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## Construction Grammar as applied to core English modality

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### *Abstract*

*The current study seeks to apply Construction Grammar to the phenomenon of modality. To facilitate a thorough application and analysis, examples of both epistemic and root modal verbs of English are considered. Specifically, those verbs of English chosen for the current study are CAN/MAY and MUST/SHOULD. Motivation for these choices is provided as well as a brief look at the other types of modal verbs existent in the language. In applying Construction Grammar to modality, the research poses the following hypotheses: 1) there are varying types of modality in English; 2) these modal variations are realized uniquely and; 3) an accurate and effective account of these unique modalities and corresponding marking systems can be provided within the Construction Grammar (CxG) framework. In order to ascertain these hypotheses, the current study asks the questions: 1) what are the modal variations of English; 2) how are these variations realized and; 3) what would a Construction Grammar analysis of modality in English look like?*

*To answer these questions, various examples of modality are analysed and the differences and similarities between the expressions gauged. A schema similar to that of RRG is then applied while assuming the postulates of Construction Grammar. Bearing these goals in mind, the phenomenon of modality itself as well as an overview of the salient points of Construction Grammar are examined. Construction Grammar is then applied to the examples and visually represented in a Role and Reference Grammar-style schema. The successes of both the application of Construction Grammar as well as the proposed schema are examined. It is found that, in keeping with the hypotheses presented, expressions of modality in English offer as many ambiguous interpretations and unique realizations as there are conversational situations in which they could be uttered. The modality of English is shown to be heavily context and in some cases subject dependant. It is also found that, as hypothesised, Construction Grammar is a suitable framework within which to analyse modality in both languages. In addition, the proposed schema proves adequate in visually representing the relationship between the pragmatic, semantic, morphological and syntactic levels of the modal expression. These findings are significant in that they promote the increasing acceptance of Construction Grammar as an appropriate and sufficient grammar theory as well as advancing the understanding of linguistic modality.*

### **1.0 Introduction**

Fortunately for those who enjoy popular fiction, snappy one-liners and bad puns, language is not tidy<sup>2</sup>. Unfortunately for past generations of linguistic theorists, this fact demands a migration from the heavily ordered, almost prescriptive approach to grammar accepted in such theories as Generative Grammar (Michaelis, 2006) to a theoretic framework which accounts for the meaning of utterances as constructions at the syntactic, morphological, phonological, semantic and pragmatics levels, regardless of their length, pattern or technical grammaticality. This shift in approach has been heralded as an important step towards understanding the everyday use of natural languages, as natural language users are almost unanimously, spontaneously inventive in natural speech.

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<sup>2</sup> By “not tidy,” it is meant that language does not follow an unyielding, unchanging set of rules. Usage and meaning are not predictable and speakers often employ words or phrases which appear to vary, or even contradict, their prescribed “basic” definition.

## 1.1 Hypothesis and Research Questions

The current study poses the following hypotheses: 1) there are varying types of modality in English; 2) these modal variations are realized uniquely and; 3) an accurate and effective account of these unique modalities and corresponding marking systems can be provided within the Construction Grammar (CxG) framework. In order to ascertain these hypotheses, the current study asks the questions: 1) what are the modal variations of English; 2) how are these variations realized and; 3) what would a Construction Grammar analysis of modality in English look like?

To answer these questions, the current study analyses examples of modality in English and gages the differences and similarities between the expressions of traditional and non-traditional modality. A schema similar to that of RRG is then applied while assuming the postulates of CxG.

## 1.2 Data

To facilitate the study of modality in English, examples found in relevant literature as well as instances of American English and Irish English modality gathered from actual conversations. Though a comparison of other dialects of English, such as British English or Australian English, would no doubt prove to be interesting research, such an undertaking is simply beyond the current study's scope.

## 1.3 Construction Grammar

Though a more comprehensive account of CxG is provided in Section 3, it is worthwhile here to briefly describe the theory. Prompted by the advancement of Cognitive Semantics in the mid-1970's, the seedling studies of CxG eventually took root as a fully developed theory in the 1980's due to the accomplishments of linguists such as Charles Fillmore, Paul Kay and George Lakoff (Contributors, 2009). Central to the CxG approach is the assumption that all constructions are equally important in the development of utterance construction and meaning, and that no piece of an utterance, such as a word or morpheme, is more basic than any other (Fried, 2010).

As language is not tidy, neither, then, is any theory of grammar tidy or flawless. Though the established approach to construction representation in CxG has until recently consisted of a "layered" approach implementing various "slides" of thematic roles and operators laid on top of each other embedding pragmatic, semantic and syntactic layers within one another (Michaelis, 2006), these schema representations are often cumbersome and intractable<sup>3</sup> or are unable to capture the relationship of form and function in a visually obvious way<sup>4</sup>. The schema description of Role and Reference Grammar (RRG), however, offers a concise, agile structural representation which has recently been successfully applied to CxG (Nolan, 2008). RRG's linear schema structure offers a valuable alternative to CxG's embedding proposal as it effectively illustrates the CxG claim that syntax and the lexicon form the poles of a syntax-lexicon continuum (Croft, 2000), thus displaying once again the pairing of form and meaning in words and complex constructions alike.

<sup>3</sup> For an example of this, see (Leino, 2005).

<sup>4</sup> Even Michaelis' representations can be awkward. See (Michaelis, 2006).

## 1.4 Modality

It seems fitting, therefore, to examine the complex system of modality within a framework such as CxG which can parallel its gradient nature (Traugott, 2006). Though Perkins points out that “the number of modalities one decides upon is to some extent a matter of different ways of slicing the same cake” (Perkins, 1983), this study will use the definitions of modal categories as defined by Lyons (Lyons, 1977), and these categories will be referred to as *epistemic modality* and *root modality*. As quoted in Palmer:

“Epistemic modality...is concerned with matters of knowledge, belief, or opinion rather than fact.”

And later, on root modality, “...is concerned with the necessity or possibility of acts performed by morally responsible agents.”<sup>5</sup> (Palmer, 1986)

These two distinctions are acknowledged in both linguistic and logical studies of modality. For centuries philosophers have considered the study of modality to encompass necessity, possibility and impossibility and the relationships between the three (Perkins, 1983). Conceptually, modality “construes talk about possible worlds as talk about ways in which we could conceive the world to be different” (Haack, 1978: 191, as quoted in Perkins, 1983). In linguistics, the study of modality is centred around “the linguistic phenomenon whereby grammar allows one to say things about, or on the basis of, situations which need not be real” (Portner, 2009).

## 2.0 Methodology

Before an application of CxG to modality is attempted, a description of the methods and materials used in the research is due.

### 2.1 Modal Verbs Chosen

This research examines the use of modals CAN/MAY and MUST/SHOULD in English. The verbs chosen are a portion of the so-called “core” modals and are addressed in this study as they form the fundamental level of the expression of modality in both languages. By “core” modal, it is meant those modal verbs which express modality using only the modal verb itself and a bare infinitive of the action verb accompanying it.

The modal verbs above were chosen for the current study as they represent classic examples of core modality in English and are commonly found in natural speech. Also, because they are popular conveyors of modality, they offer ample examples of ambiguity and realizational variation. The analysis of semi-modals, those fixed idiomatic expressions which are similar to modals in meaning but not in syntactic realization, is beyond the scope of this study and therefore is not attempted.

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<sup>5</sup> While Lyons actually uses the term “deontic” in this definition, the current study will use the same definition to describe the preferred term “root.”

## 2.2 Why CxG?

Central to the current study is the application of the theories of CxG to modality. In entering upon a study of the phenomenon of modality, it becomes obvious that modal verbs and the manifestation of modality in communication involve a strikingly rich system of expression. While a verb of action or accomplishment may simply derive its full meaning from a lexical entry, verbs of modality are shaded by each level of language, from the pragmatic to the syntactic. Because CxG postulates that meaning is a product of the full construction, the pairing of form and function, it is better able than other theories of grammar to capture the nature of modal verbs.

