We might should consider mental space theory
A mental space account of multiple modal constructions

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Abstract

In this investigation, I provide a semantic model of multiple modals through the cognitive framework of Mental Space Theory (Fauconnier, 1985). Previous research has established the primarily pragmatic function of the construction through sociolinguistic approaches (Hasty, 2012; Hasty, et al., 2012; Mishoe and Montgomery, 1994). I instead provide a theoretical model that accounts for the semantics and pragmatics of the construction. I demonstrate that different sorts of modals act as space builders. Epistemic modals set up Possibility spaces that establish a speaker's commitment to a proposition, and deontic modals set up Suggestion spaces that can encode directives. By sequencing Suggestion spaces as subordinate to Possibility spaces, this model demonstrates how the epistemic distance established in the Possibility space permeates to the Suggestion space, thereby distancing a speaker from their proposition (such as in the case of a directive). Such a model accounts for the semantic variability and highly pragmatic nature of multiple modal constructions.

1   Introduction

In this investigation, I provide a semantic model of multiple modals through the cognitive framework of Mental Space Theory (Fauconnier, 1985). Multiple modals are a syntactic feature of non–standard dialects of English found primarily in the Southern United States (Coleman, 1975). Previous research has established their highly pragmatic mitigating function (Hasty, 2012; Hasty, et al., 2012; Mishoe and Montgomery, 1994; Coleman, 1975; Butters, 1973). Hasty (2012) establishes multiple modals as distinct from their potentially co–variant single modal equivalents in other dialects of English and argues that they are constructed through variable units of epistemic and deontic modals. Using Hasty's in-depth analyses of double modals as a basis, I model double modals via a cognitive approach. Fauconnier's Mental Space Theory provides a framework for modeling different types of mental spaces that are set up by different sorts of modals. Epistemic modals build Possibility spaces that establish a speaker's commitment to a proposition, and deontic modals build Suggestion spaces that can encode directives. By sequencing Suggestion spaces as subordinate to Possibility spaces, this model demonstrates how the epistemic distance established in the Possibility space permeates to the Suggestion space, thereby distancing a speaker from their proposition (such as in the case of a hedged directive). I show how this framework can illustrate the mental conception that a listener has of a multiple modal construction, providing the theoretical backing that Hasty (2012) calls for, and demonstrating the primarily pragmatic function of such a construction.

2   Background

Previous work on multiple modal constructions (commonly referred to as double modals) has established that their geographic distribution is primarily in the Southern United States and parts of Scotland (Hasty, 2012; Paolo, 1989; Coleman, 1975; Butters, 1973; Eliason, 1956; Atwood, 1953). Their use by particular socio-economic groups or by certain genders is contested (Hasty, 2012; Mishoe and Montgomery, 1994; Paolo, 1989; Feagin, 1986; Coleman, 1975; Butters, 1973). Further attempts to characterize their usage have been limited due to the difficulty of obtaining natural language data that includes this construction. This is perhaps in part due to the lack of representation of non-standard dialects in more widely-studied language data, but can be attributed to the relative infrequency of its use even in dialects where multiple modals occur (Hasty, et al., 2012). But despite the paucity of examples and the disputed nature of their distribution, many researchers agree on the ordering of

the construction and argue that its use has a primarily pragmatic function.

Double modals are constituted by an epistemic and deontic modal (in that order), as in examples (1–3).[1]

(1) You *might outta* get that checked out.

(2) We *might should* go to the store.

(3) She *may would* help you out.

The first position modal in each example is *epistemic*, i.e. it refers to the speaker's claim to knowledge or degree of certainty in their statement. The second position modal is *deontic*, i.e. it indicates how the world might be changed such that it meets some standard or ideal expectation in the mind of the speaker.

2.1 Fixed expressions and co–variability

Hasty (2012) argues that double modals are not simply fixed expressions, and that they cannot be considered co-variable (interchangeable) with single modal equivalents. With regards to their fixedness, there is a tendency for fixed syntactic expressions to resist separation. But double modals can be split by adverbs and by negation (examples taken from Hasty (2012, p. 56)):

(4) He *might* <u>probably</u> *could* help you.

(5) I *might* <u>not</u> *could* go to the store.

In both (4) and (5), the first position and second position modals are divided by either an adverb (*probably*) or negation (*not*). This is evidence that these forms are not fixed expressions, and are actually much more flexible, as they are judged as acceptable when divided.

In terms of co–variability with Standard English forms, Hasty (2012) categorizes co–variable constructions according to two types: Type 1 has a clearly defined and semantically–equivalent Standard English variant, and Type 2 has no such clearly defined equivalent. Double modals fall into Type 2. Consider (6–7) as examples of Type 1, where we might point to an easily–identifiable Standard English equivalent that captures a similar meaning.

(6) I ain**'t never** done **nothing** like that before. (12c in Green (2002, p. 40))

'I have<u>n't</u> ever done <u>anything</u> like that before.'

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[1]All examples are my own unless otherwise specified (I am a native of Eastern Kentucky and double modals are a part of my dialect).

(7)   There **is** wild dogs in our neighborhood.

'There <u>are</u> wild dogs in our neighborhood.'

In contrast, (8–11) provide single modal examples as compared to a double modal construction. The deontic modals *should* and *might* in (8) and (9) set up clear directives. *Might* in (9) has a decidedly more mitigated stance to the proposition as compared to *should* in (8), but nevertheless seeks to convey pressure. The epistemic modal *might* in (10) conveys the speaker's epistemic stance towards the proposition, but is not understood as a directive. The Type 2 double modal example (11) thus "[lacks] strict semantic equivalence with another syntactic form" (Hasty, 2012, pp. 25–26). This is because none of the single modal constructions convey both the epistemic stance encoded by the epistemic modal and the directive force conveyed by the deontic modal. The epistemic modal *might* in (11) is limiting the speaker's commitment to the proposition that *you should go to the store.* The deontic modal *should* is citing a directive. The added level of mitigation conveyed by the epistemic modal is lacking in the single modal examples (examples adapted from Hasty (2011, p. 93)).

(8)   You *should* go to the store.

(9)   You *might* go to the store (if you want to have all the ingredients).

(10) You *might* go to the store (for all I know).

(11) You *might should* go to the store.

Alternatively, there is a tendency to incorporate epistemic adverbs like *maybe* and *probably* when attempting to establish a semantic equivalent to double modal constructions. Labov (1972), for instance, has argued that the first position modals in double modal constructions are "functioning formally as adverbs" (p. 59). However, Hasty (2012) demonstrates that epistemic adverbs like *probably* are not restricted by the same rigid syntactic constraints as first position modals, i.e. they can merge in several positions, as illustrated in (12–13) (taken from Hasty (2012, p. 47)).

