation: John didn't finish the paper.

Assume that the speaker thought that John didn't finish the paper. But he is not completely sure. In such a context, the speaker would utter (376a), rather than (375a).

If a positive assertion is followed by the conjunction *but* and a tag question, the tag question must be in the positive form, as in (377). If a negative assertion is followed by *but* and a tag question, the tag question must be in the negative form, as in (378). The conjunction *but* requires the second conjunct to contrast with the first conjunct. A positive

tag question can be the second conjunct in (377a) because it expresses the speaker's expectation towards the negative answer. A negative tag question can be the second conjunct in (378a) because it expresses the speaker's expectation towards the positive answer. In both cases, the first conjunct contrasts with the second one.

(377) a. John said that he finished the paper, but did he?

b. # John said that he finished the paper, but didn't he?

(378) a. John said that he didn't finish the paper, but didn't he?

b. # John said that he didn't finish the paper, but did he?

A possible explanation for the polarity reversal effects as to the speaker's expectation towards the answer in *yes-no* questions may come from Gricean maxims (Grice (1975)). The speaker's expectation may be the result of an instantiation of the first part of the Gricean maxim of Quantity:

(379) Make your contribution as informative as is required.

We take the notion of 'informativeness' to be relative to the individual's degree of belief in a certain proposition p in a given context c. The idea of assigning a degree of belief for p is adopted from various probabilistic ways of modeling epistemic states (e.g., Bayesian models for degrees of beliefs,[5] see Gärdenfors (1988:36)). Such models take into account individuals' beliefs that are partial in the sense that they are neither accepted nor rejected. If a speaker believes that it is very likely that p holds in c, the most informative proposition in c is $\neg p$. For instance, assume that you believe that it is very likely that it is raining and someone says to you *It is raining* (q). Then q is not adding much to what you already know. But if someone says to you *It is not raining* (q') and you believe him to be truthful, then you have to change your beliefs about the weather. The claim is that q' is more informative than q because you have to change your beliefs if you accept q'. We speculate that when a speaker is formulating a question to find out whether p or $\neg p$, s/he formulates the question in the form of the proposition that would be the most informative if it turned out to be true. This means that if a question has the form $\neg p?$, the speaker believes that $\neg p$ is the

[5] Each proposition has associated with it a probabilistic belief function b: $P \rightarrow [0,1]$, where P is the set of propositions and [0,1] is the real interval between 0 and 1.

most informative proposition if it turned out to be true. This in turn means that in such a context, the speaker believes that it is likely that p holds. In other words, the likelihood that a speaker will use a negative question $\neg p?$ is equal to the speaker's assessment of the probability of p.

Before we go on to explain how the pragmatics of *yes-no* questions relate to the polarity reversal effects of rhetorical *yes-no* questions, let us point out that a rhetorical question has an intonational contour of an assertion. Unlike an ordinary question, which has a rising intonation, a rhetorical question has a falling intonation, just like a declarative sentence expressing an assertion. We claim that the intonational contour serves as a cue for the rhetorical question function. Using the intonation contour as a cue for a certain illocutionary force is not restricted to the domain of questions. For instance, a declarative sentence with a rising intonation expresses question force rather than assertive force. Thus, assuming that falling intonation contour in a question is an indication of assertive force seems reasonable. We do not know why a question can be used to express an assertion. But let us take this fact as given, just as we take as given the fact that a declarative can be used to express a question. The question then is how we compute that a rhetorical *yes-no* question expresses an assertion of the opposite polarity. Our answer to this question depends on the semantics and pragmatics of *yes-no* questions. According to the semantics of *yes-no* questions, the denotation of a *yes-no* question $p?$ is a function which partitions the set of all possible worlds into two blocks, where one block represents the positive answer p and the other block represents the negative answer $\neg p$. Further, according to the pragmatics of *yes-no* questions, given a *yes-no* question $p?$, the speaker believes that the proposition of the opposite polarity $\neg p$ is likely to be true. The semantics of *yes-no* questions makes available either p or $\neg p$ as the assertion expressed by a rhetorical *yes-no* question $p?$. Among the two choices, the negative answer is the one that is consistent with the pragmatics of *yes-no* questions. Thus, the negative answer is selected as the assertion expressed by the rhetorical *yes-no* question. In effect, rhetorical *yes-no* questions implicate the speaker's expectation towards the answer in the strongest possible form. That is, given a rhetorical *yes-no* question $p?$, the speaker's assessment of the probability of $\neg p$ is 1.[6] Thus, speaker's