The CxG idea of the *construction* also efficiently explains the ambiguous interpretations of modal verbs often present in natural speech. It is true that many leading linguists, some of whom are quoted in the current study, advocate a lexically-driven description of modality or a “fuzzy set” approach in which core modals are offered as the best examples of modality while semi-modals or non-core modals populate an outer fringe of fundamental modality. Though herself not a proponent of a CxG approach, Anna Papafragou succinctly captures the failings of ambiguity-based modality theories:

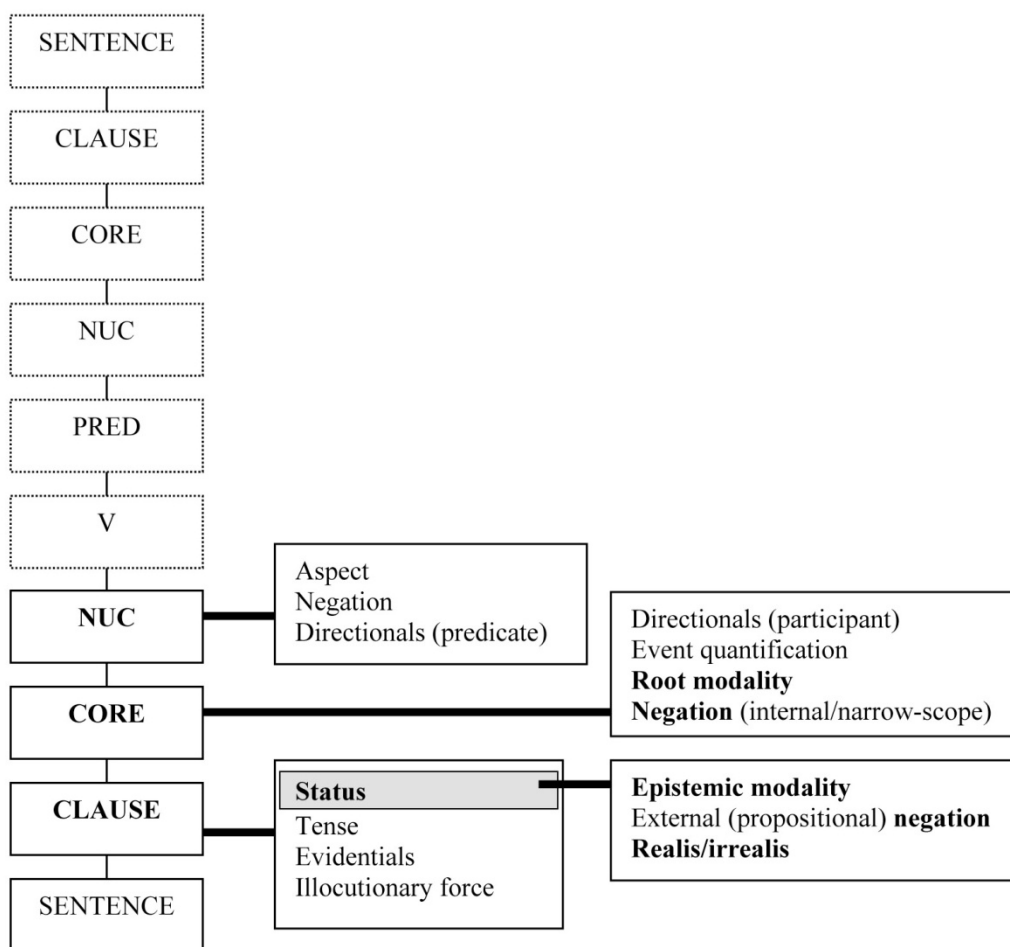
“...although the fundamental point of the ambiguity-based approach is the rigid distinction between the epistemic and various non-epistemic ‘meanings’ of the modals, [these theories] are forced to recognise a wide range of intermediate cases, where for a variety of reasons the proposed semantic distinctions prove inert, indistinguishable or insufficient” (Papafragou, 2000: 25).

If each slightly non-core case of modality along the phenomenon’s heavily-graded meaning continuum is to be regarded as an outlier case which demands a tailored semantic content, the semantic component of meaning encoding becomes quite large: larger than is intuitively probable. Instead, CxG allows for the interpretation of individual constructions with unique meanings based on input from all levels of communication.

As discussed briefly in Chapter One, these modal verbs are studied within a CxG framework while visually represented in a RRG-style schema. Though the CxG formal representation may prove useful in certain contexts, it is acknowledged by leading CxG scholars that the theory’s schema is often cumbersome and unnecessarily bulky as the nested boxes can often seem belaboured and over-complicated at first glance (Michaelis, *forthcoming*). The shortcomings of the CxG schema are amplified when an application to modality is attempted; the open-ended, imprecise organization of features applied to each category fail to capture the nuances of modality at the semantic and pragmatic levels of speech.

For these reasons, it is necessary in this study to borrow the schema of a grammar theory which is similar to CxG in its assumptions of meaning composition, but which offers a formal representation that is both easy to comprehend and suited to the imposition of CxG theories. RRG meets these criteria nicely, as it attempts to “lexically decompose” the meanings of the words themselves so that each lexical entry is represented by the combination of several “semantic primes” (Cruse, 2000). Indeed, the entire movement is based on an international, motivated research effort to create a grammar model capable of encompassing the syntactic, semantic and pragmatic nuances of each utterance with the diverse languages of the world (Van Valin, 2007).

Most modern linguists will agree that a grammar model based solely on the nominative-accusative, SVO languages such as English only represents a portion of the world language picture. For example, while grammars built upon English and syntactically similar languages take the notion of the “subject” as a matter of fact, Asian languages offer many examples where the “subject” idea as the western world knows it is nonexistent. It’s no surprise, then, that post-Chomsky grammarians have become increasingly interested in building a truly universal grammar model, one that might accurately represent languages ranging from English to Tibetan to Idoma. As traditional representations of the clause structure are often narrow in the scope of applicable languages, RRG reconfigures the depiction to embody the idea of the “layered structure of the clause” (LSC). The LSC is composed of the ‘NUCLEUS’ which contains the predicate(s); the ‘CORE’ which contains the nucleus and the predicate arguments; and the ‘CLAUSE.’ As evidenced by Figure 2.1, features of each speech entity are then plugged into the meaning of the construction as a whole at various levels.



**Figure 1: Diagrammatic representation of the layered structure of the clause (Nolan, 2008)**

Here it is shown that complex semantic operators such as tense, aspect, illocutionary force and, most importantly for the current study, modality influence an utterance at various levels (Van Valin, 2005). As depicted in Figure 1, root modality is an operator which modifies the CORE of an utterance, while epistemic modality modifies the utterance at the CLAUSE level as a sub-operator of Status (Nolan, 2008). These relationships are based on the tendency of root modality to modify the relation between the actor and the action, and that of epistemic modality to influence the clause as a whole (Van Valin, 2005). In later chapters, the

importance of noting modality's influence over the entire utterance is explored in further detail.

Also fundamental to the aims of RRG is an attempt to "lexically decompose" the meanings of the words themselves so that each lexical entry is represented by the combination of several "semantic primes" (Cruse, 2000) rather than assuming any "deep" and "surface" structures posited by Chomsky. An important part of understanding the encoding of meaning in a construction begins with dissecting the construction at a semantic level. In an RRG representation, the logical structure of a verb is scrutinized according to the individual class, called *Aktionsart* classes, of each verb: whether the verb is a STATE, ACTIVITY, ACHIEVEMENT, SEMELFACTIVE, ACCOMPLISHMENT, ACTIVE ACCOMPLISHMENT or CAUSATIVE. The STATE and ACTIVITY verbs are assumed to be a basis of lexical decomposition from which the other classes are derived. The RRG logical structures for the classes of verbs discussed in the current study are represented in the table below:

STATE	<b>predicate'</b> (x) or (x,y)
ACTIVITY	<b>do'</b> (x[ <b>predicate'</b> (x) or (x,y)])
ACHIEVEMENT	INGR <b>predicate'</b> (x) or (x,y)
	INGR <b>do'</b> (x[ <b>predicate'</b> (x) or (x,y)])
ACCOMPLISHMENT	BECOME <b>predicate'</b> (x) or (x,y)
	BECOME <b>do'</b> (x[ <b>predicate'</b> (x) or (x,y)])

Table 1: Lexical representations for verb classes

In Table 1 above, state verbs have bare predicates. This includes verbs such as *know* and *dead*. An activity verb contains the element of **do'**, such as **do'**(x[**cry'**(x)]) for the verb *cry*. Achievement verbs, those denoting an immediate change of state or start of activity such as the verb *shatter*, contain an ingressive operator, coded here as INGR. Finally, accomplishment verbs like *melt* (that is, those which are non-punctual changes of activity or state) include the operator BECOME. The 'x' and 'y' in the lexical representations in Table 2.1 are place-holders for the subjects of the sentence.

### 3.0 CxG

The use of a construction-based theory of grammar<sup>6</sup> assumes that the construction itself is a grammatical object, perhaps best represented by single-clause patterns. The examples of modal constructions provided in the current study, therefore, are mostly of the above-mentioned type. To understand the treatment of modality in CxG, a brief overview of the theory's terminology and the basic premises are in order. As the current study prefers the formal model used in RRG to represent the theories of CxG, the CxG formal model is briefly included solely for the sake of providing a more thorough description of the theory.

#### 3.1 CxG Foundations

One of the most significant postulates of CxG is that it offers a departure from the lexical licensing approach of Lexical Function Grammar (Bresnan, 2001), Head-Driven Phrase Structure (Pollard & Sag) and Role and Reference Grammar (Van Valin & LaPolla, 1997).

<sup>6</sup> Grammar theories predating Chomsky's Transformational Grammar of the 1980's and 1990's acknowledged the construction's central role in utterance meaning (Goldberg, 1995).