(12) I (*probably*) could (*probably*) go to the store (*probably*).

(13) I (*might*) could (*might) go to the store (*might).

There is a further disparity between first position modals and epistemic adverbs in the licensing of negation. As shown in (14–15), negation is only licensed *after* the modal verb, and not before. In contrast, (16–17) show negation being licensed both after the second modal and between the first and second modal (examples taken from Hasty (2012, p. 47)).

(14)   I probably can *not* go to the store.

(15)   *I probably *not* can go to the store.

(16)   I might can *not* go to the store.

(17)   I might *not* can go to the store.

Not only are epistemic adverbs like *maybe* or *probably* distinct syntactically from first position modals, but it would be difficult to identify a semantically-equivalent adverb for the variety of possible double modal constructions. Figure 1 (adapted from Hasty (2012, p. 40)) shows the attested range of multiple modals in the literature, arranged generally in order from most common and acceptable to least common and acceptable, with the leftmost column being most common and most acceptable and the rightmost column being least common and least acceptable (Butters, 1973; Coleman, 1975; Pampell, 1975; Di Paolo, et al., 1979; Feagin, 1979; Boertien, 1986; Paolo, 1989; Hasty, 2012).[2]

might could	must can	may should
might should	must could	might oughta
might would	may can	could oughta
might can	may could	should oughta
might will	may will	would oughta

Figure 1: "Attested multiple modals in the literature."

First position modals can be combined with a wide variety of second position modals to create a substantial set of distinct double modal combinations (each with different meanings). Epistemic adverbs like *maybe* might roughly emulate the first position modal to some degree in Standard speech in some of these forms. However, much of the pragmatic force of mitigation achieved with double modals is lost in these constructions. The epistemic and deontic modals that constitute a double modal construction bring with them their individual nuanced meanings, but their combined meaning is more complex than their individual contributions (Langacker, 1987).

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[2]Note that the final three examples in the rightmost column come from rarely–documented examples of what might be triple modal constructions, usually occurring with *might* in front (Hasty, 2012, p. 41)

2.2 Pragmatic usage

The work of Mishoe and Montgomery (1994), Hasty (2012), and Hasty, et al. (2012) has established the pragmatic nature of double modal usage. Recognizing the difficulty of obtaining naturally-occurring samples, and postulating that they would occur in scenarios in which mitigation of directive force might be necessary, Hasty, et al. (2012) looked to the Verilogue corpus of doctor-patient interactions. They found that the distribution of double modal use was not especially restricted to any particular socio-economic group or gender, but rather that it is a matter of the demands of institutional discourse. In the context of the doctor-patient interaction, doctors are at once constrained by the professional expectation of giving patients directives (i.e. what should be done based on their diagnosis) and the face-threatening nature of such a directive (Brown and Levinson, 1987). Essentially, doctors must deliver directives in such a way that the patient's face is not threatened, and yet maintain their authoritative status. In the Southern United States, the use of double modals appears to be a way for doctors to negotiate such directives. This is in opposition to the use of single modals as directives (e.g. You *should* exercise three times a week), which, as *aggravated* directives, are less likely to be followed than mitigated ones (West, 1990). Hasty (2015) further confirmed the face–saving pragmatism of double modal usage by measuring respondents' attitudes towards doctor-patient interactions in which the doctor did or did not use a double modal. Respondents tended to perceive the inclusion of a double modal in directives as more polite, and did not perceive its usage as indicative of less competence on the part of the doctor.

2.3 Cognitive approach

Hasty (2012) calls for future analyses of double modals to pursue a formal semantics approach in order to provide a theoretical basis for understanding the construction. However, such an analysis is limited to reducing utterances to logical forms, and is less capable of demonstrating the potentially multiple context-dependent functions an utterance might be performing at a given time. In contrast, a cognitive approach takes into account not only the formal properties of language, but how those properties structure conceptual content. It evaluates the relationship between linguistic form and its function as structurer of basic conceptual categories, such as those of "space and time, scenes and events, entities and processes, motion and location, and force and causation," and, ultimately, the "the global integrated system of conceptual structuring in language" (Talmy, 2000, p. 3). The concern of this analysis is thus less about the overt linguistic features associated with multiple modals (morphological features, syntactic distribution, etc.), and more about how those superficial features

act as conceptual organizers.

One such approach to accounting for conceptual structuring can be found in the work of Fauconnier (1985, 1997). Mental Space Theory demonstrates how lexical items act as space builders of conceptual content. Overt linguistic cues trigger the organization of discourse participants, frames, hypotheticals, and so forth into a context-sensitive understanding of the unfolding discourse. In terms of modal constructions, then, a modal verb builds a conceptual space that organizes and conveys certain information about the stance and context of the speaker in the mind of the listener. This approach allows us to model the semantic and pragmatic use of multiple modal constructions in a way that accounts for the emergent interpretations made available by the unfolding discourse.

3 Modals and mental spaces

In order to establish how double modals fit into the framework of Mental Space Theory, I here summarize a basic mental space approach, some of the ways previous authors have characterized epistemic and deontic modals, and arguments for the establishment of epistemic distance. In doing so, I demonstrate how various modals conceptualize and convey different sorts of socio–physical forces (Sweetser, 1990), how epistemic distance can be established between mental spaces (Fleischman, 1989; Sweetser, 1996; Fauconnier, 1997), and how various lexical elements can act as space builders that organize conceptual representations in the listener's mind as they process the unfolding discourse. Finally, I will combine these elements to propose how we might view double modals in a mental space model.

