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MONICA DEITOS STEDILE MONAWAR

IF THE LIGHTS ARE ON, THIS IS AN EPISTEMIC INDICATIVE CONDITIONAL:

A STUDY ON MODALITY

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'No Man is an Island'
(John Donne)

No man is an island entire of itself; every man
is a piece of the continent, a part of the main;
if a clod be washed away by the sea, Europe
is the less, as well as if a promontory were, as
well as any manner of thy friends or of thine
own were; any man's death diminishes me,
because I am involved in mankind.
And therefore never send to know for whom
the bell tolls; it tolls for thee.

IF

Rudyard Kipling

If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise:

If you can dream—and not make dreams your master;
If you can think—and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat those two impostors just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;
If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: 'Hold on!'

If you can talk with crowds and keep your virtue,
Or walk with Kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And—which is more—you'll be a Man, my son!

ABSTRACT

This dissertation aims to discuss current Kratzerian approaches on modality and a few of its related features while contextualizing them ontologically as well as illustrating them with the analysis of Brazilian Portuguese epistemic indicative conditionals. This work consists of three chapters arranged interdependently. The first chapter provides ontological foundations concerning language and its connections with thought, mind, evolution and the world. Possible worlds theory, as well as knowledge and belief are also adressed in this chapter. Modality is approached as a phenomenon of the mind that is expressed in natural language in many ways, one of them, conditionals, is the focus of the analysis of this work. Chapter two concerns the formal approaches to the semantic analysis of modality in natural language, following the framework proposed by Kratzer (1977, 1979, 1981, 1986, 1991, 2012) with added discussions concerning evidentiality, epistemic modals, context and temporal and aspectual relations. Chapter three discusses the notions adressed in the previous chapter concerning their application in the analysis of Brazilian Portuguese epistemic indicative conditionals. This work seeks to provide theoretical improvements to the analysis of modality in natural language, as well as to expand the formal linguistic analysis of modality in Brazilian Portuguese.

Keywords: Modality. Epistemic. Indicative Conditional. Brazilian Portuguese.

RESUMO

Esta tese busca discutir abordagens Kratzerianas atuais da modalidade e algumas de suas características relacionadas enquanto contextualizando-as ontologicamente, bem como ilustrando-as com a análise dos condicionais indicativos epistêmicos do português brasileiro. Este trabalho consiste em três capítulos organizados de forma interdependente. O primeiro capítulo fornece as fundações ontológicas a respeito da linguagem e as suas conexões com o pensamento, a mente, evolução e o mundo. A teoria de mundos possíveis, bem como conhecimento e crença são abordados nesse capítulo. Modalidade é tratada como um fenômeno da mente que é expresso em linguagem natural de várias formas, uma delas, condicionais, é o foco da análise nesse trabalho. O capítulo dois trata das abordagens formais à semântica da modalidade em linguagem natural, seguindo o arcabouço proposto por Kratzer (1977, 1979, 1981, 1986, 1991, 2012) acrescido de discussões acerca da evidencialidade, modais epistêmicos, contexto e relações temporais e aspectuais.O capítulo três discute as noções abordadas no capítulo anterior em relação as suas aplicações na análise dos condicionais indicativos epistêmicos em português brasileiro. Esse trabalho busca fornecer melhorias teóricas à análise da modalidade em linguagem natural, bem como expandir a análise linguística formal da modalidade em português brasileiro.

Palavras-chave: Modalidade. Epistêmico. Condicional Indicativo. Português Brasileiro.

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DISSERTATION OVERVIEW

This dissertation seeks to discuss current Kratzerian approaches on modality and a few of its related features while contextualizing them ontologically as well as illustrating them with the analysis of Brazilian Portuguese epistemic indicative conditionals. As one of the less represented languages within formal linguistics – especially concerning modality – this dissertation, alongside works by Pires de Oliveira (2014), and Pessotto (2014) aims to serve as a reference for investigations concerning how BrP modality works in general, also providing starting points for discussions concerning different modal flavors, modal force, modals with and without duals, interaction of tense and aspect, evidentiality and context. Ultimately, this dissertation is not a conclusive work on this topic, but sets the groundwork for further development and investigation of the intricacies within BrP modality, providing also insights into theoretical frameworks that are currently being applied and developed for such analyses and cross-linguistic investigations. The particular discussions on overt modal operators, the epistemic/evidential debate and the delimitation of context benefit current approaches in their search for better parameters of analysis.That way, BrP modal mapping as well as enhancing explanatory competence of current modal theories are natural consequences of this work.

Chapter One – An ontological introduction – deals with concepts developed within philosophy of language as well as formal semantics that, directly or indirectly, serve as theoretical background for Kratzer's work on modality. Firstly, I introduce the notions of internal language, subjectivism and possible worlds, which form the ontology for the theoretical work done on modality in natural language that is assumed for the analysis I illustrate in the third chapter. Afterwards, essential notions of modal logic and modal semantics that are relevant for the aim of this dissertation are briefly outlined, as well as the possibility *versus* necessity duality in terms of existential and universal quantification. Finally, relevant notions concerning knowledge and belief are articulated so that Kratzer's and other authors' convergent works on (epistemic) modality in natural language can be discussed in the following Chapter.

Chapter Two – Modality and Conditionals –isdivided in two Parts. Part One deals with the theoretical tools for the analysis of conditionals in a way that funnels the theoretical framework so that, in the end, only the tools for the analysis of epistemic indicative conditionals remain on the center stage. At first, essential ideas regarding what conditionals are consisted of are explored, following, among others, Lewis (1973, 1975, 1976, 1979, 1986, 1996), Stalnaker (1968, 1975, 1978, 1981, 1984) and Kratzer (1977, 1979, 1981, 1986, 1991, 2012). I explore notions such as conditionals as units quantifying over possible worlds, the restrictor approach to the *if*-clause, the adoption of the Limit Assumption and its consequences, as well as how they stand concerning truth and assertability conditions. After that, Part Two tackles structural and semantic issues, and topics such as what indicative conditionals are and how to treat covert and overt modalization within such conditionals. The definition of epistemic regarding knowledge and the relationship between epistemic modals and evidentials are discussed. Following that, a brief discussion on context, a widely mentioned notion that is sometimes underdetermined regarding its role in the interpretation of modality, in particular here concerning indicative epistemic conditionals, is proposed. Finally, tense and aspect as features that alter the final reading of the modal within the conditional are taken into consideration, following the work of Condoravdi (2001) concerning modal temporal orientations. These distinct points are going to serve as the backbone for the illustrative analysis of this type of conditional in Brazilian Portuguese in the following Chapter.

Chapter Three – Brazilian Portuguese Epistemic Indicative Conditionals – mirrorsthe previous Chapter. As the backbone of the analysis has already been presented, the tools that have been used in the analysis of modality mainly in English (with few cross-linguistic exceptions) are then applied in the examination of indicative epistemic conditionals in Brazilian Portuguese. Consequently, a two-way discussion takes place: the authors' impressions and findings concerning English are contrasted with the ones for BrP, as well as their theoretical assumptions about how to approach this topic in general.

CHAPTER ONE – AN ONTOLOGICAL INTRODUCTION

INTRODUCTION

As mentioned in the overall introduction to this work, it is divided in three chapters. This first Chapter aims to provide an ontological foundation for the subsequent Chapter, which provides the theoretical support and discussions for the analysis presented in Chapter Three. In this Chapter, I seek to make explicit connections that are already present within works such as Kratzer's (2012), such as language and thought, the mind and the world, etc., but that have not always been explicitly addressed by the author. Other connections are here proposed by me in order to clarify notions that have been used in formal semantics but are in fact borrowed from philosophy, such as knowledge and belief. The aim of this Chapter – or better, the motivation for its existence – is to contextualize and discuss notions that sometimes seem to have been treated solely as tools or taken for granted in formal semantics frameworks.

This Chapter begins with a discussion of language, philosophy and evolution within the biolinguistic approach, followed by connections concerning language, thought and the world. After that, the phenomenon of modality is discussed, in connection to its evolution, thought and language. Finally, possible worlds' theory is outlined as discussed by Lewis and Stalnaker, as well as the authors' views on knowledge and belief.

PART ONE - LANGUAGE, PHILOSOPHY AND EVOLUTION

1   LANGUAGE AND THE BIOLINGUISTIC APPROACH

Chomsky, in the preface for the third edition of his celebrated Language and Mind (2009), states that "the dominant approach to questions of language and mind in the 1950s was that of the behavioral sciences." With his generative approach to language and grammar, conceptions of language, acquisition, thought and evolution have been challenged and improved upon, as well as given room to bear other theoretical perspectives that do not subscribe to a behaviorist approach. According to his framework, the focus of linguistic investigation should no longer be human behavior, but, instead, the factor in human intelligence that gives language its creative aspect, the ability it has to engender itself into an infinite amount of combinations from a finite set of elements (following Humboldt's argument on the fact that "the speaker makes infinite use of finite means" (Chomsky 2009: 15)).

This shift from behaviorism has made possible the emergence of what Chomsky calls the "biolinguistic approach" (2009: vii), which has as an object of investigation "the internal cognitive systems that enter into action and interpretation, and, beyond that, the basis in our fixed biological nature for the growth and development of these internal systems." (2009: viii). Humans are, therefore, genetically predisposed to acquire language, possessing biological principles that, in their turn, account for the growth and development of the aforementioned language-related cognitive systems. Chomsky calls the theory of the genetic basis for language acquisition Universal Grammar (UG) and grammars, I-languages.

The concept of Universal Grammar has been remodeled from its traditional notion into a new usage, in order to amplify the descriptive (at the level of particular grammars) and explanatory (at the level of Universal Grammar) adequacy aimed at with this investigation program. In the past, one could perhaps elaborate the notion of UG as if it were itself the set of principles contained in all known languages, the black box of human languages. In this remodeled framework, cognitive systems are "organs of the body, primarily the brain [...]" and

they "enter into activities traditionally regarded as mental: thought, planning, interpretation, evaluation, and so on." (2009: viii). It is then possible to say this approach places language as a natural phenomenon, no longer an abstraction related only to whims of the "mind" as a manifestation of behavior. As cognitive systems are by nature grown and developed according to their principles, language, conclusively, should, in this perspective, also be a genetically-based system with its own principles. These principles "are those of internalized language (I-language) that the person has acquired" (Chomsky 2009: viii) and, according to Chomsky, such principles, along with the UG, are also the focus of linguistic research, which, among other endeavors, "seeks to discover true theories of particular I-languages (grammars)". Finally, the I-language is formulated as a "set of rules and principles from which the expressions of the language can be derived, each of them a collection of instructions for thought and action." The child unconsciously selects the I-language from the poor input they are exposed to, given the innate ability and propensity towards the acquisition and development of language. The distinction between the study of UG and that of I-language, can, therefore, be summarized by the following argument by Chomsky himself (2009: 24):

> At the level of particular grammar, he [the researcher] is attempting to characterize knowledge of a language, a certain cognitive system that has been developed – unconsciously, of course – by the normal speaker-hearer. At the level of universal grammar, he is trying to establish certain general properties of human intelligence.

Due to the affirmations presented above, it is possible to call this approach naturalistic and internalist, as well as to affirm that by studying and analyzing language and its structure one can also in some way contribute to studies regarding human intelligence.

The present study aims to, at the level of a particular grammar – in this case, Brazilian Portuguese – characterize and analyze a type of conditional proposition, the epistemic indicative one, in order to, perhaps, while better understanding the inner workings of BP grammar in terms of meaning, to also provide input at the level of universal grammar and current discussions on conditionals and thought processes. Even though the analysis that figures here is not essentially syntactic, it does concern processes that take place within the

conceptual-intensional system, and formal semantics is the way towards interfacing with it. I do not ignore syntax or the fact that it is also essential to this analysis. I do, however, make the methodological choice of approaching these structures from a formal semantics standpoint. The connections that figure in this Chapter concerning the mind, evolution, language, modality, knowledge and belief are not innovatively proposed by me, and are on their own quintessentially justified by our rationality, for they are and have been, since human language came to be, present within ourselves. I have only sought to make them explicit and methodologically coherently approached in this work. For the same reasons of methodological coherence, Chomsky's approach to the faculty of language features here, due to its ontological foundations and its perspective on language, human reasoning, and its connection to the world, proposing a solid contextualization of this work within modern linguistics.

2   LANGUAGE AND MIND, THOUGHT AND THE WORLD

Regarding the relationship of language with human intelligence, Chomsky calls upon Descartes, who, according to the author, "argued that the only sure indication that another body possesses a human mind, that it is not a mere automaton, is its ability to use language in the normal way (…)." (2009: 6). This 'normal way', according to Chomsky, would be exactly the creative aspect of language use that seems to be particular to humans, in a way that it is possible for completely new thoughts and expressions to be formulated and understood (we can distinguish 'normal use of language' from ravings of mad men and output from computers, for example). Humans are able to invent and say things they have never heard or learned; to talk about situations that have never or will quite possibly never take place; to create with language different worlds and beings that have never been discovered or conceived. This creativity of language can be found in all humans, no matter their different backgrounds, education, social class, race, etc., for it is biological and pertaining to humans as "a species-specific human possession". (Chomsky 2009: 9). This 'normal way' of using language, says the author (2009: 11), is not only

> innovative and potentially infinite in scope, but also free from the control of detectable stimuli, either external or internal. It is because of this freedom from stimulus control that language can serve as an instrument of thought and self-expression, as it does not only for the exceptionally gifted and talented, but also, in fact, for every normal human.

Due to this intricacy between language and thought, the author suggests that explanatory hypotheses should be made concerning the nature of language so that, eventually, hypotheses concerning the nature of human thought can be elaborated.

It is necessary, however, to take one step back from the obvious and the familiar – the processes that are taken for granted in relation to human thought and language. It is not within our cognition's grasp to access the underlying

mechanisms of language, the "chain of operations that relate the mental structures expressing the semantic content of the utterance to the physical realization" (Chomsky 2009: 22). Due to that, in order to be able to elaborate explanatory theories, one must start by trying to determine the systems of rules and their governing principles. Introspection is thus ruled out as a possible means of accessing the underlying abstract forms and rules that allow humans to acquire and develop language, and the structural analyses of produced utterances without aiming at underlying processes does not reach explanatory adequacy sought in relation to human competence in terms of language.

According to the author (2009: 62), these underlying processes, constitutive of an abstract system, the generative grammar, would in turn provide an explanation of the

> Humboldtian idea of "form of language" […] that constant and unvarying system of processes underlying the mental act of raising articulated structurally organized signals to an expression of thought.

Such a grammar defines a language in the Humboldtian sense, namely as a "recursively generated system, where the laws of generation are fixed and invariant, but the scope and the specific manner in which they are applied remain entirely unspecified" (2009: 62).

In this view, it is possible to say that there is "an underlying structure of grammatical relations and categories, and certain aspects of human thought and mentality are essentially invariant across languages" (Chomsky 2009: 66). And it is concerning this 'underlying structure of grammatical relations and categories' that this work centers itself upon, in order to contribute to ongoing debates that aim at better descriptions and explanations concerning the phenomenon of modality, assumed as one aspect of human thought and mentality that is 'essentially invariant across languages'. Due to that, the study of conditional sentences and their cross-linguistic similarities and differences in terms of structure would be a very limited endeavor, considering how much deeper one must go into more abstract concepts of language, thought and mind in order to fully attempt to describe and explain the phenomenon more adequately. For the same reason, it is imprudent to use Chomsky's theory of grammar as an assessment tool for

structures without going deeper into it, and recognizing the philosophical and methodological matters that have always influenced the generative approach. An analysis of structures produced by speakers would fit into an approach that the author refers to as "observed use of language – actual performance", in which "extralinguistic beliefs concerning the speaker and the situation play a fundamental role in determining how speech is produced, identified, and understood." (2009: 102). This distinction is relevant, once the present work does not concern itself with performance, but indeed with competence, as the author defines it, "the ability of the idealized speaker-hearer to associate sounds and meanings strictly in accordance with the rules of his language" (2009: 103). It is necessary to clarify that data from performance is going to be used to study competence; however, performance itself involves a multitude of other systems and, because of that, it is methodologically reasonable to primarily isolate competence as an object of investigation.

The concepts of Universal Grammar, I-language, competence, performance and language are here used with the same internalist and rationalist approach adopted by Chomsky. It is in order to shed more light on the phenomenon of modality as a language process rooted in more complex, mental processes that this approach has been adopted and, on account of that, it is necessary to further explore what is the methodology adopted by Chomsky in his program regarding mind, thought and evolution of language. The relationship between language, mind and thought in this framework is going to be explored in the paragraphs that follow; evolution of language is going to be the subject of the following section.

Chomsky states that linguistics and philosophy do have more in common than not, and affirms that "the methods and concerns of linguists and philosophers are similar in so many respects that it would be folly, I believe, to insist on a sharp separation of these disciplines" (2009: 143). The insights achieved by one should not be ignored by the other, and that is precisely the attitude Chomsky himself has in relation to philosophy's insights on matters related to language, mind and thought. In this work, this relationship is clearly stated – Kratzer's framework for the analysis of modality in natural language takes from modal logic and from the works of Lewis, deeply rooted in philosophical objects of the mind and the world –

or worlds, for that matter. Likewise, the opposite is true, and Chomsky also states that the insights provided by Linguistics on the evolution and the development of language can be of service in replying to some philosophical questions related to how humans acquire knowledge, how language shapes thought or vice-versa, among others. On this, he (2009: 152-3) states that

> if we wish to determine the relevance of linguistics to philosophy, we must investigate the conclusions that can be established concerning the nature of language, the ways in which language is used and understood, the basis for its acquisition.

As Chomsky has explored the Humboldtian concept of 'form of language' and the capacity for its speakers to 'make infinite use of finite means', he has also openly adopted views on knowledge, mind and language dating back to Descartes and Kant. In general terms, the former, responsible for the rationalist take of the biolinguistic approach, contributed to the generative methodology with his ideas relating human intelligence to language, and the perception that all humans, regardless of education and other variables, possess language, and that it is species-specific. Descartes developed the idea that scientific research should differ itself from common knowledge or ordinary problem-solving, making instead elaborations on parts or elements before trying to cope with the whole; devising theories based on simple principles, weeding out irrelevant factors. One cannot hope to find the answer to everything 'in the world' or 'outside one's head', but actually from abstractions and awareness of the limitations of one's own cognition and powers of introspection. Descartes' contributions are indirect and methodological but nonetheless essential.

Kant, with his perspectivism, allows for a linguistic approach to language in terms of internal processes and for the notion of experience as modeled by the mind, and not without mediators (Chomsky 2009: 80):

> […] it seems that knowledge of a language – a grammar – can be acquired only by an organism that is "preset" with a severe restriction on the form of grammar. This innate restriction is a precondition, in the Kantian sense, for linguistic experience, and it appears to be the critical factor in determining the course and result of language learning.