These theories hold that the fundamental scene described by a sentence is controlled by the lexical entry of the head verb. “Linking rules” exist within the lexical entry of the verb which prescribe the verb’s intended interpretation for each unique instance of use. The concept is widely popular and has been central to the argument structure in most formal theories (Michaelis & Ruppenhofer, 2001). Unfortunately, these rules often prove insufficient to account for each nuance of a verb’s interpretation. Take (1) below:

- (1) a Two women stood in the plaza.  
b In the plaza stood two women. (Michaelis & Ruppenhofer, 2001)

The different syntactic structures of (1)a and (1)b above display, when assuming a lexical licensing approach, two argument-structure frames for the verb *stand*. The linking rules postulated by this approach, however, make it difficult to explain the locative inversion displayed in (2) below:

- (2) Through the window on the second story was shooting a sniper.  
(Michaelis & Ruppenhofer, 2001)

Sentence (2) presents problems in a lexical licensing framework as the verb *shoot* does not possess a locative role or a theme role in its lexical entry, and yet, it is acceptable for *shoot* to appear in the locative-inversion configuration shown above. To account for this disparity, lexical licensing theories assume ‘overlay themes,’ but these devices are impromptu at best and insufficient in describing a living grammar used by natural speakers, as there are as many instances of ‘deviant’ verb usage in natural speech as ‘core’ usage. If the head verb of each sentence determined the argument structure of that sentence, a special verb sense for each instance of use would necessarily be assumed. Obviously, this is unrealistic when one considers the diversity of verb usage in natural speech (Michaelis & Ruppenhofer, 2001).

Central to the CxG claim that grammar is driven by the patterning of constructions is the idea that a construction provides meaning that is beyond the scope of the lexical entries of the words in an utterance. This refers to the conceptual “instructions” that a construction provides in sentence interpretation. The CxG definition states:

“C is a CONSTRUCTION iff<sub>det</sub> C is a form-meaning pair  $\langle F_1, S_1 \rangle$  such that some aspect of  $F_1$  or some aspect of  $S_1$  is not strictly predictable from C’s component parts or from other previously established constructions.” (Goldberg, 1995: 4)

A construction is considered in CxG to be a meaning-bearing element, such as a derivational marker or a prepositional phrase. The construction assumes the postulated OVERRIDE PRINCIPLE which states that in the event of a lexical and structure conflict arising in a sentence, the semantic characteristics of the lexical item conform to the grammatical structure accompanying it. This is not to say that linking patterns are unimportant: in fact, by acknowledging the OVERRIDE PRINCIPLE, proponents of CxG also acknowledge that linking rules contribute schematic semantic specifications of the verb. A construction analysis, however, assumes that linking patterns are only a part of the overall construction which interact with other specifications existing in the phrase to encode overall meaning (Michaelis & Ruppenhofer, 2001).

Also fundamental to the theory of CxG is the idea that there are no ‘core grammar’ structures within language: that all grammatical structures are equal and equally vital to meaning encoding and interpretation. This thought developed from the observation that much of the



corpus analyzed in the development of CxG contained ‘non-core’ grammatical structures. Hence, CxG theorists came to realize that the ‘felicitous’ use of language is an obvious indicator of one’s grasp of a language and that native speakers of a language, presumably the most competent users of that language, employ these creative constructions in natural speech more often than the ‘core’ structures.

### 3.2 CxG Basics and Modality

It is important to realize that the CxG approach views grammar rules as descriptions of grammatical categories, not as the procedure itself (Michaelis, *forthcoming*). These categories are taxonomically ordered and are referred to in CxG as *inheritance networks*. Inheritance networks encompass the full spectrum of the construction’s features so that a construction can belong to several inheritance networks at once, implying that constructions can display similar semantic and syntactic properties without assuming that each construction is an individual derivation of a “core” grammatical structure. In an application of CxG to modal constructions, this point is significant as it enables linguists to assume a common semantic thread in all modal forms, even in representations as seemingly diverse as epistemic and root modalities, while acknowledging that the variety of syntactic realizations reflect a wide array of specific construction meaning. However, root and epistemic modalities are often realized identically syntactically but are non-synonymous in interpretation. For instance, (5):

(5) That should be Liam at the door.

The normal interpretation of (5) does not include a moral obligation for Liam to be at the door. Instead, a hearer of (5) would assume that the speaker is basing her utterance upon situational knowledge and would therefore suppose an epistemic interpretation. CxG is able to account for the two different meanings of the same syntactic form by regarding them as “two different collections of form-meaning licensers,” (Michaelis, *forthcoming*), or as two different groups of constructions.

When entering upon a CxG approach to modal verbs, it is essential to recall the basic postulate of the theory: that the construction (in this case, the modal construction) offers an insight of meaning beyond that of the lexical entry alone and that derivations of that meaning are possible through linking rules in the semantic structure of the construction. In fact, it is even posited by some experts in modality that the basic definitions of the lexical entries of the modal verbs have dissipated over the centuries to almost nothing (Palmer, 1986), which would indicate that hearer interpretation of modal constructions is derived from the semantic structure as well as the syntactic realization of the utterance. In the following sections, this idea is expanded to include the root and epistemic modal constructions of English.

It is also imperative to be aware of the existing theories regarding the phenomenon of modality itself. To that end, the following section, Section 4, is dedicated to the definition and description of the modals analyzed in the current study, root and epistemic, according to the works of leading modality scholars, both within linguistic and cognitive studies frameworks.

### 4.0 Modality

The study of modality in linguistics, that is, the pragmatic, semantic and syntactic processes involved in its realization, has become increasingly more popular in recent years, paralleling the advent of Cognitive Linguistics as well as constructionalist grammars. Interest in the

subject of modality and its implications to language, however, is as ancient as the study of philosophy itself. Modality has enjoyed a long and heavily-debated history as a subject of logical discussion by classical philosophers such as Aristotle and Socrates (Perkins, 1983).

By definition, modality is the denotation of mood, manner or mode (Matthews, 2007). In linguistics, the study of modality concentrates on the means of expressing those qualities and the encoding process involved in that expression. This study can include core or semi-modals which express a range of modal shadings, from personal feelings or attitudes to judgements or assessments based on the speaker's knowledge of the world around her (Biber, 1999).

#### 4.1 Root Modality

Though, as mentioned in Section One, there are any number of ways to divide and label the various semantic types of modality, the current study will use the "root" and "epistemic" distinctions preferred by Coates, Palmer and a host of other experts in the field of both linguistic and logical modality (Palmer, 1986), (Coates, 1983)<sup>7</sup>.

Root modality can be divided into root possibility and root necessity, and is usually associated with the "deontic" sense, meaning that the modal verbs in question convey a sense of moral obligation, or the "dynamic" sense in which the modal verbs describe one's ability or opportunity. These two classifications are further divided by some (notably, (Portner, 2009)), but for the current study, no further distinctions are necessary.

Modality is a useful tool in linguistic hedging and the deontic modals can range from a weak suggestion to a strict command depending upon the modal used, the subject matter discussed and the context in which it is uttered. Instead of asserting absolutely that such and such is the case, a speaker may – perhaps for reasons of uncertainty, tact or politeness – indicate that the truth of what one has to say is by no means assured; that it is based merely on conjecture or that it can be verified only as some point in the future (Perkins, 1983). For example, note the strength of the obligational differences in the sentences below:

- (6) a You should pay for that.  
b You must pay for that.

Modals *should* and *must* are common conveyers of obligation. Here, *should* encodes a sense of possibility by weakly implying that one has a responsibility to pay, while *must* speaks quite clearly of necessity, expressing a requirement to pay. It is interesting to note that at the semantic level there is an understanding that *should* speaks to a hypothetical world in which the act of paying is preferred, while *must* is an unmistakably concrete command to pay, now, in this world. This realis/irrealis distinction demonstrates the complexity of both the sentential realization of modality as well as the concept of modality which exists in the speaker's mind.

Dynamic modality often subtly hedges a statement of belief, however, just as moral conviction is hedged in deontic modality. For example, sentences (7)a and (7)b below:

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<sup>7</sup> Portner prefers a further division of modal verbs into "sentential," "sub-sentential" and "discourse" modality to mark the level of communication at which the modality in question operates. The current study is solely concerned with the "sentential" realizations of modality, and will therefore disregard this otherwise intelligent division scheme.

- (7) a Hudson drives.  
b Hudson can drive.

The syntactic variation between the sentences in (7) is slight, but the semantic meaning behind the two is vastly different. While (7a) asserts that Hudson does drive on a regular basis and in fact, may be currently driving, the dynamic modal verb *can* in (7b) merely indicates that Hudson has the ability to drive, though he may never use this ability for the rest of his life. Sentence (7b) serves to affirm the speaker's knowledge of Hudson's possession of the skill of driving, but does not make the further assertion that Hudson ever employs it, and so the speaker is able to commit to a slightly less ambitious statement. If Hudson never actually drives, (7b) is still true.