3.1 Mental spaces

Dancygier and Sweetser (1996) describe mental spaces as "setting up a partial or local model of some aspect of mental content" (p. 84). They differ in nature from the *possible worlds* of formal semantics in that they are not objective, they are not described in terms of Boolean truth conditions, and they are local in scope. Mental spaces are triggered by natural language expressions, which are themselves "maximally economical means of triggering complex projection of structure across discourse domains" (Fauconnier, 1997, p. 101). Mental spaces are thus set up by space builders, e.g. tense (Fauconnier, 1997), *if–then* conditionals (Dancygier and Sweetser, 1996), subjunctive mood (Fauconnier, 1997), definite and indefinite articles (Fauconnier, 1985), prepositional phrases, adverbs (Evans et al., 2007), among many

others, which rely upon contextual information from the ongoing discourse and listener's general knowledge to structure detailed semantic and pragmatic information about an utterance in the mind of the listener. This is a crucial difference from a formal semantics approach, which relies upon the explicit linguistic utterance itself and attempts to reduce it to a logical form. Instead, Mental Space Theory highlights the multitude of roles that a single utterance might serve – setting up spaces, introducing participants, providing an internal structure, etc.
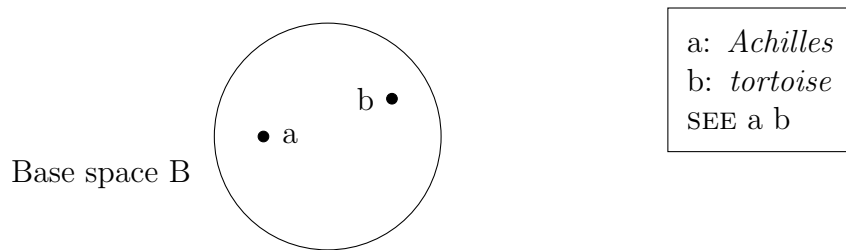

Figure 2: "Achilles sees a tortoise."

In Figure 2 (adapted from Fauconnier (1997, p. 44)), the linguistic elements of the sentence "Achilles sees a tortoise" build a Base space. A Base space is the space from which other spaces can emerge, and serves as a way to ground the established participants and understandings thus far established in the conversation as new spaces emerge. It includes participants that have been or are being introduced in the unfolding discourse. In this case, *Achilles* and *a tortoise* are represented by *a* and *b*, respectively. Additionally, spaces have internal framings or cognitive models that structure understanding and set up relationships between participants. In this case, the SEE frame structures the space and assigns the roles of *seer* and *seen* to the participants.

In Figure 3, the Base space in Figure 2 is expanded to include *Belief Space M*. The Belief space is evoked by the space builder *think* in the sentence "He thinks that the tortoise is slow." The already-established participants, *Achilles* and *a tortoise*, are imported into the Belief space. Here, the internal frame is that of being SLOW, and accordingly the *tortoise* adopts the associated characteristics. The internal structure of the Belief space indicates that the proposition therein is a subjective proposal.

In these simplistic examples, then, we can see how Mental Space Theory represents the introduction of discourse participants and shapes their relationship to each other via internal framing. That framing can be specified by an explicit frame (such as SEE) or encoded in the cognitive model designated by the type of space itself (like the Belief space). These basic elements will serve as a model for the more complex configurations demanded by single and double modals.
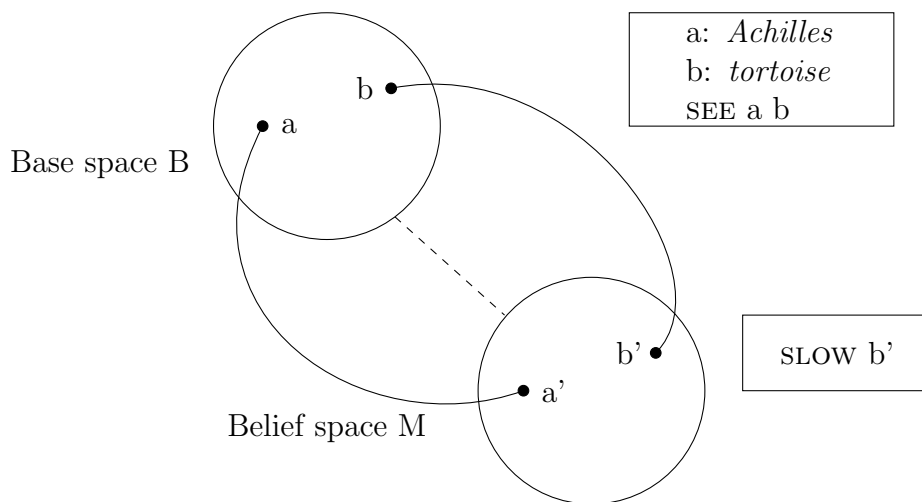
Figure 3: "He thinks that the tortoise is slow."

3.2   Root and epistemic modals

Modal verbs denote different aspects of a speaker's stance towards a proposition. Sweetser (1990) characterizes root modals[3] (which denote real-world obligation, permission, or ability) and epistemic modals (which denote necessity, probability, or possibility in reasoning) in terms of metaphorical mappings from the experiential external world to internal reasoning processes. She argues that epistemic modals stem from root modals, and that this relationship involves a sort of metaphorical projection. Essentially, we conceptualize our internal reasoning processes as subject to the same sorts of compulsions, obligations, etc. as our real world actions. This is evidenced by our understanding of epistemic modals (modals referring particularly to reasoning) in terms of physical barriers and paths.

Based on our experiential understanding of force dynamics, we can understand the socio-physical forces encoded by root modals via metaphor. Our understanding of physical forces (arrived at through experience with the external world), allow us to conceptualize various social forces, such as *allowing* one to do something (encoded by a modal such as *may*), the *potential* to do something (e.g. *can*), or the *obligation* to do something (e.g. *ought*). This concrete domain of forces carries with it an inherent set of core participants, including an *imposer* (i.e. the entity that inserts or removes a barrier) and a *target* (i.e. the entity compelled to act in some way). (18) shows such a configuration:

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[3]Essentially equivalent to what I have heretofore referred to as *deontic* modals.

(18)   John *must* be home by ten (or his mother will ground him).

In this case, the imposer is *his mother*, who presumably established a curfew for *John*. *John* himself is the target, who is compelled to obey the curfew or face the consequences. The socio-physical force that *his mother* applies to *John* in the form of a time constraint is understood in terms of partial mappings from the physical realm of force dynamics, where an imposer might enact physical force upon a target such that it is compelled to move or stop moving in some particular fashion.

When root modals are then mapped over to epistemic modals, however, imposer and target roles are not preserved. Instead, "premises" apply epistemic force (Sweetser, 1990). Those premises indicate a speaker's path to a conclusion. Given the premises (i.e. the facts of the situation), one is forced to arrive at a particular conclusion. Consider (19):

(19)   John *must* have gotten home by ten (his mother did not ground him).

