YOU MIGHT SHOULDN'T SAY THAT: THE CARTOGRAPHIC SYNTAX OF ENGLISH MULTIPLE MODAL CONSTRUCTIONS AND ITS (SPECULATIVE) HISTORY*

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1. INTRODUCTION

The syntactic representation of the clause developed by Chomsky (1957, 1986, etc.) and in works derived from his Principles and Parameters framework, nicely explains the well-established observation that clauses in Standard English allow for the occurrence of at most one modal auxiliary in a clause. Because modals merge directly with I°, they constitute a special subcategory of auxiliaries that are inherently finite.

The fact however that a number of varieties of the language regularly produce grammatical clauses that include two or more modal auxiliaries causes problems for the traditional theory. If the standard account for the limitation on modals were valid, one would not expect to find such occurrences. Multiple modal constructions (MMCs) are perhaps among the most investigated phenomena in nonstandard varieties of English, yet the solutions that have been proposed have proven unfruitful.

The current paper will take a new look at these unusual constructions, seeking a syntactic explanation for the differences between these varieties and Standard English and offering a diachronic account of what took place to make these nonstandard constructions grammatical. As part of the analysis, a hypothesis of the syntax of auxiliaries will be proposed, based on recent works, widely known as "cartographic" syntax, which indicate a far richer structure than the traditional CP - IP - VP.

In section 2, we will review the traditional analysis of auxiliaries in the Standard English clause, and then summarize Lightfoot's historical account which explains the unusual nature of the language's modals. A summary exposition of multiple modal (MM) varieties and the grammatical combinations in each will follow in section 3. Section 4 will briefly detail a number of previous syntactic hypotheses that have attempted to account for MMCs, and the shortcomings that each encounters. A new cartographic explanation for the syntax of auxiliaries will be presented in section 5, followed in section 6 by the ensuing account for MMCs. Finally in section 7, a speculative history of the development of MMCs will be presented.

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2. STANDARD ENGLISH: SOME BACKGROUND

2.1. X-bar and auxiliaries

The long-standing X-bar account of generative syntax, formalized by Chomsky (1986, etc.) and developed to explain diverse cross-linguistic observations, attributes the clausal structure with three types of projections: CP, associated with subordination, question words, and other elements of speech force; IP (relabeled TP in many current works), headed by components of inflection like tense, aspect, and mood; and VP, in which the main verb is base-generated and the event along with its participants and thematic relations are established. This hypothesis puts English in a universal light despite a number of idiosyncratic characteristics. Specifically, it manages to explain the differences between English auxiliaries and main verbs, albeit requiring certain *ad hoc* adjustments.

Though main verbs are base-generated as the head of VP, their position at Spell-Out differs from language to language. For example, based on the relative position of certain adverbs, quantifiers, and elements of sentential negation, Pollock (1989) finds that an inflected main verb in French occupies I° whereas the corresponding inflected English verb does not move from V°.[1] This characteristic sets English verbs apart from those of most other Romance and Germanic languages which exhibit V° to I° movement.

Inflected English auxiliaries, however, do occur in I° and therefore are distinct from lexical verbs in exhibiting what Palmer (1974) labels the NICE properties. They are compatible with sentential Negation, may Invert with the subject, produce Code (tag questions and verbal ellipsis), and may be stressed for Emphatic affirmation. Each of these operations presumably acts on the clausal inflectional head I°, thus requiring that an overt element occupy the position. Since main verbs cannot, they fail to produce such constructions. It is for this reason that in a clause containing a NICE operation (i.e., negation, inversion, etc.), resulting from a derivation that would otherwise not contain an auxiliary (but instead an inflected main verb), the inflected vacuous auxiliary *do* must be inserted to occupy I°.

Based on further observations, the traditional theory recognizes that English auxiliaries do not constitute a uniform class, but require a further split. Aspectual and voice auxiliaries of English behave similarly to those of related languages. Because perfective *have*, progressive *be*, and passive *be* have not only an overt inflectional paradigm for tense and agreement in finite forms, but also nonfinite forms, they grammatically occur as the complement of other auxiliaries. Since this flexibility mirrors that of main verbs, the traditional theory classifies them as special verbs base-generated as the heads of VPs.[2] Because it is not a *lexical* verb, such an auxiliary moves to I° if and only if it is finite, i.e., the first (structurally highest) auxiliary in the clause.