#### 4.2 Epistemic Modality

Following the preferred classification scheme of both Portner and Perkins (Portner, 2009)<sup>8</sup> and (Perkins, 1983), the other main classification of modality is epistemic, in which a speaker may state a fact-based opinion. Epistemic modality, though related to root modality, is concerned with stating a fact or opinion based upon knowledge which the speaker may possess.

The realis/irrealis distinction discussed above is further demonstrated when examples of epistemic modality are considered. As established in Section One, epistemic modality is concerned with the beliefs or opinions a speaker may express based on her knowledge of the world around her, and the linguistic realization of those beliefs can reflect either a realis (real-world) possibility or an irrealis ("other" world) possibility. Consider the sentences in (8) below:

- (8) a {upon learning Ken won the prize} That should be Mary.  
b {upon hearing a knock at the door} That should be Mary.

The examples in (8) demonstrate the modal verb *should* as describing irrealis root modality as in (8a) and realis epistemic modality as in (8b). Though the syntactic realizations are exactly the same, the context of the utterances determines very different interpretations for the hearer. While (8a) represents the type of modality discussed in 4.2, that is, root modality depicting an assertion of what is morally correct in another or a "perfect" world, (8b) exemplifies epistemic modality in which the speaker asserts her belief that Mary is at the door based on her knowledge of the exact, real-world situation, such as the fact that she is expecting Mary to arrive soon or that she has seen Mary's car pull into the drive.

The statement of the speaker's beliefs based on the knowledge of the world around her is the crux of epistemic modality, but like the deontic and dynamic root modality, epistemic modality allows speakers to make statements of gradient levels of truth assurance. Consider (9):

- (9) a Zannie may win State.  
b Zannie must win State.

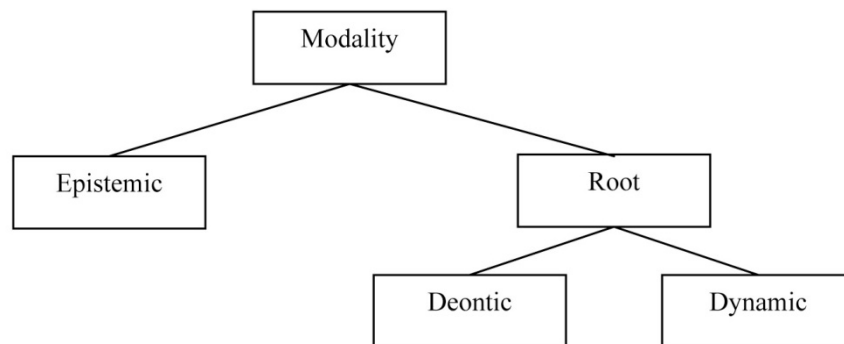
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<sup>8</sup> It should be noted, however, that Portner labels his "root" modals as "non-epistemic" and calls the "deontic" class "priority." The semantic distinctions which dictate their classifications, however, are the same as those employed in the current study, though I have chosen to use the traditional terms.

An interpretation of (9a) might read: Zannie has a good chance at winning State; while (9b)'s interpretation would more accurately be realized as: Zannie will almost certainly win State, if no unforeseen difficulties arise. Again, the use of modal verbs, in this case epistemic modals, lets speakers encode understated and yet precise semantic meaning.

### 4.3 Modality in Theory

In understanding modality, it is essential to acknowledge the many theories surrounding the phenomenon as well as the ways in which the types of modality relate to one another. For the purpose of establishing the basic links between epistemic and root modality, consider Figure 2 below:



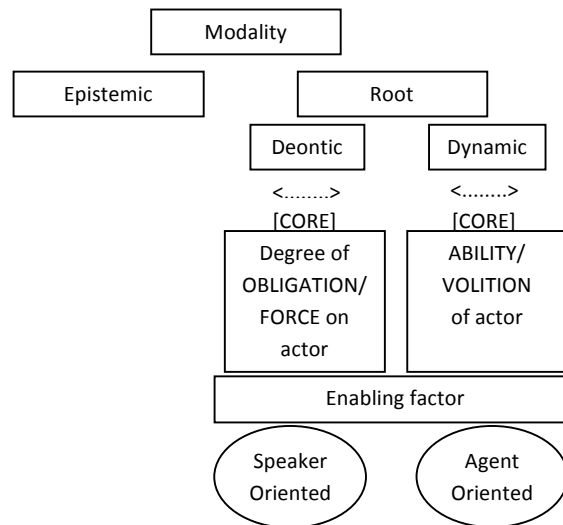
*Figure 2: Relationship of modalities, as drawn in (Nolan, 2008), based on (Coates, 1983)*

As Figure 2 illustrates, epistemic modality and root modality are branches of the same tree, with root modality further branching into deontic and dynamic modality.

#### 4.3.1 Modal Orientation

The two types of modality, root and epistemic, can be further delineated with regard to the orientation of the modality occurring in the individual utterance. Agent-oriented modality (AOM) refers to those instances of modality in which the agent performing the action of the clause is influenced in some way. This includes modality of obligation, necessity, ability and desire. Motivation in modality can initiate with the speaker as well. Speaker-oriented modality (SOM) refers to clauses in which the speaker enables the condition, as in instances of directives, imperatives, prohibitions, optatives, admonitions and permissions (Nolan, 2008).

The diagram in Figure 2 above is extended to illustrate AOM and SOM below:



**Figure 3: Extended relationships between modalities to include AOM and SOM enabling factors (Nolan, 2008)**

The distinctions between AOM and SOM are relevant when considering illocutionary force, or the speaker's combination of grammatical elements, background social or cultural knowledge and awareness of the immediate conversational context. Illocutionary force is regarded as a domain of the pragmatic level of communication and can include communicative encoding of the purposes or aims of the speaker. This is significant in a study of modality within a CxG framework in investigating the points at which modality is encoded at each level of the construction.

Some linguists suggest that the semantics involved in root modality can be defined in terms of force dynamics, as in the linguistic representation of the forces and barriers existent in the real or unreal worlds (Talmy, 1981, 1988). The theory posits that modals are commonly used for hedging purposes, the "clearer" force-dynamic modals such as *must* representing a stronger psychological barrier than those which carry less impact such as *could*.

#### 4.3.2 Modal Strength and Argument Structure

Much of the theory involving modality revolves around the "strength" of the modal verbs in question. In these theories, modality serves mainly as a tool of quantification whether universal, in the case of necessity, or existential, in the case of possibility. This is perhaps due to the fact that the primary language of interest in the study of modality has remained within the confines of English. "Confines" seems an appropriate word when considering the fact that in some languages, a "weak" modal, usually associated with existential quantification, can actually embody universal quantification while encoding a limited scope of reference based on their context (Portner, 2009).

Also pertinent to the examination of modality's syntactic representations are the theories surrounding its argument structure. In generative syntax theories, it has been assumed that epistemic modals always take a single propositional argument and that root modals take two propositional arguments. It is true that some modals do display a raising predicate while others employ control predicates, but these distinctions cannot be neatly bound to the root/epistemic division lines.

Popular, too, among generative grammarians is the idea that the different semantic categories of modal verbs are realized through different positions in the syntax, and reside at higher or lower positions in the tree structure of the generative grammar formal schemata: specifically, that epistemic modality always exists higher in the structure than root modality. A CxG approach to communication, however, would assume that each constructional realization of modality is able to dictate a unique position in the internal structure, depending upon the distinctive combination of syntax and semantics involved in the utterance. Following chapters of this work address the matter of modality's position within the framework of meaning construction in a CxG-modified RRG schema.

The current study regards the above generative grammar approaches to modality as insufficient based on the acknowledgement established in Section One: language is not tidy. The epistemic/root distinction is merely only a system of labelling a phenomenon which is quite complex. For example, (10):

- (10) a May I have a word with you?  
b I may have a word with you.

In (10), it is obvious that two different types of modality are represented, but it is not immediately obvious where to draw the epistemic/root modality division. While (10a) can almost directly be recognized as an appeal for permission, it is not entirely accurate to label the sentence root deontic, as a case could be made for considering the sentence epistemic in the sense that the speaker is appealing to her knowledge of the current situation and that of the hearer to ascertain whether she may have a word. The same arguments apply to (10b). Though it initially appears to be solely epistemic, one could argue that a sense of duty is implied in the utterance, making it root deontic. It is this inherent feature of natural language to produce as many "marginal" examples of constructions as it does "core" phrases which proves that a CxG grammar is an intuitive approach to grammatical organization.

### 4.3.3 Modal Logic

A discussion of modality is incomplete without a nod to the long tradition of studying modality within the realm of logic. Indeed, even the most purely linguistic approach to modality is well served by an acknowledgement and familiarity with the modal operators involved. When approaching modality from the perspective of linguistic theory, a few modal operators and characteristic modal sense must be introduced in Table 2.