Example (19) shows the epistemic force of the premises (John is not grounded) leading to a particular conclusion (that John arrived home prior to his curfew). Of note here is the conceptual metaphor THOUGHT IS MOTION, which maps the physical experience of moving across a landscape onto the mental processing of thought (Lakoff and Johnson, 1980). In such a view, the process of thinking and coming to a conclusion about something is conceptualized as traveling along a path, as in (20). Though lacking the epistemic force provided by a modal like *must* in (19), the speaker of (20) is "directed" or "pushed" or "pulled" towards a conclusion by some here unstated premises (perhaps the speaker is overweight, they are lethargic, they have developed some lifestyle-related disease, etc.).

(20)   I was *led* to the conclusion that I needed to start exercising.

Figure 4 shows the mapping of force dynamics in the physical world to the real world socio-physical domain and then to the epistemic domain. This flowchart illustrates the thus-far established metaphorical understanding of modality.

Experiential understandings of physical forces in the world (imposed by people, natural phenomena, etc.) are drawn upon to understand socio-physical forces, encoded linguistically by modals, in the real world domain. Physical barriers (or lack thereof) are mapped onto social barriers (or lack thereof). Compelling physical forces are mapped onto compelling social forces (of social responsibility or obligation). Our understanding of the external world is then mapped onto our internal reasoning process, though partially, in that the event participants are now premises leading to a particular conclusion. Just as socio-physical barriers and paths might prevent or
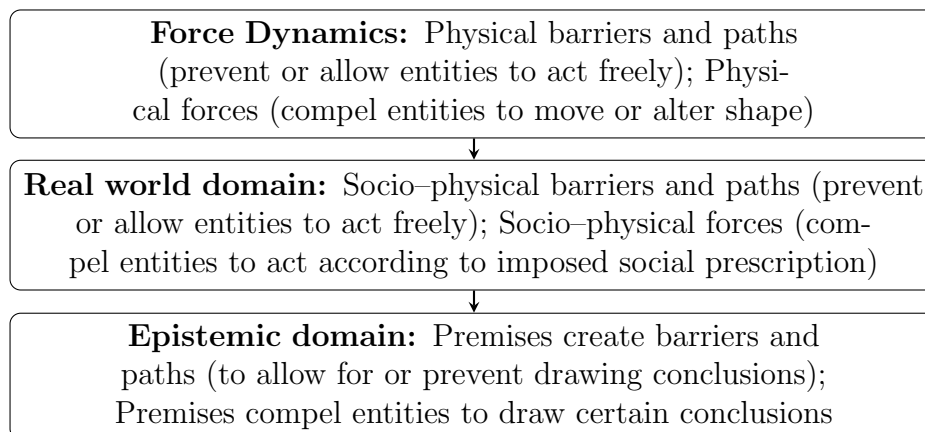
> **Force Dynamics:** Physical barriers and paths
> (prevent or allow entities to act freely); Physi-
> cal forces (compel entities to move or alter shape)

> **Real world domain:** Socio–physical barriers and paths (prevent
> or allow entities to act freely); Socio–physical forces (com-
> pel entities to act according to imposed social prescription)

> **Epistemic domain:** Premises create barriers and
> paths (to allow for or prevent drawing conclusions);
> Premises compel entities to draw certain conclusions

Figure 4: "Modals in terms of force dynamics."

allow for an action, premises can prevent or allow the drawing of a particular con-
clusion. Likewise, compelling socio-physical forces map over to compelling premises,
"forcing" one to draw a particular conclusion. These understandings help us charac-
terize the cognitive models of spaces created by modal space builders, much like the
Belief space created by *think* in Figure 3.

3.3   Temporal and epistemic distance

Fleischman (1989) establishes that there is cross-linguistic evidence that past-tense
forms denote social and epistemic distance, in addition to temporal distance. Sweetser
(1996) agrees, arguing that the addition of another morphological layer of past tense
corresponds to an additional layer of conceptual "distance." In this way, the use
of past-tense modals (e.g. *would, should, could*) corresponds to past and epistemic
distance from the speaker, and explains why past tense forms are recruited into use
as modals. Fauconnier (1997) argues that this distance is represented as distance be-
tween local mental spaces, and that, regardless of the type of distance (i.e. temporal
or epistemic), it is tracked from a Base space to subordinate spaces. The following
examples demonstrate this (taken from Fauconnier (1997, p. 93)):

(21)   If you *go* fishing tomorrow, you *will have* food for me.

(22)   If you *went* fishing tomorrow, you *would have* food for me.

In both (21) and (22), the events and the time of occurrence are the same (in
the future, namely tomorrow). They differ in stance taken towards the hypothetical

event. Fauconnier argues that the present tense marking in (21) denotes the speaker's neutral stance to the proposition, whereas the past tense marking in (22) denotes the speaker's negative stance. This is in alignment with Sweetser (1996), who argues that a present tense hypothetical example like (21) represents a situation in which the speaker identifies with P (the proposition in question) as a description of the state of affairs. In contrast, the speaker in (22) identifies with ¬P (that the proposition is not true) instead of P. Sweetser clarifies that we cannot know for certain what the speaker's inner views are, and that not identifying with P may only indicate mild skepticism, but that some form of association is being displayed with the proposition regardless. If the past tense marking in conditionals correlates with negative stance, then past tense marking in (22) signals a greater deal of epistemic distance between the speaker and the proposition than the present tense marking in (21).

Epistemic distance can be characterized as a multi-layered metaphorical mapping of physical distance between objects in space to temporal distance, and further to distance from one's commitment to a proposition (Fauconnier, 1997). In other words, the tense marking found in examples like (21–22) encode the symbolic distance between an uttered proposition and the speaker. Such distance represents the commitment the speaker has to the proposition. The greater the distance, the less commitment the speaker has to that proposition.

Sweetser (1996) establishes that the same past–tense marking indicative of epistemic distance permeates spaces subordinate to the initial one. For example, in a multi-clause sentence, multiple subordinate spaces may emerge, wherein spaces subsequent to the Base space "inherit" the epistemic distance encoded by the past-tense morphological marking on the initial clause's predicate. In the following examples, spaces set up by the initial *if*–clause have multiple subordinate spaces (in turn set up by subsequent clauses) wherein certain conditions will be met if the initial hypothetical is realized. The tense marking encoding epistemic distance, the metaphorical distance from the speaker to the proposition, permeates to subordinate spaces. Consider the following examples (taken from Sweetser (1996)):

(23) If you *have* Triple–A, then if you *go* to a telephone, you *can* solve your problem.

(24) If you *had* Triple–A, then if you *went* to a telephone, you *could* solve your problem.

(25) If you *had had* Triple–A, then if you *had gone* to a telephone, you *could have* solved your problem.

