

# Modality in Modern Greek



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By

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*To my parents, Constantinos and Evangelia.*



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## ABBREVIATIONS

INP	imperfective non past
PNP	perfective non past
IP	imperfective past
PP	perfective past
FUT	future
SUBJ	subjunctive
OPT	optative
PASS	passive
IMP	imperative
NOM	nominative
GEN	genitive
PRF	perfect
sg	singular
pl	plural





# CHAPTER ONE

## INTRODUCTION

### 1 Introduction

The goal of this book is to provide a formal analysis of Greek modal expressions of epistemic, priority (deontic) and dynamic sentential modality<sup>1</sup> main or embedded. The study consists of two components: (1) an empirical investigation of modal expressions in Greek such as *prepi* ‘must’, *bori* ‘may’ and particles such as *na* ‘subjunctive’, *tha* ‘will’, and (2) a formal analysis of the syntactic and the semantic properties of these constructions with emphasis on comparison of different types of modal structures, internal to Greek as well as cross-linguistically.

#### 1.1 Modal Expressions in Greek

The first modal structure I investigate is the set of Greek modal particles, including *na* (subjunctive), and *tha* (future) which combine with verbs (see 2.34) and produce modal readings. For example:

- (1.1) a. **Na / as** efevgha  
SUBJ/OPT was-leaving.1sg  
I wish I should / could go

**Deontic wish:** I consider my wish necessary

- b. **tha** efevgha ..  
FUT was-leaving.1sg  
I would leave ..

**Epistemic possibility:** As far as I know, it was possible that I leave

---

<sup>1</sup> Sentential modality conveys modal meaning at the level of the whole sentence, and it encompasses two main modal expressions such as (1) the modal auxiliary verbs including *can*, *could*, *have to*, *may*, *might*, *must*, *needn't*, *ought*, *should*, and (2) the sentential adverbs including *allegedly*, *apparently*, *certainly*, *maybe*, *perhaps*, *possibly*, *probably*, *supposedly*.

The second modal structure I examine is the set of impersonal modal verbs, including *prepi* ‘it must’, *bori* ‘it is possible’ and the personal *boro* ‘I am able to’. All three take subjunctive *na* complements (Mackridge 1987; Holton et al (1997); Clairis & Babiniotis (2005), among many others). The latter two, *bori* and *boro*, are impersonal (3<sup>rd</sup> person singular) and personal variants of the same verb. The impersonal *bori* is an epistemic modal, whereas the personal *boro* ‘I am able to’ is abilitative or deontic, never epistemic. The modal verb *prepi* is a necessity modal. It is, either epistemic or deontic, and always impersonal:

- (1.2) a. \* Ta pedhia **prepun** na trone fruta  
 The children **must.3pl.INP** SUBJ eat.3pl.INP fruits  
 Children must eat fruits
- b. Ta pedia **prepi** na trone fruta  
 The children **must.3pl.INP** SUBJ eat.3pl.INP fruits

**Epistemic necessity:** As far as I know, the children must eat fruits

**Deontic necessity:** The requirements for a healthy diet dictate that it is necessary that children eat fruits

- (1.3) a. Ta pedia **bori** na fijun  
 The children **might.3sg.INP** SUBJ leave.3pl.PNP

**Epistemic possibility:** As far as I know, it is possible that children leave

- b. Ta pedia **borun** na fighun  
 The children **can.3pl.INP** SUBJ leave.3pl.INP

**Ability:** Children are able to leave.

**Deontic:** The children are allowed to leave.

One of the main claims that this study asserts is that modality is determined not only by context (see Kratzer 1977, 1981, 1991b; Portner 2007a, 2009; von Stechow & Gillies 2007b; among many others) but also by the speaker’s epistemic model (see a description of it in Giannakidou 1999). All modal expressions will be shown to be non-veridical, or expressing a non-commitment to truth (Giannakidou 1998).

I adopt the thesis that modal verbs are non-veridical operators (a proposition embedding function, see Giannakidou 1999). I provide a modest extension of Giannakidou’s proposal on (non) veridicality and show its descriptive and explanatory power in describing sentential modality in Greek. Furthermore, my goal is to investigate the role of non-veridicality and how we can employ it in explaining the dependency of perfective non-past (PNP) on non-veridical particles and their embedding

under non-veridical propositional operators: the modal operators. A detailed description follows in chapter 2.