[6]There are some apparent rhetorical positive *yes-no* questions that do not express the negative assertion. The question in (380b) and the rhetorical *yes-no* question in (380c) can mean the same thing: namely, the

expectation towards $\neg p$ is asserted as the speaker's belief.

6.5.2 *Wh*-questions

Ordinary *wh*-questions also have implications in terms of speaker's expectations towards the answer. Ordinary negative *wh*-questions implicate that the speaker expects that the set of individuals who satisfy the question is smaller than the set of individuals who do not satisfy the question.

(382) a. Who didn't finish the paper?

b. Speaker's expectation: Most people finished the paper.

In general, a positive *wh*-question has no implications as to the speaker's expectations with respect to the answer. However, sometimes it has the implication that the speaker expects that the set of individuals who satisfy the question is smaller than the set of individuals who do not satisfy the question.

(383) a. Who finished the paper?

b. Speaker's expectation: Most people did not finish the paper.

Assume that the speaker believes that most people didn't finish the paper, and wants to know who indeed finished the paper. In such a context, the speaker would utter (383a), rather than (382a).

Pope is indeed Catholic. However, the usage of these questions is different. As can be seen by the following discourse segments, the two questions cannot be used interchangeably. While (380b) can be an answer to the ordinary question in (380a), (380c) cannot. Moreover, while (381b) can be an appropriate reply to (381a), (381c) cannot.

(380) a. A: Is Clinton a liberal?

b. B: Is the Pope Catholic?

c. # B: Isn't the Pope Catholic?

(381) a. A: The Pope has not been acting like himself lately.

b. B: No matter what, isn't the Pope Catholic?

c. # B: No matter what, is the Pope Catholic?

The question in (380b), although without negation, expresses a positive assertion. While the analysis given here predicts that such cases must have negation (as in (380c)), the above examples show that the positive assertion of (380b) is distinct from the one in (380c) and must be dealt with exceptionally.

A *wh*-question $Whx[Px]$? contributes an open proposition Px. For instance, the *wh*-question in (382a) contributes the open proposition *x didn't finish the paper*. In a context where most people finished the paper, the probability of an arbitrary person in the domain of context to be included in the WITNESS SET of the open proposition is low. The witness set of an open proposition is the set of individuals that satisfies that proposition. If we assume that the probability of an arbitrary individual in the domain of context to be included in the witness set of the given open proposition to be inversely proportional to the informativeness of that proposition, then we can provide a similar explanation regarding the speaker's expectation in *wh*-questions in terms of informativeness as for *yes-no* questions. For instance, if the speaker believes that most people in the domain of context finished the paper, then the probability of an arbitrary person in the domain of context to be included in the witness set of the open proposition *x finished the paper* is high, and so the informativeness of the open proposition is low. However, given the same context, the probability of an arbitrary person in the domain of context to be included in the witness set of *x did not finish the paper* is low, and so the informativeness of this open proposition is high. The intuition behind this assumption is that in a situation where the speaker already believes that most people finished the paper, the information that some individual x did not finish the paper is more informative than the information that some individual x finished the paper. Thus, just as in *yes-no* questions, when a speaker is formulating a *wh*-question, s/he formulates the question with an open proposition that is most informative. This means that if a *wh*-question is in the form of $Wh[\neg Px]?$, then the speaker's assessment of the probability of an arbitrary individual being included in the witness set of $\neg Px$ is low. This in turn means that the speaker believes that most individuals in the domain of context satisfies Px. In other words, the likelihood that a speaker will use a negative *wh*-question $Whx[\neg Px]?$ is equal to the speaker's assessment of the probability of an arbitrary individual being included in the witness set of Px.