According to Chomsky (2009: 87), this innate restriction is then responsible for modeling the linguistic experience, allowing the human being to acquire and develop a language. By attempting to study this innate restriction and its principles, the author affirms research is getting closer to being able to elaborate on "the highly specific ways of interpreting phenomena that are, in large measure, beyond our consciousness and control and that may be unique to man". It is by acknowledging these restrictions and inaccessibilities that the generative methodology subscribes to a Kantian view of experience as molded by the mind, as language acquisition and development are also molded by the Universal Grammar and, perhaps one could say, the fact that it is not possible to consciously access this knowledge of language (often called linguistic competence) that all humans have through introspection is also coherent with Kant's perspectivism. Such restrictions and inaccessibilities determine a very specific form of language, at the same time that they allow us to use language creatively, expressing thoughts freely in multiple ways. This matter of creativity also becomes problematic to be explained if one subscribes to theories of meaning that aim at establishing 'head-world' relationships (McGilvray In: Chomsky 2009a: 8), especially when taking into consideration insights of internalist and perspectivist approaches.

McGilvray (In: Chomsky 2009a: 1) discussed, in the preface for the third edition of Chomsky's *Cartesian Linguistics*, the fact that, in this perspective, linguistic pursuits should and do take into consideration "what is in the head", instead of what can be seen in people's behaviors and actions, the "outside the head" bit. This approach, as stated before, is "concerned with the principles of operation of a faculty/module, with its internal inputs and outputs, and with how this faculty develops and grows as the organism develops". It is important to highlight, however, that Chomsky's approach has been relabeled "biolinguistic", maintaining its rationalist and internalist essence at the same time it reaches out for a more specifically naturalist approach on language. In sum, as McGilvray states, the "biolinguistic research strategy is just the rationalist-romantics' nativist and internalist strategy updated" (In: Chomsky 2009a: 4).

From the internalist point of view, then, what role does the "external world" play? As pointed out by Chomsky (2009) and McGilvray (In: Chomsky 2009a), one

can extract evidence from how people use language in order to elaborate diagnostics on the internalist approach itself. This evidence, nevertheless, does not suffice to serve as basis for a theory (at this point, the opposition to empiricism makes itself evident), but it does consist of necessary input – no matter how poor or decayed – to trigger the acquisition and development of language. It can also be the linguistic 'experience' (going back to Chomsky's use of the Kantian concept) that demands in specific situations certain concepts to emerge; nevertheless, "the shape and the character of a concept or combinatory system is determined by the mind itself, not the world or community" (McGilvray In: Chomsky 2009a: 15). This way, it is possible to circle back to the idea that our minds shape the world, and not the other way around. McGilvray (In: Chomsky 2009a: 16) continues by evoking Kant's filter of the mind, in that

> the view of the world that one gets through the lens of our innate concepts and combinatory principles owes more to the characters of our concepts and combinatory principles than it does to how the world might be 'in itself'.

Even though these concepts permeate the whole of the present work, this matter in particular is deeply connected to the discussion of the distinction between epistemic modals and evidentials in Chapter Two. Without advancing too much on the discussion, it is relevant to state, nevertheless, that even direct, sensory evidence is not taken here to be objective, or stirring clear from the mind. Evidence reliability can be taken, in this perspective, as a gradable notion within subjective parameters still. Matthewson's (*in press*) and von Fintel and Gillies's (2010) works that are going to be discussed in the following Chapter are compatible with the ontological boundaries that have just been outlined concerning this issue.

Having had established what stand is taken here concerning the relationship of language with thought and the world, it is time to move on to the matter of the evolution of language within this perspective as a final feature in shaping what is here to be understood as language. After this last section, modality is going to be addressed in connection to what has been outlined concerning language: its evolution, its connection to the mind and thought and, finally, to the world.

3   BIOLINGUISTICS AND THE EVOLUTION OF LANGUAGE

Biolinguistics and a few of its main concepts have been approached here before, in order to contextualize this work within the generative framework. As Chomsky (2009: 173) states, "the biolinguistic perspective views a person's language in all its aspects – sound, meaning, structure – as a state of some component of the mind, understanding 'mind' in the sense of eighteenth-century scientists (…)". In the previous section, this 18th century understanding of "mind" was explored. The present section turns to what Chomsky refers as "some component of the mind", the faculty of language.

In the first line of the abstract of the article *The faculty of language: what is it, who has it, and how did it evolve?* Chomsky, Hauser and Fitch (CHF) state that "an understanding of the faculty of language requires substantial interdisciplinary cooperation" (In: Larson et al. 2010: 14). It is thus a very complex subject that demands multidisciplinary perspectives in order to be approached adequately, thus arguing for the nature of the approach adopted here, combining works from philosophy and linguistics that are essentially intertwined. Consequently, the faculty of language and its evolution are going to be addressed within the perspective thus far explored, in order to give basis to the study and analysis of modality in terms of conditional propositions in the Chapter that follows.

As mentioned before, the biolinguistic framework seeks to bring linguistics closer to biology, stating that language and its components are natural phenomena, biological in essence. Following that reasoning, the faculty of language present in humans can be conceived as having the same type of

organization as the genome: "hierarchical, generative, recursive, and virtually limitless with respect to its scope of expression" (CHF, In: Larson et al. 2010: 14).

Once the approximation to biology has been sketched, it is necessary to search for a naturalistic theory of its evolution, of how it came to exist and develop in time. Chomsky and his collaborators adopt the perspective brought forward by Wallace, the co-founder of modern evolutionary theory, which treats the language faculty as "man's intellectual and moral nature". According to Chomsky (2009: 175), that encompasses

> the human capacities for creative imagination, language and other modes of symbolism, mathematics, interpretation and recording of natural phenomena, intricate social practices and the like […].

Having adopted Wallace's perspective, Chomsky and his collaborators clarify that, in order to approach the evolution of language, one must have a clear conception of language itself, for "it is important to distinguish between questions concerning language as a communicative system and questions concerning the computations underlying this system" (CHF, In: Larson et al. 2010: 15). With that, the internalist aspect of Chomsky's approach is strengthened, and the distinction proves itself of methodological use here as well, for modality is here seen firstly as primarily a computational aspect of language within its faculty, and not as part of language as a communication tool. The possibility that human language evolved chiefly not for communication, but that it suffered changes once it was realized as being useful in this sort of activity is also explored by the authors. Due to this, the approach adopted here accepts this possibility and aims to examine the appearance and the development of language prior to its use in communication and further changes. As the authors state, it is possible that "key computational capacities evolved for reasons other than communication but, after they proved to have utility in communication, were altered […]" (CHF, In: Larson et al. 2010: 15).

The authors list three issues that are relevant when theorizing about the evolution of language. First, is it shared with other animals or is it unique to humans? To this, the authors specify that, even though it is possible to say that there are systems of communication among animals (bees dance, chimpanzees grunt, etc.), the "rich expressive and open-ended power of human language (based on humans' capacity for recursion)" is species-specific (CHF, In: Larson et

al. 2010: 16). The second issue concerns the pace in which the evolution of language took place: gradual or saltational? On this, Chomsky agrees with the paleoanthropologist Ian Tattersall, who says that the "invention of language" was "sudden and emergent" and, due to that, it figures in human evolutionary research as Jared Diamond called it, "a great leap forward", as Chomsky (2009: 176) states,

> [...] the result of some genetic event that rewired the brain, allowing for the origin of human language with the rich syntax that provides a multitude of modes of expression of thought, a prerequisite for social development and the sharp changes of behavior that are revealed in the archaeological record, also generally assumed to be the trigger for the rapid trek from Africa, where otherwise modern humans had apparently been present for hundreds of thousands of years.

The third and final issue listed by CHF as relevant when discussing the evolution of language concerns what the authors referred to as "continuity versus exaptation" (In: Larson et al. 2010: 16). Would language have evolved gradually from preexisting communication systems, or would important aspects of it have evolved by exaptation from other functions (the authors quote as examples spatial or numerical reasoning, tool making, etc.)? Chomsky had already discussed this issue in his *Language and Mind* (2009: 184), where he states that it could be possible that this "Great Leap was effectively instantaneous, in a single individual, who was instantly endowed with intellectual capacities far superior to those of others, transmitted to offspring and coming to predominate". Therefore, from this perspective, it is possible to say there could be discontinuity and exaptation from other functions, since adaptation is a gradual, continuous process and, as affirmed by Pievani and Serrelli (2011: 1),

> the stressed particular consequence of exaptation is the possibility of accelerated evolutionary change: it appears that the sudden appearance of complex traits such as 'human consciousness' cannot be explained by gradual adaptation.

In sum, the authors adopt a perspective that suggests the faculty of language (and more specifically, recursion) is unique to humans – it evolved suddenly, in a saltational manner other than gradual, and by exaptation of other systems.

Since numerous aspects of cognition are accessible to language, Chomsky, Hauser and Fitch elaborate a methodological division of the faculty of language in two, a broader conception and a narrower conception. Briefly, the faculty of language in the narrow sense is "the abstract linguistic computational system alone, independent of the other systems with which it interacts and interfaces" (CHF In: Larson et al. 2010: 17). Mainly, the core of the faculty of language in the narrow sense corresponds to recursion, still in the Humboldtian sense of finite elements yielded into infinite arrays (it yields discrete infinity). It is also, according to the authors, what seems to be lacking in other animals' communication systems.

The faculty of language in the broad sense includes within itself the faculty of language in the narrow sense. It combines the latter with

> at least two other organism-internal systems […] "sensory-motor" and "conceptual-intentional" […] [it] excludes other organism-internal systems that are necessary but not sufficient for language (e.g., memory, respiration, digestion, circulation, etc.).

The interaction between the faculties of language in the broad sense and narrow sense happens when the computational system in the faculty of language in the narrow sense (narrow syntax) "generates internal representations and maps them into the sensory-motor interface by the phonological system, and into the conceptual-intentional interface by the (formal) semantic system" (CHF, In: Larson et al 2010: 18). This operation, by which a "discrete infinity of [hierarchically] structured expressions" is yielded, is called Merge. Chomsky proposes then a "strong minimalist thesis", which is "that language keeps to the simplest recursive operation, Merge, and is perfectly designed to satisfy interface conditions." (In: Larson et al 2010: 52).

This interaction between the internal language (the expressions yielded by the faculty of language in the narrow sense) and the interfaces (sensory-motor and conceptual-intentional) could be perceived as symmetrical, if seen from the traditional perspective on language as what links sound and meaning. However, Chomsky (In: Larson et al 2010: 54) affirms this interaction is not symmetrical, there being "mounting evidence that the thought systems are indeed primary" in relation to the sensory-motor systems. It is assumed, then, that the "earliest stage

of language would have been […] a language of thought, available for use internally", being communication not its primary use.

Finally, Chomsky calls upon the words of Nobel laureate François Jacob (1974), affirming that, if the thought systems have been the primary function for language in an internal sense – a language of thought – communication would have been of secondary priority in the evolution and development of language. According to Jacob (1982: 59), what makes language unique is "its role in symbolizing, in evoking cognitive images", in "molding" our notion of reality and yielding our capacity for thought and planning, through its unique property of allowing 'infinite combinations of symbols' and therefore "mental creation of possible worlds".

It is particularly concerning these aspects of language that make it unique, according to Jacob and agreed upon by Chomsky, that the present study bases itself for the inquiry on modality, in general, and on epistemic indicative conditionals, specifically. Furthermore, the delimitation of context proposed in the next Chapter looks towards narrowing it down to the speaker's context – as close as one can get to this "language of thought" – not considering communication or even the existence of others. Likewise, these mentally created possible worlds feature in this Chapter from Lewis's and Stalnaker's works, and are essential in Kratzer's approach to natural language modality in the following Chapter. Our own "notion of reality", our capacities for thought and planning feature constantly in modality, and can be accessed via the analysis of structures such as conditionals. The discussion of the distinction between knowledge and belief that figures later on in this Chapter, as well as the one concerning epistemic modals and evidentials that follows in Chapter Two are intertwined and intrinsically complementary in order to better understand – to better explain – even if just by a tiny fragment, this phenomenon of modality.

And it is precisely modality that the next section discusses, first as a thought-related phenomenon and then as it features in language.

PART TWO- MODALITY

1 EVOLUTION, THOUGHT AND LANGUAGE

The discussion of modality promoted here and in the following chapters is drenched in the concepts developed above, concerning the biolinguistic approach, internalism, and language of thought. Therefore, notions related to external language and perceptions are not approached; one step back is taken in order to explore the I-language mechanisms that come into play, interfacing with the conceptual-intentional systems and how they have evolved and come to be present in language and, perhaps, other cognitive systems. Due to that, as well, the concept of context has been outlined in the following Chapter as more restricted, not involving production features at the level of performance.

In their introduction to *Evolution of Language: Biolinguistic Perspectives* Larson, Depréz and Yamakido (2010: 8) explore the concept of planning and how it could have come to exist in the evolution of man:

> Anticipatory cognition, once acquired, can serve as the backdrop of action planning. It allows one to step away from present circumstances and abstractly project oneself in the not-yet-existent future. Plausibly, it represents a precursor of the language-unique ability for displacement and representation of future possible worlds.

It is this "language-unique ability for displacement and representation of future possible worlds" that is of interest here, and how it relates to thought, perspectivism, internalism and I-language. The authors also call upon Bickerton (1981) and his isolation of this property of speaking of things that are not present to the speaker or to the hearer, this *displacement*, as a "crucial property driving early linguistic evolution" (In: Larson et al. 2010: 12). Bickerton and CHF differ mainly in terms of the acceptance of a gradual evolution of language on Bickerton's side, and a saltational and less selection-driven process on CHF's. What they converge on, among other points, is the uniqueness of the creative aspect of human language.

Going back to the notion of displacement, it features in Hockett's (1960) list of Design Features of Human Language, pointing to the fact that human language goes beyond discussing the *here* and the *now*. Naming entities and referring to them when they are not present is one example of displacement, but not the type that is of interest here. Displacement within what von Fintel and Heim (2010: 3) call *intensional semantics*, "the kind of semantics that models displacement of the point of evaluation in temporal and modal dimensions" is the type of displacement to be investigated here.

Modal displacement takes us to "a world distinct from the actual one, […] a merely POSSIBLE WORLD" (von Fintel and Heim 2010: 2). It can combine itself with other types of displacement – spatial or temporal, for example – and it can also talk about necessities and possibilities within this modal dimension, or about the world of evaluation. Even though modal markers are not necessary for us to discuss possibilities, overt marking of modal displacement has a special role; according to Kratzer[1] (2013: 183),

> markers of modal displacement provide a unique window into the interplay between grammar and other modules of cognition since they share properties with both quantifiers and degree expressions.

For example, such modal displacement has, as one of its background processes, cognitive abilities such as planning. Regarding this ability, it is possible

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[1] Kratzer's framework for the analysis of modality in natural language is going to be discussed in the next Chapter.

to connect modality and conditionals themselves to the point made by Gärdenfors and Osvath (In: Larson et al. 2010: 105), who state that:

> The ability to envision various actions and their consequences is a necessary requirement for an animal to be capable of planning. […] An organism is planning its actions if it has a representation of a goal and a start situation and it is capable of generating a representation of partially ordered set of actions for itself for getting from start to goal. […] planning therefore presupposes an inner world.

The authors have related this idea with evidence collected in digging sites, where artifacts were found in ways that point to future-oriented behaviors, such as burial of heavy tools and weapons in areas where animals would cross during migrations in order to hunt and field dress them faster when the season would come, among others.

Connecting that to language, Kratzer (2013: 192) affirms that

> The factual domain projection can be found in so many subareas of semantics suggests that it is a mechanism that relates to a very basic cognitive ability: a creature's ability to map a part of its own world to a range of worlds representing possible ways that part could be 'extended' to or 'grow into' a complete world.

Going further, Chomsky (In: Larson et al. 2010: 56) comments on imaging studies that have lent "further support to the hypothesis that 'there exists tissue in the human brain dedicated to a function of human language structure independent of speech and sound'". According to this perspective, then, these findings could corroborate the perspective in which evolution of language took place firstly on an internal level, as a language of thought, to later evolve into an external language, depending on other cognitive and biological systems and their corresponding evolution processes. Following this, the author comments that possible questions related to "which aspects of thought might be language-independent" arise, as well as to how these aspects would relate to the faculty of language and its systems. Modality, as pointed out by (Kratzer 2013: 182), can also be language-independent, for "we do not need language to dwell in possibilities: babies do it, baboons do it, they say that even birds do it. We also do not need special words or moods to talk about possibilities".

It is of our concern here to further explore modality in relation to these ideas and, in the course of this work, question the possibility of modality being, at its core, language-independent; reflecting on how it relates to the faculty of language in order to generate numerous expressions that deliver different degrees of possibility or necessity; and how it can pertain to other cognitive systems that have already been considered connected in some way to the language faculty, converging with Kratzer (2014, *website*):

> From the time I started my dissertation work in New Zealand […] I have been interested in context dependent semantic phenomena, in particular tense, modals, conditionals, quantifiers, and attitude ascriptions. One way of looking at this old interest from a more contemporary perspective is to see it as an interest in how the human language faculty interacts with non-linguistic cognitive modules, some of which we may share with other species. The guiding idea behind this research is that most lexical items come with pointers to particular kinds of information that they request to be recruited from other cognitive components. The question is how those pointers are realized in natural languages, what kind of information they recruit, and how that information is ultimately integrated into the computation of meanings.

In sum, a part of the methodological and ontological foundations for the present work's objectives have been succintly explored. Key concepts of the modern generative approach have been discussed, such as UG, I-language, the faculty of language and recursion. However, a theory of language such as the one proposed by Chomsky is drenched in philosophical concepts – such as mind, thought, reality, their relationship to language as an internal property, as well as their relationship to an external language – which cannot be ignored, and are also the reasons why this approach has been adopted even though the present work concerns itself with a semantic analysis other than a purely syntactic one. As a result of Chomsky's move towards an approximation of linguistics with biology, a whole shift of methodology seems to take place and it would not have been coherent to ignore questions of evolution of language and its natural aspects when dealing with phenomena under the scope of biolinguistics.

Next, concepts and works that underlie Kratzer's (2012) framework are going to be discussed, mainly concerning possible worlds and accessibility relations. Moreover, matters of knowledge and belief are going to be approached

in the last section, aiming to provide a foundation for the discussion of epistemic modals and evidentials in the following Chapter.

2 POSSIBLE WORLDS

Kratzer's framework for the analysis of modality in natural language takes from Lewis's (1986, 1998) *possible worlds semantics machinery*, as it is referred by von Fintel (2006: 3). In the paragraphs that follow, the basic notions of this machinery according to Lewis (1986, 1998[2]) and Stalnaker (1976) are going to be outlined.

Work concerning possible worlds can be traced back to Leibniz, who claimed that "the universe – the actual world – is one of an infinite number of possible worlds existing in the mind of God. God created the universe by actualizing one of these possible worlds – the best one" (Stalnaker 1976: 65).

Lewis argues that, converging with basic human intuitions, we all believe things could have been different from how they actually are, perhaps even in countless ways. Ordinary language allows us to paraphrase it, as he points out

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[2] The works chosen to serve as basis for this section are by no means exhaustive on the topics, but have been chosen due to their cohesiveness in treating aspects of his theory that had been developed individually in other works, such as counterparts and quantification, for example. I refer to Lewis (1968, 1973, 1975, 1979b, 1981) concerning discussions that, due to the nature of this work, do not figure here.