This book is organized as follows. In chapter 1, I describe the general empirical and theoretical background for the research; categories and theories of modality more generally based on English. In chapter 2, I present an investigation of clause structure and modal auxiliary verbs in Greek. More specifically, I provide an overview of (a) the tense and aspect system, (b) the mood (selection pattern), and (c) the clause structure introduced by the particles *tha* (future), and *na* (subjunctive), and the formal framework within which I will develop the analysis of Greek sentential modality. In the last section, I introduce modal auxiliary verbs within the clause structure (*na* – complement, interpretational ambiguity, and the tense and aspect selection pattern), and discuss some questions that determine the analysis of modality, and some that will form the empirical core of this study. I will also discuss how the study of modal structures in Greek in particular impacts general theories of modality. In chapter 3, I examine expressions of epistemic modality in Greek. In this section my main goal is to provide a discussion and formal analysis of epistemic modality, focusing on the following main themes: (a) the types of epistemic modality in Greek, (b) the contribution of epistemic modals to the truth conditional content of the proposition they are in, and (c) their evidential nature and characteristics. In chapter 4, I explore (a) the relation between epistemic modality and future reference. In chapter 5, I investigate the sub-varieties of priority modality: deontic, bouletic, and teleological. This part of the study is mainly dedicated to (a) the types of deontic modality, (b) the study of imperative and optative structures, and (c) the issue of argument structure of priority modals. In chapter 6, I examine the essential features and meaning of dynamic modality. The aim of this chapter is to discuss and analyze the nature of dynamic modality typically exemplified by modals of ability and disposition.

## 2 Linguistic Theories of Modality

In this section, I present the frameworks I use in this study. The first subsection outlines the essential ideas formalized by Kratzer, and the parameters I consider important for the truth validation of modal expressions. Next, I present the work of Portner (1997, 2007a, 2009), who offered an extension of Kratzer's work. Before I move onto the analysis of the frameworks I adopt, I briefly describe the different types of modality.

## 2.1 Types of Modality

Portner (2009) introduced the following classifications of modality: epistemic, priority, and dynamic modality. Epistemic (Greek *epistēmē* ‘knowledge’ and more general information) modality pertains to the speaker’s knowledge or lack thereof, and expresses the possibility of the necessity for a proposition to be true, given what is already known and based on the available evidence:

- (1.4) Epistemic Modality
- a. Mary may come to the party
  - b. John must have a good reason for being late tonight
  - c. We may possibly run into them at the concert

Priority modality includes deontic (Greek *deon* ‘obligation’), bouletic (Greek *boulē* ‘desire’), and teleological (Greek *telos* ‘goal’) modals (Portner 2009). It expresses a wide range of interpretations, of which the basic features are obligation, permission, exhortation, and optative, given particular goals and desires. As Portner (2009) put it, the term ‘priority’ indicates a possibility as better than, or as having a higher priority than, others:

- (1.5) Priority Modality
- a. You must obey the laws of your country  
*deontic*
  - b. You should try this red lipstick  
*bouletic*
  - c. You could add Tabasco to your soup for a spicy touch     *teleological*

Dynamic modality includes both volitional and quantificational modals, and conveys a wide range of meanings relevant to ability, disposition, and opportunity (Portner 2009). On the one hand, volitional modality relates to ways in which certain circumstances have an effect upon the actions of an individual’s deliberate intentions. On the other hand, quantificational modality has to do with universal or existential quantification over individuals:

- (1.6) Dynamic Modality
- a. Volitional
    - (i) Mary can swim     *ability*
    - (ii) Mary can enjoy an excellent view from her terrace     *opportunity*
    - (iii) Mary will cry when she finds out her dog died     *dispositional*

## b. Quantificational

- |      |   |                    |
|------|---|--------------------|
| (i)  | A typhoon can occur in the western Pacific  | <i>existential</i> |
| (ii) | A typhoon will occur in the western Pacific | <i>universal</i>   |

Modals also vary according to the kinds of the interpretation they obtain showing signs of lexicalization. For example, some English modals like *might* are only sensitive to a set of propositions relative to information and/or evidence:

- (1.7) a. Paul might be at the back yard  
 b. # Citizens might obey the laws of their country

On the other hand, there are modals that can have both epistemic or priority interpretations. Consider the following examples:

- |          |                                       |                              |
|----------|---------------------------------------|------------------------------|
| (1.8) a. | Paul may be at the back yard          | <i>epistemic possibility</i> |
| b.       | You may use the dining hall after 5pm | <i>deontic possibility</i>   |
| c.       | Dinosaurs must have died out suddenly | <i>epistemic necessity</i>   |
| d.       | You must be home by 11pm              | <i>deontic necessity</i>     |

As it has been argued many times in the literature (see for example von Stechow & Gillies 2008a/b; among others), modals contain an evidential component, but this characteristic of modality clashes with the traditional account that argues for quantification over possible worlds, and does not capture the evidential meaning of modality. To capture this distinctive attribute of modality without abandoning a unified account, Portner (2007a, 2009) suggested that modals are not evidentials *per se*; instead modals provide an extra speech act in addition to their standard truth-conditional contribution as quantifiers over possible worlds. Based on the work of Stalnaker (1974, 1978, 1987), Portner (2007a, 2009) suggested that modals are *performative* if they perform a speech act different from, or in addition to, the usual speech act of assertion. In this study, I adhere to the classification of modality as proposed by Portner (2009).

## 2.2 Kratzer's framework (1977, 1981, 1991b)

Modal expressions in languages from different families exhibit chameleonic properties allowing them to convey a multiplicity of meanings. Consider, for example, the English modal *have to*:

- |          |   |                  |
|----------|---|------------------|
| (1.9) a. | He has to be studying.                  | <i>epistemic</i> |
| b.       | Protesters have to evacuate the square. | <i>deontic</i>   |
| c.       | Mary, you have to wake up early.        | <i>bouletic</i>  |

- d. I'm running late. I have to go, bye! *circumstantial*  
 e. CTA is on strike. You have to take a cab. *teleological*

The central claim of semantic theories until the mid-seventies was that modals were ambiguous expressions (see for example, Groenendijk & Stokhof 1975; Kamp 1975). The meaning of modal expressions was modeled as an inherent part of its lexical definition. However, lexical ambiguity would proliferate the lexicon when, in fact, it would be more natural to narrow down the multiplicity of modal meaning as context dependent. This proposal was made by Kratzer in a sequel to her seminal papers.

Kratzer (1977, 1981, 1991b) innovated the traditional modal analysis by arguing that modals are context-dependent and developed a system in which modals are defined with respect to three basic parameters, thus making them relative to: (1) the modal force, (2) the modal base, and (3) the ordering source. Kratzer kept the first parameter from the modal logic tradition: possibility modals are existential quantifiers, and necessity modals are universal quantifiers over possible worlds. Kratzer's novel contributions to the analysis of modality were parameters (2) and (3), which derive the meaning of modal expressions via context and capture the context sensitivity of modals. In what follows, I present the three dimensions of Kratzer's modality theory, which I adopt in this study.

As stated above, modals are quantifiers over possible worlds (Kripke 1963; Lewis 1973; Kratzer 1981, 1991b, a.o.), and distinguish existential quantification from universal quantification. For example:

- (1.10) a. Children may read at the library  
 $\exists w$  ('Children read at the library' is true in  $w$ )  
 b. Children must read at the library  
 $\forall w$  ('Children read at the library' is true in  $w$ )

In example (1.10a), I state, formally, that there is a possible world among those compatible to my knowledge, in which children read at the library. *May*, as a possibility modal, existentially quantifies over possible worlds. In example (1.10b), the necessity modal, the verb *must*, quantifies universally over all those possible worlds. This is the modal force, and according to Kratzer, it is lexically determined.

Modal base, the second essential parameter, determines the kind of modality, as bare modal force does not capture the modal expression's true meaning. For Kratzer, the interpretations of the modals depend on two types of conversational backgrounds that are provided by the context. The modals can be specified with an *in view of*-phrase corresponding to sets of

propositions of information, rules, permissions, facts, evidence, etc. In this case, the conversational background at work will be one of the following:

- (1.11) a. [In view of what I know,] children may read at the library  
 $\lambda w. \lambda p. p$  is one of the propositions that I know in  $w$   
 b. [In view of school's rules,] children must read at the library  
 $\lambda w. \lambda p. p$  is one of the propositions that are commanded in  $w$