Returning to rhetorical *wh*-questions, assuming that the intonational contour serves as a cue that a *wh*-question is a rhetorical question that expresses an assertion, the question we ask is how we compute that a rhetorical *wh*-question expresses an assertion in which the value of the *wh*-phrase is the empty set and not some other set. In principle, the semantics of *wh*-questions makes available all the possible answers as the assertion expressed by a rhetorical

wh-question, where the possible answers differ with respect to the possible values for the *wh*-phrase. According to the pragmatics of *wh*-questions, given a *wh*-question $Whx[Px]$?, the speaker believes that the probability of an arbitrary individual being included in the witness set Px is low. Among the choices of propositions presented by the semantics of *wh*-questions, the proposition that is consistent with the pragmatics of *wh*-questions will be selected as the one being asserted by the rhetorical *wh*-question. Thus, the proposition in which the value of the *wh*-phrase denotes the unit set will not be selected because it implies that there is the highest probability of an arbitrary individual in the domain of context to be included in the witness set, namely 1. On the other hand, propositions in which the *wh*-phrase denotes one of the smaller sets can be selected because these propositions are consistent with the pragmatics of *wh*-questions. Among these propositions, the proposition in which the value of the *wh*-phrase denotes the empty set implies the lowest probability of an arbitrary individual being included in the witness set, namely zero. And the fact is that rhetorical *wh*-questions assert the proposition in which the value of the *wh*-phrase denotes the empty set. At this point, we do not know of a way to derive this fact without stipulation.[7]

6.6 Deriving the Interpretation

Now that we have motivated why rhetorical questions are interpreted as assertions of the opposite polarity, we propose a way of deriving the interpretation.

We have assumed that *yes-no* questions have a covert *wh*-word that corresponds to *whether*, presumably in [Spec, CP], just like ordinary *wh*-words in *wh*-questions. We propose that in rhetorical *yes-no* questions, *whether* maps onto negation and takes scope over the entire sentence. This negation is isomorphic to the negative polarity in the two algebraic

[7]There are some rhetorical *wh*-questions whose *wh*-phrase does not denote an empty set.

(384) Who fed you and gave you a proper education? (A mother to her son)

Under the rhetorical question reading, the *wh*-phrase in (384) denotes a singleton set, and the question denotes a specific answer: namely, *I fed you and gave you a proper education.* A possible explanation could come from the nature of the discourse context. That is, it may be the case that the discourse context in which such a type of rhetorical question can be used has an existential presupposition, e.g. *someone fed you and gave you a proper education.* Then, the *wh*-phrase can no longer denote an empty set, and the smallest possible set it can denote is a singleton set. With this kind of extension in mind, we restrict the discussion to rhetorical *wh*-questions whose *wh*-phrase denotes an empty set.

denotation of *whether*, illustrated in Figure 6.2. In (385a), *whether* has the negative value. And so the question is interpreted as a negative assertion, as can be represented as (385c).

(385) a. Did I tell you that writing a dissertation was easy?

b. *whether*[Did I tell you that writing a dissertation was easy]

c. ¬[I told you that writing a dissertation was easy]

In (386a), *whether* is mapped onto negation. The propositional content of the question and *whether* each contribute a negation, as represented in (386c). The two negations cancel out each other, and the question is interpreted as a positive assertion, as represented in (386d).

(386) a. Didn't I tell you that writing a dissertation was easy?

b. *whether*[¬(I told you that writing a dissertation was easy)]

c. ¬[¬(I told you that writing a dissertation was easy)]

d. I told you that writing a dissertation was easy

We propose that in rhetorical *wh*-questions, the *wh*-phrase maps onto a negative quantifier and it takes scope over the entire sentence. This negative quantifier is isomorphic to the empty set in the boolean algebraic denotation of *wh*-words, illustrated in Figure 6.1. In (387a), the *wh*-phrase is mapped onto a negative quantifier. And so the question is interpreted as a negative assertion, as represented in (387b).