(Lewis 1998: 96): "there are many ways things could have been besides the way they actually are", a sentence that is in itself what Lewis calls an *existential quantification*. By saying 'ways things could have been', we admit to the existence of alternatives, and these are what Lewis refers to as *possible worlds*. Worlds do not differ in kind amongst themselves, but in what happens in them, and the actual world is only one of such worlds. What makes it different from the other worlds, then? According to Lewis (1998: 97), it is 'actual' precisely because it is ours – "the meaning we give to 'actual' is such that it refers at any world *i* to that world *i* itself. 'Actual' is indexical, like 'I' or 'here', or 'now': it depends for its reference on the circumstances of utterance, to wit the world where the utterance is located". The thesis that our world is one option among many other worlds, the plurality of worlds, is what Lewis (1986: 2) calls *modal realism*. Following the same indexical line of thought, present time is *present* because it is the time in which we are actually living, among the other possible times of the same kind, *t* times.

Why would one subscribe to such modal realism, then? Lewis's (1986: 3) answer is that this hypothesis is

> serviceable, and that is a reason to think that it is true. The familiar analysis of necessity as truth at all possible worlds was only the beginning. In the last two decades, philosophers have offered a great many more analyses that make reference to possible worlds, or to possible individuals that inhabit possible worlds. I find that record most impressive. I think it is clear that talk of possibilia has clarified questions in many parts of the philosophy of logic, of mind, of language, and of science - not to mention metaphysics itself. Even those who officially scoff often cannot resist the temptation to help themselves abashedly to this useful way of speaking.

According to Stalnaker (1976: 67), possible worlds as described by Lewis do not demand us to subscribe to a metaphysical theory because in our rationality or in our ordinary language we seem to commit to them. Instead, "what appears to be a weighty metaphysical theory is really just some ordinary beliefs by another name. Believing in possible worlds is like speaking prose. We have been doing it all our lives".

The best application for this *possible worlds machinery* is, according to Lewis himself (1986: 5) to modality. And it happens in terms of quantification, such as "possibly there are blue swans iff, for some world W, at W there are blue

swans". "at W", signaling a world, would act as a modifier, mostly restricting the domain of the quantifier.

It has been affirmed before that "there are many ways things could have been besides the way they actually are" amounts to existential quantification, according to Lewis (1998: 96). Existential quantification over the worlds refers to possibilities and necessity calls upon universal quantification – necessity refers to all worlds, and possibility, to some[3]. Modal quantification is, nonetheless, restricted[4] by accessibility relations, such as historical necessity, for example. This accessibility relation concerns worlds that, up to this moment, are identical (even if they may diverge in the next five minutes or much later on)[5] – they are, thus, alternative possibilities for one another, relying on a relationship of similarity. Analogously, individuals within worlds have their alternative possibilities in other worlds, and these counterparts are under the same kind of restriction applied by accessibility relations to worlds – counterpart relations, also involving similarity.

Stalnaker (1976: 67) summarizes four theses that are contained in Lewis's approach to possible worlds. He defends a "more moderate form of realism about possible worlds – one that might be justified by our common modal opinions and defended as a foundation for a theory about the activities of rational agents". I will briefly outline these four theses and Stalnaker's acceptance or refusal of them, alongside his arguments, in order to establish the foundations on which possible worlds are taken from in the subsequent Chapters.

The first thesis, "*possible worlds exist*", can be accepted if taken to be, as Lewis affirmed, as the 'many ways things could have been', but not as worlds such as the actual one. Taking us to thesis two.

Thesis two affirms that "*other possible worlds are things of the same sort as the actual world*" (Stalnaker 1976: 67). Stalnaker claims that this affirmation could have been derived from a misunderstanding between referring to the world as 'actual' and considering its indexicality as pointing to 'actual' as "I and all my

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[3] In the following Chapter I will discuss how these notions have been weakened in Kratzer's framework.

[4] Epistemic is one of the types Lewis (1986: 8) lists as restricted modalities, alongside nomological, historical necessity, deontic and "maybe one or two more".

[5] The matter of historical necessity and future divergence among worlds is going to be discussed following Condoravdi's (2001) approach to the temporal orientation of modals in Chapter Two.

surroundings", or perhaps even "the way things are". It can be argued, according to the author, that "the essential difference between our world and the others is that we are here, and not there" (1976: 69).

Thesis two leads to thesis three, which concerns itself with the indexicality of 'actual', placing it alongside other indexicals like 'I', 'here' and 'now', for example. Stalnaker claims that the problem with this third thesis is that it provides a neutral point of view – each world can be 'actual' if we do not consider a specific perspective in mind and take instead a completely objective, neutral one. In one sense, we go back to perspectivism allied with Stalnaker's (1976: 69) claim that one should recognize that "the standpoint of the actual world *is* the absolute standpoint, and that it is part of the concept of actuality that this should be so", separating therefore the semantic analysis of 'actual' from any other metaphysical analysis that can be ascribed to it. By suggesting this moderate form of realism, consequently, Stalnaker accepts theses one and three, while rejecting thesis two.

Thesis four remains to be discussed, and it claims that "*possible worlds cannot be reduced to something more basic*" (Stalnaker 1976: 67). Regarding this thesis, the author argues that two distinct problems emerge and need to be separated:

> The first is the general worry that the notion of a possible world is a very obscure notion. How can explanations in terms of possible worlds help us to understand anything unless we are told what possible worlds are, and told in terms which are independent of the notions which possible worlds are intended to explain? The second problem is the specific problem that believing in possible worlds and in the indexical analysis of actuality seems to commit one to extreme realism, which (many believe) is obviously false. Now to point to the difference between a way our world might have been and a world which *is* the way our world might have been, and to make clear that the possible worlds whose existence the theory is committed to are the former kind of thing and not the latter, is to do nothing to solve the first problem; in fact it makes it more acute since it uses a modal operator to say what a possible world is. But this simple distinction does, I think, dissolve the second problem which was the motivation for Adams's demand for an analysis.

Adams (1974) argued for a reduction of possible worlds to propositions. Stalnaker (1976: 71) proposes the reverse, "the analysis of propositions in terms of possible worlds", which is the one used in Kratzer's framework for natural language modality. Another fundamental adaptation concerns the necessity and

possibility operators from modal logic when the same notions are to be analyzed in the semantics of natural language.

Necessity and possibility are expressed in classical modal logic via the operators *box* (□) and *diamond* (◊). Despite their efficacy in the realms of logic, as Lewis (1986) affirms himself, such operators are not sufficient to account for the ambiguities and intricacies of ordinary, natural language. The author (1986: 13) claims that human language "has modal idioms that outrun the resources of standard modal logic"; no matter how many extensions and *ad hoc* measures one may take. Moreover, according to Portner (2009: 29), "modal logic does not integrate its ideas about the meanings of modal expressions into a general theory of natural language", and considering that the main goal of the semanticist is, according to the author, "to provide a precise theory of the meanings of modal expressions across languages", yielding descriptions of the facts and explaining "linguistically important generalizations", one must find different ways in which to work with modality within natural language semantics apart from boxes and diamonds[6].

And that is precisely what the work of Kratzer (1977, 1979, 1981, 1986, 1991, 2012) does, as "the most influential incarnation of this idea" (von Fintel 2006: 3), 'this idea' being the use of the possible worlds machinery in the semantic analysis of modality within natural language. An account of the current form of her framework is provided in the next Chapter, rendering the theoretical support for the analysis in Chapter Three.

Finally, before we turn to the linguistic framework *per se*, the concept of 'epistemic', knowledge and belief as discussed by Lewis (1996) and Stalnaker (2006) are going to be presented, for they are also the basis of linguistic debates discussed in the next Chapter.

As mentioned before, Lewis (1986: 27) characterizes an epistemic accessibility relation as one that targets the "content of someone's knowledge of the world", differing it from doxastic accessibility relations, which concern themselves with the speaker's beliefs[7]. The distinction between what is knowledge

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[6] I refer the reader to Lewis (1986) for a more detailed discussion of these operators.
[7] Laca (2014: 77) argues for the elimination of the term 'epistemic' and the extension of doxastic accessibility relations: "Epistemic readings of modals express something about the information state and the beliefs of an epistemic agent -typically the Speaker. They

and what is belief, as well as how they can be related have been widely discussed in philosophy and are not the focus of the present work. However, I will outline Lewis's and Stalnaker's arguments concerning these two concepts and how they interact in terms of modality so that further discussion on this topic in Chapter Two concerning Matthewson's (*in press*) and von Fintel and Gillies's (2010) analyses of evidentials and epistemic modals are contextualized.

3 KNOWLEDGE AND BELIEF

In his *Elusive Knowledge*, Lewis (1996) claims that the apparent abundant and varied knowledge we (humans) all seem to have, concerning all kinds of things, is not necessarily all *knowledge*. One could say, calling upon an "ancient idea", as Lewis (1996: 550) does, that what marks the difference between knowledge and opinion (including true opinion) is justification – it is supported by reasons, then as ascriptions of knowledge would be context-dependent due to the fact that "standards for adequate justification" would also be context-dependent. However, Lewis does not subscribe to the idea that justification is what makes opinions into knowledge – it is not sufficient for one to have reasons and then declare something justified, therefore worthy of being referred to as 'known'.

At the same time, Lewis claims that justification is not always necessary; we gain knowledge by means that are not justified by non-circular arguments, such as through our perception, memory[8] and testimony. Or we sometimes do not even know how we know something – it might be that "we once had evidence, drew conclusions, and thereby gained knowledge; now we have forgotten our

operate on ignorance alternatives about what is or was the case, and not on the ways eventualities may comply or not with what is necessary or possible in view of a body of social norms, or preferences, or laws of nature. Given the fundamental link they entertain with the beliefs of an individual, they would be more appropriately called doxastic rather than epistemic, but the latter term is by now too well established to be changed".

[8] In the present work, I correlate Lewis's concept of 'memory' with 'common knowledge' in the approach to evidentials and epistemic modals in Chapter Two.

reasons, yet still we retain our knowledge[9]" (Lewis 1996: 551). This particular point of Lewis's discussion is highly harmonious with what is going to be discussed in Chapter Two concerning the evidence sources and their trustworthiness, as well as general knowledge.

Lewis's conclusion on the matter is to break the connection between justification and knowledge. In order to do that, he first proposes that knowledge must be infallible: "subject *S knows* proposition *P iff P* holds in every possibility left uneliminated by *S*'s evidence; equivalently, *iff S*'s evidence eliminates every possibility in which not-*P*" (1996: 551). It does not matter who *S* is or what his evidence is. The possibilities can be about how the whole world is, but can also be *de se et nunc*, they do not need to be limited to what is 'real', or only 'epistemic'. The author (1996: 552) claims – "*S*'s epistemic possibilities are just those possibilities that are uneliminated by *S*'s evidence"[10].

What does it mean, however, to say that a possibility is uneliminated? It is here as well that Lewis's claims converge with Matthewson's and von Fintel and Gillies's as shown in the next Chapter. Uneliminated possibilities are such "*iff* the subject's perceptual experience and memory in *W* exactly match his perceptual experience and memory in actuality" (Lewis 1996: 553). If perceptual evidence or memory eliminate a possibility, it is because the existence of the experience or memory actually conflicts with *W*. It is not about the propositional content of the experience being false – which can happen, but about the experience itself – the experience or memory's existence[11].

For the sake of domain limitation, as well, there are possibilities that are ignored by us as irrelevant to the matter at hand. Lewis describes three rules concerning what possibilities cannot be ignored: the Rule of Actuality, the Rule of Belief and the Rule of Resemblance.

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[9] This approach figures again in Matthewson's (*in press*) discussion of how evidence can in time become established knowledge.

[10] This specific point in Lewis's argument can be connected to von Fintel and Gillies's (2010) argument concerning kernels and their relationship with evidence and knowledge, seen in the following Chapter.

[11] Analogously, Matthewson (*in press*: 15), when discussing epistemic modals and their connection with evidence, as it figures in Chapter Two, argues: "[…] the reason epistemic modals have appeared to be about knowledge is perhaps simply because it is very normal to infer something about the speaker's knowledge from their assertions about their evidence".

The Rule of Actuality concerns the fact that actuality "may never be properly ignored" (Lewis 1996: 554). The actuality in discussion is ours, no matter if we are ascribing knowledge to someone else, they technically are in the same actuality, provided that we exclude subject and time from the possibilities. We can even ascribe knowledge to counterparts in different possible worlds. In the end, Lewis (1996: 555) affirms that "it is the subject's actuality, not the ascriber's, that never can be properly ignored". It is *S*'s knowledge that needs to be attended, if *S* ignores possibilities X and Y, we must also ignore them; conversely, if he can think of far-fetched yet uneliminated possibilities, we must do the same.

The Rule of Belief states that, despite if one is right or wrong in believing a possibility, such cannot be properly ignored. It is necessary, however, to insert a gradable notion of belief in this case – the belief needs to be sufficiently strong for the possibility to remain uneliminated. However, depending on context, even a low degree of belief strength could be considered high enough – thus eliminating few possibilities.

The Rule of Resemblance specifies that possibilities can resemble one another, rendering the fact that one cannot be ignored if it holds resemblance to an uneliminated possibility. If the subject's evidence does not eliminate a possibility, for example, similar evidence about another possibility also makes it uneliminated. However, the resemblance needs to be salient enough; consequently, "either every one of them [the possibilities] may be properly ignored, or else none may" (1996: 557).

Concerning what may be properly ignored, Lewis (1996: 558) formulates the Rule of Reliability. It is possible to say that possibilities concerning information transmitted to us via perception, memory and testimony are rather reliable. Their failure would thus allow us to potentially properly ignore a possibility. Vision, for example, is very reliable, and we tend to presuppose that it rarely fails.

Two Rules of Method follow. Firstly, we presuppose that samples are representatives – which can be defeasible, nonetheless. We also tend to presuppose that "the best explanation of our evidence is the true explanation" (Lewis 1996: 558). Secondly, according to the Rule of Conservatism, we can adopt what is usually and mutually expected of us in terms of the presuppositions

that are shared, what is common knowledge, and the possibilities that are known to be commonly ignored.

Lewis's final rule, the Rule of Attention, is more trivial: "a possibility not ignored at all is *ipso facto* not properly ignored" (1996: 559). Particular contexts feature different possibilities, so one possibility can be properly ignored in a context and then move on to be uneliminated in a different context.

Such knowledge as the one molded by these rules is elusive, according to Lewis (1996: 562); it takes place by presupposing and ignoring, but it is nonetheless still knowledge even if of anonclaimable sort – "presuppositions alone are not a basis on which to *claim* knowledge". However, knowledge that is based more on the elimination of not-*P* possibilities is better than knowledge that bases itself on ignoring possibilities – if we start attending to previously ignored possibilities, knowledge is less stable due to our shift in attention.

Furthermore, concerning science and knowledge, the author (1996: 563) states that

> the serious business of science has to do not with knowledge *per se*; but rather, with the elimination of possibilities through the evidence of perception, memory, etc., and with the changes that one's belief system would (or might or should) undergo under the impact of such eliminations.

In the end, Lewis (1996: 566) claims that the cardinal principle of pragmatics – "interpret the message to make it make sense" – overrides every one of the rules he mentions. As I do not cross over into pragmatics in this work, but remain only as context-dependent as semantically possible, Lewis's rules can still suffice in paving the way to the discussions in the following Chapter. Last, but not least, I turn to Stalnaker's arguments on knowledge and belief, based on his *On Logics of Knowledge and Belief* (2006).

Starting off by contextualizing his approach, Stalnaker (2006: 169) affirms that "formal epistemology that develops a logic and formal semantics of knowledge and belief in the possible worlds framework began with Jaakko Hintikka's book *Knowledge and Belief*, published in 1962". Around the same time Hintikka published his book, Edmund Gettier also published his refutation of the analysis of knowledge as justified true belief, in 1963. Both works contributed immensely to renew discussions concerning knowledge and belief, and have been extended and

adapted by many. The particular inner-workings of their analyses, even though by now outdated, provide insight to the general strategies by them devised, which still can provide insights into epistemological questions, according to Stalnaker (2006).

The post-Gettier project of defining knowledge seeks to "clarify the abstract relationship between the concept of knowledge and some of the other concepts (belief and belief revision, causation and counterfactuals)"[12], using tools provided by formal semantic frameworks. Taking that into consideration, Stalnaker (2006) aims to establish a few connections that are present between the formal semantics frameworks and such notions as knowledge and belief. In order to do so, the author firstly discusses the basis of Hintikka's work (2006: 171):

> The basic idea that Hintikka developed, and that has since become familiar, was to treat knowledge as a modal operator with a semantics that parallels the possible worlds semantics for necessity. Just as necessity is truth in all possible worlds, so knowledge is truth in all epistemically possible worlds. The assumption is that to have knowledge is to have a capacity to locate the actual world in logical space, to exclude certain possibilities from the candidates for actuality. The epistemic possibilities are those that remain after the exclusion, those that the knower cannot distinguish from actuality. To represent knowledge in this way is of course not to provide any kind of reductive analysis of knowledge, since the abstract theory gives no substantive account of the criteria for determining epistemic possibility.

The key point for this type of approach is to establish the features of the epistemic accessibility relation: it needs to be reflexive (necessary for knowledge to imply truth), transitive (knowing implies knowing that one knows), but not introspection (knowing that one lacks knowledge that one lacks). Conclusively and respectively, Hintikka accepts the KK and the S4 principles, while rejecting the S5 principle. His main concerns in his earlier models were directed at a single knower, not multiple ones as later works of epistemic models sought to address. Nonetheless, Hintikka's model has the potential to be extended to different knowers through generalization. What would be necessary, in this case, according to Stalnaker (2006: 174-5) would be

> […] a separate knowledge operator for each knower, and in the semantics, a separate relation of epistemic accessibility for each

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[12] Stalnaker (2006: 170).

> knower that interprets the operator. One can also introduce, for any group of knowers, an operator for the *common* knowledge shared by the member of the group, where a group has common knowledge that ɸ if and only if all know that ɸ, all know that all know that ɸ, all know that all know that all know, etc. all the way up. The semantics for the common knowledge operator is interpreted in terms of an accessibility relation that is definable in terms of the accessibility relations for the individual knowers: the common-knowledge accessibility relation for a group G is the transitive closure of the set of epistemic accessibility relations for the members of that group.

This extension of Hintikka's model is not part of the present work due to the aforementioned fact that here I do not take into consideration other knowers except for the speaker; however, in future work, this extension is going to be applied, and so its mention here is of relevance.

When discussing knowledge and belief, Stalnaker (2006: 179) affirms that the former implies the latter, and a strong concept of belief such as the one he pursues, in terms of subjective certainty, leads to the notion that when one believes, this implies the belief that one knows. His logic of knowledge and belief include, therefore, the principles of positive introspection, negative introspection, knowledge implies belief, consistency of belief and strong belief. Such combined logic, according to him (2006: 179), yields "a pure belief logic, KD45, which is validated by a doxastic accessibility relation that is serial, transitive and euclidean".

