A LOGICAL FRAMEWORK OF MODAL VERBS

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Abstract

The present article discusses a possible logical approach to view the central modal verbs as options to express modality, based on the ground-breaking idea developed by Lewis (1986). The roots may stem from the English verbs system, leading to the closed group of modal verbs and their 'core' meaning. While concepts connected to modality are numerous, Palmer's 'messy' definition is reconsidered, making use of terms originating from logic, completed with the latest statistics on modal verb frequency, embedded in a possibly cultural context.

Keywords: verb system, modality, *can*, remote pair, core meaning.

1. Introduction

The issues concerning *modality* and the English *modal verbs* (modals) have led to thousands of pages of extensive explanations in the form of articles and books, yet without a satisfactory 'final word' upon the topic. The reasons may be manifold, but it is certain that the overwhelming majority of authors agree that it is a highly complex area of English grammar.

As we have never been completely satisfied with the results of teaching the English modal verbs to non-native speakers, even relying on reference material of famous authors (in English, Romanian and Hungarian), we have come to the conclusion that we somewhat (if not mostly) failed the task. However, much to our relief, we have come across a book incidentally(Lewis, 1986), which managed to change our entire concept of approaching the topic.

A systematic approach to modal verbs may start by looking for possible definition(s) and classification(s) of verbs, then switching to possibilities of expressing modality and highlighting the importance of modal verbs in this respect. However, a thorough description of modal verbs entails both form and (communicative) function, making it (seemingly) impossible to cover the topic successfully due to various reasons:

- the group of modal verbs contains a varying number of entries;
- various grammar books describe modal verbs from various perspectives, which are seemingly arbitrary (e.g. based on examples either created to serve the purpose – leading to a strenuous memory game of overlapping terms, such as *likelihood, certainty,* etc. –, or often exemplifying marginal cases);
- monolingual descriptions cannot grasp so-called 'core' or 'central' meanings, offering either too few examples or too many under various headings;

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- bilingual descriptions make use of translating them into another language, adding to the complexity, knowing that modal verbs may lead to three possibilities (in different languages):
    1. they may have their 'accepted' equivalents (words);
    2. they may be 'represented' by a verb suffix;
    3. they may 'disappear' in translation (e.g. polite formulations).

A justified question is whether modal verbs are 'possible' to describe in a satisfactory (effective) way, as non-native speakers do need them in order to communicate successfully, as modality, ("non-factual or not actualized", cf. Aarts, 2011, p. 275) is a natural companion to factual information. In fact, not much hope arises from Palmer's approach:

> "There is no doubt that the overall picture of the modals is extremely 'messy' and untidy and that the most the linguist can do is impose some order, point out some regularities, correspondences, parallelisms. But there is no single simple solution…" (Palmer, 1990, p. 49)

On the one hand, it is not only linguists who are interested in language, while on the other hand it is our firm belief that linguists do not have to 'impose' anything, as rules of a language are not created by linguists; however, this path takes us beyond the scope of the present article. For the time being, it is worth making some 'mess' around in order to try to reach some fresh conclusions. After all, "You don't get anything clean without getting something else dirty." (Cecil Baxter)

2. The English Verb System

English grammar is abundant enough in offering us extremely many terms for the verb system. Functionally, grammars distinguish at least two types:

1. *main* verbs, to which alternate names are: *full, principal, notion, lexical, ordinary, primary, content, predicative*;
2. *auxiliary* verbs, which may be 'primary' (*be, do, have* with the majority of their forms) and 'secondary' (the *modal* verbs).