The relative order of these auxiliaries is fixed: perfective *have* precedes progressive *be* which precedes passive *be*. Though none of these auxiliaries is required to produce a grammatical clause, those that are present may only appear in this arrangement.[3] Zagona claims that part of their special nature is that non-modal auxiliaries are verbs that subcategorize for the forms that may follow. It is only when the auxiliary is the highest in the clause that it can and must move to I° bearing inflectional morphology; otherwise, it remains *in situ*.

[1] We put aside the exceptional cases of inflected *be* and, in certain varieties, *have*, not selecting a verbal complement, which pattern with non-modal auxiliaries.
[2] Zagona (1988), Emonds (1978), and others.
[3] Schachter (1983).

The second class of English auxiliaries, the modals, is unique among related languages. These verbs, listed by Palmer as *can*, *could*, *dare*, *may*, *might*, *must*, *need*, *ought*, *shall*, *should*, *will*, and *would*,[4] lack the flexibility exhibited by non-modal *have* and *be*. In the standard language, they are restricted to finite uses yet show no overt agreement morphology (specifically with 3s (third person singular) subjects in non-past tense). Furthermore, modals cannot serve as verbal complements, whether of an aspectual auxiliary or another modal auxiliary; nor do they subcategorize for non-verbal complements.

This is markedly different from the corresponding modal verbs in Romance and other Germanic languages which are syntactically main verbs that overtly inflect for tense, agreement, aspect, and mood; produce nonfinite forms which freely embed under aspectual auxiliaries and other modal verbs; and may select object complements.[5] This difference is neatly explained by the traditional theory. Since the modal verbs of these other languages are main verbs base-generated in VP, the structure of the full expression is biclausal: that is, the modal is a matrix verb.

In contrast, an English modal auxiliary is part of a monoclausal construction in which VP is headed by the main verb. In the traditional theory we are describing, unlike non-modal auxiliaries base-generated in VP, a modal merges directly as the head of IP, and the associated limitations listed above are consequences. Since a modal auxiliary is not generated in VP, it cannot occur in the scope of a non-modal auxiliary; and because the clause contains a single IP, there is only one head with which a modal auxiliary may merge. This makes more than one modal in a clause impossible.

Supporting *do* is something of a special case which is syntactically akin to modal auxiliaries. Though its paradigm displays overt agreement morphology (i.e., *does*), it is also deemed to be base-generated in IP since it has no nonfinite forms. Unlike modals, it is incompatible with subsequent auxiliaries. This has been ascribed to its last resort status which is directly attributable to the need for an auxiliary (i.e., under a NICE operation) in a derivation otherwise lacking such a form.

In spite of the fact that the outlined syntactic analysis of the clause neatly explains the English auxiliary system, it demonstrates a couple of inherent weaknesses. First, it seems intuitive that auxiliaries constitute a class, yet the traditional theory paradoxically groups aspectual and voice auxiliaries with lexical verbs as the heads of VPs. This means that they are a subclass of verbs rather than a subclass of auxiliaries.

Secondly, the proposal that the unique grammatical ordering of aspectual and voice auxiliaries is due to subcategorization of V°s is not only complex and imprecise, but also *ad hoc*. Perfective *have* does not obligatorily subcategorize for progressive *be*, for the latter may be absent. Yet if it subcategorizes for passive *be*, how might progressive *be* intervene? A tidier explanation would account for the fixed order in more transparent structural terms.

Perhaps the biggest obstacle to the traditional analysis comes from the constructions that are the subject of the current article. MMCs, which are grammatical in a number of varieties of English, are clauses that contain more than one modal auxiliary. Given the limit to one IP, the clause has no position that additional modals could occupy. In fact, the attempts to rectify these constructions with the traditional model, as will be summarized in section 4.2, have all been shown to be unviable.