(387) a. What has John done for you?

b. ¬∃x[John has done x for you]

In (388a), the *wh*-phrase maps onto a negative quantifier. The negative quantifier and the propositional content of the question each contribute a negation, as represented in (388b). The two negations cancel out each other, and the question is given the correct interpretation as a positive assertion, as represented in (388c).

(388) a. What hasn't John done for you?

b. ¬∃x[¬(John has done x for you)]

c. ∀x[John has done x for you]

6.7 A Proposal

We can account for the formal properties of rhetorical questions discussed in §6.2 if the well-formedness conditions apply at a level where *wh*-words have been mapped onto negation for *yes-no* questions and negative quantifiers for *wh*-questions. The representation at this level is not LF, which is the output of syntax, but more abstract than that. It is the output of further post-LF derivation via interaction with at least a sub part of the interpretational component.[8]

6.7.1 Rhetorical Questions as Assertions

The proposed analysis explains why rhetorical questions have the formal properties of assertions. At the level in which the well-formedness conditions apply, the value of *whether* for rhetorical *yes-no* questions and the value of the *wh*-phrase for rhetorical *wh*-questions are determined. At this level, rhetorical questions are not questions anymore. Rather, they are assertions.

6.7.2 NPI Licensing

Under the proposed analysis, NPI licensing in rhetorical questions can be accounted for. NPI licensing applies to the representation in which the *wh*-phrase is mapped onto negation. Thus, NPIs are licensed if this representation contains a licensing negation, but not if it does not. In other words, NPIs are licensed if rhetorical questions are interpreted as a negative assertion, but not if they are interpreted as a positive assertion.

6.7.2.1 Rhetorical *yes-no* questions

Both strong and weak NPIs are licensed in rhetorical positive *yes-no* questions. Under the rhetorical question reading, both (389a) and (390a) are interpreted as negative assertions.

[8] An analysis in a similar vein is found in Linebarger (1980, 1987) in the domain of NPI licensing in general. Bhatt (to appear) also reaches a similar conclusion in the domain of rhetorical adjunct *wh*-questions. Heycock and Kroch (to appear) argue that the connectedness effects of specificational pseudoclefts can be explained if well-formedness conditions such as binding and NPI licensing are stated over a partially interpreted post-LF representation. They argue that this representation is derived via an operation which is a part of information packaging instructions to a hearer on how to store the propositional content of the pseudocleft sentence in the discourse model (see Prince (1981) and Vallduví (1990) on information packaging in discourse).

(389) a. Did John visit anyone?

b. ¬[John visited anyone]

(390) a. Did John lift a finger to help you?

b. ¬[John lifted a finger to help you]

The interpretation of (389a) and (390a) can be represented as in (389b) and (390b), respectively. The weak NPI *anyone* in (389a) and the strong NPI *lift a finger* in (390a) are licensed because they both end up in the scope of negation in the derived representations for the rhetorical questions.

NPIs are not licensed in rhetorical negative *yes-no* questions (the asterisk on (391a) applies only to the rhetorical question reading).

(391) a. * Didn't John visit anyone?

b. ¬[¬(John visited anyone)]

c. * John visited anyone

Under the rhetorical question reading, (391a) is interpreted as a positive assertion because the two negations contributed by *whether* and the propositional content of the question cancel out each other. The interpretation of (391a) can be represented as in (391c). But this representation is not well-formed because the NPI *anyone* is not licensed.

6.7.2.2 Rhetorical *wh*-questions

Just like rhetorical positive *yes-no* questions, rhetorical positive *wh*-questions license both weak and strong NPIs. Under the rhetorical question reading, both (392a) and (393a) are interpreted as negative assertions.

(392) a. What has Sam ever contributed to the project?

b. ¬∃x[Sam has ever contributed x to the project]

(393) a. Who lifted a finger to help Mary?

b. ¬∃x[x lifted a finger to help Mary]

The interpretation of these questions can be represented as in (392b) and (393b). The NPIs *ever* and *lift a finger* are licensed because they end up in the scope of negation in the derived representations for the rhetorical questions.

Moreover, just like rhetorical negative *yes-no* questions, rhetorical negative *wh*-questions do not license NPIs, (again, the asterisk on (394a) applies to the the rhetorical question reading).