The first conversational background gives us the possible worlds of the modal base (MB) (the accessible worlds). According to Kratzer, this type of conversational background consists of many different possibilities (realistic, totally realistic, epistemic, stereotypical, deontic, and empty, to mention a few), and contributes the premises, facts, and ideals, from which conclusions and inferences are drawn. Thus, the conversational background is that entity provided by utterances such as *what the law dictates (deontic)*, *what the facts are (realistic)*, *what the case is (totally realistic)*, *what is known (epistemic)*, *what is normal (stereotypical)*, *what is commanded (deontic)*, *what is desirable (bouletic)*, etc. Conversational backgrounds differ from one possible world to another, and they represent a set of propositions in a possible world. For example, the utterance *what the law dictates (deontic)* provides a set of propositions in a possible world, and it can be represented as a function from the set of possible worlds  $W$  into the power set of the power set of  $W$ , which assigns to any world  $w$  of  $W$  the set of all propositions, which are commanded in  $w$  (Kratzer 1981). In other words, conversational background is the function  $\cap f(w)$  that assigns sets of propositions to possible worlds (see next diagram 1).

Where  $f$  = conversational background  
 $w$  = actual world  
 $W$  = set of possible worlds

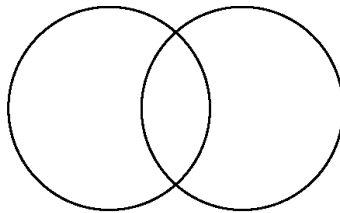


Diagram 1

According to Kratzer (1981), the different kinds of conversational backgrounds fall into two main types, epistemic and deontic, and can be represented formally, as follows (following Kratzer 1981):

(1.12) a. Epistemic conversational background:

The function  $f$  which assigns sets of propositions to members of  $W$  such that for all possible worlds  $w \in W$ :  $f(w)$  contains all those propositions  $p$  which are established knowledge in  $w$ .

b. Deontic conversational background:

The function  $f$  which assigns sets of propositions to members of  $W$  such that for any possible worlds  $w \in W$ :  $f(w)$  contains all those propositions  $p$  such that is commanded in  $w$  that  $p$ .

Additionally, consider the contrast between the two modal bases in the following examples:

(1.13) a. Children might eat fruits and vegetables

b. Children must eat fruits and vegetables

Example (1.13a) is evaluated with respect to an epistemic modal base, in which, according to the speaker's knowledge, it is possible that children eat fruit and vegetables. In contrast, example (1.13b) is evaluated with respect to a deontic modal base, which identifies all those accessible, possible worlds in which certain circumstances hold, for example, the quality of food, the prevention of life-threatening diseases, etc. The difference between epistemic and circumstantial (deontic) modal bases is also evident in the different truth conditions that yield for the examples in (1.13). If children do not eat fruits and vegetables, example (1.13a) will be false, but example (1.13b) will be true because the circumstances are not affected; it still holds in a possible world that children are required to consume fruits and vegetables.

The third determining factor for modal meaning is the ordering source. Remember that an accessibility relation essentially connects a world  $w$  to a world  $w'$  if, and only if, every situation  $p$  that holds in  $w$  is possible in  $w'$ . However, this definition does not determine under what proposition the accessibility relation is true in  $w'$ . Kratzer (1981) associated the conversational background with accessibility relation, as follows:

(1.14) If  $f$  is a conversational background, the set of worlds  $W$  that are accessible in a world  $w$  with respect to  $f$  is simply the intersection of all possible worlds  $\cap f(w)$ . That is the set of worlds where all propositions of  $f(w)$  are true.



Hence, according to the conversational background, Kratzer introduced the ordering source, which is the second conversational background and whose role is to order the worlds of the modal base according to some contextual ranking. The concept of the ordering source dates back to Lewis (1981), who argued that we might think of conversational backgrounds as an ordering of possible worlds. Given the facts, ideals, understandings, and attitudes of a context, some facts have greater import than others; thus, we can say that some possible worlds fit the facts of the ideal set of possible worlds  $A$  better than others do. Similarly, some worlds differ so much from  $A$  that they should be ignored, and possibly omitted altogether from an ordering source. Kratzer (1981), crediting Lewis (1981), defined the ordering source as follows:

(1.15) Ordering Source  $\leq_{g(w)}$ :