In pursuit of a theory of the syntax of MMCs, the current paper will offer a revised account for the syntax of auxiliaries based on more recent analyses of the clausal structure

[4] Palmer finds that English also has 'quasi-auxiliaries' such as *used to* which exhibit some but not all NICE properties. For the sake of brevity, these forms will not be considered in the context of the current paper.

[5] Abraham (2002), de Haan (1997). De Haan describes the English modal system as very unusual even among closely related Germanic languages, not only from a syntactic perspective, but also due to the high degree of grammaticalization and idiosyncratic morphology and semantics.

itself. This will be delayed until section 5, after further preliminary information has been presented.

2.2. The history of English modals

Given the unusual nature of the modal auxiliaries of English, particularly among closely related languages, it is no surprise that some effort has been made understand their development. In fact, English has not always had a distinct class of modal auxiliaries, wholly disconnected from V°. The forms from which modals derive were in Old English main verbs base-generated in VP, syntactically mirroring their cognates in modern Germanic languages[6] and the equivalent expressions in modern Romance. At that stage, main verbs in English moved to I° (like Modern French) and were therefore compatible with negation and inversion.[7] They furthermore could grammatically serve as the complement of aspectual auxiliaries and other modals, and produced nonfinite forms. As Denison (1993) claims, modern modal auxiliaries derive from full verbs compatible with complex complementation. According to Lightfoot (1999), the final attested use of modals as main verbs is found in the linguistically conservative writings of Sir Thomas More in the early sixteenth century. The prevalent historical account of the two-stage process which English underwent is formulated by Lightfoot (1988, 1991).

Through the evolution of Middle English, modal verbs came to bear a number of exceptional properties which distinguished them from other main verbs. By the sixteenth century, modals were the only surviving verbs derived from the preterite-present paradigm, exceptionally lacking distinct agreement marking for 3s subjects in the non-past. Due to the general depletion of the language's agreement morphology, modals now had a largely invariable conjugation. Furthermore, unlike other matrix verbs which subcategorized for *to*-infinitives, they took bare infinitive complements. In response to the general loss of subjunctive morphology, modals had also acquired highly grammaticalized senses associated with the subjunctive mood; past forms for example had come to take on non-past hypothetical, or tentative meanings.

Lightfoot claims that these exceptional characteristics triggered the reanalysis of modals as auxiliaries rather than main verbs. As part of this process, modals lost nonfinite forms, which meant that they could no longer serve as complements of aspectual auxiliaries or other modals. They were also restricted to infinitive complements; direct objects became ungrammatical.

Yet the evolution of the syntax that characterizes Modern English modal auxiliaries was not complete until the eighteenth century. For a period, inflected main verbs continued to move to I°, thus grammatically preceding sentential negation and inverting with the subject. Lightfoot claims that the syntax in which elements of two distinct categories, Verbs and Auxiliaries, could occupy I°, was not attainable by acquirers. Input from the old grammar in which the verb moved was therefore disregarded in acquisition, requiring that the main verb remain *in situ* and making auxiliaries the only forms that grammatically surfaced in I°. The vacuous auxiliary *do* was the means through which I° was filled with an overt element when required by such operations as negation and inversion.[8]

Because MMCs constitute a marked characteristic of certain varieties of English, the divergence in development is also of interest. Certain aspects of this will be discussed in section 4.1. The question arises as to whether we might accept the traditional theory (of the

[6] Abraham (2002).
[7] Lightfoot (1999).
[8] Denison (1993).

previous section) as being valid for Standard English and simply attribute MM varieties with a radically different syntax. Such a suggestion will be addressed and rejected.

In fact, there is evidence that the two grammars are minimally distinct, meaning that the respective histories should bear a close relation. A speculative diachronic account of MM varieties will be undertaken in section 7.

3. MULTIPLE MODAL CONSTRUCTIONS AND VARIETIES

3.1. Modal combinations across English varieties

Having reviewed the traditional analysis of the clause and the history of modal auxiliaries in Standard English, it is important to examine the constructions that the current article is treating from a strictly descriptive point of view, before looking for a synchronic and diachronic syntactic explanation for them.