The linguistic operators in Table 2 will prove useful in the application of a formal schema in which it is necessary to display the source, type, sense and characteristic of modality encoded in each sentence. Operators and their corresponding characteristics are closely related to the purely logical approach to modality in which formal semantic theory is more constrained and stringent. Though logical theories of modality are certainly more inflexible, this strict methodology offers the same freedom of displaying encoded modality accurately. Take the logical operators as defined in (11) and (12) below:

- (11) L operator indicates that a statement is *necessarily* true  
(12) M operator indicates that a statement is *possibly* true

Modality Type	Modal Characteristic	$\phi$ Operator	Modal Sense
Deontic	Force	forc	<i>Must</i>
	Obligation	obl	<i>Must</i>
	Permission	perm	<i>Let/allow</i>
SOM	Imperative	imp	<i>Must do</i>
	Prohibitive	proh	<i>Must not do</i>
	Optative	opt	<i>Wish</i>
	Hortative	hor	<i>Should do</i>
	Admonitive	adm	<i>must</i>
Dynamic	Permissive	perm	<i>Let</i>
	Volition	vol	<i>Can/may</i>
AOM	Ability	abl	<i>Can/may</i>
	Obligation	obl	<i>Must</i>
	Necessity	nec	<i>Need</i>
Epistemic	Desire	des	<i>Want</i>
	Belief	bel	<i>Believe</i>
	Knowledge	know	<i>Know</i>
	Possibility (possible worlds)	pos	<i>May</i>
	Probability	prob	<i>Should</i>
	Inferred certainty	infc	<i>Must</i>

**Table 2: Modality types with associated operators and characteristic modal senses (Nolan, 2008)**

Operators such as these lend another dimension in accurately and succinctly logging modalities encoded in an utterance. Thus, when noting the modality of a sentence, it can be presented as:

- (13) Newton knows it is dinnertime.  
 L(**be'**(dinnertime, Newton))  
 Newton knows that it is *necessarily* dinnertime.

In this way, extra logical information is represented. This application of modal operators can be extended to if-statements, such as that below, where  $\partial$  is some proposition and  $\mathbf{ww}$  is a world accessible from  $\mathbf{w}$ :

- (14) L ( $\partial$ ) is true in  $\mathbf{w}$  if  $\partial$  is true in all  $\mathbf{ww}$  accessible from  $\mathbf{w}$   
 M ( $\partial$ ) is true in  $\mathbf{w}$  if  $\partial$  is true in at least one  $\mathbf{ww}$  accessible from  $\mathbf{w}$

Here, the logical *true* is different in each possible world, and each world is accessible through a mutual accessibility relation. As Nolan writes, examining modality logically can contribute to the linguistic understanding of the phenomenon as the logical approach:

“...allows us to link to the theoretical machinery associated with the (RRG) actor-undergoer hierarchy, for the determination of states of affairs and aktionsarten.” (Nolan, 2008: 8)

By providing a logically-based account of the role of modality in a sentence, the linguistic analysis of said modality's input in the meaning construction of an utterance is more accurately realized within the representational schema. According to Portner, a consideration of the semantics of modal verbs offers insights into the study of reasoning by allowing for a better understanding of concepts such as implication, obligation and necessity. As Portner, 2009 states:

“...A semantic theory which does not attend to modality will be radically simpler than one which does, and so will provide a much less accurate overall picture of the nature of meaning in human language.” (Portner, 2009: 11)

For these reasons, the current study's proposed schema will include the use of modal operators as introduced in Table 4.2. By exposing the type of modality encoded in the sample sentences as well as the origin of that modality, a clear and complete schema is achieved.

### 5.0 CxG and English Modality

In this section, CxG is first applied to examples of “traditional” modality; that is, straightforward cases of modality in which no ambiguity or verb form variations occur. The ambiguous and varied instances are then considered within the CxG framework and with an application of a CxG schema.

Though Section Four detailed the phenomenon of modality, it is useful to quickly note the common features of English verbs in general, and more specifically, the English modal verbs. Modal verbs in English are heavily grammaticalized and do not share many common morphological properties with lexical verbs, such as sensitivity to aspect (Abraham, 2002). In essence, modality in English behaves in most ways like modality in other languages: it serves to allow speakers to talk of necessity, possibility, ability, permission, obligation and the like. However, modality in English presents several “idiosyncratic difficulties” (Palmer, 2003; 1) which are unparalleled in other languages. For instance:

- (15) *I'm surprised that you should say that.*  
 I:PRN be:V-1sg.prt surprise:V-prt that:PRT you:PRN should:V-mdl.prt say:V-inf that:PRT  
 (F. Palmer, 2003)

The modality in sentence (15) presents a typological problem. It could arguably be classified as epistemic *should* on the basis that the speaker is expressing to the hearer surprise at his statement based on her knowledge of the context. It could also be argued as root deontic, *should* here encoding a sense of moral surprise or concern that the hearer uttered something with which she disagrees. Intuitively, however, neither of these explanations ‘feels’ right.

A study of the modal verbs of English does not end with the scrutiny of the verbs' encoding of logical notions such as obligation, permission and necessity. Analyzing the modal verbs of English also includes examining the ways in which they express subtle conversational nuances such as condescension, politeness, tact and irony, as exemplified in (16):

- (16) *You can go now.*  
 You:PRN can:V-mdl.prt go:V-inf now:ADV  
 (Leech, 1987)



A straightforward analysis of (16) would imply very simply that the speaker intends to grant permission to the hearer to leave. A native speaker of English, however, would immediately recognize the inherent condescension encoded in a sentence a command such as (16). Indeed, one can almost imagine the speaker’s utterance of (16) accompanied by a flippant wave of the hand and icy manner. Similarly, speakers encode great politeness with the use of phrases such as “Would you mind...” or “Would you like to...” to prove that they value a listener’s opinion (Leech, 1987). Discovering from where these implications originate remains a popular field of linguistic study.

### 5.1 Application of Schema to Traditional English Modality

To begin the application of CxG theories to modality in English, an example of traditional English modality is provided in (17).

- (17) a *I must reply to Steve and Chrissy.*  
 I:PRN must:V-mdl.prt reply:V-inf to:PP Steve:N and:CONJ Chrissy:N
- b *You must reply to Steve and Chrissy.*  
 You:PRN must:V-mdl.prt reply:V-inf to:PP Steve:N and:CONJ Chrissy:N

The example in (17a) above is a classic example of root deontic modality. The speaker feels a sense of moral or social obligation to send an overdue reply to the subjects, Steve and Chrissy. As proposed below, the enhanced schema succinctly captures the modality of the sentence in example Figure 4 below:

PRAGMATICS	SUB: me CONTEXT: have obligation, reply OBJECTS: Steve, Chrissy
SEMANTICS	mustROOT{ $\phi$ adm, $\phi$ imp [ <b>do'</b> (1sg) <b>reply'</b> (1sg, Steve & Chrissy)]}
MORPHOLOGY	I:PRN must:V-mdl.prt reply:V-inf to:PP Steve:N and:CONJ Chrissy:N
SYNTAX	<i>I must reply to Steve and Chrissy.</i>

Figure 4: Sentence (17)a as represented in proposed schema

The syntactic realization of sentence (17) is simple and tied to the morphological level of speech: the modal verbs of English do not follow the tense changes characteristic of the general English verbs. This fact is interesting in that rather than encouraging specific and inflexible meanings for each modal verb as one might assume from a system which depends solely on the modality encoded by the word itself, ambiguity and varied uses arise. The role of the construction then becomes increasingly important in discerning an accurate interpretation of the modal expression.

The PRAGMATICS level displays the contextual considerations acknowledged by the speaker at the onset of sentence formulation. The SEMANTICS level, the domain of the modal verb, is the level of interest in the present example. Displayed here in Figure 6.1 are the key clues to accurately capturing modality in speech. First, it is shown that root modality originates from the SEMANTICS level of the utterance. Second, the verb MUST is shown to be of root modality, with the optional reading of either  $\phi$ adm (admonitive) or  $\phi$ imp (imperative). These two choices are equally available to the speaker and hearer, though the definition of the verb MUST has remained intact.