For  $\forall w$  and  $\forall z$  such that  $w, z \in W$ :  $w \leq_{g(w)} z$  iff  $\{p: p \in g(w) \text{ and } z \in p\} \subseteq \{p: p \in g(w) \text{ and } w \in p\}$

“For all worlds  $w$  and  $z$ , a world  $w$  is at least as close to the ideal set of possible worlds  $g(w)$  as a world  $z$  iff all propositions of  $g(w)$  which are true in  $z$ , are true in  $w$  as well”

The formulation that Kratzer (1981) gave in definition (1.15), orders possible worlds by invoking an unordered set of propositions: an unordered set of propositions  $p$  that are true in  $z$ , and an unordered set of propositions  $p$  that are true in  $w$ . The only condition that should be preserved for an ordering is the comparativeness of truth among possible worlds. If two possible worlds have at least as many propositions true between them (i.e., a similar sum of true propositions) then they are considered to be close to the ideal represented by  $A$ . In contrast, to the first type of conversational background, i.e., the modal base, an ordering source remains opaque and has to be recovered from the context. Let us examine an example:

(1.16) Children must eat fruits and vegetables.

Example (1.16) refers to an ideal situation in which children consume fruits and vegetables. In this case, the modal base defines a set of worlds,  $f_{\text{deontic}}(w)$ , and each of these worlds expresses the content of the requirement in the base world  $w$ . For example, with no exception, children follow the instructions for a healthy diet and eat fruits and vegetables. As is, the modal quantifies only over worlds where the requirements of a healthy diet are fulfilled. In all of the worlds in which the requirements are fulfilled, children consume fruits and vegetables. Facts and ideals are

treated in a similar way. However, our world is far from an ideal one, and, our goal is the modal to quantify over all those worlds where the requirements of a healthy diet are not fulfilled. Imagine a case, as is often true, in which children consume hamburgers instead of fruits and vegetables, and gain weight. Then consider the following requirement:

(1.17) Children must consult a nutritionist.

However, above, we excluded all of those worlds in which there was a violation of the requirement for a healthy diet. Thus, we cannot consider the proposition in example (1.17) because there is no violation of the requirements, even though children eat hamburgers. Now, for the modal to quantify over those worlds where violations of the requirement hold, we should include all those relevant facts on the base world  $w$ , and, according to Kratzer, order them with respect to an ideal set of possible worlds  $g(w)$  (see definition in 1.15). Thus, the ordering source will order all of those relevant worlds, starting from the best possible world in which children fulfill the requirements of a healthy diet, and end with the possible world in which children violate the requirements and consult a nutritionist. Consider the worlds  $w$  and  $z$  in which children follow an unhealthy diet, and where children go to a nutritionist in  $w$ , but not in  $z$ ; consider also a deontic ordering source  $g$  orders the set of worlds: *unhealthy eating results in undesirable consequences and those on an unhealthy eating go to a nutritionist*. Worlds  $w$  and  $z$  violate the first proposition in  $g(w)$ , but  $w$  is closer to the ideal ordering set of propositions induced by the ordering source  $g(w)$  than  $z$ , for the reason that in  $w$ , the children eating an unhealthy diet go to a nutritionist, but not in  $z$ .

To sum up, Kratzer developed a theory of modality in which the contribution of the context plays an essential role in determining two of the dimensions of a modal: modal base  $f$  and ordering source  $g$ . Modal force determines whether the quantification is existential or universal. Modal base determines the set of worlds in which a modal quantifies over, and ordering source orders a set of worlds with respect to an ideal set of possible worlds  $g(w)$ .

I adopt the framework suggested by Kratzer (1977, 1981, 1991b), and I build on her assumption of the relativity of modality, and the ordering of worlds. Kratzer suggested that modality is a context-dependent linguistic phenomenon. When we analyze modality, the context plays a crucial role.

### 2.3 Portner (1997, 2007a, 2009)

Portner, in a series of papers, offered an updated version of Kratzer's standard theory on modality, and offered explanations for certain puzzling issues that Kratzer's unifying account overlooked. In this section, I present his theoretical framework (*Best* operator and modality as speech acts) and the classification system of modality that he introduced. I will consider Portner's contribution in explaining and formalizing modality as an essential part of Kratzer's framework on modality, thus following his main ideas and formalizations.