(394) a. * Who didn't say anything interesting at the seminar?

b. $\neg\exists x[\neg(x \text{ said anything interesting at the seminar})]$

c. * $\forall x(x \text{ said anything interesting at the seminar})$

Under the rhetorical question reading, (394a) is interpreted as a positive assertion because the two negations contributed by the *wh*-phrase (which is equivalent to a negative QP) and the propositional content of the question cancel out each other. The interpretation of (394a) can be represented as in (394c). But this representation is not well-formed because the NPI *anything* is not licensed.

6.7.3 Rhetorical Questions with a Deontic Modal

Further evidence for the proposal comes from rhetorical questions with deontic modals. In a sentence where a deontic modal c-commands negation *not* or a negative QP, the deontic modal unambiguously takes scope over the negation or the negative QP. For instance, in (395), the deontic modal *must* or *should* c-commands *not*. In (396), the deontic modal c-commands *nothing*.

(395) a. John must not eat the cake.

≈ It is obligatory for John to not eat the cake.

b. John should not leave.

≈ It is obligatory for John to not leave.

(396) a. John must say nothing.

≈ It is obligatory for John to say nothing.

b. John should eat nothing.

≈ It is obligatory for John to eat nothing.

In these examples, the deontic modal unambiguously takes scope over the negation, as can be seen by the paraphrases given for each sentence.

Interestingly, rhetorical questions with a deontic modal unambiguously have the interpretation in which the deontic modal has narrow scope with respect to a negation or a negative QP, although there is no negation or a negative QP in the surface syntax. This is illustrated in (397) and (398).

(397) a. Must John say anything?
≈ It is not obligatory for John to say anything.

b. Should John do the homework?
≈ It is not obligatory for John to do the homework.

(398) a. What must John say?
≈ There is nothing such that it is obligatory for John to say it.

b. What should John do?
≈ There is nothing such that it is obligatory for John to do it.

Under the proposal given here, in rhetorical *yes-no* questions, the covert *wh*-phrase *whether* which has the negative value is located in [Spec, CP], c-commanding the deontic modal. Hence, it is not surprising that rhetorical *yes-no* questions with a deontic modal have an interpretation in which the negation takes scope over the deontic modal. The interpretation of the rhetorical *yes-no* questions in (397) can be represented as in (399).

(399) a. ¬[John must say anything]

b. ¬[John should do the homework]

Similarly, under the propsal given here, in rhetorical *wh*-questions, the *wh*-phrase, which is equivalent to a negative QP, is in [Spec, CP], c-commanding the deontic modal. Hence, it follows that rhetorical *wh*-questions with a deontic modal have an interpretation in which the negation takes scope over the deontic modal. The interpretation of the rhetorical *wh*-questions in (398) can be represented as in (400).

(400) a. $\neg\exists$x[John must say x]

b. $\neg\exists$x[John should do x]

Although there is no negation in the surface syntax, the questions in (397) and (398) can have a rhetorical question reading in which the negation takes scope over the deontic modal. This is because the covert *whether* in *yes-no* questions and the *wh*-phrase in *wh*-questions contribute wide scope negation under the proposed analysis.

6.7.4 Evidence from a Negative Concord Language: Italian

We have seen that *wh*-words in rhetorical *wh*-questions behave like negative quantifers. Here, we look at some facts from the behavior of negative constituents in *wh*-questions in Italian that support our analysis in general and the link between *wh*-words and negative QPs in particular.

In Italian, pure sentential negation is expressed by the negative marker *non*.

(401) Italian

Gianni non telefona a sua madre.
Gianni Neg telephones to his mother

'Gianni does not call his mother.'

Sentential negation can also be expressed by one or more negative constituents. In Italian, postverbal negative constituents behave differently from preverbal negative constituents. Postverbal negative constituents are similar to English NPIs in that they have to be licensed by *non* or a preverbal negative constituent (Zanuttini (1991), Haegeman (1995)). Both (402a) and (402b) are well-formed because *nessuno* is licensed by *non* in (402a), and *niente* is licensed by *nessuno* in (402b). But (402c) is not well-formed because there is no licenser for *nessuno*.