Clauses containing more than one modal auxiliary verb, or MMCs, which occur grammatically in a number of English varieties, pose a challenge not only to the traditional X-bar account of the English clause, but also to the syntactic analysis of the MM varieties themselves. The dilemma created for the traditional theory arises from the notion that the English clause contains only one head (I°) with which a modal auxiliary may merge. Unlike non-modal auxiliaries which produce a full paradigm of finite and nonfinite forms and have thus been traditionally analyzed as verbs (in VP) that move to IP only if not preceded by another auxiliary; modals have only an invariable finite form that must merge in IP. Yet since the clause is limited to one IP, and IP, to one head I°; it offers no position that an additional modal may occupy.

The challenge internal to the syntax of MM varieties is the high degree of variability. These varieties do not license a liberal or random amalgamation of any and every modal, but rather allow only a limited number of specific combinations often with little apparent rationale. What is more daunting is the fact that the combinations deemed grammatical vary not only from variety to variety but even from individual to individual within a speech community.[9] With regard to the MM variety of the Southern United States, both Di Paolo (1986) and Coleman (1975) find that even within the areas in which MMCs are common, there are speakers who reject them outright. Even among those who use them, individual judgments on particular combinations vary.

Coleman claims that these constructions are characteristic of the speech of blacks and whites, of males and females, and of persons of all educational and income levels; and moreover, that they occur in informal and formal speech whether casual or careful, as well as in print media, television, and radio. Often those who use them are unaware that they are regional.[10] Nevertheless, outside of the area, such constructions are stigmatized as substandard and uneducated.

In recent history, such influences as mass media and education have brought some degree of awareness of this stigma to the areas in which they have traditionally been found. According to Di Paolo, in the Texas dialect, there are strong age factors influencing the acceptability of MMCs; older people use them more naturally than do the younger, who have more likely been affected by this awareness. She speculates that this might imply that the dialect is evolving toward the standard language. Coleman makes a similar assertion with regard to North Carolinians, based not on age but on the influence of immigrant speakers of non-MM varieties. It is interesting and paradoxical, however, that according to Di Paolo, such

[9] Di Paolo (1986), Coleman (1975).
[10] Di Paolo (1986).

non-MM speakers who immigrate to the South quickly incorporate MMCs into their speech. This strongly supports the claim that the underlying syntax is the same as that of Standard English and that the specific syntax of MM varieties is minimally different.

One of the greatest obstacles to an analysis of MMCs, syntactic or otherwise, is the paucity and disputability of the data. A great deal of the literature builds on the opinions of a few informants (as few as three or four) whose judgments often do not concur. Moreover these investigations concentrate on word order and specific syntactic operations (e.g., negation and inversion), making little effort to scrutinize the specific meanings of the component modal auxiliaries, whose well-established polysemy must be taken into account to arrive at an acceptable result. From a statistical standpoint, we are forced to extract the most reasonable and consistent data, but at the same time, not to dismiss outright the apparent exceptions.

According to Fennell / Butters (1996), English dialects in which MMCs characteristically occur are of four varieties, three geographically based: Scotland and Northern England, the Southern United States, and Atlantic Creoles; and one ethnically based: African American Vernacular English (AAVE).[11] With the exception that combinations are largely shared by the Southern US and AAVE varieties, the set of MMCs deemed grammatical in each group does not correlate with that of the others.

As described by Brown (1991), speakers of Hawick Scots are unified in the MMCs that are grammatical. They regularly use the combinations: {*might* or *should*} + {*can* or *could*}, any of which *will* may precede to form a triple modal construction; *must* + {*can* or *could*}; *will can* and *would could*; and *could must*.[12,13] Sentences in (1) are among the examples that he offers.

(1) a. He should can go tomorrow. (Brown 1991:74)
'He ought to be able to go tomorrow.'

b. He would could do it if he tried. (Brown 1991:74)
'He would be able to do it if he tried.'

c. He'll can get you one. (Brown 1991:75)
'He will be able to get you one.'

d. He'll might could do it for you. (Brown 1991:75)
'He might be able in the future to do it for you.'