The outcome of this convergence – when defining belief in terms of knowledge – to the semantics would be that "one can define a doxastic accessibility relation for the derived belief operator in terms of the epistemic accessibility relation" (Stalnaker 2006: 181). Supposing the epistemic accessibility relation and a relation of equivalence, Stalnaker's relations of subjective indistinguishability, knowledge and belief collapse into one.

The extension of a doxastic accessibility relation (D) to an epistemic one (R) can be done in two ways: minimally or maximally. Minimally, "the set of epistemically possible worlds for a knower in world x will be the set of doxastically accessible worlds, plus x" (Stalnaker 2006: 186). This implies adopting the analysis of knowledge as true belief. Even though this extension has its defenders, the author claims that it is necessary to impose stronger conditions on knowledge, moving on to the maximal extension – which "would not provide a plausible account of knowledge in general, but it might be the appropriate idealization for a

certain limited context". This is due to its weaker logic in comparison to the one in the minimal extension, it allows one "to know things that go beyond one's internal states only when *all* of one's beliefs are correct" (2006: 186-7). The maximal extension follows from both positive and negative introspection conditions "that for any possible world *x*, all worlds epistemically accessible to *x* will be subjectively indistinguishable from *x*" (2006: 186).

How about finding a definition of such accessibility relations somewhere between the minimal and the maximal extensions? Stalnaker (2006: 187) affirms that, in order to do that, one needs to enrich the theoretical tools available. One possibility of doing so would be to add a theory of belief revision, "and then to define knowledge as belief (or justified belief) that is stable under any potential revision by a piece of information that is in fact true[13]". This way, there would be a prior belief state, a function taking a proposition – new evidence – and then a posterior belief state. If this new information is compatible with the prior belief state, nothing changes, and the information is added to the prior beliefs; if the contrary happens, belief revision takes place.

Ultimately, the author (2006: 189) affirms that "we might define an epistemic accessibility relation in terms of the belief revision structure, and use it to interpret the knowledge operator in the standard way", epistemic accessibility would still extend doxastic accessibility. Still, a few alterations need to take place, for not all settings are as ideal as the one outlined by Stalnaker, who claims himself that this account for knowledge as it stands now might not be a plausible one in general.

In order to improve on his account, the author explores other features of the "relation between a knower and the world that may be relevant to determining which of his true beliefs count as knowledge" (2006: 191). Outside of an idealized setting, conditions are not fully normal and not all of the agent's beliefs are true. Looking into the interaction between the knower and the world, and how information is acquired, the knower can be misinformed in case one or more of his 'informants', i.e. "any kind of input channel" (2006: 192), is malfunctioning. When

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[13]This notion of stability when facing new evidence/information has been mentioned before concerning Lewis's discussion on knowledge and belief.

all informants are functioning properly, one may say the conditions are normal. Ultimately, according to the author (2006: 193):

> Possible worlds in which conditions are fully normal will be those in which all the input channels are functioning normally – the worlds in the intersection of the two sets. This intersection will be the set compatible with the agent's beliefs, the set where belief and knowledge coincide. If conditions are abnormal with respect to informant one (if that information channel is corrupted) then while that informant may influence the agent's beliefs, it won't provide any knowledge. But if the other channel is uncorrupted, the beliefs that have it as their sole source will be knowledge.

This final rendition of Stalnaker's model is going to underlie the discussions concerning epistemic modals and evidentials in Chapter Two, as well as the analysis in Chapter Three. Even though neither Matthewson nor von Fintel and Gillies have explicitly made this connection, I propose it here, taking as epistemic, i.e., knowledge, what Lewis and Stalnaker have converged upon, assuming its connection with belief and then establishing how it relates to evidentials in the following Chapter.

Chapter One has come to its conclusion, after having had punctually outlined and explored the ontological boundaries of this work, by means of making connections that had already been established between philosophical works and their linguistic expansions and adaptations explicit; as well as by proposing new connections and strengthening the long-established interface between philosophy and linguistics. Chapter Two is going to deal with the semantics for modality in natural language viewed from Kratzer's perspective. Additions from collaborators as well as different connections suggested by me are also going to feature, in the quest to limit the domain of this work while making its restrictions as compatible and as clear as possible.

CHAPTER 2 – MODALITY AND CONDITIONALS

INTRODUCTION

Seeking methodological coherence and clarity, this Chapter is going to discuss epistemic indicative conditional structures according to Kratzer (1981, 1991, 2012) and complementary works which are compatible with her theoretical framework for the formal analysis of modality in natural language. The first part consists of a concise introduction to conditionals as units and quantifiers over possible worlds, following mainly the works of Lewis (1973, 1975, 1976, 1979, 1986, 1996), Stalnaker (1968, 1975, 1978, 1981, 1984) and Kratzer (1977, 1979, 1981, 1986, 1991, 2012). The second part of this chapter consists of a series of punctual discussions concerning structural and semantic issues pertaining to the analysis of epistemic indicative conditionals. Due to the extent of the bibliography on modality and conditionals as well as to the focus and nature of this work, specific issues were chosen in order to map out the upcoming illustrative analysis of these structures in Brazilian Portuguese in the following Chapter. I do, however, refer the reader to the works listed at the end to more extensive readings on other issues that, for one reason or another, could not be discussed here.

PART ONE - MODALITY AND CONDITIONALS – A WORM'S EYE VIEW

Barker and Kennedy, in their preface to Portner's (2009: xi) *Modality*, state that modality itself is

> a fundamental topic in the study of meaning, as it underlies one of the most significant features of human language: the capacity to convey information about objects and events that are displaced not only in time and space but also in actuality or potentiality.

Portner (2009: 1) himself starts by arguing that modality is "the linguistic phenomenon whereby grammar allows one to say things about, or on the basis of, situations which need not be real", evoking Lewis's (1986) *On the plurality of worlds*. Moreover, he states that in order to better understand modality, we need to first look into its linguistic features, starting with the more obvious ones, such as auxiliary verbs, adverbs, adjectives and words in general in modalized structures. The author moves on to distinguish three levels of analysis of modality: sentential (expression of modality at the level of the whole sentence), sub-sentential (expression of modality within constituents smaller than a full clause) and in discourse (modal meaning that goes beyond the sentential level and is not part of sentential truth conditions). Just as in Portner (2009), modality at the sentential level, i.e., looking into the sentence as a whole, is the focus here. Due to that,

certain issues concerning specific syntactic features as some of those discussed by Hacquard (2006, 2009, 2010) and Kratzer (2012), among others, are not within the present scope, and are going to be discussed in upcoming work[14].

As mentioned in the previous Chapter, in his *On the plurality of worlds*, Lewis (1986) affirms that the best known application for the modal realism he defends is to modality. This resource allows us to even discuss the notions of possible worlds, as the author (1986: 2) did himself by affirming that "there are ever so many ways that a world might be; and one of these many ways is the way that this world is". Such reasoning on possibilities (and, for that matter, impossibilities as well) and alternative scenarios sometimes brings about disparities regarding the world of evaluation and the worlds selected.

According to Kratzer (2012: 1), "the semantics of modals and conditionals offers an ideal window into the way the human mind deals with inconsistencies", leading to a better understanding of certain features of language and also posing insights into reasoning and the linguistic mind/brain. Differently from a few philosophical works concerning such inconsistencies and reasoning (such as Makinson 2003), Kratzer's work, however, did not separate from possible worlds. This notion, according to Kaufmann, Condoravdi and Harizanov (2006: 76) is central "in the semantic interpretation of modal logic" and, despite metaphysical and philosophical debates, it is a very important methodological tool, and such possible worlds are "nothing but abstract entities which help us in modeling certain semantic relations among linguistic expressions". In this way, they are central in determining the denotations of sentences, and their analysis in terms of meaning is made based on how they make distinctions among possible worlds.

Similarly, Stalnaker (1975: 273), in order to set the bases for his framework, firstly assumes this notion of possible worlds, which is taken for granted in his analyses of conditionals. As mentioned before, these are some of the structures present in natural language that can differentiate situations in many ways, including regarding if they may or may not ever happen, or what is necessary for them to take place, for example. This notion, encompassed by possible worlds theory, as discussed in Chapter 1, has been an essential part of the groundwork for many of the past and current works on modality, while many

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[14]Ibaños and Monawar (*in prep.*).

have and still endeavor to better explain how human reasoning works from a formal perspective. The author connects possible worlds theory and modality and, more specifically, conditionals and their uses in communication:

> It is a common and essential feature of such activities as inquiring, deliberating, exchanging information, predicting the future, giving advice, debating, negotiating, explaining and justifying behavior, that the participants in the activities seek to distinguish, in one way or another, among alternative situations that may arise, or might have arisen. Possible worlds theory, as an explanatory theory of rational activity, begins with the notion of an alternative way that things may be or might have been (which is all that a possible world is) not because it takes this notion to be unproblematic, but because it takes it to be fundamental to the different activities that a theory of rationality seeks to characterize and relate to each other.

Thus, for example, when one advises someone to go to a concert, such as in Yanovich's (2013: 8) *You should go to that concert!* or even *If you go to that concert you may listen to good music*, one is bringing into the conversation alternative scenarios, some in which the person goes to the concert, some in which they do not, at the same time demonstrating effective preference for the listener to favor as well the scenarios in which they actually go to the concert in detriment to the ones they do not[15].

As said before, Kratzer does not break away from the notion of possible worlds, but assumes its semantics as one where "propositions are identified with sets of possible worlds. If *W* is the set of possible worlds, the set of propositions is *P(W)* – the power set of *W*" (2012: 10). So, as illustrated by Kaufmann, Condoravdi and Harizanov (2006: 77), *It is raining* has as its denotation the proposition 'that it is raining', which comprises the set of worlds in which it is indeed raining. According to Kratzer (2012: 31), these possible worlds are mapped to sets of propositions by functions she calls *conversational backgrounds*. This parameter is fixed by context of use, allowing variety of interpretation and interaction of meaning with "relevant features of the utterance situation". These propositions mapped by the conversational backgrounds, according to Hacquard (2009: 11-2) "correspond to bodies of information, facts, rules, etc., responsible for determining the modal flavor", relating to facts, rules, wishes, advice, etc.

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[15] The modality of giving advice, symbouletic modality, is not the topic of this work, but it has been discussed regarding Brazilian Portuguese in Monawar and Strey (*in press*).

Following that, an epistemic conversational background is a function that assigns to each world (*w*) in the set (*W*) a set of propositions such as "*p* is a proposition that expresses a piece of established knowledge in *w* – for a group of people, a community…" and "modal statements of the form '*must p*' or '*can p*' are true relative to a conversational background *f* if and only if *p* is true in all or some of the worlds in which the propositions of the conversational background are true" (Hacquard 2009: 12-3). The author also points out that defining one of the parameters for modal interpretation to be fixed by context (when not overt) was the way found by Kratzer to step away from the traditional quantificational analysis in which the set of accessible worlds is not determined by information within the lexical entry of the modal, allowing thus for a modal to be lexically unambiguous and also have different possible interpretations in its use.

Using only one parameter for modals can be problematic, however. As Hacquard (2009: 14) points out, the sentence *John must go to jail* is interpreted under a deontic flavor, in which according to the laws of the world of evaluation John must be imprisoned. But also according to such laws, John should not have committed a crime in the first place. To solve this type of issue, Kratzer introduces *double relativity* for modals, in which two different parameters are at play (finally adding up to three parameters together with modal force), both provided by conversational backgrounds: the first, the modal base, "contributing the premises from which conclusion are drawn" and the second, the ordering source, "a modal relation determining the *force* of the conclusion", rendering an ordering of the worlds in the modal base according to how close they come to ideals, knowledge, evidence, etc., present in the conversational background that rendered the ordering source (Kratzer 2012: 31). Thus, *John must go to jail* is interpreted as "the best way to obey the law in the imperfect world in which John committed murder is to have John go to jail" (Hacquard 2009: 14). Ultimately, this points out to graded modality, as "graded and comparative notions of possibility emerge when we rank worlds that are compatible with a body of facts according to how close they come to some norm or ideal" (Kratzer 2012: 38). Therefore, at the base of the modal analysis proposed by Kratzer there are: a world *w*, a modal base *f* and an ordering source *g* from which additional modal relations are defined, such as necessity and possibility.

According to Lewis (1986: 7), "as possibility amounts to existential quantification over the worlds, with restricting modifiers inside the quantifiers, so necessity amounts to universal quantification". Such notions have since then been revised and rendered less absolute. Necessity, weaker than the notion of simple necessity, does not demand the proposition to be true in *all* accessible worlds, but in all "accessible worlds that come closest to the ideal determined by the ordering source" (Kratzer 2012: 40), remaining neutral in relation to Lewis's (1973) *Limit Assumption* – which, according to Hacquard (2009: 15), means "assuming that there are always accessible worlds that come closest to the ideal" as can be seen argued by Stalnaker (1984) and Portner (2009). Possibility, unlike its dual necessity, has a stronger definition than simple possibility – it is no longer sufficient for a proposition to be true just in some or other world for it to be possible: "a proposition is a *possibility* in *w* with respect to *f* and *g* iff its negation (that is, its complement) is not a necessity in *w* with respect to *f* and *g*" (Kratzer 2012: 40). Such ordering within possibility allows for it to be graded and comparative, and the author affirms that, considering also Portner (2009), it is reasonable to say that "any semantics for modals must in principle allow for graded notions of possibility" (2012: 41).

An alteration in the most recent version of *The Notional Category of Modality* (2012) is the discussion of modals without duals and how they can be categorized in terms of possibility or necessity. Kratzer (2012: 25) argues that "at least some modals without duals might be neither possibility nor necessity modals, but degree expressions describing a high degree of desirability or probability". This is the result of the potential addition of the Limit Assumption, collapsing the distinction between necessity and possibility. She then mentions Stalnaker's (1981) argument for the collapsed possibility/necessity modal *would* in rejecting *might* as its counterfactual dual. For him, "a conditional is true in a world *w* just in case its consequent is true in the closest world to *w* where its antecedent is true" (Kratzer 2012: 44). This being so, with only one such world being the closest, the boundaries between counterfactual necessity and possibility collapse. Orderings are, therefore, crucial to the existence of dual pairs of modals in language.

Kratzer (2012: 45) cites the work by Rullmann, Matthewson and Davis (2008) regarding comparisons within languages that do not have the possibility

and necessity distinction at the lexical level of the modal, which is more common in Indo-European languages. However, this distinction does not need to be so clean-cut, as there are in-between cases related to degree expressions more than the possibility and necessity duality. This can stem from how the orderings would be established:

> In an ordering semantics for modals, ordering sources are used as domain restrictions for the set of accessible worlds: not all, but only the "closest" accessible worlds matter for what is possible or necessary. As the domain of accessible worlds shrinks, necessity modals become weaker and possibility modals become stronger. In the most extreme case, the distinction between necessity and possibility collapses. In less extreme cases, necessity and possibility may still be formally distinguishable, but a language may nevertheless choose not to lexicalize dual pairs of modals in some or all modal domains. The retained modals might all be possibility modals, for example. Being weaker than the corresponding necessity modals, possibility modals could be used to describe situations where English might use *must* or *may*[16]. […] Rather than being just a possibility modal or a collapsed possibility/necessity modal, a modal without dual could also be a degree expression covering the upper end of a scale of degrees of probabilities or preferences.

A modal which can behave as both necessity and possibility while preferring necessity interpretations is, according to Kratzer (2012: 49) most likely a degree modal. In the end, Kratzer circles back to the three parameters on which the analysis of modal interpretations lies – be them necessity, possibility, collapsed duality, existential or degree modals – modal base, ordering source and modal force.

According to Kratzer (2012: 64), "the separation of modal bases and ordering sources also leads to an insightful analysis of conditional modality". Since in the early versions (1978, 1979) she worked on rules for modals separately, she was not able to generalize the interaction between *if*-clauses and modal verbs in their different flavors and strengths. In her current revision, she presents the idea that many conditionals involve modals, being them explicit or implicit, as discussed in one of the subsequent parts.

Returning to conditional modality, and more specifically the conditional structures, von Fintel (2011: 1515) characterizes conditionals as

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[16] As is the case for Brazilian Portuguese *dever*, to be discussed in the next Chapter.

> sentences that talk about a possible scenario that may or may not be actual and describe what (else) is the case in that scenario; or, considered from "the other end", conditionals state in what kind of possible scenarios a given proposition is true. The canonical form of a conditional is a two-part sentence consisting of an "antecedent" (also: "premise", "protasis") marked with if and a "consequent" ("apodosis") sometimes marked with then [...].

Afterwards, the author moves on to discuss how cross-linguistically this is still a topic at the infancy of its possible analyses and discussions, reason also for the less technical and more exploratory nature of the present work.

Due to its complexity – connecting language in so many levels (syntax, semantics, pragmatics) as well as human reasoning in terms of conditionality related to thought and action – the analyses through which such constructions have gone over the years differed in many ways. Here the main three mentioned in the literature will be sketched in order to better situate the analysis presently adopted. The three classic accounts, as von Fintel (2011: 1520) organizes them, are "(i) *if…then* as a truth-functional connective, material implication, (ii) the strict conditional analysis, (iii) the non-monotonic possible worlds analyses of Stalnaker and Lewis". Accounts (i) and (ii) will be briefly discussed, and after that the third account is going to be considered alongside adaptations made by Kratzer (2012) for the semantics of natural language modality.

If one takes *if…then* to be a two-valued truth-functional connective, one talks of *material implication*, in which the conditional is false if and only if the antecedent is true but the consequent is false, rendering also the material implication to be true if the antecedent is false – its parts determine the truth value of the whole conditional. The strict implication, as proposed by C. I. Lewis (1918), would mean that *if p, q* would be true only if the material implication would be necessary. This is the view Stalnaker (1968) and Lewis (1973) independently drove away from, followed later on by Kratzer (2012) in which the notion of necessity does not require the proposition to be true in *all* accessible possible worlds, as it did for the strict implication analysis, but in a subset of such accessible possible worlds. As von Fintel (2011: 1523) affirms

> the Stalnaker/Lewis account selects from the worlds in which *p* is true those that are most similar to the evaluation world and claims just about those most similar *p*-worlds that they are *q*-worlds. This

> has significant effects on what kind of inferences will be valid with conditionals.

The preceding truth-functional approaches have been subject to objections such as the paradoxes of material implication – our intuitions as speakers of natural language do not correspond to the supposedly valid inferences pointed out by the idealized language taken into consideration for the material conditional. Moreover, as Kratzer (2012: 88) affirms, "the recent history of semantics has seen the steady decline of the material conditional", mainly because "material conditionals had no role to play in the formalization of sentences with quantifiers" (Kratzer 2012: 89), such as in her example (11) "Most porches have screens". With that, adverbial quantifiers that scope over indicative conditionals were, by the hand of Lewis (1975) a very direct threat to material implication, with sentences like "Sometimes if a man buys a horse, he pays cash for it" (Kratzer 2012: 89). Kratzer (2012) assumes that adverbs like *sometimes* quantify over events and, applying restricted quantification structures to such adverbial quantifiers, the *if*-clause restricts the domain of the adverb – which renders the analysis of such conditionals as material implication not feasible.