(402) Italian

a. Gianni non telefona a nessuno.
Gianni Neg telephones to nobody
'Gianni does not call anyone.'

b. Nessuno ha detto niente.
nobody has said nothing
'Nobody said anything.'

c. * Gianni telefona a nessuno.
Gianni telephones to nobody

On the other hand, a preverbal negative constituent, like *nessuno* in (403), is a full-fledged negative QP, requiring no licensing negative element.

(403) Italian

Nessuno ha visto Maria.
nobody has seen Maria

'Nobody has seen Maria.'

In ordinary information-seeking *wh*-questions with a postverbal negative constituent, the negative marker *non* must be present in order to license the postverbal negative constituent.

(404) Italian

a. Chi non ha baciato nessuno?
who Neg has kissed nobody
'Who has not kissed anybody?'

b. * Chi ha baciato nessuno?
who has kissed nobody

However, a rhetorical positive question with a postverbal negative constituent does not require *non*. Assume that speaker A has accused speaker B of kissing Mary, and that B denies this accusation by uttering the rhetorical question in (405b).

(405) Italian

a. A: Hai baciato Maria!
have-2sg kissed Maria!
'You have kissed Mary.'

b. B: Ma chi ha baciato nessuno?
but who has kissed nobody
'But who has kissed anyone?'

Under the proposed analysis, the *wh*-word *chi* is equivalent to a negative QP. It licenses *nessuno*.[9]

Moreover, a rhetorical negative question that has *non* is interpreted as a positive assertion.

(407) Italian

Chi non sposerebbe Maria?
who non marry Maria

'Who would not marry Mary?'

Under the proposed analysis, *chi* is equivalent to a negative QP. It has true negative force. *Chi* and *non* cancel out each other, and the question is interpreted as a positive assertion.

In summary, since the *wh*-phrase in a rhetorical question denotes an empty set and is equivalent to a true negative QP, it can license postverbal negative constituents.

6.8 Compositional Semantics for Rhetorical Questions

Given the proposed analysis, the interpretation of rhetorical questions is derived compositionally. We illustrate this point by deriving the logical form of the rhetorical *wh*-question in (408).

(408) What$_i$ must Sam eat t$_i$?

At LF, the rhetorical question in (408) has the structure in (409).

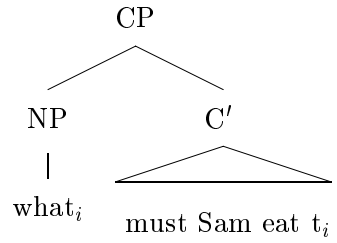
[9] In Spanish, negative constituents are subject to the same constraints as those in Italian. And just as in Italian, a postverbal negative constituent does not require *no* in rhetorical positive questions, supporting our proposal that the *wh*-phrase in a rhetorical question behaves as a negative QP. The example in (406) is from Gutiérrez-Rexach (1997).

(406) Spanish

¿Qué ha hecho nadie en este departamento recientemente?
what has done nobody in this department recently

'What has anybody done in this department recently?'

(409)



This LF structure undergoes a post-LF derivation where *what* maps onto a negative QP that corresponds to *nothing*. The output of this post-LF derivation directly maps onto semantic interpretation.

(410)

$$\neg\exists x(thing'(x) \wedge \Box eat'_*(sam', x)),\ \lambda\text{-conversion}$$

$$|$$

$$\neg\exists x(thing'(x) \wedge \lambda x_i \Box eat'_*(sam', x_i)(x)),\ {}^{\vee\wedge}\text{-elimination}$$

$$|$$

$$\neg\exists x(thing'(x) \wedge^{\vee\wedge} \lambda x_i \Box eat'_*(sam', x_i)(x)),\ \lambda\text{-conversion}$$

$$|$$

$$(\lambda X \neg\exists x(thing'(x) \wedge^{\vee} X(x)))^{\wedge} \lambda x_i \Box eat'_*(sam', x_i),\ \text{quantify-in}$$

$$\lambda X \neg\exists x(thing'(x) \wedge^{\vee} X(x)) \qquad \Box eat'_*(sam', x_i)$$

nothing$_i$ must Sam eat x$_i$

In short, a correct logical form of the rhetorical question *What must Sam eat?* can be derived by mapping *what* to the intensional logical translation of *nothing*, and quantifying this into the translation of *Sam must eat* x_i (in the way that the quantifying-in function in Montague's (1973) PTQ model works). After λ-conversions and ${}^{\vee\wedge}$-eliminations, the logical form which represents the correct scope between the negation and the deontic modal is derived.