It is interesting to note here that in the same vein, a  $\phi$ forc (force) or  $\phi$ obl (obligation) modal operator would be available if the subject of the sentence were changed from first person singular *I* to second person singular *you*, as shown in sentence (17b) and displayed in Figure 5 below:

PRAGMATICS	SUB: me CONTEXT: have obligation, reply OBJECTS: Steve, Chrissy
SEMANTICS	mustROOT{ $\phi$ forc, $\phi$ obl [ <b>do'</b> (1sg) <b>reply'</b> (1sg, Steve & Chrissy)]}
MORPHOLOGY	You:PRN must:V-mdl.prt reply:V-inf to:PP Steve:N and:CONJ Chrissy:N
SYNTAX	<i>You must reply to Steve and Chrissy.</i>

Figure 5: Sentence (17)b as represented in proposed schema

As CxG posits, this is due to the fact that the meaning of the sentence is not driven by the lexical entry of a few key verbs and arguments but rather, the meaning is derived from the entire construction, the pairing of the meanings of the words as well as the form and order in which they appear. With the substitution of *I* for *You*, the orientation of the obligation shifts from agent-oriented in Figure 4 to speaker-oriented in Figure 5, though the rest of the sentence has remained unchanged. The diagram below represents the shift:

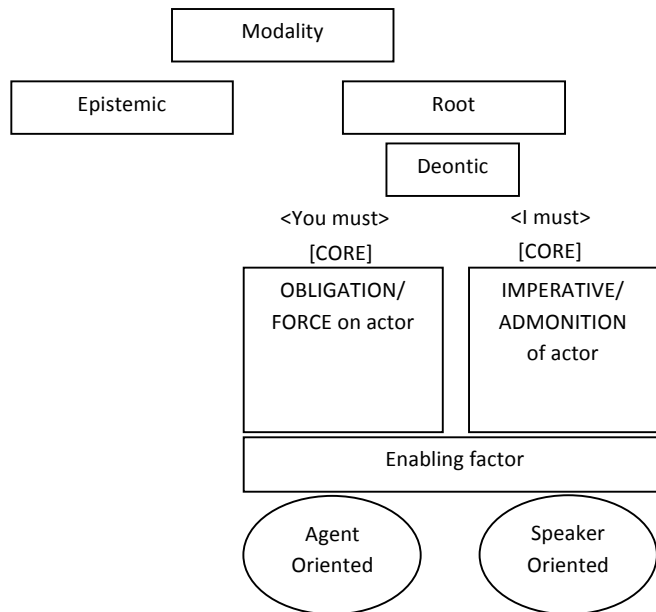


Figure 6: Relationships between agent-oriented and speaker-oriented modality in (17)a and (17)b

Through a change of pronoun, an important change in the modal operations at work in the utterance follows. It seems there is little room for substitution of the arguments involved in English modal expressions.

This is especially evident in English sentences which rely heavily upon word order for meaning. The modal examples in Figures 6.1 and 6.2 show that the modal verb **MUST**, exhibiting influence over the verb **REPLY** by its location in the utterance, does not need to alter its lexical entry for an accurate reading of obligation or modal imperative: the modal operators offer these choices for the speaker and hearer. Finally, these modal operators are

shown to have influence over the entire utterance, thus shading the utterance with a root deontic reading. The speaker, who feels strongly about the obligation to reply to the friends, is able to encode this strong feeling simply by choosing the modal verb MUST instead of another, weaker modal such as SHOULD.

Consider another example of traditional English modality in (18) below:

- (18) *That must have been all they had.*  
 That:PRN must:V-mdl.prt be:V-per all:N they:PRN have:V-pst

The verb involved is again MUST, but this time with an epistemic reading. As represented in the proposed schema:

PRAGMATICS	SUB: this object CONTEXT: necessarily is entire stock
SEMANTICS	mustEPIST{ $\phi$ infc [ <b>have been'</b> (3pl, all)]}
MORPHOLOGY	That:PRN must:V-mdl.prt be:V-per all:N they:PRN have:V-pst
SYNTAX	<i>That must have been all they had.</i>

**Figure 7: Sentence (18) as represented in proposed schema**

Though the modal verb in sentences (17) and (18) is the same, the meaning and modality of each is very different. As displayed in Figure 7, the modality captured in the MUST of (18) is epistemic in nature. This is seen in the semantics level and encoded with the modal operator  $\phi$ infc which means “inferred certainty.” The speaker is certain that “that” is “all they had” because of her knowledge of the world around her. That modal certainty is expressed syntactically as “must,” though this verb is also available for use in root modality as well. The dual functions of MUST can coexist within the CxG framework without the need for a separate scheme of linking rules to explain or account for each one. Following the same logic, epistemic modality is expressed in both of the verbs MUST and SHOULD, though to varying degrees of certainty. Consider the next example:

- (19) *This should work.*  
 This:PRN should:V-mdl.prt work:V-inf

Sentence (19) is a classic example of epistemic modality involving the verb SHOULD. In the proposed schema, the modality can be captured as below:

PRAGMATICS	SUB: this action CONTEXT: probably will be successful
SEMANTICS	shouldEPIST{ $\phi$ prob, $\phi$ pos [ <b>do'</b> (3sg[ <b>work'</b> (3sg)])]}
MORPHOLOGY	This:PRN should:V-mdl.prt work:V-inf
SYNTAX	<i>This should work.</i>

**Figure 8: Sentence (19) as represented in proposed schema**

Again, the modality of the utterance has been encoded semantically. In this case, the modal verb SHOULD offers the interpretational options of  $\phi$ prob (probability) and  $\phi$ pos (possibility). Though both the modal verbs MUST as used in (18) and SHOULD as used in

(19) denote the epistemic modality of belief or knowledge of the world, they do so with different shades of conviction. Within the mind of the speaker in (18), little doubt as to the truth of her statement has been left; the speaker of (19) is not so confident. This is a fascinating characteristic of modality: the sliding scale of merely believing to actually knowing. Though none but the speakers of (18) and (19) could accurately explain their evidence for knowing or believing their statements, the proposed schemata in Figures 7 and 8 *are* able to accurately predict the modality encoded as well as display the types and scope of the modality operating within the utterance. According to the CxG framework, this is useful in that the modality of the entire construction is represented.

Note as well the influence of the subject in the modal interpretation of each verb. If, for instance, the subjects of sentences (18) and (19) were replaced a personal pronoun such as the first person plural *we*, the type of modality encoded becomes root deontic instead of epistemic. When a human subject, as *we* would encode, is applied rather than the impersonal *that* or *this*, the sentence becomes an appeal to the sense of duty: it becomes more human. Again, CxG capably accounts for this shift in meaning interpretation by allowing for the equal input from all levels of meaning encoding, including the syntactic realization of the utterance. Though traditional instances of modality in English are useful in establishing a basis for the application of the proposed schema, it is the untidy samples of language, the natural, non-core use that proves the most interesting in linguistic study. Therefore, in the next section, variations of modality within English are examined.

## 5.2 Application of Schema to English Modal Variations

If CxG is to be cited as an appropriate framework in which to describe modality, it must stand the test of non-traditional applications. Distinctions such as ambiguity and variations in usage are the modality of the native, natural speaker, and no application of a grammar theory would be complete without addressing them. Therefore, the section below offers examples and analysis of the discrepancies found in English modal expressions.

### 5.2.1 Modal Ambiguity

As noted in the brief history of modality provided in Chapter Four, the modal verbs of English have evolved from holding distinct lexical meaning to serving an assortment of syntactic, semantic and pragmatic functions. This polyfunctional nature ensures that modal verbs in English are often misinterpreted due to ambiguity. For example, consider sentence (20) below:

- (20) *If Cillian isn't busy, he may go.*  
 If:COND Cillian:N be:V-1sg.prt not:NEG busy:V-prt he:PRN may:V-mdl.prt go:V-inf

At first glance, example (20) is a simple case of deontic modality. This type of modality would accurately be represented in Figure 9:

PRAGMATICS	SUB: Cillian CONTEXT: possesses permission, IF not busy THEN go
SEMANTICS	mayROOT{ $\phi$ perm [[ <b>busy</b> NEG'(Cillian)]^ <b>do'</b> (Cillian[go'(Cillian)])]}
MORPHOLOGY	If:COND Cillian:N be:V-1sg.prt not:NEG busy:V-prt he:PRN may:V-mdl.prt go:V-inf
SYNTAX	<i>If Cillian isn't busy, he may go.</i>

**Figure 9: Deontic modality of sentence (20) as represented in proposed schema**

As interpreted in Figure 9, sentence (20) would hold an initial interpretation that Cillian is under some obligatory work schedule during which he might be too busy to go. However, consider the schema in Figure 10:

PRAGMATICS	SUB: Cillian CONTEXT: possesses ability, IF not busy THEN go
SEMANTICS	mayEPIST [[ <b>busy</b> NEG'(Cillian)]^ { $\phi$ pos [ <b>do'</b> (Cillian[ <b>go'</b> (Cillian))]}]
MORPHOLOGY	If:COND Cillian:N be:V-1sg.prt not:NEG busy:V-prt he:PRN may:V-mdl.prt go:V-inf
SYNTAX	<i>If Cillian isn't busy, he may go.</i>