Von Fintel (2012: 471) summarizes Lewis's (1975) view on the overall structure of the conditional:

> Lewis argued that there was no plausible semantics for the conditional connective that would interact compositionally with the adverbs of quantification to give correct truth-conditions for these sentences. Instead, he argued that the *if*-clause added no conditional meaning of its own to the construction. The idea is that the only "conditional" operator in the structure is the adverb and that *if* merely serves to introduce a restriction to that operator. In other words, […] Lewis argued that there was just one operator and that *if* didn't express any kind of conditional operator of its own.

Extending Lewis's (1975) notion of *if*-clauses as restrictors, which covered conditionals in the direct scope of adverbs of quantification to also cover conditionals with modals, Kratzer paves the way of how "properties of both indicative and subjunctive conditionals could then be derived from the properties of the participating operators" (Kratzer 2012: 85). In her perspective, then, "*if*-clauses restrict quantificational operators, but the operators can be covert, and hence may go unnoticed. […] the operators overtly or covertly restricted by *if*-clauses may

depend on contextually provided domains restrictions – a second source of indeterminacy" (Kratzer 2012: 85). Also due to the nature of *if*-clauses as restrictors of operators – such as adverbs of quantification, modals, probability operators, etc. – there is no two-place *if…then* operator.

Finally, as affirmed by Kaufmann (2006: 6), "in all languages, the interpretation of conditionals is determined and constrained by expressions of temporal relations, modality, quantification, and a variety of pragmatic factors". In the following Part a few of these elements that determine and constrain the interpretation of conditionals will be taken into consideration.

PART TWO - STRUCTURAL AND SEMANTIC ISSUES

INTRODUCTION

The aim of Part Two is to discuss a few ingredients present in the reading of epistemic indicative conditionals. In this way, the object of analysis for the following Chapter is going to result from the constraints discussed here. At first, the traditional distinction between indicative and subjunctive conditionals is considered and then overt and covert modality in this type of conditional are outlined. After that, the adopted distinction between epistemic and evidential is laid out. Due to the more panoramic nature of this work, the last three sections of Part Two consider matters of context, tense and aspect, as well as their interactions and interferences for the reading of these conditionals in particular. Certainly, each topic will not find its exhaustion at the end of this Chapter, but such fundamental discussions supply the basis for what follows in Chapter Three and subsequent work in preparation.

1 INDICATIVE CONDITIONALS

This section discusses indicative conditionals from a semantic standpoint. Matters concerning syntax and sub-sentential modality are not within the scope of this work and are going to be addressed at another time. Here, mainly the works of Stalnaker (1968, 1975) concerning this type of conditional serve as basis for what has been developed by Kratzer (1986, 2012). The aim of this section is to delineate the criteria according to which this type of conditional is different from others, more specifically, the subjunctive or counterfactual type.

Stalnaker (1975: 277) describes indicative conditionals as the ones that can be made "*only in a context which is compatible with the antecedent[17]*". Therefore, conditionals that would not conform to this pragmatic constraint, like counterfactual conditionals, would be expressed in the subjunctive. Such approach is discussed by von Fintel (1998: 4), concerning the difference in meaning between indicative and subjunctive conditionals:

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[17] Italics in the original.

> Arguably, the meaning difference induced by subjunctive marking is simply a presupposition that the domain of quantification is not included in the common ground of the current conversation. In simple cases this means the conditional antecedent is contrary-to-(assumed)-fact, but other cases show the superiority of the Stalnaker idea.

According to Stalnaker (1968: 101), the information from the antecedent is added to our information state so that it can serve as basis for the assessment of the consequent. Following Ramsey's test, the author suggests that, when facing a conditional, one should

> add the antecedent (hypothetically) to your stock of knowledge (or beliefs), and then consider whether or not the consequent is true. Your belief about the conditional should be the same as your hypothetical belief, under this condition, about the consequent.

In indicative conditionals, such information is compatible with the context, which does not take place in subjunctive conditionals. There, the information state will be reviewed according to the information given by the antecedent. This way, as von Fintel (2012: 469) affirms, the psychological process of assessing a conditional "starts from the actual world, considers the antecedent, and looks for worlds that differ minimally from the actual world while making the antecedent true. It is in those worlds that the antecedent is then evaluated". This minimal difference required to exist among the selected worlds refers to Stalnaker's (1968: 104) argument that "there are no differences between the actual world and the selected world except those that are required, implicitly or explicitly, by the antecedent".

Such differences in meaning, then, would basically remain regarding quantification and the ordering semantics – or better said, if their domain would, context-dependently, be within the common ground or beyond it. Ultimately, "the indicative marking indicates that in the current context c with speaker s and utterance time t, for all worlds w in the common ground of c, f (w) is included in the common ground" (von Fintel 1998: 5). Even though von Fintel (2012: 466) himself debates the adequacy of the distinction between indicative and subjunctive conditionals (regarding mood) or even indicative versus counterfactual (regarding reaching outside of the context available) as "not entirely accurate", I will maintain, as he does as well, this traditional distinction here for the purposes of this work,

which concerns itself with what has been so far generally agreed upon in the literature concerning this difference.

Similarly, Egré and Cozic (*to appear*) state that a more adequate semantic division would be between counterfactuals and non-counterfactuals, following from a series of inadequacies pointed out by Iatridou (2000) concerning languages which do not use the subjunctive to express counterfactuality (like French) and others that do not have a subjunctive mood (Danish and Dutch). This distinction between counterfactual and non-counterfactual would aim, according to the authors, to differentiate between "two kinds of cases: those in which the antecedent is assumed to be false in the context, and those in which it is not assumed to be false" (Egré and Cozic *to appear*: 29). Circling back, then, to Stalnaker's (1975) pragmatic constraints and finally, as von Fintel (2007: 13) summarizes, "indicative conditionals have the same basic truth-conditions as counterfactuals, except that they are more constrained by what is conversationally presupposed".

The next logical step when studying a particular type of conditional, as von Fintel (2007: 21) affirms, is to study "the particular kind of operator that the *if*-clause is restricting". Here, as the aim is to study epistemic indicative conditionals, the next step is to look at epistemic operators. Before that, however, it is necessary to discuss Kratzer's covert and overt operators.

As discussed before, Kratzer's framework formulates *if*-clauses as restrictors for "certain types of operators, including adverbs of quantification, modals, and probability operators" (Kratzer 2012: 97). In von Fintel's (2007: 21) example *If this dog is approached, it bites*, the *if*-clause restricts a frequency adverb (≈ always); and in his other example, *If John was here on time, he left Cambridge at noon*, the operator restricted by the *if*-clause is an epistemic necessity modal (≈ must). The common feature between both operators in von Fintel's examples is that they are not explicit in the sentences: they are covert operators. As Kratzer (2012: 28) affirms,

> since *if*-clauses often restrict modals, and since those modals are often unpronounced, complex modalized conditionals may be mistaken for simple conditionals consisting of just a binary connective joining two clauses. The variability and indeterminacy

of modals and the variability and indeterminacy of conditionals have a common source.

Therefore, the conditionals above are not so "bare" after all – they both contain operators, which in turn are restricted by the *if*-clause. As Kratzer (2012: 98) remarks based on her previous works (1978, 1979, 1981), "we should consider bare conditionals as implicitly modalized" and she complements, "simplifying slightly, we can think of modal operators as quantifiers whose domains are sets of possible worlds or situations. *If*-clauses can restrict those domains further". In her example (34) (Kratzer 2012: 98), here (1), she provides what the logical form (here, 1a) would be for a conditional with a covert operator:

(1) If the lights in his study are on, Roger is home.

(1a) (*MUST*: the lights in his study are on) (Roger is home)

The conditional in (1) is true if and only if "Roger is home in all accessible worlds where the lights in his study are on" (Kratzer 2012: 98). The covert operator is an epistemic modal whose modal base is realistic, based on some kind of "salient piece of factual evidence"[18].

It is thus necessary to outline the differences between explicitly and implicitly modalized conditionals. Kratzer (2012: 98) affirms that "if there is a non-overt modal in bare conditionals, it is not expected to have exactly the same meaning as its overt counterpart". Therefore, (1) would not have the same meaning as (2), Kratzer's (37):

(2) If the lights in his study are on, Roger must be home.

The use of the overt epistemic modal *must* in (2) signals that the speaker is relying on "a particular, non-trivial, piece of evidence […] overt *must* shows the characteristic constraints of so-called 'indirect evidentials' […] it cannot be used felicitously for claims based on direct perceptual or experiential evidence" (Kratzer 2012: 99). Hence, bare conditionals that are covertly modalized by *MUST* are epistemic conditionals, but also in a different way from the conditionals overtly modalized by *must*. It seems that the connection between modal force and covert

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[18] This conditional, due to its features, can also be reduced to a material conditional. However, this is not under discussion here.

modality remains open; however, if one were to consider evidence reliability as a factor, perhaps the conditions of analysis would be different as well[19].

According to the author, epistemic *MUST* is one of the possible unpronounced modal operators. Kratzer (2012: 106) cites the works by Farkas and Sugioka (1983) and the papers in Carlson and Pelletier (1995) as suggesting "silent generic operators are another possibility. Kadmon (1987) coined the fitting terms 'one-case' and 'multi-case' conditionals for the two types of conditionals". In both cases, the *if*-clause can restrict the silent operators, epistemic or generic.

Kratzer (2012: 106) uses Zvolensky's (2002) example in order to illustrate that, "if *if*-clauses can restrict silent operators, we should find cases where a given *if*-clause fails to restrict a subsequent overt modal". Her example (54) and its logical form (55), reproduced below as (3) and its logical form as (3a), can be correctly interpreted (not tautologically interpreted) if the *if*-clause restricts a silent operator other than the overt *modal* in the consequent.

(3) If Britney Spears drinks Coke in public, she must drink Coke in public.

(3a) (If Britney Spears drinks Coke in public (*MUST* (she must drink Coke in public))).

According to the author, the overt deontic *must* in the consequent is interpreted within the scope of the covert epistemic modal. This double modalization is what warrants the non-tautological interpretation. However, the reason why this example "has only a double modalized interpretation is thus still open" (Kratzer 2012: 107), and I do not pursue its answer here. However, it is of relevance to point out such limitations on the restrictions of the *if*-clause, such as the one according to which it cannot restrict ability modals and why in some cases non-overt modals are obligatory. Both instances are present in Kratzer's (2012: 107) examples (57a) and (57b), reproduced below as (4a) and (4b).

(4a) If I was taller, I could reach the ceiling.

(4b) If he has a kitchen, he can cook.

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[19] Klecha's (2014) dissertation figures interesting parameters of variation regarding modal force which are not going to be discussed here, but are nonetheless remarkable.

Kratzer (2012: 104) affirms that bare conditionals "are the kinds of things that can in principle have truth-conditions. Being implicitly modalized, their truth-conditions depend on a premise set determined by the current circumstances of evaluation for the modal's modal base."[20] The evaluation conditions can remain unspecified or underdetermined, however. We rely, therefore, on assertability conditions, "to convey the information we want to convey and obtain the information we are seeking". The satisfaction of such assertability conditions is what guarantees that there is no break in communication even if the evaluation conditions are unspecified or underdetermined. Lewis (1979) discusses how such modal underspecifications make it so that the modal boundaries can be altered (also unintentionally) by the speaker so that, during a conversation, such boundaries are changed or (re)negotiated by the participants.

This underspecification, according to Kratzer (2012: 100), results ultimately from the shrinking of the circumstances of evaluation for conversational backgrounds from whole worlds to "smaller entities like situations or spatio-temporal locations", expectedly context-dependent (thus prone to change in time, etc.). Thisdependency can account for the modal claims' underdetermination and vagueness, as well as for the flexibility of modal boundaries at the speakers' discretion during conversation, as long as assertability conditions are met. Finally, Kratzer (2012: 101) summarizes how truth-conditions and assertability conditions can come apart:

> It may happen that, for one and the same modal statement, truth-conditions are inherently vague, while assertability conditions are relatively sharp. For assertability conditions, speaker's evidence is what counts, but that's not necessarily so for truth-conditions.

It seems necessary here to briefly describe what could be defined as an assertion in order to better outline what is referred to by the notion of assertability conditions as mentioned by Kratzer (2012). Stalnaker (1978: 78) clearly summarizes four properties of assertions[21]:

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[20] Kratzer (2014: 102) complements, "If bare conditionals are implicitly modalized, we expect them to show the same dependence on situations of evaluation that we see with modals".

[21] As stated by Stalnaker himself concerning his ideas on assertion (1978: 78),"the influence of Paul Grice's ideas about logic and conversation will also be evident".

> First, assertions have content; an act of assertion is, among other things, the expression of a proposition – something that represents the world as being a certain way. Second, assertions are made in a context – a situation that includes a speaker with certain beliefs and intentions, and some people with their own beliefs and intentions to whom the assertion is addressed. Third, sometimes the content of the assertion is dependent on the context in which it is made, for example, on who is speaking or when the act of assertion takes place. Fourth, acts of assertion affect, and are intended to affect, the context, in particular the attitudes of the participants in the situation; how the assertion affects the context will depend on its content.

Such properties aid in the understanding of Kratzer's discussion of the separation between truth-conditions and assertability conditions, as well modal underspecification and context dependency. In her example (40), here reproduced as (5), one can see the four properties in place. The general context is that two people are sitting together and see the outline of a man that is approaching (Kratzer 2012: 100).

(5) Me (when the man was in the distance):   The man might be Fred.

   You (when the man was closer):   No, it must be Martin.

According to Kratzer (2014: 100), this dialogue is possible without changes in the modal base:

> if conversational backgrounds are functions from situations or spatio-temporal locations to premise sets, premise sets representing the available evidence can change as time goes by. One and the same conversational background can thus represent changes in premise sets.

Turning to Stalnaker's list of properties of an assertion, running a checklist is then possible. First property, check – propositions are expressed. Second property, check – such assertions are made in a context, both people are sitting together somewhere, they both have visual evidence of a man approaching in the distance and have the knowledge of what Fred and Martin look like in order to compare to the man's outline from far away and when he is closer. Third property, check – in this case, the content highly depends on the context in which the assertions are made; the fact the man is approaching and his outline is clearer makes it possible for the evidence to change and become more reliable[22], yielding

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[22] Evidence reliability and knowledge are going to be discussed in section 2.

the change in content and modal choice in the second assertion. Fourth property, check – the update of the evidence, leading to a firmer belief that indeed it was Martin and not Fred that was approaching, was triggered by the negation and subsequent assertion of the updated information under the modal *must*. That assertion affects the first speaker (in the example, Kratzer herself), in a way that, as the author affirms (2012: 101), the second's speaker evidence "trumped" the first speaker's. Moreover, from that it may have followed, a confirmation by direct, perceptual evidence of the man actually being Martin and not Fred when he finally approached.

So far, the first condition – the expression of a proposition – has been discussed following Kratzer's framework for the analysis of modality in natural language. The three remaining properties of assertion are going to underlie the following considerations concerning what *epistemic* in modal analysis is taken to mean here, as well as the interactions and interferences of context, according to the ontological boundaries that have been previously established for this work in Chapter One.

2 EPISTEMIC, EVIDENTIAL, OR BOTH?

Firstly, the main conceptions of the features that constitute epistemic modals in Kratzer's (2012) framework are going to be outlined, followed by discussions by Matthewson (*in press*)[23], von Fintel (2003) and von Fintel and Gillies (2010). The aim of this section is to establish for the present work the characteristics of what is here going to be referred as 'epistemic', as well as setting the groundwork for debate in Chapter Three concerning epistemic indicative conditionals in Brazilian Portuguese, and how their analysis can benefit from a clearer take on the relationship between epistemic modals and evidentials.

In her paper *What Must and Can Must and Can Mean* (1977, 2012), Kratzer outlines the different *must*s and *can*s in order to account for modal ambiguity. Regarding epistemic *must*, she describes it as relating "to a piece of knowledge or evidence" (2012: 5) and, going back to the double relativity of

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[23] Matthewson (*in press*) is the main work by the author discussed in this section and, to avoid unnecessary repetition, the reference is going to be henceforth omitted, maintaining only the page number, and specified differently in case of another work.

modals, epistemic *must*, as mentioned before, takes two arguments: "a free relative, like *what is known* […] and a sentence" (Kratzer 2012:7). On top of the neutral core of the modal *must*, the free relative can provide the modal restriction and, in its absence, it is up to the context of utterance to provide the information needed. The examples discussed here and in Chapter Three are going to contain overt modal restrictions, as it has been done in Kratzer[24] (1977, 2012) – for the sake of methodological coherence regarding the role of context in the present analysis[25].

Turning to Kratzer's *The Notional Category of Modality* (1981, 2012), it is possible to start an outline of what can be considered epistemic and evidential in the author's approach. Commenting on von Fintel and Gillies (2010), Kratzer (2012: 22) states that there are "strong" and "weak" interpretations for the "modals in the epistemic/evidential family". Considering the strong interpretations regarding necessity modals, they "commit the speaker to the truth of the proposition the modal scopes over", whereas weak interpretations "are relativized to the content of some source of information that may or may not be faithful to reality". Both possible interpretations, according to Kratzer, are key to the connection between epistemic modals and evidentials as they are being currently discussed in the literature.

According to Kratzer (2012: 22), evidentials, especially cross-linguistically, invariantly "classify evidence for what is being said as direct, indirect, or hearsay"[26]. Regarding this, Kratzer (2012: 23) postulates the job to be performed by the epistemic modal concerning evidence:

> Direct evidence may come from direct perception or first-person experiences, like skin itching or headaches. Indirect evidence may come from reports, or inferences drawn from direct or indirect

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[24] As pointed out by the author (2012: 8), the cases in which the overt modal restriction takes place are less common than the ones in which the modal restriction is provided by the context of utterance: "In real life, this [overt modal restriction] is very seldom the case, however, even though being aware of a missing modal restriction might help us avoid or settle misunderstandings".

[25] Be that as it may, more extensive work on the role of context and evidential markings for epistemic conditionals, having as a starting point Kratzer's (2009) perspectives on epistemic modals and epistemic anchors, is underway. For the same reason, Arregui (2009) is not addressed here concerning the interaction between tense and aspect alongside anchors.

[26] Following Willet (1988); de Haan (1999); Garrett (2001); Faller (2002); Aikhenvald (2004); Speas (2008) and Murray (2010).

evidence. Rumors or legends may be classified as hearsay. The cross-linguistically invariant job of an epistemic modal is not to classify evidence, but to assess the truth of a proposition against a range of possibilities projected from a body of evidence. There are two distinct semantic jobs to be done, then: classify evidence versus assess the truth of a proposition against possibilities projected from a body of evidence. The two jobs often end up being carried by a single portmanteau item that might then be arbitrarily cataloged as modal or evidential. That evidential meaning components are in principle independent of modal meaning components, but can be bundled together with other meaning components in a single lexical item, was emphasized in Izvorski (1997).