However, this minimalistic approach is unsatisfactory for multiple reasons. First, terminology: non-native speakers can hardly understand the rationale of a 'full' verb (associated with completeness, for instance), which cannot handle by itself certain situations (negation, interrogation). Secondly, a proper definition of auxiliary must refer to its nature of 'helping' *another* verb to express grammatically important things, such as negation or interrogation, but it will surely fail to fit the existence verb into this category alone. After all, *be*can be found 'alone' (*Am I right?; She is pretty.; He wasn't satisfied.*), which clearly signals that it is not exclusively an auxiliary. But it is not a 'main' verb either. Furthermore, modal verbs have a single form, which is not typical of auxiliary verbs, and modals are hardly 'secondary', knowing that any sequence of verbs starts with a modal verb, leading us to their properties (e.g. Palmer, 1990, p. 4;Gălăţeanu-Fârnoagă, 1995, p. 197;Quirk, Greenbaum, Leech, &Svartvik, 1985, pp. 3–6;Swan, 2005, pp. 325–327). They

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all come to the obvious conclusion that modals do not co-occur, which is not a characteristic feature of 'primary auxiliaries', thus it is not sustainable the dichotomy of the verb system.

We have argued that – in our opinion – four categories are needed (Imre, 2015):

1. strong verb (S): *be, am, are, is, was, were* (no other forms);
2. auxiliary verbs (A): ***be****, am, are, is, was, were,* ***do****, does, did,* ***have****, has, had,* ***will***;
3. weak verbs (W): all the verbs not belonging to strong, auxiliary or modal verbs;
4. modal verbs (M): *can, could, may, might, shall, should, will, would, must* (although there are marginal modal verbs and idiomatic constructions, at this stage this is peripheral).

Thus we can talk of the MAW string of verbs (it takes some maw to digest it…), which means that the verb order is strict: the full string is $MA^1A^2A^3W$, where the auxiliaries may be *perfective, passive,* and *continuous/progressive*, although the full set is extremely rare, but having read Lewis's ground-breaking book we are reluctant to say that it not 'correct'. However, shorter strings are typical, when the verb phrase is only one word (W) or all other combinations (MAW, MAAW, MW, AW).

The next logical stage is to check how these verbs functionally differ, coming to the conclusion that modals and auxiliaries help weak verbs in forming the negative, interrogative, or 'past' forms, accepting that tenses constructed with a single verb (Present Simple and Past Simple) make use of the 'dummy' *do, does* and *did* (Lewis, 1986, p. 56). It is inevitable to observe that there are overlaps, such as the dummy *do* and weak *do* (*Don't do that!*Cf. *Star Wars,*), but this leads us to the importance of semantics.

3. Meaning of modal verbs

To put it simply, language contains an immense number of words (without entering the debate what counts as a word), which are used effortlessly by native speakers with "speeds above a hundred words a minute … communicating some 30 or more messages per minute" (Lewis, 1986, p. 29), which is possible because the language system is relatively simple, even if not completely regular.

However, when two languages are compared (e.g. translation), the situation completely changes, as there are two opposing views: "meanings cannot be transferred *at all* from one language to another" and "meanings can *be fully* transferred"(Wierzbicka, 1992, p. 6). Of course, these views can hardly stop translators and interpreters from doing their job. A possible explanation comes from Kelly: "Had translation depended for its survival on theory, it would have died out long before Cicero." (1979, p. 219).

Meanings of modal verbs usually turn from bad to worse, as grammar books present them one by one: for instance, in case of *can,* we are presented its meanings as *ability, possibility, permission, speech acts,* and *stock phrases*, but if we go deeper, we might feel like rubbing salt in the wound, as ability may be split into physical, moral, mental, occasional/sporadic ability (Gălăţeanu-Fârnoagă, 1995, p. 205), not mentioning

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competence, skill (which may be durable, cf. Bădescu, 1984, p. 407), but the ability may cover a hidden request as well: *Can you reach for t he knife?* (cf. Palmer, 1990, p. 30). Similarly, there are multiple possibilities (varying degrees), specific cases (the combination of *can* with sense verbs or expressing understanding), and when thinking that no more surprise is welcome, further meanings stem from *can* used in the interrogative (politeness, advice, suggestion) and negative forms (prohibition, impossibility), and we have not even mentioned the intricacies of 'past pair' and alternate options (*could, be able to, manage to, fail to, know how, capable of,* etc.).