The tense marking on verbs can therefore indicate not only temporal distance but also epistemic distance. That distance spreads to subordinate clauses, as shown

in (23–25). Thus in mental spaces, the subordinate spaces are adopting the same epistemic distance established in the initial space. This is crucial for an account of multiple modals using mental spaces, where the epistemic modal can set the trend for subsequent spaces in terms of epistemic distance from commitment to a suggestion.

3.4 Mental spaces and modals

Up to this point, I have demonstrated how linguistic features act as space builders that organize conceptual content – introducing participants, setting up frames, and so on. In addition, special spaces (like the Belief space) can denote particular understandings of a speaker's stance towards a proposition. Here, I combine these notions with the metaphorical understandings of root and deontic modals in terms of physical forces, as well as the establishment and inheritance of epistemic distance between spaces, to propose a model of single and double modals. I first provide a mental space configuration of a hypothetical as a model, and then expand that model to single and double modal representations.

Figure 5 models the utterance "Maybe Romeo is in love with Juliet" (adapted from Fauconnier (1997, p. 43)). *Base Space B* organizes the participants that have been set up thus far in the discourse, i.e. two people, named *Romeo* and *Juliet*. In this case, the space builder *maybe* sets up *New Space M*, which is a *Possibility space*. Like the Belief space in Figure 3, the Possibility space encodes a particular stance towards the proposition that follows. The identities of *a* and *b* are transferred and placed into a new frame, LOVE. LOVE a' b' indicates the *internal structure* of the mental space, and has the typical notation of frames, wherein the LOVE frame takes two participants, *lover* (a') and *loved* (b'). A listener's knowledge of social norms for *love* and their own experience with it will help to structure this space. The hypothetical Possibility space thus alters *Base Space B* such that the speaker is understood as considering the possibility of the proposition, that *Romeo is in love with Juliet*. The internal structure of the Possibility space and the distance modeled between the Base and Possibility spaces indicate the epistemic distance between the speaker and the proposition.

3.4.1 Single modal constructions

Single modals can similarly set up mental spaces, wherein the modal acts as a space builder to create a *Suggestion space* (via root/deontic modals) or a *Possibility space* (via epistemic modals). A Suggestion space represents a mental space in which socio–physical forces compel, allow for the possibility of, or grant permission for, the proposition to take place. The listener thus interprets the proposition as a suggestion
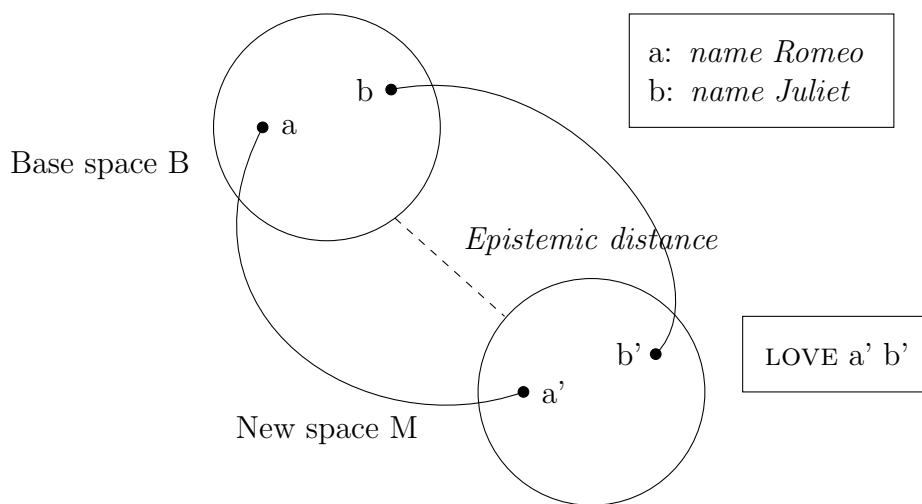
Figure 5: "*Maybe* Romeo is in love with Juliet."

on the part of the speaker. A Possibility space, as in Figure 5, represents a mental space in which premises compel or allow for the possibility of the veracity of a predicate or event. In this way, the listener understands that the speaker is qualifying their commitment to the possibility or certainty of an occurrence. Examples of Suggestion and Possibility spaces are proposed and analyzed below.

Figure 6 shows the mental space set up by the deontic modal *should* in sentence (26). The Base space establishes the participant, *you*, represented by *a*. The Suggestion space is built by *should*, and the relevant discourse participants established in the Base space are imported (*a* is imported as *a'*). The EXERCISE frame places *a'* in the role of *exerciser*. Additionally, the Suggestion space's cognitive model carries the metaphorical understandings of socio-physical forces in terms of force dynamics. From the point of view of the listener, the speaker is understood as applying socio-physical force (via a deontic modal) such that the predicate or event in the Suggestion space be realized.

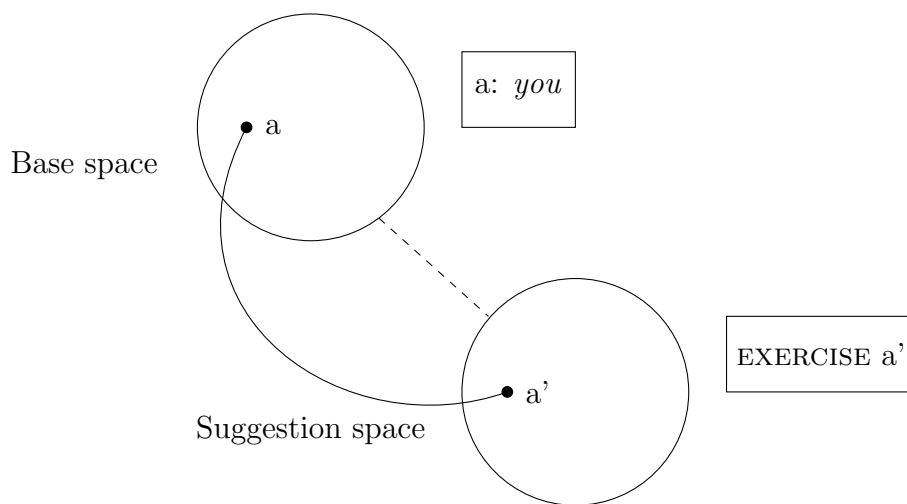(26)   You *should* exercise three times a week.