In English, according to Kratzer (2012: 23), "evidential, modal and temporal components" are spelled out "together as the single lexical item *must*, resulting in what we call a 'present tense epistemic modal'". This modal contains, therefore, evidential characteristics, but, according to the author, "excludes direct perceptual or irreducibly first-person evidence", barring thus uses such as in Kratzer's example (3), here (6):

(6) # Your nose must be dripping. I can see it.

You must have a cold. Your nose is dripping.

Consequently, if one actually sees the other person's nose dripping, therefore having first-person hard evidence, one should not mention it by using *must*, for it would conflict with the modal's evidential meaning component, which excludes direct evidence as the one present in the first utterance of the example above.

As mentioned before, modals are susceptible to different readings due to their underspecification, and the differences between the core interpretation of the modal lexical entry and its other possible interpretations is normally contextually defined. In the case of epistemic modals, according to Kratzer (2012), there are two sources of significant difference between them and *root* modals – syntactic and semantic. Let us first turn to Kratzer's established approach to this distinction, and then briefly discuss Hacquard's (2006, 2010) alterations.

When distinguishing between root and epistemic modals, Kratzer (2012: 50) affirms that, even though this distinction is traditional and widely used in the literature, it is still rather hazy, for "it's not clear what 'root' is meant to refer to, and 'epistemic' modals do not have any necessary connection to knowledge". The

author defends a preference for the use of the term *circumstantial* instead of *root*. However, she claims even this preference can be a target for scrutiny once pretheoretical distinctions give space to analysis.

Root modality, in Kratzer's perspective, relates to constant-across-worlds properties and circumstances of individuals or spatio-temporal locations. They are "typically future oriented and are used to talk about propensities and potentials of people, things, and spatio-temporal locations, given their current circumstances" (Kratzer 2012: 51). The connection between circumstances and events is not always established: sometimes the former prevent or allow for the latter and other times events simply take place – coughing, laughing, crying, etc.

Epistemic modals, on the other hand, would target the facts that are related to the "*evidence of things*" as pointed out by Kratzer (2012: 33), following Hacking (1975). Such evidence of things would be characterized as

> things in the world, including olfactory and auditory objects […]. However, private experiences should be able to function as evidence of things, too: experiences of seeing, hearing or smelling – even experiences of illusions and hallucinations – can be actual events.

The difference between realistic conversational backgrounds and informational backgrounds would, therefore, also outline the boundaries between representations of things and representations of information content, which would, according to Kratzer (2012), be important in the discussion of evidentials. She argues that "if the backgrounds are realistic, the accessible worlds all contain counterparts of the actual experience that come into existence in the same way and have the same content as the actual experience" (2012: 35-6). However, if informational backgrounds are fed by perceptual experiences, their accessible worlds would correspond to the "information content of the experience"[27]. Even so, sources of information can function as evidence of things and also feed realistic conversational backgrounds. For that, the author stipulates that certain conditions need to be satisfied regarding their counterparts in the relevant accessible worlds: "they have to carry the same information as the actual piece of information, and they have to come into existence in the same way" (Kratzer 2012: 36).

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[27] Other not necessarily realistic conversational backgrounds other than informational ones are stereotypical, deontic, teleological and bouletic.

Consequently, when sources of information can be relied on as evidences of things, they have a higher status as relevant evidence.

Based on this, Kratzer (2012: 55) argues that

> both root and epistemic modals have realistic modal bases. If all modals are either root or epistemic, it follows that *all* modals have realistic modal bases. Potentially non-realistic conversational backgrounds must then function as ordering sources.

Syntactically, epistemic modals appear in higher positions in relation to the verbal inflectional heads, while root modals appear in lower positions. Semantically, the main difference between root and epistemic modals would rely on the particular kinds of facts taken into consideration. Kratzer's original version of *The Notional Category of Modality* (1981) postulated that such differences could be accounted for with the split of conversational backgrounds: *circumstantial* versus *epistemic*, relying finally on what she deemed, in the revised 2012 version, an "erroneous assumption that the two types of modals semantically select modals bases with distinctive semantic properties" (Kratzer 2012: 24). The way out it seems, then, would be to follow Hacquard's (2006, 2010) work on modal anchors.

According to Hacquard (2010), the range of possible interpretations a modal receives is even more restricted than the difference in scope (higher for epistemics, lower for root modals) as initially conceived. The author (2010: 79) claims that "modals are relative to an *event* – rather than a world – of evaluation, which readily provides a time (the event's running time) and (an) individual(s) (the event's participants)". This shift from a world to an event of evaluation is an important modification on Kratzer's framework, aiming to "explain the correlation between type of interpretation and syntactic position, without having stipulation of an interpretation-specific height for modals" (Hacquard 2010: 79). This way, as Kratzer (2012: 24) argues,

> different types of possibilities become available in different places of the verbal projection spine because different types of event arguments appear in those places. The lower regions of the verbal projection spine provide access to the participants and spatio-temporal locations of the events described […] higher regions provide access to speakers' knowledge via a representation of the speech situation.

Such modal anchors can range from events to entities of various types such as "individuals and their stages, spatio-temporal locations, or situations – whatever entities might be represented in a modal's domain in the verbal projection spine" (Kratzer 2012: 24). As previouslymentioned, syntactic intricacies and their deeper connection to context dependency in modal interpretations are the focus of another ongoing work and for that matter are not within the present scope. For the purposes here pursued, as well as for the methodological boundaries established and for the sake of theoretical coherence[28], Kratzer's (2012) framework is maintained regarding worlds of evaluations – and not events, as reframed by Hacquard (2006, 2010).

Returning to Kratzer's discussion on epistemic modals as targeting facts related to *evidence of things*, strong evidentials are realistic whereas weaker evidentials are informational. As mentioned before, when the sources of information are of a high, relevant status, they can be considered as well as evidence of things. This seems to make the distinction between what is considered epistemic and evidential even more complex, and the works of Matthewson, von Fintel (2003) and von Fintel and Gillies (2010) are going to be discussed next in order to better shape the features of epistemic modals considered here, so that their role in the subsequent analysis of conditionals is also less elusive.

Matthewson (p.: 1) discusses the traditional distinction between epistemic modals and evidentials by affirming that the former "introduce quantification over epistemically accessible possible worlds" whereas the latter "encode information about the speaker's source of evidence for the proposition advanced". As has also been discussed in Kratzer (2012), modals like *must* seem to encode both evidential and epistemic features, seeming then to make their distinction even more complex. For the present purposes, Matthewson's point of view is adopted, in light of her discussions concerning von Fintel and Gillies's (2010) and Kratzer's (2012) works, seeking to maintain, therefore, methodological consistency.

Returning to Kratzer's (2012) argument that epistemic modals are mistakenly taken for having a relationship with knowledge, but instead should be related to *evidence of things*, Matthewson (p.: 1) states that "all epistemic modals

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[28] Kratzer (2012: 55) shows reservations regarding Hacquard's (2010) connection between higher positioning for epistemic modals to the epistemic possibilities of speakers.

encode evidential information, as a matter of definition, since an 'epistemic modal' is a modal whose modal base relies on *evidence* (not on *knowledge*)". However, it still remains unclear what type of evidence is thus encoded[29], and what restrictions there are such as the ones mentioned before concerning the infelicitous use of epistemic *must* in the presence of direct evidence (as shown in example (4)).

Matthewson claims that the function of epistemic modals is to encode information about the evidence, consequently encoding some kind of restriction on the type of evidence assumed. Which could be, then, these restrictions, such as the ones that do not seem to license the use of *must* in light of direct, perceptual evidence, for example?

Von Fintel and Gillies (henceforth vF&G 2010: 352) discuss "Karttunen's Problem", named after the semanticist to firstly point out that modal semantics would render a stronger interpretation for a modalized sentence with *must* in contrast with our intuitions of the statement of the prejacent, as in the example (7) below, from vF&G (their (2)):

(7) Where are the keys?
  a. They are in the kitchen drawer.
  b. They must be in the kitchen drawer.

Modal semantics, according to the authors, would suggest that 5b is a stronger answer to the question posed, but human intuition would go the other way, claiming that the bare prejacent is indeed stronger. The authors affirm that, when facing this problem, "semanticists have reacted with an overwhelming consensus that the meaning of epistemic *must* needs to be weaker than classically predicted and weaker than that of the bare prejacent" (vF&G 2010: 352). Quoting Lyons (1977: 808), the issue of commitment from the part of the speaker in natural language comes into play when distinguishing between the modalized sentence and the bare prejacent: "It would be generally agreed that the speaker is more strongly committed to the factuality of *It be raining* by saying *It is raining* than he is by saying *It must be raining*" (vF&G 2010: 353).

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[29] Kratzer (In: Kratzer, Pires de Oliveira and Pessotto 2014: 18) diverges by arguing that "[…] in logical form you can have two elements. You could have a modal and then you could have a modifier that restricts the modal to a particular type. And then you have to think how to spell out these two elements". Here, I adopt the approach outlined in this section.

The core of this intuition that seems to render *must* weaker is, according to the authors, deeply connected to the evidential signal carried by this modal, especially one that points the conclusion as having been drawn by the speaker by means of an indirect inference. Being so, vF&G (2010: 354) reproduce Willett's (1988) Taxonomy of Evidential Categories, reinforcing the placement of epistemic modals within the rightmost corner, along with indirect inference, but not alongside information derived from reports.
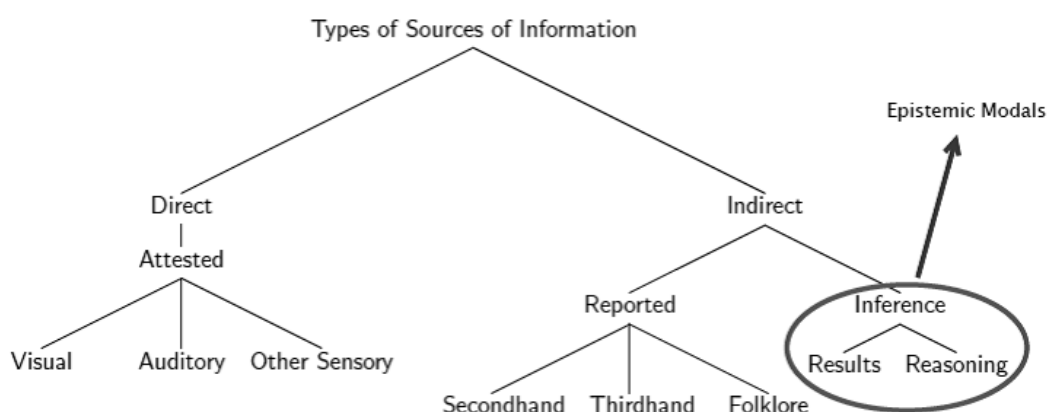
Figure 1 - Willett's Taxonomy of Evidential Categories (von Fintel and Gillies 2010: 354)

This connection with indirect evidence also figures, as mentioned before, in Kratzer (1991, 2012). According to vF&G (2010), the path chosen by the author in order to better account for this perceived weakness of *must* is its sensitivity to an ordering source, such that *must* does not quantify over all possibilities, but over a minimum some. The outcome of this is that *mustϕ* does not entail ϕ, and the additional information encoded in the modal concerning the source of the information as being indirect renders it weak.

Von Fintel and Gillies (2010: 364) argue for a clearer distinction between the indirectness of the information or evidence and the sense of weakness of the modal, for "indirect knowledge is still knowledge and so what follows from what is indirectly known must be true, and so there is no good sense in which *must* is weak". In their perspective, indirectness and weakness are not correlated, but indeed different and, finally, that "it is around the evidential signal thus that a proper treatment of epistemic *must* should be built and no amount of weakness

should be impugned to it" (vF&G 2010: 365). This approach does not necessarily conflict with Kratzer's due to the fact that she does not affirm that sentences with *must* are inherently weaker than the ones without it, leaving open to be explained why some sentences with *must* are indeed weaker. Furthermore, vF&G (2010: 369) claim that, in their core, "*must*-statements *never* have weakness as part of their meaning[30]".

However, it is possible to contrast *must* with actual weaker epistemic modals such as *might* and *ought*. In vF&G's perspective, *might* and *ought* are different from *must* because they allow the speakers to distance themselves from the truth of the prejacent in case it is in the end false. The same is not accurate for *must*, one cannot get such distance or correct oneself with the same ease. The solution for Karttunen's Problem, according to vF&G (2010: 371), is to incorporate the "evidential component of *must* in a way that does not weaken its force as a strong necessity modal". For that, the authors propose a strong semantics for *must* which encodes information regarding the indirectness of the source of evidence or information within its primary semantic content, hardwired in its lexical properties.

vF&G (2010) propose a formal implementation in which the modal base concerns information compatible with what is known in w in that context, and then there would be, as Matthewson (p.: 3) discusses,

> a special set of propositions representing 'the privileged information', i.e. the 'direct information' that the speaker has in the context. The set of propositions representing the direct information is called the kernel (K), and it determines its own special modal base B_K, the set of worlds given by intersecting all the propositions in K.

Following that implementation, *must* ϕ would presuppose that the kernel does not settle ϕ directly, and would assert that ϕ is entailed by the kernel. This way, if Billy is seeing the rain outside, for example, *it is raining* is part of the kernel; consequently, Billy should not say *It must be raining*, for the kernel has already settled that fact. However, if Billy only sees wet raingear, the kernel has not settled it, but entails that it is raining, licensing therefore the use of *must*. Matthewson discusses that, even though this formal implementation by vF&G is ingenious and

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[30] Italics in the original.

works well for simpler cases, more refinement is needed in terms of how direct evidence must actually be in order to be counted as settled by the kernel.

Matthewson sets out to better outline the evidential information encoded in *must*, generally following vF&G's formal implementation. Going back to Willett's (1988) taxonomy, direct evidence is the type that is experienced/witnessed personally by the speaker. Indirect evidence, on the other hand, encodes two main types: reported and inference-based. As seen before, vF&G (2010) assume that epistemic modals fall into the latter type, encoding indirect inference. Concerning the types of evidence that go into the kernel, Matthewson (p.: 5) affirms that "all types of sensory evidence send propositions to the kernel" – it does not matter if the evidence was obtained via sight, hearing, or other senses. Indirect sensory evidence, on the contrary, allows for *must* to be felicitous, because it does not settle or contradict the prejacent proposition, and the kernel, alongside the context, entails ϕ.

Concerning another type of indirect evidence, reports, Matthewson argues that, in vF&G's (2010) formal implementation, trustworthy reports of ϕ send ϕ to the kernel, rendering *must* infelicitous. Following from that, untrustworthy reports do not send ϕ to the kernel, and would thus allow for the indirectness of *must* to be felicitous. This differs from vF&G's (2010: 354) original claim that "epistemic modals will in all cases treat reports as direct evidence", but instead, Matthewson (p.: 6) affirms that "in most evidential systems, reportatives pattern with indirect evidentials".

According to Matthewson, not only propositions derived from direct evidence provided by the context of utterance, as initially assumed by vF&G (2010), figure in the kernel. Over time, general knowledge propositions are also incorporated. Finally, the author summarizes the three types of information that are contained in the kernel for *must* (p.: 7), claiming that it no longer belongs at the rightmost branch of Willett's taxonomy: "(i) information obtained by sensory observation in the utterance situation; (ii) trustworthy reports; (iii) general knowledge", being trustworthiness the underlying property of all. These three types of information also correspond to a scale of "better evidence"; being direct, sensory evidence the best type possible, followed by trustworthy reports and then by general, established and undisputed knowledge.

It seems, then, that *must* particularly selects trustworthiness as a requirement, going separate ways from what has been thus far discussed regarding reportative evidentials. Concerning these, for example, evidence is of the same type no matter if the source of the report can be considered trustworthy or not, basically and simply being classified as indirect evidence in nature. Nonetheless, trustworthiness or reliability of the evidence figures as evidence strength in Matthewson's (*submitted*) dimensions of meaning encoded in evidential restrictions, alongside evidence type (sensory, reported, etc.) and evidence location (if the speaker was present during the event itself or just witnessed its outcomes). This encoding of reliability within evidentials would, according to the author, signal if the speaker considers their evidence to be more or less trustworthy[31]. However, as pointed out by vF&G (2010), Matthewson (p.: 9) argues that "the trustworthiness distinction is still an evidential notion, and does not reduce to speaker certainty about the prejacent proposition. This is true for *must* under vF&G's analysis, since for them, the speaker of *mustϕ* can easily be certain that ϕ is true, but must lack a single trustworthy-evidence proposition that ϕ", making it clearer, thus, why it is essential to better outline the type of information encoded in so-called epistemic modals. Or, as Matthewson (p.: 10) argues after comparing these features of *must* with Cuzco Quechua =*mi*,

> it thus seems that cross-linguistically, trustworthiness of the evidence is something which evidentials can choose to pay attention to. This parallel between the semantics of epistemic modals and evidentials supports the argument for the evidential nature of epistemic modals.

Even though it is the case for *must*, not all epistemic modals encode the *indirectness* of evidence restriction, but all of them encode evidential information. Relating this to Kratzer's approach, Matthewson (p.: 15) stipulates a reformulation, which will be adopted and extended here, hence eliminating the label 'epistemic' as solely related to knowledge:

> An epistemic necessity modal *M* applied to ϕ then does not mean 'all (stereotypical) worlds compatible with the speaker's knowledge are ϕ-worlds', but 'all (stereotypical) worlds compatible with the

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[31] In connection with Stalnaker's (2006) model presented in Chapter One, reliable evidence would suggest normal functions from an informant, in his terms, rendering therefore belief into knowledge.

speaker's evidence regarding ϕ are ϕ-worlds.' If this idea is right, than the reason epistemic modals have appeared to be about knowledge is perhaps simply that it is very normal to infer something about the speaker's knowledge from their assertions about their evidence. And if the idea is right, then it stands to reason that it will be extremely common – if not universal – for 'epistemic' modals to encode restrictions on the type of evidence the speaker has.

This reformulation, in my perspective, should also target both overt and covert modalization. Consequently, covert *MUST*, as discussed before, would also need to be minimally reformulated. Kratzer (2012: 99) affirms that one can utter a conditional implicitly modalized by *MUST* without having any "particular piece of evidence at all". This contradicts the notion that all epistemic modals encode evidential information, unless there are particular restrictions to covert operators which would single them out from their overt counterparts. Considering that covert operators are stronger and have wider scope than overt ones, covert *MUST* could thus signal different evidential strength in comparison to overt *must*. Let us go back to Kratzer's example, (1) here, reproduced below as (8) and its modalized version as (9):

(8) If the lights in his study are on, Roger is home.

(*MUST*: the lights in his study are on) (Roger is home)

(9) If the lights in his study are on, Roger must be home.

Karttunen's Problem is back again. Intuitively, (8) is stronger, but modal semantics would point at (9) as stronger, also signaling that deduction based on evidence was present. Considering the infelicitous possibility of using overt *must* when there is trustworthy, direct evidence settling the prejacent in the kernel, (8) points to the possibility of the speaker having had witnessed this situation; having had direct sensory input or even having had reports that they judged trustworthy enough to be incorporated in the kernel. The same cannot be said about (9), since overt *must* in this case is felicitous since the kernel does not contain any information that settles the prejacent, but only entails it, such as weaker evidence – reports that were not trustworthy enough to be incorporated in the kernel, indirect sensory evidence, and general knowledge. As mentioned before, the speaker could indeed be certain in (9) that Roger is home, but is not completely certain of their evidence trustworthiness, therefore preferring the overt *must*. It

remains hazy to me, however, how epistemic covert *MUST* is felicitous even in the absence of any type of evidence.