In the previous section, I discussed conversational background, modal base, and ordering source, as the key factors that determine the type of modality, and demonstrated how Kratzer explained the various kinds of interpretations without postulating massive lexical ambiguity. In the first type of conversational background, the modal base  $f$  contributes the accessible worlds, and in the second type, the ordering source  $g$  ranks the accessible worlds with regard to how close they satisfy an ideal given by  $g$  (see 1.17).

Portner (1998, 2009) argued that there are two puzzling issues in ordering semantics, as offered by Kratzer. The first issue is that a conversational background defines only a partial ordering<sup>2</sup>  $\leq_{g(w)}$  on the set of possible worlds  $g(w)$ , and this implies that not every pair of worlds need be related, and that for some pairs of worlds it may be that neither is better than the other in the set of possible worlds. Let us consider an example, and assume a conversational background  $g$ , a world  $w$ , and a set of worlds  $\{p, q, r\}$ . The conversational background  $g$  induces a partial ordering  $\leq_{g(w)}$  where  $\{p, q, r\}$  are the "best" worlds,  $\{p, q\}$ ,  $\{q, r\}$ , and  $\{p, r\}$  worlds are not as good as  $\{p, q, r\}$  and are incomparable to each other, which means that a  $\{p, q\}$  world is not in any ordering relation with the other two sets of worlds. Finally, the worlds  $\{p\}$ ,  $\{q\}$ , and  $\{r\}$  are the worst among the worlds. The formalization adapted from Portner (2009: 64) follows:

(1.18) For any set of propositions  $P$  and any worlds  $w, v$ :  $w \leq_p v$  iff for all  $p \in S$ , if  $v \in p$ , then  $w \in p$

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<sup>2</sup> Partial ordering is a binary relationship " $\leq$ " over the set  $P$  which is reflexive, antisymmetric and transitive:

- Reflexivity:  $a \leq a$
- Antisymmetry: if  $a \leq b$  and  $b \leq a$  then  $a = b$
- Transitivity: if  $a \leq b$  and  $b \leq c$  then  $a \leq c$

The definition in (1.18) states that any proposition in  $P$  that is true in  $v$  is true in  $w$  as well, and because  $w \leq_s w$ , the order is reflexive (see footnote 2);  $w$  is either highly ranked or equally ranked as  $v$  (Portner 2009). Portner (1998, 2009) also noted that the ordering can be more complex when there are multiple sets of “best” worlds in which we have a set of worlds  $g(w) = \{p, q, r\}$  and  $\{p, q\}$  are incompatible. The incompatibility of  $\{p, q\}$  creates two sets of “best” worlds as we can have the ordering  $w_{pr} \leq_{g(w)} w_p$  and  $w_{qr} \leq_{g(w)} w_p$  but not  $w_{pq} \leq_{g(w)} w_p$ . Thus, the partial ordering (a reflexive, antisymmetric, transitive binary relation) that the conversational background induces on a set of propositions complexifies the definitions of modal operators.

Another issue in the ordering develops when the set of possible worlds  $P$  is infinite, which implies that there is always a better world for every possible world in the set. Assume a scenario in which you always want to succeed in every endeavor, and regardless of how successful you imagine yourself to be, you accept nothing other than success. Then, the bouletic ordering will look like this:

- (1.19)  $g(w) =$
- a.  $p_1 =$  “I want to succeed at least once in my life”
  - b.  $p_2 =$  “I want to succeed at least twice in my life”
  - c. ...
  - d.  $p_n =$  “I want to succeed at least  $n$  times”

According to Portner (1998, 2009) this ordering contains no worlds in which failure is the worst world, but only infinite cases of successful worlds, and he suggested an ordering such as the following:

$$(1.20) \dots \leq_{g(w)} w_n \leq_{g(w)} \dots \leq_{g(w)} w_{p2} \leq_{g(w)} w_{p1} \leq_{g(w)} w$$

In this ordering there are no “best” worlds and this is a case of when we want to order a defined set of worlds. These issues indicate that modals are open to two or even more interpretations that can be paradoxical or trivial, and that the mechanism of the conversational background (ordering  $g$ ) does not limit the readings to less contradictory ones. Thus, our goal is to find a mechanism with which we can determine the relevant background facts for the interpretation of modals while avoiding vagueness and indeterminacy in what is relevant.