Figure 6: "Mental space representation of deontic modal *should*"

Figure 7 shows the mental space representation of the epistemic modal *might* in sentence (27). The Base space sets up the participant, *she* as *a*. The epistemic modal, *might*, sets up a Possibility space, which encodes the metaphorical understandings of premises. The premises (here unstated) are such that they do not preclude the possibility of the proposition following the epistemic modal. In the context of the larger discourse, we can assume that some premises provided epistemic force for drawing the conclusion that *She exercises three times a week*, or at the very least that such a conclusion is allowable (e.g. *a* is relatively in shape, is wearing sporty clothes, has a fairly open schedule, etc.). Additionally, the distance between the Base space and the Possibility space, established by *might*, illustrates the epistemic distance between the speaker and the proposition, or the commitment the speaker has to the veracity of such a proposition. The Possibility space's modifications to the Base space, in combination with its distance from the Base space, cite both the speaker's concession to the possibility of the proposition in question, and their commitment to its truth.

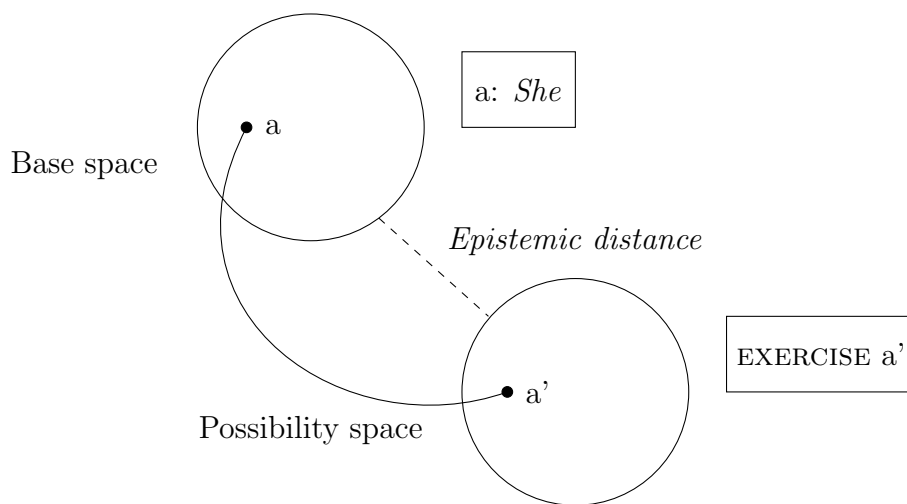(27)   She *might* exercise three times a week.

Figure 7: "Mental space representation of epistemic modal *might*."

3.4.2 Multiple modals

Having proposed mental space representations for single modal constructions, I now illustrate a configuration for representing the three most common and most accepted double modal constructions according to previous research (See Figure 1). Building off of the single modal examples in the previous section, I provide (28) as an example of a double modal construction. Figure 8 shows the corresponding mental space configuration.

In the example, there are two space-building modals, *might* and *should*. The Base space establishes the participant, *you* (as *a*), as in previous examples. From there, a Possibility space is set up (by *might*) in which some (here unstated) premises do not preclude the speaker from accepting the veracity of *a' should exercise three times a week*. As in Figure 7, *might* also encodes epistemic distance between the speaker and their commitment to the proposition (and thus establishes distance between spaces). *Should* sets up a subordinate Suggestion space to the Possibility space in which socio-physical forces compel the listener to carry out the action, *exercising three times a week*. Thus this utterance is understood as a directive, but is mitigated by the epistemic stance and distance established by the Possibility space. The double modal construction is interpreted as more polite than an aggravated directive (e.g. the single modal construction *You should exercise three times a week*) due to this increased level of mitigation.

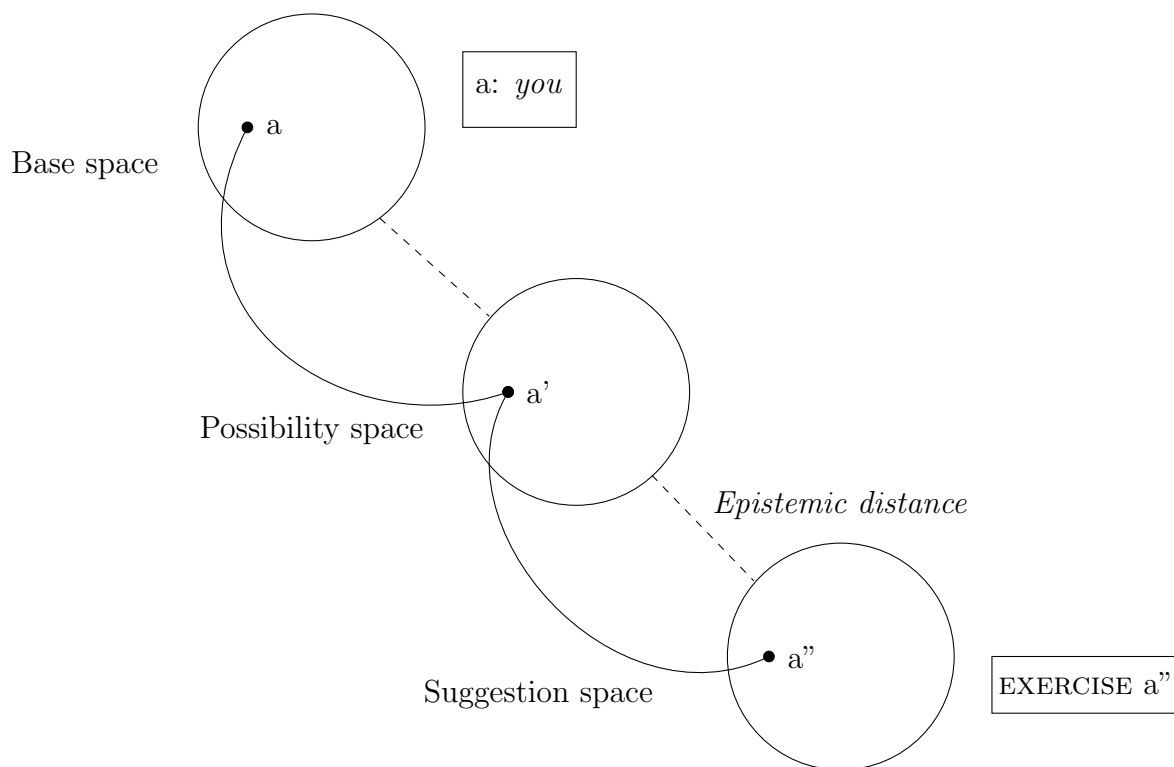(28) You *might should* exercise three times a week.

Figure 8: "Mental space representation of double modal *might should*."