One way of coinciding would be perhaps to assume that, even though the speaker does not rely on a particular piece of evidence *per se*, when they "bet on the corresponding conditional", as Kratzer (2012: 99) phrases it, they are relying on evidence still, but of a different type than the one referred initially by the author – but evidence in terms of general, undisputed knowledge. I argue that the speaker bets on the conditional because they consider their knowledge stable, even if the evidence that has brought it forward has been long forgotten or lost, in the terms of Lewis (1996: 551), as discussed in Chapter One: "we once had evidence, drew conclusions, and thereby gained knowledge; now we have forgotten our reasons, yet still we retain our knowledge". Following also Matthewson's (*in press*: 14) claim that "*must* does not allow general knowledge propositions to directly settle" the prejacent, and *must* as always encoding some kind of evidential information, wouldn't then covert *Gen* be more appropriate in this case, operating under the same restrictions, encoding perhaps different types of evidence/knowledge/belief of different strengths as well? This discussion, even though extremely intricate, is not within the scope of the current investigation, but I aim to suggest a stronger connection between the covert operators *MUST* and Gen than the one presented in Kratzer (2012) – they both have fairly uncancellable presuppositions having to do with knowledge (and, to a certain extent, even belief), but seem to have different approaches to evidence.

In summary, I have presented a few reformulations regarding what is to be considered here as 'epistemic', following vF&G's (2010) and Matthewson's works, as well as proposed a stronger connection between the covert operators *MUST* and Gen considering Lewis's (1996) discussion regarding knowledge. We now return to indicative conditionals to explore the limits of their context dependency in order to better outline the analysis offered in the following Chapter. Kratzer's (2012) attributed roles for context are going to be seen again concerning more specifically what she has postulated for conditionals, relating them with what has been outlined as 'epistemic' and also key time and aspect interactions as addressed by Condoravdi (2001).

3 CONTEXT

As discussed in Chapter One, the aim of this work is not to treat epistemic indicative conditionals within the scope of dialog or interaction – this endeavor would imply as well a pragmatic interface that is not developed here. Instead, this discussion focuses itself on a more egocentric, one may say, view of such constructions. For that matter, knowledge negotiations, updates on common knowledge/common ground, conditionals as having illocutionary force and other related features are not going to be discussed here, but in subsequent work. In this sense, the speaker referred here will be in soliloquy, having no interaction with their peers, having no expectations concerning their shared knowledge or context of utterance. As a self-involved Hamlet, this speaker stands on their own within the limitations of his own context(s), which are going to be outlined in the following paragraphs.

It has been here discussed, regarding 'epistemic' modals, that they encode evidential information of some sort and strength in their own lexical self, and not differently later. Such information is thus hardwired into the meaning component of the modal, not being necessarily subjected to context dependency in that sense.

As previously mentioned, furthermore, Kratzer's (2012) framework approaches conditionals from a *restrictor view*, that is, the *if*-clause restricts the modal base of the associated modal – even at a distance – being it implicit or explicit. Such covert or overt operators, in their turn, "may depend on contextually provided domain restrictions", a "source of indeterminacy" (Kratzer 2012: 85). As discussed before, Kratzer's modal claims are context dependent; they rely on it to give them the circumstances of evaluation for the modal claim. This way, she argues that "the indeterminacy of modals follows from the indeterminacy of circumstances of evaluation – a general source of indeterminacy for any kind of claim" (2012: 101).

As seen before, Kratzer turns to assertability conditions in order to evade the un- or underspecification of such circumstances of evaluations for conditionals and their truth-conditions. Their assertability conditions, quite differently, seem to remain clearer, also for the sake of communication and mutual understanding. Turning more specifically to 'epistemic' claims, Kratzer (2012: 175), following Lewis (1996), affirms that

> The exact type of context-dependency for knowledge ascriptions is a matter of debate and has given rise to a staggering variety of – *isms* – most prominently a whole range of contextualist versus relativist positions. Both types of positions acknowledge the context dependency of epistemic standards for knowledge attributions. What is being debated is whether the context at stake is the utterance context or the context of assessment.

Stalnaker (1975: 271) affirms, concerning context, that it "[…] constrains content in systematic ways. But also, the fact that a certain sentence is uttered, and a certain proposition expressed, may in turn constrain or alter the context." According to the author, there are two ways in which this could take place: one way is that, since certain utterances are only appropriate in certain contexts, possible inferences are made concerning the context because this utterance was made in it (as long as it was considered appropriate in that sense); the other way

is that the utterance of a proposition changes the context, even if minimally so by making it into a context in which this proposition has been uttered. So, the author affirms, that "there is thus a two way interaction between contexts of utterance and the contents of utterances" (1975: 271-2). This way, it is possible to affirm that the context of utterance cannot be ignored in the analysis of the propositions; if that happens, systematic relations such as the ones "between propositions expressed at different points in a conversation, relations which are mediated by the context" (Stalnaker 1975: 272), will be lost.

Due to the nature of this work, the context of utterance is the one at stake in this analysis, and not the context of assessment. Therefore, matters of change of mind and disagreement as pointed out in Lewis (1976), such as regarding speakers with different beliefs, do not figure here. Each proposition is taken to be expressed in a context of utterance, and any updates or changes of mind figure in different contexts of utterance themselves[32]. This way, a speaker can assert *must* or *might p* and be felicitous according to their own evidence, previous to any potential rejection or reformulation by the hearer with basis on his evidence, for example. Here we are thus dealing with felicity of assertion instead of acceptance or rejection of assertion by a hearer.

Finally, according to vF&G (2011), when one asserts *ifx p, q*, there is the presupposition that *p* is compatible with X's evidence, leading to the assertion that all *p*-worlds that are compatible with X's evidence are *q*-worlds. Evidence, in this sense, corresponds to what has been previously discussed in the perspective of Matthewson and vF&G (2010).

Having had outlined the type of context that is to be taken into consideration for the analysis of epistemic indicative conditionals in this work, it is time to frame one more feature of the modal claim in order to narrow its indeterminacy further – its interaction with tense and aspect. In the section that follows, the framework proposed by Condoravdi (2001) for the analysis of the temporal orientation of modals is going to be succinctly described. Chapter Three ultimately follows, presenting the application of the features outlined in this

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[32] vF&G (2011) outline an analysis of these two different types of context in their approach concerning clouds of standard, context-sensitive propositions.

Chapter to Brazilian Portuguese epistemic indicative conditionals in order to illustrate the potential for applying these features to the analysis.

4 TENSE, ASPECT, MODALS AND CONDITIONALS

Condoravdi (2001: 1) starts by arguing that "modal auxiliaries in English are used to express possibility or necessity, from the perspective of the time of utterance, about a state of affairs temporally located in the present, future or past". She then refers to modals like *may*, *must*, *might*, *should*, *ought to* as 'modals for the present', because they usually place their perspective in the present and possibly with an orientation towards the future. 'Modals for the past', on the other hand, take the perspective of the present but are oriented towards the past, they "express that it is possible or necessary at the present moment that a certain state of affairs obtained in the past" (Condoravdi 2001: 2). Such modals for the past,

according to the author, shift their time of evaluation of the sentence within their scope towards the past of the time of utterance, while modals for the present sometimes can shift the evaluation time forward or not at all.

The author (2001: 3) argues that the "temporal interpretation of the modal determines whether the modal expresses epistemic or metaphysical modality", being the former related to "knowledge or information of agents" and the latter concerning "how the world may turn out, or might have turned out, to be". As discussed before concerning epistemic modals, Matthewson's and vF&G's combined approaches to epistemic modals as encoding evidential information are taken into account for the analysis proposed in the following Chapter, added with Condoravdi's temporal analysis – I suggest, therefore, an interaction of temporal and evidential information in the meaning component of such modals. Consequently, Condoravdi's epistemic modality is of interest here, whence her metaphysical modality is not going to be presently explored.

An example of an epistemic reading of a modal for the past is Condoravdi's (2001: 4) (7a), below as (10):

(10) He may/might have (already) won the game (# but he didn't).

It concerns a possibility in the present related to facts about the past – the speaker has compatible information regarding the potential win, the outcome has already been settled in the past, but the "speaker does not, or presumes not to, know which way it was settled" (Condoravdi 2001: 4). Counterfactual readings of modals for the past, on the other hand, regarding metaphysical modality, would go back to a point where the win had not been settled yet and things could have progressed either way.

Condoravdi (2001: 5) argues that "modals are grouped together in one way according to their temporal orientation and in a different way according to their temporal perspective", but their temporal contributions in general are not necessarily dependent on the type of modality they express.

In (10), the modal for the past on the epistemic reading has a past orientation, with a present perspective. It is possible, however, for the temporal perspective to be a present one while the temporal orientation can be past (as in (10)) or present, as shown in Condoravdi's (2001: 5) table reproduced below:

The author claims that "modals combine with untensed sentences and that they may occur in the scope of tense" (Condoravdi 2001: 6), also observing that in unembedded clauses, for example, modal auxiliaries are interpreted as having only the perspective of the utterance time. In addition, as in von Stechow (1995), Condoravdi (2001: 6) assumes that "modals are in the scope of present tense in extensional contexts and in the scope of zero tense in intensional contexts […] the present tense operator fixes the temporal perspective of the modal to be the time

[9]	Future Orientation	Past Orientation
Present Perspective	modals for the present	modals for the past (epistemic reading)
Past Perspective	modals for the past (counterfactual reading)	

Table 1 – Condoravdi's (2001: 5) Temporal Perspective and Orientation

of utterance".

This way, the logical form of the sentence *He may/might win the game* would be PRES(MIGHT(he win the game)), fixing the modal temporal perspective to the time of utterance. The relation of scope between the modal and tense occurs differently for epistemic readings and metaphysical ones – in the former the modal scopes over the perfect and, in the latter, the other way around. One example of epistemic reading of a modal for the past with the modal scoping over the perfect is Condoravdi's (2001: 15) (27), below as (11):

(11) He may have won.

In it, his winning precedes the utterance time and is included in an interval that takes place temporally before the interval [*now*, _). Such is the property of non-root modals with epistemic reading – "the property they apply to is instantiated

at a time coinciding with, or in the past of, the temporal perspective of the modal"
(Condoravdi 2001: 20). When the property they apply to is instantiated in the
future time regarding the perspective of the modal, its reading is no longer
epistemic, but metaphysical. Such conditions apply to both necessity and
possibility modals, according to the author.

The author then summarizes her arguments regarding temporal
perspective and orientation of modals (Condoravdi 2001: 11):

> […] modals can appear in the scope of present tense in
> extensional contexts and in the scope of zero tense in intensional
> contexts. When the outer tense is present tense, the perspective of
> the modal is the time of utterance. The orientation of the modal,
> that is the time of evaluation of the element in its scope, is set by
> the modal itself, not by an embedded tense, and is shifted
> backwards when the perfect is present. Whether modals for the
> present have a future orientation depends on the type of
> eventuality the sentence in their scope denotes.

Condoravdi's framework for modals and the perfect takes for granted
eventualities (events and states, deriving eventive and stative predicates) and
temporal intervals, which correspond to a reference time for eventualities – events
are temporal inclusive and states have temporal overlap. Even the time of
utterance, *now*, is taken to be an interval in this perspective, no matter how short it
can be considered to be. The Perfect, however, has different reference intervals
depending on what scopes over it – if scoped under present tense, the interval is
the time of utterance, *now*. However, if the Perfect scopes under a modal, it is up
to this modal to determine the reference interval at hand. In addition, when a
modal is future-oriented, it does not shift its time of evaluation to a future time, but
it indeed expands the interval from the local time of evaluation into the future. This
difference accounts for two facts (Condoravdi 2001: 13):

> (i) the fact that in the absence of any future-oriented temporal
> adverbials, or other contextual clues, modals for the present with
> stative predicates imply that the temporal trace of the described
> state includes the time of utterance, (ii) the fact that the past
> orientation on the scoping MODAL over PERF is from the
> perspective of the time of utterance, not some future time.

On one hand, when a modal combines with a stative predicate, for example, the perspective yielded is present about the present or the future, as in Condoravdi's (2001: 14) (25), (12) below:

(12) He might be here.

There is temporal overlap – it is a stative predicate after all – of him having been here with the interval [*now*, _), starting at some point in the past and lasting at least up to the time of the utterance. It is also possible for his being here to overlap in a way that his presence is fully included in the interval, from the time of utterance and projecting into the future. A subinterval of [*now*, _) could have been restricted by an adverbial like *today*, *yesterday*, etc.

When combined with an eventive predicate, on the other hand, the modal yields present perspective with a future orientation, such as in Condoravdi's (2001: 15) (29), reproduced below as (13):

(13) He might run.

The action of him running can start at the earliest at the time of utterance and, inevitably, be completed at some point after the utterance time, within [*now*, _).

Condoravdi (2001: 19) finally summarizes her arguments, saying that

> The temporal perspective of a modal is fixed by the operator whose scope it is directly under: if the operator is PRES (as it is in extensional contexts), the perspective is that of the time of utterance; if the operator is PERF, itself under the scope of PRES, the perspective is some time to the past of the time of utterance. Modals uniformly expand the time of evaluation forward. If modals have PERF in their immediate scope, they exhibit a backward-shifting reading due to the effect of PERF. If they do not have PERF in their immediate scope, they exhibit a forward-shifting or a non-shifted reading depending on the type of eventuality the sentence radical they combine with denotes and on the frame adverbials modifying the sentence radical.

The author affirms that her generalizations regarding the temporal reference of the modals are not constructs made to fit a mode of analysis – they would be compatible for "any theory that does not simply stipulate the modality that can be expressed by a modal as part of its meaning but instead abstracts it out as a contextually fixed parameter and tries to relate in a systematic way the

temporal and the modal dimension of the meaning of modals" (Condoravdi 2001: 20). Consequently, the present analysis of epistemic conditionals is going to rely on both different yet not incompatible approaches concerning epistemic readings – the one treated earlier concerning evidential information, and Condoravdi's temporal features, accompanied by the presupposition of *settledness.* If an issue is presupposed to be settled, or when the modal applies a property at a time coinciding with or in the past, the issue is presupposed to be settled. For future orientations, only when there is specific contextual information hinting at settledness can one affirm it is present. Such settledness, the author argues, goes back to Kamp (1979) and Thomason (1984) and their discussions on *historical necessity* – it "relies on a structure of possibilities such that at any given time the past and the present are settled whereas the future is open" (Condoravdi 2001: 22).

Following Thomason's (1984) world-time model, then, one can say there is a fixed past and undetermined future, characterized as 'forward branching'. Worlds have multiple copies, which share the same past but have different futures. Condoravdi's (2001: 23) graphical representation of the forward branching modal is reproduced below, showing how the copies of the worlds have a shared, settled past from which, as undetermined future played its role, divergence ensued.
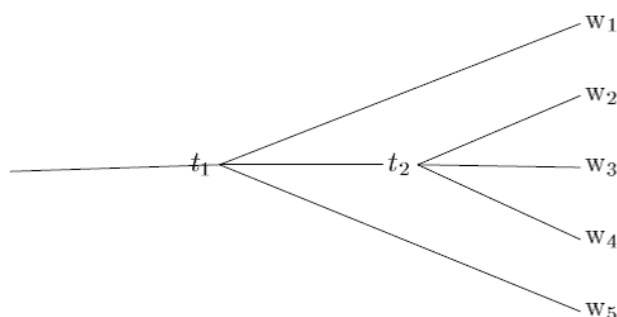
Figure 2 - Condoravdi's (2001: 23) representation of the forward branching model

Up to t_1 all five worlds are historical alternatives to one another. After that, only worlds w_2, w_3 and w_4 remain historical alternatives to each other. W_1 and w_5 only have but themselves as historical alternatives after t_1, which means the future is "completely deterministic" for these worlds. The same can be said for worlds w_2, w_3 and w_4 after t_2 (Condoravdi 2001: 23). As can be seen, then, historical

alternatives change over time, and a counterfactual reading would imply going back to a point in time where there were open options about what would/could still happen. In epistemic readings, it is presumed as common knowledgeamong the participants of the conversation that "the instantiation of the property [the modal] applies to is presupposed to be historically necessary if true" (Condoravdi 2001: 24).

Condoravdi's (2001) approach has also set the groundwork for analyses of modals in languages that, differently from English, indeed have overt morphology pertaining to tense and aspect[33].

In summary, this Chapter dealt with the methodological boundaries of what are here to be considered epistemic indicative conditionals, which stemmed from the ontological foundation presented in Chapter One. At first, modality was discussed as a natural language phenomenon and as the object of analysis of Kratzer's framework, presented in Part One. Part Two concerned structural and semantic issues that are going to be taken into consideration in the following Chapter's analysis. Matters of what are indeed indicative conditionals, as well as the debate concerning epistemic modals and evidentials were addressed. Afterwards, a semantic delimitation of context was presented, followed by Condoravdi's (2001) approach to the temporal orientation of modals. The present Chapter finds itself relatively mirrored in the following one, where I will discuss Brazilian Portuguese epistemic indicative conditionals, aiming to illustrate the methodological boundaries here established, as well as the interfaces promoted within the approaches.

CHAPTER THREE – BRAZILIAN PORTUGUESE EPISTEMIC INDICATIVE CONDITIONALS

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[33] Laca's (2014) approach to European Spanish and French epistemic modals in relation to temporal anchoring takes from the basis of Condoravdi's (2001) work and elaborates on it to be able to account for the complexity of these Romance languages' overt tense-aspect morphology in modals. Due to time restrictions concerning its publication date, it was not possible to discuss Laca's approach in this work.

INTRODUCTION

This Chapter aims to illustrate and further discuss the topics approached in the previous two Chapters, coming full circle with this analysis of Brazilian Portuguese epistemic indicative conditionals. In order to do so, firstly it is essential to discuss BrP modals that can render epistemic readings: *poder*, *dever* and *tem que/de*[34]. After that, I will discuss them in terms of Kratzer's restrictor analysis of conditionals, including the examination of examples with covert and overt modalization. Following this, the issues discussed in the previous Chapters concerning knowledge, belief and evidence are going to be addressed, illustrating with different examples various levels of evidence strength, knowledge stability and belief revision. All of the examples subscribe to the contextual delimitations[35] introduced in Chapter Two, following the ontological boundaries established previously in Chapter One. Finally, an analysis in terms of temporal orientation and perspective is going to take place, following Condoravdi's (2001) framework.

1 BRAZILIAN PORTUGUESE EPISTEMIC MODALS

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[34] I will not discuss in this work the differences between the two structures for it is of no immediate relevance to the present work.