**Figure 10: Epistemic modality of sentence (20) as represented in proposed schema**

The difference in the two interpretations of (20) is the scope of the modal verb MAY. Note that in Figure 9, MAY is shown to have scope over the entire utterance. However, in Figure 10, MAY only has scope over the second portion of the sentence: “he may go.” Taking these scopal considerations into consideration, the representation in Figure 10 could be interpreted as, “In the event that Cillian is not busy, he may decide to go.” The scope of the modality lies in the orientation of the modality. If there is an outside force such as represented in Figure 6.6 initiating the modality, the modal operator  $\phi$ perm (permission) will hold scope over the entire utterance. If, however, as in Figure 10 the modality is instigated from Cillian himself, the modal operator  $\phi$ pos (possibility) will dictate that based on a set of known circumstances, Cillian is able to decide to go. It is interesting to note here the influence of the conditional word *if*. In pragmatic logic, if-then statements such as sentence (20) can be represented in logical statements like (21) and decomposed into an easily-intelligible schema as in Figure 11 below:

(21) If q then p

<b>q</b>		<b>p</b>
T	→	T
F	→	T or F
F	←	F
T or F	←	F

**Figure 11: Composite truth table as assumed by an epistemic reading of (20) (Huang, 2007)**

Figure 11 displays the composite truth values for the two propositions expressed syntactically in (20) and represented logically in (21). When considering the scope of modality, the role of any logical operators existing in the sentence should not be ignored. In this case, the modality itself interacts with the influence of the conditional if-then to create the epistemic and root modal readings. Note that while all the truth conditions expressed in Figure 6.6 hold true for an epistemic reading, a deontic reading would require altered truth conditions, such as those in Figure 12:

<b>q</b>		<b>p</b>
T	→	T
F	→	F
F	←	F
T	←	T

**Figure 12: Composite truth table as assumed by a deontic reading of (20)**

Within a CxG framework, the interplay of the pragmatic and semantic elements of (20) is essential to meaning creation in the construction as a whole. CxG can account for the availability of both an epistemic and deontic reading of (20) and their corresponding truth values by allowing for a disparity in meaning based not on the lexical entries of the verbs and arguments involved in each sentence, but on the combination of the semantics and pragmatics levels and their contextual differences, which in this case override the sum of the parts to arrive at a complete construction meaning.

Another example of ambiguity in English modality is considered in (22), where the modal verb CAN is available for both a root deontic and root dynamic interpretation.

(22) *Jena can tell you everything.*  
 Jena:N can:V-mdl.prt tell:V-inf you:PRN everything:N

Depending on the context in which it was uttered, the sentence in (22) could bear the root dynamic interpretation along the lines of, “Jena is able to tell you everything, as she has all the necessary and pertinent information.” A root deontic reading, however, would leave the hearer with the interpretation that, “Jena has been granted permission to tell you everything.”

Both of these interpretations are coded in the semantic level of speech as displayed in Figure 13 below:

PRAGMATICS	SUB: Jena, you CONTEXT: possesses ability to tell all information
SEMANTICS	canROOT{ $\phi$ abl, $\phi$ perm [ <b>do'</b> (Jena)[ <b>tell'</b> (you, everything)]]}
MORPHOLOGY	Jena:N can:V-mdl.prt tell:V-inf you:PRN everything:N
SYNTAX	<i>Jena can tell you everything.</i>

**Figure 13: Sentence (22) as represented in proposed schema**

As shown in Figure 13, the two possible interpretations of the modal verb CAN are encoded at the semantic level. It is the pragmatic or contextual level which offers the keys to deciphering the speaker’s intended interpretation. Here, the situational nuances indicate that a root dynamic understanding is intended, but that is only realized by the cooperation of all levels of the utterance, as posited in the CxG framework. These levels do not exist in a top-down hierarchy but work together along a continuum of meaning to form a higher plane of interpretation: the construction. In that way, the two possible interpretations of CAN are able to coexist without the creation of additional, ad hoc linking rules. The conglomerate meaning of the construction is all that is needed to arrive at the correct interpretation.

It is worth noting here that the addition of a temporal descriptor such as *now* to sentence (22) narrows the interpretive choices to one: root deontic. Consider sentence (23):

(23) *Jena can tell you everything now.*  
 Jena:N can:V-mdl.prt tell:V-inf you:PRN everything:N now:ADV

To capture the change in meaning, Figure 14 displays the schema:

PRAGMATICS	SUB: Jena, you CONTEXT: possesses permission to tell all information
SEMANTICS	canROOT[now{ $\phi$ perm [ <b>do'</b> (Jena)[ <b>tell'</b> (you, everything)]}]]
MORPHOLOGY	Jena:N can:V-mdl.prt tell:V-inf you:PRN everything:N now:ADV
SYNTAX	<i>Jena can tell you everything now.</i>

**Figure 14: Sentence (23) as represented in proposed schema**

The temporal word *now* acts at the condition under which Jena is permitted to convey the information in question. As shown at the semantics level, *now* enjoys scope over the entire utterance, even over the modality of CAN. This is succinctly displayed in the proposed schema in the SEMANTICS line by placing *now* at the beginning of the string of operators, showing the temporal considerations to influence the sentence even above that of the modality. This ease of adaptability is a great advantage of the proposed schema.

The simplicity with which the schema is amended to suit the addition of *now* reflects one of the goals of the current study: to offer a straightforward schema for representing the CxG. By advocating that the meaning of each part of an utterance is submissive to the meaning of the construction as a whole, CxG lends itself to such an easily-adaptable schema which can concisely mirror changes in syntax, morphology, semantics or pragmatics.

**5.2.2 Variations in Modal Realizations**

Ambiguity is not the only variation in the realization of modality in English. Below are several examples of conversational situations in which the type of modality expressed is unclear or not obviously defined. Consider first sentence (24):

- (24) *Should Tipperary win tomorrow, they'll play in the All-Ireland final.*  
 Should:V-mdl.prt Tipperary:N win:V-inf tomorrow:ADV they:PRN+will:V-mdl.prt  
 play:V-inf in:PP the:DET All-Ireland:ADJ final:N

Upon reading (24), the instinctive interpretation is one of epistemic modality. That is, the speaker is making an assumption (that Tipperary will play in the final) based on information she possesses about the real world (the possibility of Tipperary winning). However, a closer examination reveals that there is another factor at work in (24). To capture it, consider the schema in Figure 15:

PRAGMATICS	SUB: Tipperary CONTEXT: possesses ability to play in final, if win tomorrow
SEMANTICS	shouldEPIST[IF{ $\phi$ prob [[ <b>do'</b> (Tipperary)[ <b>win'</b> (Tipperary, tomorrow)]]^THEN[ <b>do'</b> (they) <b>play'</b> (they, final)]}]
MORPHOLOGY	Should:V-mdl.prt Tipperary:N win:V-inf tomorrow:ADV they:PRN will:V-mdl.prt play:V-inf in:PP the:DET All-Ireland:ADJ final:N
SYNTAX	<i>Should Tipperary win tomorrow, they'll play in the All-Ireland final.</i>

**Figure 15: Sentence (24) as represented in proposed schema**

Again modality’s close ties to modal logic provide an example of modality which is perhaps best described in terms of the modal operators IF and THEN. As Figure 15 illustrates, the modality encoded in the modal verb SHOULD is affected and effectively distributed by the conditions of IF and THEN implied. The modal verb SHOULD in sentence (24) cannot truly be labelled an epistemic modal of probability; instead, logical constraints embedded in the verb itself both change the exact nature of the modality to that of a conditional and apply those conditions to both sentential clauses though neither the modality nor the conditional is overtly represented in the second clause of the sentence.

This example of non-traditional modality is easily accounted for within the proposed schema. No new linking rules are required; by the simple addition of a new logical operator the distinct modality of (24) is displayed accurately and elegantly. In keeping with the postulates of CxG, the ‘irregular’ modality is illustrated in the same manner as the ‘regular,’ as no construction or realization of the phenomenon should be considered more acceptable or normal than the other.

Another variation in the realization of English modals is exemplified in sentence (25) below:

(25) *You may want to close that window.*  
 You:PRN may:V-mdl.prt want:V-inf to:PP close:V-prt that:DET window:N

As was the case in the modality captured in sentence (24) above, the modality in (25) is somewhat difficult to describe. Ostensibly, the modal verb MAY in sentence (25) appears to encode an epistemic modality over the entire construction, but upon further consideration, it seems that the encoding of modality in this particular example is rather less obvious. To depict the subtle difference in the modality represented in (25), consider Figure 16:

PRAGMATICS	SUB: you CONTEXT: possibly possess desire to close window
SEMANTICS	mayEPIST{ $\phi$ pos[want'(you)]^do'(you[close'(you, window)])}
MORPHOLOGY	You:PRN may:V-mdl.prt want:V-inf to:PP close:V-prt that:DET window:N
SYNTAX	<i>You may want to close that window.</i>

Figure 16: Sentence (25) as represented in proposed schema

The element in sentence (25) which sets it apart from other examples of modality is that the sentence includes two sets of verbs and arguments: a) *you may want* and b) *close that window*. These two clauses are linked by the preposition *to* but not linked by a common modality. The modality encoded in the modal verb MAY extends only as far as the first clause, *you may want*. The second clause is not affected by the verb MAY. This fact contradicts an interpretation such as, “You will possibly close the window,” or, “You have the ability to close the window.” The scope of the modality in (25) is constrained specifically to the first clause. Therefore, a more accurate interpretation of the sentence in (25) is, “You possibly possess the desire to close that window.” Finally, the sentences in (26) offer an altogether different variation in the realization of English modality than those analyzed above.