Another double modal example is found in (29), and modeled in Figure 9. In this case, *a* is the speaker themselves. In the context of a particular conversation, we might imagine that someone has presented *a* with a set of symptoms they are experiencing. Rather than overtly directing their interlocutor to seek immediate medical attention, *a* responds with a highly mitigated directive. A Possibility space is established by the epistemic modal *might*, wherein premises do not preclude the veracity of the proposition, *I would go to the doctor*. Again, epistemic distance is established between the two spaces. *Would* sets up a subordinate Suggestion space to the Possibility space in which the listener understands that the speaker seeks to establish socio-physical force such that the proposition, *going to the doctor*, is realized. The underlying assumption is that, were *a* in the position of their interlocutor, *a* would go to the doctor. Contextually, the listener understands that the speaker is encoding a directive, albeit an indirect one.
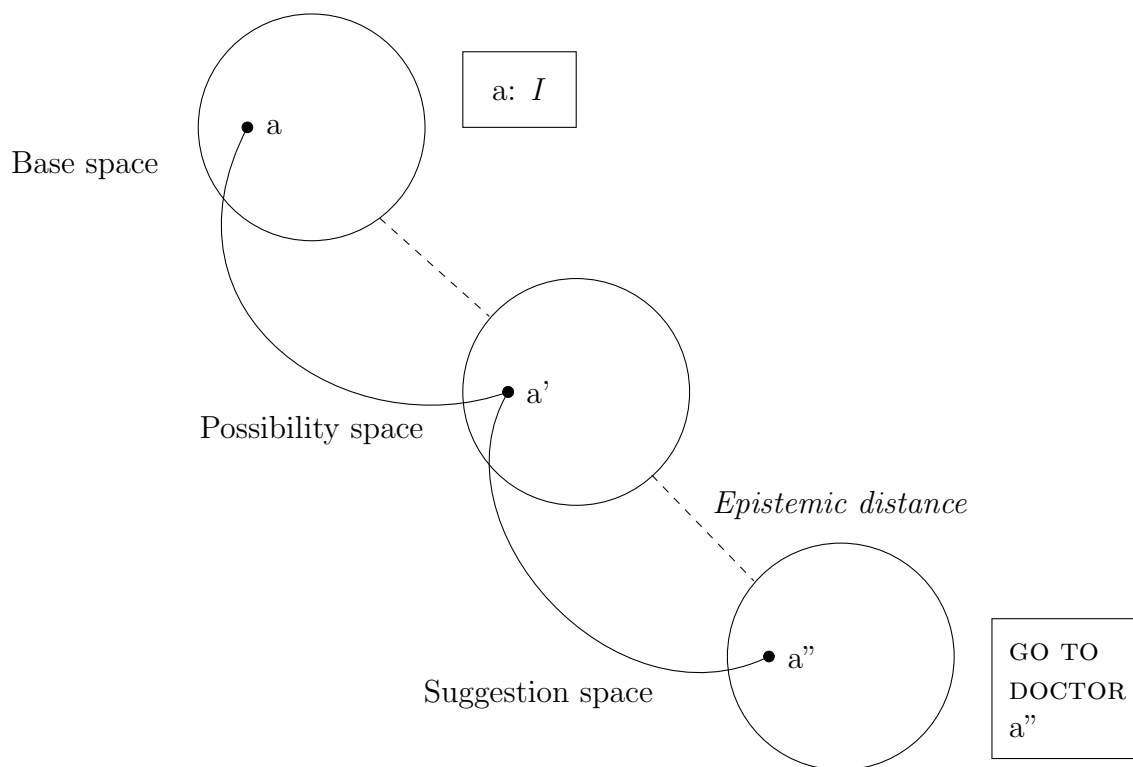
(29)   I *might would* go to the doctor.

Figure 9: "Mental space representation of double modal *might would*."

Another example is found in (30), modeled in Figure 10. Here, the Base space introduces the participants, *you* (*a*) and *them* (*b*). The epistemic modal *might* builds a Possibility space, which establishes epistemic stance and distance with regards to the proposition. A subordinate Suggestion space is built by the deontic modal *could*. The ASK frame is set up and organizes two partipants, the interrogator (*a"*) and the interrogee (*b"*). In this case, the Suggestion space encodes a form of directive in that the speaker is suggesting that no socio-physical force inhibits *you* from realizing the content of the suggestion (i.e. *asking them*). The added epistemic distance established by the Possibility space and the distance created between the spaces mitigates the force of that directive. On the whole, the listener understands the speaker to be directing them to ask a third party, and doing so in a comparatively politer fashion than a more direct command. This is in comparison to a single modal construction (e.g. *You could ask them*) or an overt command (e.g. *Ask them*).
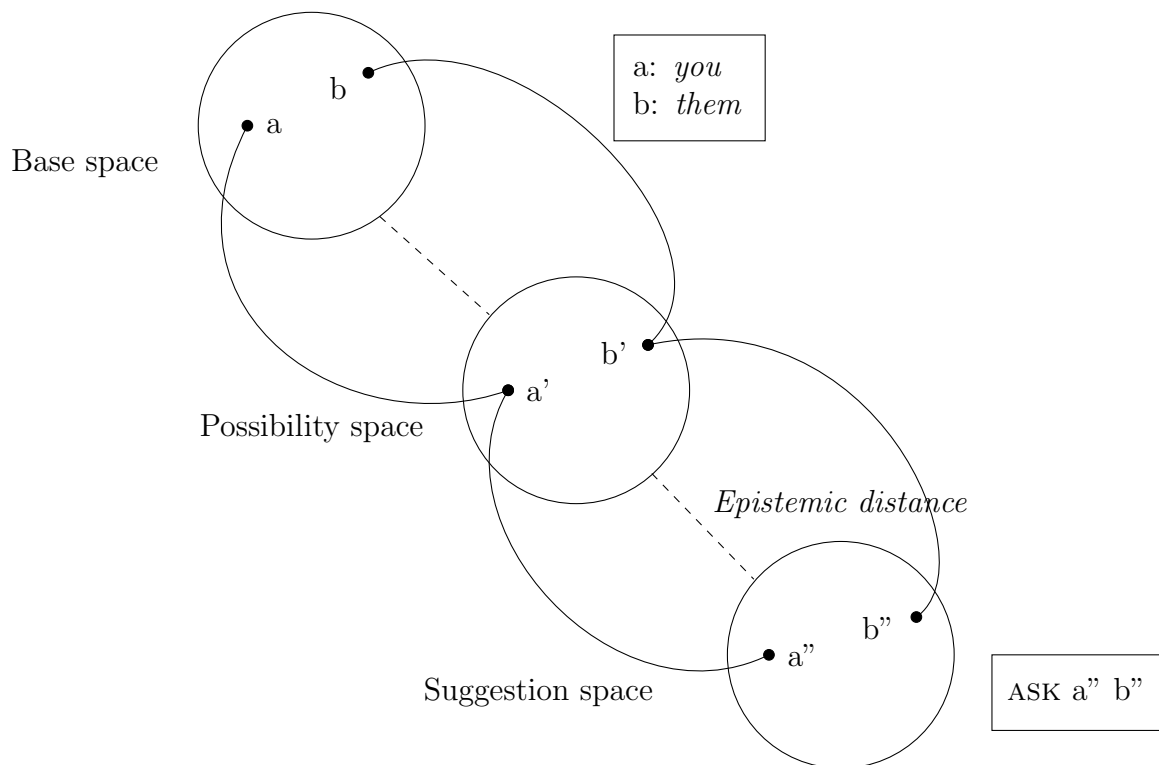
(30)   You *might could* ask them.