Much worse is the situation of modals referring to future, as authoritative grammars state that English has no future tense, even if it is mentioned that *will* – followed by the bare infinitive – refers to the future. After all, as Palmer correctly remarks that "philosophers have for a long time debated whether the future can ever be regarded as factual, since we can never know what is going to happen." (Palmer, 1990, p. 12).

No wonder that non-native speakers *can't help falling in love with* ***can*** (paraphrase of Elvis Presley's song, which is otherwise a stock phrase), without thinking too much that there is more to come; after all, there are at least eight more 'core' or 'central' modal verbs and further marginal ones, completed with partially synonymous constructions…

Modal verbs are also interesting because their meaning sometimes refers to 'themselves', but sometimes to the proposition (context-based), which is true for their negative and interrogative forms as well. It is clear that something must be done about it, as one and the same sentence may express both *promise* and *threat*:

If *you don't finish your spinach, I* ***can't*** *give you any chocolate.*

The sentence may conceal further traps: first, we have to know about the possibility to use modals in conditional sentences both in the protasis and the apodosis (see more readily available options constructed with *should, would, will,* etc.). Secondly, acceptance from both parties that there is an authority (the speaker or an external one) that can validate the effort, and either the promise (*chocolate*) or the threat(*no chocolate*) is carried out. Sadly, this reminds us the importance of confidence regarding the truth value of the statement (Coates, 1983, p. 41).

However, the *coup the grace* is offered by Lewis when stating that:

> We can never be sure that the range of choices available to each speaker is the same. We can never be sure why the speaker has made a particular choice. Despite these difficulties, we need to recognise that the speaker does make choices, and that grammar is not only a matter of objective fact. …(Lewis, 1986, p. 44)

This means that when discussing modals, *objectivity* and *subjectivity* must be included in the explanations, together with 'basic' meaning and meaning deriving from the 'context'. Thus rather subjective categories, such as *politeness* may be discussed in terms of degrees instead of absolute rules, offering the chance to compare, for instance, *can, could, may* and *might*.Some might accept *can* as perfectly polite (possibly completed with *please*),

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while others would prefer *could*.Yet, we should also consider the number of occurrences, which may play a vital role when studying a foreign language at different levels.

Although data may differ (different sources), it is worth looking into the statistics. For instance, according to the *Cambridge Grammar of English, can* is the most frequent modal verb (Carter & McCarthy, 2006, p. 642), so it seems logical to start learning modal verbs with this one; another source lists the top 3,000 English words, stating that the frequency of modals are: *will* (position 35), *would* (36), *can* (37), *could* (57), *should* (78), *may* (88), *must* (120), *need* (147, but mainly as a weak verb), *might* (151), *shall* (166, 'offer' and 'suggest'), *ought to* (1574), and even *dare* is included (2802). At this stage we tend to think that the higher the frequency, the more situations are possible for a particular modal verb to be used, but non-modal factors still have to be considered. *Will,* for instance, is a

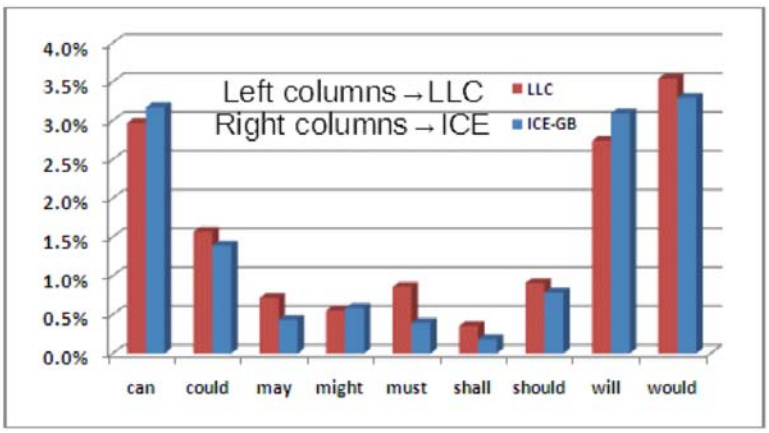


Figure 1. LLC and ICE-GB frequency of modal verbs

suitable modal to function as the future *operator* (a term which may be applied, by and large, to the majority of auxiliaries and modals, involved in forming the negation and interrogation, although 'imported' from logic). A different type of frequencyof modals is illustrated below[2]:

Those favouring numbers over percentage, may consult Aart's table (2011, p. 280), which lists *would, 'd* and *wouldn't* as the most frequent modal with 2,581 + 795 + 394 (spoken) and 2,533 + 182 + 87 (written) occurrences. This is followed by *can, can't* and *cannot* (2,652 + 792 + 80 spoken and 2,533 + 222 + 316 written instances), while *will,'ll*and *won't* are listed with 1,883 + 1,449 + 232 spoken, and 3,284 + 361 + 80 written occurrences per million words. *Could* and *couldn't* still have more than 2,700 instances, *may* is around 2,500 (*mayn't* only 2), *should* and *shouldn't* combined are slightly above 2,000, while *might* has 1,270 occurrences (*mightn't* 3), *must* has 1,329 instances (*mustn't* 24) and *shall* totals slightly above 400 (*shan't* 5).

Whatever their percentage and number, modal verbs play a central role in shaping modality, at which point we should turn over a new leaf.

[2] Source: http://www.ucl.ac.uk/english-usage/projects/verb-phrase/modalfindings.htm, 26.02.2017.

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4. Modality and logic

As Murvai mentions, modal categories are taken from logic (2001, p. 59), and modal operators (verbs) add *modus* to the semantic content. This is best understood when we try to summarize definitions of *modality*.

Modality is a semantic term, dealing with judgments originating from the speakers' opinion (Palmer, 1990, p. 2) and attitudes (Greenbaum, 1996, p. 80) or "speaker's assessment of probability and predictability" (Greere&Zdrenghea, 2000, p. 29), referring to factuality (truth value of utterances: certainty, probability, possibility) or reflecting "the speakers' judgment of the likelihood of the proposition it expresses being true"(Quirk et al., 1985, p. 219); the other option is 'human' control over the situation (obligation, permission, intention, and the marginal ability). These are readily expressed by modal verbs, although other verbs (*hope*), nouns (*suggestion*), adverbs *(perhaps*) and adjectives (*able*) also contribute to the full palette. It has been mentioned the strong connection between future time and modality (Huddleston &Pullum, 2005, p. 56), knowing that no factual information is available about the future, hence we have a modal verb (will) as the auxiliary for future. According to a well-summarized definition, modality "refers to a speaker's or a writer's attitude towards, or point of view about, a state of the world. In particular, modals are used to say whether something is real or true, or whether it is the subject of speculation rather than definite knowledge"(Carter & McCarthy, 2006, p. 638).

The extended concept of modality unfortunately is too vague, as there are several types of modality, clearly summarized by Murvai(2001, p. 59), completed with Palmer's or Aarts(Aarts, 2011, pp. 276–277) tripartite description :

1. *alethic,* stemming from Aristotle's concepts of necessary, probable and impossible (truth in the world);
2. *buletic*, expressing the speaker's desires and wishes
3. *axiological*, expressing values of certain groups, culture and historical periods, operating with highly subjective qualifiers (good/bad);
4. *temporal*, which may be both objective and subjective (*It's time to*, 'always', 'never', 'will be')
5. *doxastic,* or modality of belief (*It is thought/believed/considered*…);

However, the two most often mentioned types of modality (connected to modal verbs) are:

6. *epistemic,* associated with truth judgments (necessity, possibility, impossibility), connected to the *alethic* type, but this time the truth is in the individual's mind;
7. *deontic*, connected to obligation, permission or prohibition.
8. *dynamic*, encapsulating ability and volition, although these are neutral and circumstantial meanings.

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Thus it is clear that modality connects semantic ('always true') and pragmatic features ('now true'), as epistemic is associated with the former, while deontic with the latter (Murvai, 2001, pp. 60–61).