6.9 Conclusion

We have shown that rhetorical questions and ordinary questions do not pattern alike with respect to various well-formedness conditions. We have proposed a way of deriving the interpretation of rhetorical questions and addressed the question of why rhetorical questions are interpreted as an assertion of the opposite polarity. According to our analysis, the polarity

reversal effects in the interpretation of rhetorical questions fall out from the semantics of questions and the general pragmatic principle of informativeness. We have also proposed that the representation over which various well-formedness conditions are stated is the output of a post-LF derivation which is determined via interaction with at least a sub part of the interpretational component. Finally, we have seen that a compositional semantics for rhetorical questions is possible by directly mapping this post-LF representation onto the semantic interpretation.

Appendix A

Abbreviations

This appendix lists the abbreviations and their full names for the texts cited in chapter 3. The abbreviations are in brackets. In citations from Old English, we refer to the texts by abbreviations specified in Mitchell, Ball, and Cameron (1975, 1979). In citations from Middle English sources, we refer to the texts by abbreviations specified in PPCME. In citations from Late Middle English and Early Modern English, we refer to the texts by the abbreviations specified in Ellegård (1953).

A.1 Old English Texts

[AELS] *AElfric's Lives of Saints.* Skeat 1881-1900.

[Beo] *Beowulf and the Fight at Finnsburg.* Klaeber 1950.

A.2 Middle English Texts

[AELR3] *Alfred of Rievaulx's de Institutione Inclusarum.* Early English Text Society, 287. Ed. J. Ayto and A. Barratt. London, 1984.

[ANCRIWII] *Part II: The English Text of the Ancrene Riwle.* Early English Text Society, O.S. 267. Ed. E. J. Dobson. London, 1972.

[AYENBI] *Dan Michel's Ayenbite of Inwyt or Remorse of Conscience, Vol. I.* Early English Text Society, O.S. 23. Ed. R. Morris and P. Gradon. London, 1965 (1866).

[BOETH] Chaucer, Geoffrey. *Text: Boethius. The Riverside Chaucer. Third Edition.* General Editor L. D. Benson. Based on the Works of Geoffrey Chaucer, edited by F. N. Robinson. Boston: Houghton Mifflin Company, 1987.

[CAXPRO] Caxton, William. *The Prologues and Epilogues of William Caxton.* Early English Text Society, 176. Ed. W. J. B. Crotch. London, 1956 (1928).

[CMPRIV,MPASTON] Paston, Margaret. *Text: Letter(s). Paston Letters and Papers of the Fifteenth Century, Part I.* Ed. N. Davis. Oxford: Clarendon Press, 1971.

[EARLPS] *The Earliest Complete English Prose Psalter.* Early English Text Society, O.S. 97. Ed. K. D. Buelbring. London, 1891.

[EDMUND] *Text: the Life of St. Edmund. Middle English Religious Prose.* York Medieval Texts. Ed. N. F. Blake. London: Edward Arnold, 1972.

[HORSES] *A Late Middle English Treatise on Horses.* Stockholm Studies in English, XLVII. Ed. A. C. Svinhufvud. Stockholm: Almqvist & Wiksell International, 1978.

[KEMPE] Kempe, Margery. *The Book of Margery Kempe, Vol. I.* Early English Text Society, 212. Ed. S. B. Meech and H. E. Allen. London, 1940.

[MALORY] Malory, Thomas. *Text: Morte Darthur. The Works of Sir Thomas Malory.* Ed. E. Vinaver. London: Oxford University Press, 1954.