Figure 10: "Mental space representation of double modal *might could.*"

4 Discussion

The proposed mental space representation provides a cognitive semantics model of how the linguistic components of the double modal construction and the unfolding discourse organize the conceptual interpretation of a mitigated proposal or directive. Overt linguistic components act as space builders to set up mental spaces, particular conceptual organizers that show how a listener might interpret epistemic stances or socio–physical forces. This allows for a particular sequencing of spaces in order to track epistemic stance/distance beyond the Base space, and is flexible enough to account for the compositional nature of double modals. Taken altogether, the mental space sequence encodes a pragmatic approach to a proposition or directive that the speaker understands as highly mitigated. Mental Space Theory is sophisticated enough to account for the nuanced pragmatic work being done by double modal constructions and provides a theoretical model for understanding the construction.

   The proposed model consistently sequences Suggestion spaces (set up by deontic

modals) as subsequent (and subordinate) to Possibility spaces (set up by epistemic modals), as shown in the previous section. The ordering of the Possibility and Suggestion spaces is crucial in establishing epistemic distance and the speaker's epistemic stance towards the proposition organized in the Suggestion space. A reversal of the spaces would fail to capture the mitigated aspect of the double modal, as the epistemic stance and distance established in the Possibility space could not permeate to a superordinate Suggestion space.

Fauconnier (1997) addresses the structure of hypotheticals (particularly in *if-then* conditional constructions). In such instances, he models hypotheticals as having a Possibility space relative to the Base space, and a further expansion space relative to the Possibility space. It is understood that the expansion relative to the Possibility space is subordinate to that Possibility space. As such, the proposition in the expansion space is analyzed relative to what holds in the Possibility space. The epistemic stance structured by the Possibility space permeates to subordinate spaces, but not vice versa.

In examples where directives or suggestions might occur and are then modified by an epistemic adverb, as in (31), the Suggestion space is set up prior to any Possibility space chronologically. But Fauconnier's theory is flexible in that it allows different spaces to take focus or to be modified based on the unfolding discourse. Though the deontic modal *should* precedes the epistemic adverb *maybe*, the Suggestion space can be modified after it is established. In this way, *maybe* would build a Possibility space that modifies the force of the directive (*You should go to the doctor*). That Possibility space would be built relative to the Base space, and the Suggestion space would be relative to the Possibility space. The Suggestion space is then subordinate to the Possibility space, and inherits the epistemic stance and distance thus established.

(31) You *should* go to the doctor, *maybe*.

Apart from the order of the sequence, the Possibility and Suggestion spaces and their internal structure allow for the modelling of the construction's compositional nature. The mental space sequences created are variable due to the variety of possible modals available for each position in a double modal construction, and their combined meaning potential. In general, the epistemic modal will create some sort of Possibility space, but the nature of that space may change based on the semantics of the particular epistemic modal that is used and the context in which it is used. This is evident in the difference between *might* and *must*, where the commitment to the proposition is decidedly stronger when *must* is used. Likewise, the Suggestion space can be triggered by a variety of different root/deontic modals, but what that space might entail will vary. What one *could* do will encode a different set of entailments

than *should*.

As a whole, the establishment of epistemic distance and the subordination of the Suggestion space to the Possibility space models how a listener might interpret a speaker's commitment to a proposition or directive. If a weaker epistemic modal builds the Possibility space (e.g. *might*), then the listener can interpret the speaker's commitment to the following directive (evident in the Suggestion space) as weaker. The epistemic distance established in the initial space is carried over to subordinate spaces, so the Suggestion space inherits the degree of commitment encoded in the Possibility space.

The nuanced pragmatics of double modals demand a capable semantic model in order to capture what all is at play. What the mental space representation captures is a deeper understanding of the conceptual potential of linguistic components and how those components can set up complex understandings in the mind of the listener. Given the complexity, both semantic and pragmatic, of multiple modal constructions, it is thus a suitably-nuanced approach.

5 Conclusion

The proposed characterization of double modals within Mental Space Theory allows for a theoretical understanding of their underlying semantic and pragmatic features. Modals are understood as space builders, meaning they set up certain mental spaces in the mind of the listener. Different types of modals set up different sorts of spaces – epistemic modals set up Possibility spaces, and deontic modals set up Suggestion spaces. Those spaces contain certain understandings of forces that allow for or compel the listener to draw certain conclusions or to acquiesce to various directives. Suggestion spaces can then be sequenced as subordinate to Possibility spaces in order to model an understanding of a speaker's commitment to a proposition. This models how double modals can be seen as compositional, which Hasty (2012) has argued can be established syntactically. The number of possible combinations of multiple modals, the variable meanings that different combinations have, the variable pragmatic functions different combinations have, and their syntactic behavior in negative and epistemic adverbial constructions, all point to their compositionality rather than to them being a single lexical item. By showing how multiple modals build spaces that encode particular cognitive models, and how those spaces are sequenced, this variability can be illustrated with the proposed theoretical configuration. Additionally, it explains how the face–threatening force of a directive (e.g. *You should exercise three times a week*) can effectively be mitigated by the conceptual content of the Possibility space, where the speaker establishes their degree of commitment to such a

directive. This satisfies Hasty's (2012) call for a more theoretical underpinning for understanding double modals semantically, and reaffirms the analyzed pragmatic utility of double modals in previous research.

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