As we would like to find the logic behind these concepts, we would like to offer a minimalist framework of these concepts based on the sources we have mentioned so far, but discussed in all grammar books which present modal verbs as clusters around concepts (e.g. Budai, 1994, pp. 143–161;Alexander, 1988, pp. 207–240).

In our view, the most logical framework so far has been described by Lewis (1986, pp. 112–125), although not struggling for a 'comprehensive' view. The first stage is to delimit the modal verbs from the rest, when it is good to remember syntactic features; this results only nine central modals (marginal modals lack one or more essential features), which may be discussed as pairs. We argued as early as 2008 that it is wrong to consider *could, would, should* and *might* as the past forms of *can, will, shall* and *may* (Imre, 2008), giving the improper example of dictionary entries of list of irregular verbs, not knowing that Lewis had done that more than two decades prior to that. But he also found the ingenious solution: the 4 'past' forms are in fact the *remote* pairs, proving clearly that this theory is applicable, if *remote* is extended enough. Thus we obtain the following framework:

POSSIBILITY		
'now'	remote in time → 'past' remote socially → politeness remote likelihood	
can	*could*	perceiving existence of possibility logical
may	*might*	volitionally involved in creating possibility speculation
NECESSITY		
must	-	legal→ obligation moral→ prohibition practical→ advice logical→ deduction
INEVITABILITY		
'now'	remote socially → politeness remote likelihood remote psychologically→hypothetical	
will	*would*	opinion (the speaker may be wrong) temporal logical
shall	*should**	directly involved in creating inevitability reasonable *extra meanings

Table 1. Modal concepts described by Lewis (1986)

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This framework reduces immensely the terms associated with modals in the initial stage of learning, still preserving further possible ramifications (*ask for, give permission,* etc.). *Can* may be offered as an example: its 'core' meaning is to express possibility in the following forms:

- *ability* (although a marginal concept to modality, as this has little to do with the speaker's judgment): *She can read fast.* (possible sub-meanings: physical, mental, circumstantial, sporadic, instrumental, capacity, know-how, skill, senses, etc.);
- *objective (im)possibility;*
- *(im)possibility decided by rules;*
- *request;*
- *offer;*
- *deduction – logical (im)possibility*.

All these options are viable for *could*, referring to remote ('past') ability, past (im)possibility, remote (politer) requests and offers, as well as remote deductions (*She could find it. She couldn't have found it.*)

More than that, the concept of 'remote' is equally valid for the traditional view of past and present dichotomy and the way people express politeness, when culturally (physically) more distance is kept between the interlocutors or linguistic hedges (*I could say that* …) are used for distancing. This corroborates with Wierzbicka's findings when stating that "the way we speak reflects the way we think", at least at the social level (2006, p. 22), and the process is a never-ending change, hopefully evolution; this is partially reflected in the frequency statistics of modal verbs, as the *whimperatives*(*could, would*) developed in late modern English (2006, p. 25), and today *may, must, shall* decline in use[3].

5. Conclusions

There are many possible conclusions, but we should mention Jakobson's famous statement: "Languagesdiffer not in terms of what they can express, but in terms of what they must express.". As the tendency today is to be more diplomatic, in our politically correct world language is"shaped by both 'human nature"' and culture (Wierzbicka, 1992, p. 7), so English 'must' express proper meanings.

However, the language has a lot of possibilities to express *understatement*, non-native speakers should know about (modal verbs, weak verbs). This is possible to observe when well-chosen examples are viewed (suggested by Lewis) or when countless English TED *Talks* are watched, preferably with English subtitles.

Should we accept Palmer's initial statement about modal verbs, we would never bother with trying to fully understand the lyrics of *I can't dance* by *Genesis*or the rather interesting *Should I stay or should I go?* by *The Clash.*

Even if each modal verb has multiple meanings, we can start by following the framework set up by Lewis, never forgetting that however challenging modal meanings

[3]http://www.ucl.ac.uk/english-usage/projects/verb-phrase/modalfindings.htm, 27.02. 2017.

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may seem, they significantly contribute to the diversity (subjectivity, 'as of now' aspect) of communication, mentioned in Murvai's concluding remark.

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