To simplify things, Portner (1998, 2009), crediting Stalnaker (1984, 1987), employed the Limit Assumption, a concept that originated in the treatment of counterfactual conditionals (Lewis 1973; Pollock 1976;

Herzberger 1979; Warmbröd 1982). According to the Limit Assumption the following statement is true (adapted from Warmbröd 1982):

(1.21) For every world  $w$  there is at least one accessible world  $w$  closest to the ideal.

Portner (2009) called these worlds Best ( $f(w)$ ,  $g(w)$ ). The Best operator selects the most ideal worlds from the set of worlds  $P$ , given the ordering provided by  $g(w)$ . Portner argued that there are two pragmatic relations in the treatment of propositions: the common ground (CG) which is the set of propositions that participants of a conversation mutually agree to treat as true, and the common propositional space (CPS) which is the set of propositions that the participants in a conversation are mutually aware of. The CG is a subset of the CPS:

(1.22)  $CG \subseteq CPS$

For example, consider the following scenario where you and your friend Maria talk about John, a common friend of yours, and a possible visit to him. Then, the CPS set includes the following propositions that the participants, you and Maria are aware of: *it is a holiday*, *the weather is bad*, and *John usually chooses to spend holidays indoors when the weather is bad*. The CG set includes the following modal propositions which are also assertions that the participants mutually agree to treat as true: *John might be happy if he spends time with us*, *we might catch up with John at his house on a bad day like this*. Thus, the modal expressions belong to the wider set of the CPS (see 1.22). But there is more to the assertion of a modal expression.

The assertion of a modal structure of type  $M(\phi)$  performs two speech acts. First, the modal proposition  $M(\phi)$  that is added to the CG contributes truth-conditional content to the proposition it is in. Second, the prejacent proposition  $\phi$  is added to the CPS and is considered to serve an evidential-like function (see chapter 3). This function imposes restrictions on a modal's conversational background and determines the ordering source. This is done via a selection function  $cg$  (common ground) (adapted from Portner 2007a, 2009):

(1.23) Where  $\psi$  = unmodalized proposition (the prejacent), and,  
 $\phi$  = modal proposition, then  
 $\langle CPS, cg \rangle + M(\phi) = \langle CPS', cg' \rangle$ , where  
 $CPS' = CPS \cup \{ \llbracket \psi \rrbracket^{c, f, g} \} \cup \{ \llbracket \phi \rrbracket^{c, f, g} \}$   
 $cg' = cg \cup \{ \llbracket \phi \rrbracket^{c, f, g} \}$

A conversation consists of the pair CPS and the selection function  $cg$ , which selects those members of the CPS that are mutually presupposed by the participants. When a modal proposition is contributed to the conversation it updates the CPS and the  $cg$ :  $\langle \text{CPS}, cg \rangle + M(\phi) = \langle \text{CPS}', cg' \rangle$ . Specifically, the  $\text{CPS}'$  is the union of two propositions: the modal proposition  $\{\llbracket \phi \rrbracket^{c, f, g}\}$  (an assertion added to the CPS) and the unmodalized proposition (the prejacent)  $\{\llbracket \psi \rrbracket^{c, f, g}\}$ . The updated  $cg'$  consists of the  $cg$  and the modalized proposition  $\{\llbracket \phi \rrbracket^{c, f, g}\}$ . In other words, there are two propositions that are added to the CPS: an assertion (contributing a speech act) and a modal one.

According to Portner (2007a): “An utterance which adds one or more propositions to the CPS is felicitous only if *at least one* of these propositions is a complete or partial answer to a question under discussion. Such a proposition is Relevant.” As we are going to see in chapter 3 in more detail Portner’s account of modality as contributing speech acts explains the intrinsic features of modality.

### 3 Conclusions

In this section, I presented the modal structures of Greek that I will investigate, and the thesis I adopt. The first modal structure I will investigate is the set of Greek modal particles including *na* (subjunctive), *an* (conditional), *as* (optative), and *tha* (future) which combine with verbs and produce modal readings. The second modal structure I examine is the set of impersonal modal verbs such as *prepi* ‘it must’, *bori* ‘it is possible’ and *boro* ‘I am able to’.

In this book, I adhere to the thesis that modal verbs are non-veridical operators. The framework in which I develop my thesis is that of Kratzer (1977, 1981, 1991b), and Portner (1997, 2007a, 2009). I analyze modality in Greek, considering that context plays a crucial role in determining its meaning.