(26) a *She must be heading home*  
 She:PRN must:V-mdl.prt be:V-inf head:V-prt home:N  
 b *We must be heading home*  
 We:PRN must:V-mdl.prt be:V-inf head:V-prt home:N



The sentences in (26a) and (26b) present an interesting paradox in interpreting modality. While sentence (26a) encodes an epistemic reading which implies that the speaker knows that the subject is heading home based on the speaker’s knowledge of the current situation as well as his knowledge of the subject (inferred certainty), with the alteration of just one word the modal verb in sentence (26b) encodes a completely different type of modality: namely, root deontic modality. Here, the speaker is commenting on the duty to and necessity of heading home. To capture these differences, the proposed schema is employed in Figures 17 and 18 below:

PRAGMATICS	SUB: she CONTEXT: possess knowledge of going home
SEMANTICS	mustEPIST{ $\phi$ infc[ <b>be'</b> (she)^ <b>do'</b> (she[ <b>head'</b> (she, home))]]}
MORPHOLOGY	She:PRN must:V-mdl.prt be:V-inf head:V-prt home:N
SYNTAX	<i>She must be heading home.</i>

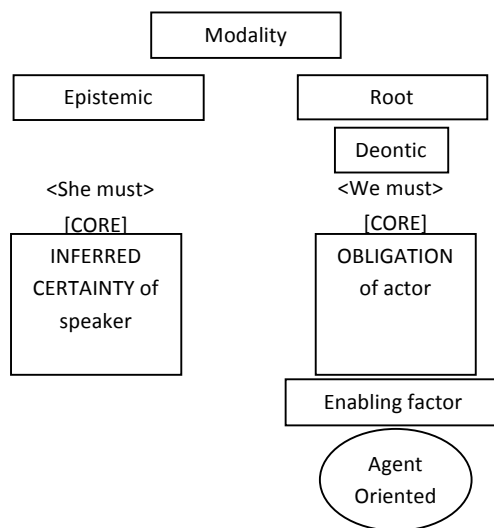
**Figure 17: Sentence (26a) as represented in proposed schema**

Compare the epistemic modality encoded above to the root deontic encoded in Figure 18 below:

PRAGMATICS	SUB: we CONTEXT: possess duty, necessity of going home
SEMANTICS	mustROOT{ $\phi$ obl [ <b>be'</b> (she)^ <b>do'</b> (she[ <b>head'</b> (she, home))]]}
MORPHOLOGY	We:PRN must:V-mdl.prt be:V-inf head:V-prt home:N
SYNTAX	<i>We must be heading home.</i>

**Figure 18: Sentence (26b) as represented in proposed schema**

In the sentences (26a) and (26b), once again a substitution of pronoun has wrought an important interpretational change, noted below by a relationship diagram:



**Figure 19: Relationships between agent-oriented and speaker-oriented modality in (26a) and (26b)**

Here the substitution of *She* for *We* invokes a complete typological change. While sentence (26a) involves epistemic modality, sentence (26b) is an example of root deontic. The two types of modality encoded in sentences (26a) and (26b) display the fine lines of distinction that exist between the modal verbs of English. To understand how this change is achieved the schemata Figures 17 and 18 above offer clear visual representations. In these, the variation is captured neatly and concisely and in keeping with the essential ideas of CxG. Though the meaning of the sentence and of the modal verb MUST itself have changed completely, no new linking rules are necessary to prove the changes.

## 6.0 Conclusions

As the introduction to this research study established, language is not tidy. The fluctuations of prosodic features, syntactic and morphological realizations and semantic and pragmatic considerations involved in the natural usage of language prove this time and again, including those non-core examples provided above in the current study such as modal ambiguity and alternative realization.

To account for the natural variations in the form and even the function of parts of speech in a language, CxG provides a grammatical framework which accepts the variations in speech alongside and on equal footing with the so-called “core” usage examples. The pairing of form and function in the final realization of an utterance is dubbed a *construction*, and it is the construction, the combination of the meaning encoded by form and function in an utterance, which provides a complete interpretation exceeding that of an utterance’s individual elements such as a verb’s lexical entry or prescribed morphological patterning.

## 6.2 Discussion

The ability of CxG to allow for an unlimited number of variations in natural language usage proves it ideal in describing rich phenomena such as modality. The schemata of CxG, however, are unnecessarily laboured for the purpose of describing and illustrating sentential root and epistemic modality. Layer upon layer of large nested brackets containing the lexical specifications and thematic roles for an utterance’s parts of speech prove cumbersome and unwieldy when attempting to concisely describe one specific occurrence such as modality. For these reasons, the current study proposes a cleaner, more elegant schema as detailed in Section Five. In the proposed schema, contributions from four of the levels of meaning input, the syntactic, morphological, semantic and pragmatic, are arranged in an order reminiscent of the syntax-lexicon continuum. In the case of the present study in which modality is the element of interest, the level of modal operation, the semantic, is enhanced to show exactly where and with what scope the modality operates over the entire utterance.

To claim a satisfactory application of CxG, however, it is necessary to re-examine the hypotheses and research questions posed in Section One. Once again, the hypotheses asserted by the current study are: 1) there are varying types of modality in English; 2) these modal variations are realized uniquely and; 3) an accurate and effective account of these unique modalities and corresponding marking systems can be provided within the CxG framework.

In Section Five, examples of both core and varied modality are provided. Variations included statements of ambiguous nature, as well as statements in which the modality realized could be altered by changing the pragmatic assumptions of the situation or the subject of the sentence. In this way, hypotheses 1 and 2 are proved. The third hypothesis is confirmed with the successful application of the proposed schema to the instances of modality documented in

Section Four. In each example, the schema successfully adapts to the unique modality in question, displaying its useful versatility in approaching modality through a CxG framework.

One interesting product of this study is the shift of the modal interpretations when the subject of an utterance is changed. It seems that the subject of the sentence places a heavy interpretational onus on the modality operating over the entire utterance. This further proves the CxG postulate that all parts of an utterance bear upon the meaning of a construction. A sentence simply cannot be a rigid amalgamation of lexical entries. The pronouns substituted for one another in the examples in Section Five above do not hold in their lexical definitions information which would change the meaning of a verb. However, as exemplified, the substitution of one pronoun for another has profound impact on the interpretation of modal expressions. As CxG posits, it is the pairing of the form of the utterance as well as the functions of the parts of speech involved which contribute to the overall meaning of the construction.

### **6.3 Implications**

In applying CxG to the examples of English modality provided in Section Five, it is established that it is a sufficient theory for the description of modality. In the same section, the application of the schema describes modality within the CxG framework and in keeping with the goal established in the introduction chapter of creating a schema which is less cumbersome than that proposed by the CxG theorists. Both of these objectives have been achieved.

By applying CxG to instances of modality in English, the current study has provided both an important step in the advancement of CxG as well as a useful tool in the development of its theories. Approaching a description of modality in any theory of grammar is a move that can only enhance and serve to establish the theory to an even greater extent, as the subject of modality, as seen in Section Four above, is one of some importance among linguists and logicians alike. The implications of the current study for the advancement of CxG, therefore, are further proof of the theory's capability to describe any number of language phenomena. As shown in Section Five, traditional and varied examples of modality are accurately explained within the framework of CxG.

Even the proposal of an alternative schema to be used in the application of CxG to modality should be considered a progression of the theory. Use of the proposed schema not only presents a more attractive and manageable visual representation than the current layered bracket design, but also offers an alternative option for the description of individual phenomena, such as that of modality presented in the current study. Ultimately, this work's application of CxG serves to further linguists' knowledge and understanding of the modal phenomenon. In the preceding chapters, a theory and schema combination is offered which merges the dual advantages of flexibility and descriptive adequacy. CxG was developed with the natural language speaker in mind, and an amalgamation of a theory based on the creativity of natural speech with a representational schema so quickly and easily adjusted to the slightest nuance is a powerful tool that can contribute toward a fuller understanding of modality in language.

### **6.4 Recommendations**

Further applications of the schema would greatly benefit both the increased influence and acceptance of the theories of CxG as well as a more accessible understanding of modality

within that framework. To achieve this, the schema should be tested in a variety of languages, preferably those without IndoEuropean roots. Also, a closer study and subsequent application of the theory to the set of modal verbs in English as well as other languages would achieve a balanced and complete depiction of the multiple and varied types of modality which exist in the world's languages. The current study, though attempting to thoroughly analyze the occurrences of root and epistemic modality in English as realized with core modal verbs, lacks the scope to endeavour a more comprehensive analysis.

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