[35] I recognize, as Campos (1992: 15) affirms, that "language is an entity that may be abstracted, as a set of principles and rules, from its social manifestation, but it cannot, effectively, be unlinked from this practice" (my translation from the original in Brazilian Portuguese). So the methodological choice of limiting context in the ways that have been outlined in Chapter Two does not reflect an indifference towards other features of context.

As Pires de Oliveira (2014) affirms, one can count on one's hand how many formal linguistics researchers have been doing work concerning Brazilian Portuguese modality. Due to such scarcity, the present Chapter does not aim to promote a comparative discussion between approaches or analyses, but is going to outline BrP epistemic modals and epistemic indicative conditionals following the works discussed in the previous Chapters, following also the intuition based on my native speaker's internal grammar of this language. I refer the reader to Pires de Oliveira and Scarduelli (2008) for a comparison between *ter que* and *dever* using written and spoken corpora, proposing *ter que* as strong necessity in contrast to weak necessity in *dever*, as well as different modal bases: circumstantial in the former and epistemic and circumstantial for the latter. Moreover, Pessotto (2014) discusses *poder*, *dever* and *ter que* in terms of conversational backgrounds and modal force they convey, proposing *poder* as a prototypical possibility modal, *dever* as a non-dual upper-end scale modal of possibility and *ter que* as a strong necessity modal.

The discussion that follows concerns these three Brazilian Portuguese modals, *poder*, *dever* and *ter que*, concerning their possible epistemic reading. First, by using BrP versions of Kratzer's examples, I aim to establish that they do indeed select epistemic modal bases, while differing in terms of modal force, generated by the interaction of the modal base with the ordering source, in these cases, stereotypical.

Kratzer's (2012: 23) example (3b), reproduced in Chapter Two as (6) and below as (22), illustrates a possible use of epistemic *must* – the speaker's knowledge of the symptoms of a cold include a runny nose and, based on indirect evidence combined with such knowledge and ordered highly in terms of what usually is the case when people have runny noses, they can utter:

(22) You must have a cold. Your nose is dripping.

In Brazilian Portuguese, using the three different modals, the modal force varies (I choose to change the wording slightly to make it more natural in BrP[36]):

(23a) *Você tem   que estar   resfriada.*

You HAVE(PRES.3s) that be(INF.) cold[37].ADJ(F.).

O seu nariz está escorrendo.

'You have to have the cold. Your nose is running.'

(23b) *Você deve   estar   resfriada. O seu nariz está escorrendo.*

  You MUST(PRES.3s) be.INF cold.ADJ(F.)

  'You must have the cold. Your nose is running.'

(23c) *Você pode   estar   resfriada.*

You MIGHT/MAY(PRES.3s) be.INF cold.ADJ(F.).

O seu nariz está escorrendo.

'You might/may have the cold. Your nose is running.'

(23b) and (23c) conform to Von Fintel and Gillies's (2010) analysis of *must* as strong and of *might* as weak. (23a) practically rules out any possibility for the person in question not to have a cold, being a very strong necessity indeed. How do they relate to knowledge, or evidence, for that matter? Following the approach outlined by the combination of vF&G's (2010) kernel approach with its modifications by Matthewson (*in press*), it is possible to say that "Your nose is running", when added to the kernel, does not establish the prejacent, but entails it. How it relates to other pre-established knowledge the speaker has is what determines the different placement in the ordering. Since the modal force stems from the interaction of the other modal analysis parameters, in (23a), for example, it is possible to conceive such an utterance if the speaker knows that the person in question absolutely never has a runny nose unless they have a cold – nothing out

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[36] For the sake of clarity, only the modalized sentence figures in the word-by-word translation.

[37] In BrP, when a person has the cold it is possible to say that they are sick specifically with the cold, therefore, using an adjective related to *resfriado* (the common cold), making the person, then *resfriada* (f.) or *resfriado* (m.).

of the ordinary has happened to this person, they rarely get sick, the only instances when they have a runny nose is when they have a cold. Thus, the only way of understanding and explaining the runny nose is for the person to have a cold.

In (23b) it is possible to see a more standard relationship between the epistemic modal base and the stereotypical ordering source in the sense that, having had the knowledge regarding symptoms for the common cold and also knowing that the person in question does not usually have a runny nose due to other reasons, it seems reasonable to conclude that they must have a cold.

(23c), on the other hand, relays the weakest modal force among these modals. Yes, stereotypically one can say that runny noses provide good enough indirect evidence for a cold, but in the case of (23c), the speaker knows, for example, that the person in question is allergic to pollen and it is Spring, so a runny nose does not necessarily lead to the stereotypically chosen conclusion of a cold – it competes with other, reasonably stable knowledge concerning the person's allergies and how, during Spring, they sometimes have a runny nose. This shows in (24), where both alternatives share the same modal force:

(24) *O seu nariz está escorrendo.*

Você pode   estar resfriada

You MIGHT/MAY(Pres.3s) be.Inf cold.adj(f.)

ou você pode   estar   com alergia.

or you   MIGHT/MAY(Pres.3s) be.Inf with allergy.

'You nose is running. You might/may have a cold or you might/may have allergies.'

The examples above illustrate three different strengths of epistemic modals and their usage in connection with indirect evidence. I am not going to discuss here the other modal bases these modals can interact with, but instead I move on to the analysis of their behavior in relation to stronger evidence.

Let us say I am walking down the street and I see a woman far ahead, with her back to me. Even though I can tell very little considering the distance and from the angle I can see her, I think aloud and say (25):

(25) *Pode ser a Elena.*

 (It) MIGHT/MAY(Pres.3s) be.Inf the Elena.

'It might/may be Elena.'

Then I see that actually, as the distance between us diminishes, that this 'Elena' – as far as I know, Elena was a brunette – actually has dark blonde hair. According to vF&G (2010), as discussed in the previous Chapter, with weaker modals such as *might*, one can distance oneself from the truth of the prejacent, being able to then to make a correction, such as:

(26) *Ah, pode   não[38] ser   a Elena.   Elena não é*

 Ah,   MIGHT/MAY(Pres.3s)   no   be.Inf   the   Elena.   Elena   no be(Pres.3s)

 loira.

  blonde.

 'Ah, it might/may not be Elena. Elena is not blonde.'

I walk a bit more, and then, as the distance between us shortens further, I see the woman's profile and there is a striking resemblance to the Elena I know. My direct evidence does not settle the prejacent, it only entails it, and even though I believe it is indeed Elena, I feel certain that it is her, but with a different hair color, I can still be felicitous saying:

(27) *Deve ser a Elena.*

 (It) MUST(Pres.3s) be.Inf the Elena.

  'It must be Elena.'

According to vF&G (2010), the speaker can felicitously use *must* even though they are certain about the prejacent, but do not have sufficiently reliable or trustworthy evidence to back up such certainty. Perhaps I forgot my glasses at home and cannot fully trust my eyes, perhaps it has been a long time since I last saw Elena and I think she could have changed enough to get me confused, etc.

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[38] Negation and its interactions with modals are not within the scope of this work. I limit myself to the test proposed by vF&G (2010) for weak *poder.*

Something makes me second-guess myself, and due to that the examples with *must*, and as well for BrP *poder*, are felicitous.

I get restless and decide to call a mutual friend on the phone, Katia, who I know has kept in touch with Elena much more than I have. Katia provides me with the information that Elena lives on the street I am on, and actually has dyed her hair blonde recently. Well, the fact Katia is close to Elena makes her report highly trustworthy, and updates my knowledge of Elena as well as triggers a belief revision as to whether the 'actual' Elena is a few meters ahead of me. Considering the strength of the evidence (Matthewson *in press*), I say to myself, given what I know now:

(28) *Tem   que ser   a Elena.*

(It) HAVE(PRES.3S) that be.INF the Elena.

'It has to be Elena.'

I pick up the pace in order to reach her, and call out her name. She turns around and sees me, waves and smiles. I see her face, even thought it had been many years since I had last seen her, she has aged and her hair is a different color, I believe my eyes – I am close enough that the lack of glasses is no longer relevant or something for me to worry about as making my sight less reliable as a source of information – it is indeed Elena. I no longer can felicitously utter (even to myself), (25), (27) nor (28), the kernel has incorporated direct, sensory information, as well as highly trustworthy reports from Katia, that the prejacent is true, it is Elena who is standing in front of me.

With the end of the Elena dilemma[39], Karttunen's Problem can be addressed again, for in this final situation, only the utterance of the prejacent is felicitous, but (27), with *dever* and *must*, is coherent with vF&G's (2010) claim that *must* (and therefore *dever*) is not weak, it encodes different types of evidence, or even better, as Matthewson (*in press*) complements, its evidence trustworthiness

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[39] Kripke (1977) addresses this type of situation, particularly concerning semantic reference apart from speaker's reference. As discussed in Campos (1992) concerning 'Jones' and Smith, if Elena would have turned out to be a different woman, not confirming my modal exasperations and revealing herself as Joan, the reference of the woman as 'Elena' would have been the semantic reference whereas Joan would have been the speaker's reference. In these examples, gladly, both were Elena.

is not enough to simply affirm the prejacent or, as in (29), use a stronger modal force:

(29) *É   a Elena.*
 (It) be(PRES.3S) the Elena.
    'It is Elena.'

As evidence trustworthiness improved, *ter que* (*have to*) was felicitous, up to the point where the prejacent was established (no longer only entailed) by the propositions incorporated in the kernel. As Matthewson's (*in press*) extension of vF&G's (2010) framework, Katia's highly reliable report was incorporated in the kernel, as well as better, more reliable visual input on my part. Once the threshold was surpassed, the propositions in the kernel were able to completely establish the prejacent, therefore no longer licensing either modal.

It is possible to say, thus, that *poder*, *dever* and *ter que* find themselves in a scale – *poder* is weaker than *dever* and *ter que*, and *dever*, even though not weak, is less strong than *ter que*. The semantic underspecification of *dever* licenses it in contexts in which the evidence strength ranges from weak to strong. These characteristics are typical of non-dual modals, as argued by Kratzer (2012) with added discussions from Rullmann et al. (2008) and Faller (2002) concerning cross-linguistic comparisons with underrepresented languages such as St'át'imcets and Cuzco Quechua. Aligning with Pessotto (2014), I argue that the BrP modal *dever* is an upper-end, non-dual modal, whose possibility/necessity is highly contextual. Monawar and Strey (*in press*) discuss how, at the level of production, prosody can strengthen or weaken *dever* even further, to the point where it can almost stand side by side with *poder* or even *ter que*, due to its vagueness. I consider, then, *poder* and *ter que* as duals, while *dever* stands as a non-dual modal in BrP. In the next section, I will propose an illustrative analysis of epistemic indicative conditionals in BrP taking into consideration the epistemic modals discussed in this section, as well as the methodological and theoretical approaches outlined in Chapters One and Two.

2 BRAZILIAN PORTUGUESE EPISTEMIC INDICATIVE CONDITIONALS

Following what has been previously outlined in Chapter Two concerning indicative conditionals, I will first discuss Kratzer's (2012: 98) example (34), discussed in Chapter Two as (1), below as (30), in its BrP version:

(30) *Se as luzes no seu escritório estão acesas, Roger está em casa.*

'If the lights in his study are on, Roger is home.'

Kratzer (2012: 98) affirms that this indicative conditional is not bare – it is implicitly modalized by epistemic *MUST*[40], rendering the logical form also applied to BrP:

(31) *(MUST: as luzes no seu escritório estão acesas) (Roger está em casa)*

(32) (*MUST*: the lights in his study are on) (Roger is home)

The same conditional with overt *dever* and *must* are my BrP version and Kratzer's example (2012: 98) (37), below as (33) and (34), respectively:

(33) *Se as luzes no seu escritório estão acesas, Roger deve estar em casa.*

(34) If the lights in his study are on, Roger must be home.

The same conditional could be uttered felicitously according to the discussion above concerning BrP epistemic modals, with *poder* or even *ter que*, depending on the evidence strength and trustworthiness, as well as what is settled or entailed by the kernel. However, covert cases seem to be hazy, as I discussed before in Chapter Two concerning the use of covert *MUST* regardless of the absence or presence of evidence (even if indirect) as assumed by Kratzer (2012).

Following my argument at the end of section two in the previous Chapter, covert *MUST* (thus, covert *MUST* in BrP as well) can be used in cases where overt *must* (overt *dever*, too) would not be felicitous, such as a situation having had been witnessed by the speaker, the existence of direct sensory input or even

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[40] I am not going to discuss how covert operators restrict overt modals with modal bases other than epistemic. For that, I refer to Kratzer (2012).

trustworthy reports that represented evidence strength high enough to be incorporated in the kernel. The same was the case in the non-conditional examples discussed in the previous section where the threshold that limited up to what point of evidence strength and trustworthiness it was still considered indirect enough not to settle the prejacent from the kernel, therefore licensing the correspondent strong(er) or weak(er) overt modal. After that, only the assertion of the prejacent itself was licensed. Could it also have been covertly modalized, then? This is not a question I can answer without further work on context, which is underway. Nevertheless, it seems reasonable enough to argue for covert modality since overt modality is not felicitous, for the assertion seems to be still based on something[41]. Moreover, it seems more adequate for a cross-linguistic comparison to disregard parallel relationships between covert and overt *must* as a lexicalized operator, and instead consider it independently from its core modal and semantic features. For this, further work on the behavior of this covert operator within BrP modality is going to be developed.

Going back to Roger in (33) and (34), then, I would felicitously assert them under the conditions established before for *dever* and *must*. The *if*-clause, following Kratzer's perspective, would restrict the domain of these overt modals. In the case of covert operators, such as in (31) and (32), the *if*-clause restricts the domain of the covert modal.

Leaving Roger and going to Peterson's (2012) Gitksan example discussed in Pessotto (2014: 69), regarding evidential-inferential '=ima' which, according to the latter, is best translated as *dever* in BrP, such as in her example (34') reproduced below as (35):

(35) *Ele deve ter   ido   pescar.*

He deve have-INF go-PastPart fish-INF

'He must have gone fishing.'

If we make conditionals out of this context, for the sake of illustration, for example, we would have the following possibilities, considering the context in which I go to Peter's tent and see that his rod and tackle box are not where he

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[41] I refrain from proposing analyses using covert Gen due to the yet exploratory nature of my claim. Further work is going to take place on this matter.

usually keeps them, and he is nowhere to be seen. The *if*-clause, as a restrictor, narrows down the domain with basis on the current state of reality available to the speaker:

(36) *Se ele nem as coisas dele estão   aqui,*

   If he   nor the things his   be(PRES.3PL.) here,

ele deve ter ido pescar.

he MUST have go(PASTPART.) fish(INF.)

   'If neither he nor his things are here, he must have gone fishing.'

The 'bare' conditional equivalent, below as (37), shows a change in the aspect of the consequent, from *have gone* to *went*:

(37) *Se ele nem as coisas dele estão   aqui,*

If he   nor the things his   be(PRES.3PL.) here,

   ele   foi   pescar.

   he go(PAST) fish(INF.)

   'If neither he nor his things are here, he went fishing.'

Following Kratzer (2012), the logical form corresponds to (*MUST* neither him nor his things are here) (he went fishing).

It seems, then, that covert or overt modalization also interferes with the choice of aspect, coinciding thus with Condoravdi's (2001: 4) discussion of the example (6b) "He might have won", in which she claims both epistemic and metaphysical readings are available, depending on surrounding context – if the issue of his fishing is presupposed to be settled or not, even if it is technically past, perhaps he is not fishing yet. It seems possible to say, thus, that in (37), seemingly due to something related to the nature of this covert operator, only the epistemic reading is made available, perhaps due to its presupposition being guaranteed and settled in comparison to the metaphysical alternative with the overt modal. Moreover,in (36) the use of the perfect in BrP allows for the inclusion of his action of fishing also in the interval that began before the utterance time yet includes it, even if barely. In (37), the absence of the perfect causes the interval not to include the utterance time anymore, and the reading is non-shifted.

Getting into the temporal and aspectual interactions concerning modals, Condoravdi (2001) claims that epistemic modals take present perspective, and present or past orientation. In (36), the perspective is present, but the modal orientation is past, having been shifted backwards by the perfect. What the modal scopes over or under is what determines an epistemic or a metaphysical reading, as discussed in Chapter Two. In (36), the modal can scope over or under the perfect, therefore being ambiguous as to epistemic or metaphysical in the absence of more context. In (33), on the other hand, the perspective is present and the modal orientation is also present.

Furthermore, maintaining the same *if*-clause, different consequents can be uttered with *poder* as well as *ter que*; granted, not maintaining the same modal force that would make it as close to '=ima' as *dever* seems to be, but nonetheless, possible assertions within their own epistemic/evidential and contextual restrictions.

In this section, BrP epistemic indicative conditionals were succinctly addressed in order to illustrate the possible interactions with different epistemic modals, as well as covert and overt modality. Condoravdi's (2001) fundamental notions of perspective and orientation were used, as well as her take on epistemic and metaphysical readings differing in terms of the scope of the modal in relation to the perfect. More extensive, detailed work on temporal and aspectual interactions concerning BrP modals is underway in Ibaños and Monawar (*in prep.*) concerning their interference on modal force.

FINAL REMARKS

This work has achieved its goal to establish ontological and theoretical connections and debates concerning modality as a phenomenon of the mind and of natural language, expressed in a multitude of ways – one of them, chosen to illustrate the potential application of these discussions – the epistemic indicative conditional.

Chomsky's biolinguistic approach to language sets the groundwork for a discussion of modality within the mind – how it can relate to reasoning and planning – and also its relationship with the world as part of such mind that, in turn, belongs to a knower (in Stalnaker's terms), a speaker, an 'actual' being in an 'actual' world.

This being is not void of perspectivism, they do not have direct access to the world, perceiving so-called *reality* without any filters. They are beings who have beliefs, who have knowledge, are able to reflect upon such beliefs and knowledge and, with limited introspection, discuss them. And it is by discussing them, directly or indirectly, that this being modalizes, displaces themselves or their counterparts, or even other people or other counterparts, in time or space, maybe even going to a different, possible world. Such worlds are the ways things could have been, while ours, 'actual' (precisely because it is ours), is the one where things are the way they are. These travels are possible via the tracks of accessibility relations, and their types dictate the kind of travel this being is in for. The travel we have bought a ticket for at the beginning of this work was one concerning knowledge, belief, evidence – an epistemic journey – and how they can relate, within a limited context, with indicative conditionals, time, aspect and modals (overt as well as covert).

Kratzer's approach was the one mainly responsible for the itinerary of this journey, with collaborations from other authors who have built upon and expanded

her work to discuss in particular notions of evidence within epistemic modals and their temporal orientations. I have eagerly sought to provide my own collaboration in terms of the discussion of the possible evidential features of the covert epistemic *MUST*, and a better delimitation between it and Gen. Another contribution of this work has been the articulation proposed concerning a more evidential take on epistemic modals and how evidence strength collaborates with modal force. The final analysis, even though designed simply to illustrate the features discussed as well as BrP epistemic modality, provides more material of discussion concerning this language's modal system.

The journey has not come to an end, after all, this is a hop-on hop-off train. For now let us enjoy the view until it is time to hop on again. It will be soon.

The journey of a thousand miles begins with one step.
Lao Tzu

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