[MIRK] Mirk, John. *Mirk's Festival: a Collection of Homilies, by Johannes Mirkus (John Mirk), Part I.* Early English Text Society, E.S. 96. Ed. T. Erbe. London, 1905.

[NTEST] *Text: the New Testament. The New Testament in English according to the version by John Wycliffe about A. D. 1380 and revised by John purvey about A. D. 1388.* Ed. J. Forshall and F. Madden. Oxford: Clarendon Press, 1879.

[PURVEY] Purvey, John. *Text: the Prologue to the Bible. The Holy Bible, containing the Old and New Testaments, with the Apocryphal Books, in the earliest English versions made from the Latin vulgate by John Wycliffe and his followers, Vol. I.* Ed. J. Forshall and F. Madden. Oxford: University Press, 1850.

[ROLLFL] Rolle, Richard. *Text: The Form of Living. English Writings of Richard Rolle, Hermit of Hampole.* Ed. Hope Emily Allen. Oxford, 1931.

[ROYAL] *Middle English Sermons, edited from British Museum Ms. Royal 18 B. XXIII.* Early English Text Society, 209. Ed. W. O. Ross. London, 1940.

[SAWLES] *Text: Sawles Warde. The Katherine Group, edited from Ms. Bodley 34.* Bibliotheque de la Faculte de Philosophie et Lettres de l'Universite de Liege, CCXV. Ed. S. T. R. O. d'Ardenne. Paris: Societe d'Edition "Les Belles Lettres", 1977.

[SIEGE] *The Siege of Jerusalem in Prose.* Memoires de la Societe Neophilologique de Helsinki, XXXIV. Ed. A. Kurvinen. Helsinki: Societe Neophilologique, 1969.

[WYCSER] *English Wycliffite Sermons, Vol. I.* Ed. A. Hudson. Oxford: Clarendon Press, 1983.

A.3 Late Middle English and Early Modern English Texts

[161] *Biblical Version.* Ed. A. C. Paues. Cambridge. 1902.

[190] *St. Bartholomew's Church in London.* Ed. N. Moore. Early English Text Society 163. 1923.

[243] *Works of Sir Thomas Malory.* Ed. E. Vinaver. Oxford. 1947.

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[324] Gardiner, Stephen. *Letters.* 1527-1555. Ed. J. A. Muler. *The Letters of Stephen Gardiner.* Cambridge. 1933.

[326] Palsgrave, John. *Acolastus.* 1540. Ed. P. L. Carver. Early English Text Society, 202. 1935.

[338] Wilson, Thomas. *Rhetorique.* 1553. Ed. G. H. Mair. Tudor and Stuart Library. Oxford. 1909.

[344] *Palace of Pleasure.* 1566. Ed. Haworth. *An Elizabethan Story Book.* London. 1928.

[347] Northbrooke, John. *Treatise against Dicing.* 1577. Ed. J. P. C. Shakespeare Society 14. 1843.

[350] Mulcaster, Richard. *Elementarie.* 1582. Ed. E. T. Campagnac. Tudor and Stuart Library. London. 1925.

[356] Queen Elizabeth. *Boethius.* 1593. Ed. C. Pemberton. Early English Text Society, 113. 1899.

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[360] *Ben Jonson's Plays.* 1598-1609. Ed. W. Bang. *Ben Jonsons Dramen*, in *Materialien zur Kunde des Älteren Englischen Dramas, Vol. VII:1-2.* 1905-8.

[361] Chapman, George. *Plays.* 1606-1612. Ed. T. M. Parrot. London. 1914.

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[364] Dekker, Thomas. *Seven Deadly Sins of London.* 1606. Ed. E. Arber. English Scholars' Library 7. 1879.

[372] Browne, Thomas. *Religio Medici.* 1635. Ed. Geo. Keynes. Nelson Classics. 1940.

[373] Cowley, Abraham. *The Guardian; Oliver Cromwell; Essays in Prose.* Ed. A. R. Waller. *The English Writings of Abraham Cowley, Vol. 2.* Cambridge English Classics. 1906.

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