Though they do not produce gerundive or participial forms, Brown reports that *can* and *could* also appear as *to*-infinitives under certain matrix verbs in Hawick Scots as seen in (2).

(2) a. I want to can do that. (Brown 1991:78)
'I want to be able to do that.'

[11] As a review of the literature will confirm, it is dubious that Atlantic Creoles should be treated as a variety of English, rather than having separate language status. Though English is one of the ancestral foundations, the syntax and lexicon of these dialects are sufficiently different (particularly at the most divergent end of the continuum) to render them incomprehensible to speakers of other varieties. Nevertheless, as they are among the data of Fennell / Butters, we include them here for the sake of completeness.

[12] Brown offers no example of a *could must* construction listed in his figure 8.1. It is not covered by his exposition of accepted MMCs, nor does he extend his syntactic explanation to this form. As this ordering exceptionally places *could* before another modal, we speculate that its inclusion may be a typographical error; nevertheless, having no further evidence that this is so, we will not pursue the issue.

[13] Brown lists several other possible combinations. While one of these includes a quasi-auxiliary (i.e., *used to*) which we omitted from our investigation in section 2.1, the others contain periphrastic modal expressions (e.g., *might have to*, *will be to*, etc.) whose second form in fact is not syntactically a modal auxiliary. These combinations are grammatical in Standard English and should thus not be considered as MMCs. For this and the varieties that follow, we will exclude such data from consideration.

b. I would like to could swim. (Brown 1991:75)
'I would like to be able to swim.'

According to Fennell / Butters, MMCs are found only in certain Atlantic Creoles such as Jamaican, Antiguan, Bahamian, and Gullah, but are absent in many others. While some of the dialects use several such constructions, others like Nassau Bahamian have only one attested form, *might could*.[14] Fennell / Butters summarize the forms that are generally accepted by speakers of Jamaican Creole as: {*might* or *must*} + {*can* or *could*}; {*will* or *would've*} + *must*; and *should can*.[15] Cassidy (1961) offers the examples in (3).

(3) a. A should can find some. (Cassidy 1961:61)
'I should be able to find some.'
b. Him mus' can do it. (Cassidy 1961:61)
'He must be able to do it.'

MMCs in the Southern US variety have attracted the attention of numerous linguists, making it a substantial source of information. On the downside, the findings are generally dissimilar due primarily to the great variation within the region. It is in this variety that we find the most erratic inconsistencies in the judgments of speakers.

By far, the most commonly investigated modal combination in the Southern US is *might could*, followed by other *might* + modal MMCs. Based on the Texas dialect studies of Di Paolo (1986) and Boertien (1986), Fennell / Butters summarize the possible Southern US MM combinations as: *might* + {*can*, *could*, *ought*, *should*, or *would*}; *may* + {*can*, *could*, *should*, or *will*}; *must* + {*can*, *could*, *ought*, or *would*}; {*could* or *can*} + *might*; *should ought*; and *might should ought*. Coleman (1975) adds to the list, finding that some North Carolina speakers accept one or more among: *might may*; *may* + {*ought* or *would*}; {*should* or *would*} + *might*; *ought to* + {*might* or *should*}; and *should* + {*may* or *might*} + *ought*. Though some of these are judged awkward, they are not ruled out grammatically, particularly in an appropriate context. It is noteworthy that acceptability of MMCs in general is often not determined solely by the combination, but may degrade in inversion or negation or when embedding particular aspectual or voice auxiliaries.

A few examples of Southern US MMCs are shown in (4).[16]

(4) a. I might can go up there next Saturday. (Di Paolo 1986:1)
'I might be able to go up there next Saturday.'
b. This thing here I might should turn over to Ann. (Di Paolo 1986:1)
'Perhaps I should turn this thing over to Ann.'
c. He may will come back down the other side of the street. (Di Paolo 1986:1)
'It's possible that he will come back down the other side of the street.'
d. John might should oughta be painting the barn. (Coleman 1975:73)
'Perhaps John really should be painting the barn.'
e. I may would go if you will stay with Grandma. (Coleman 1975:79)
'Perhaps I would go if you stayed with Grandma.'

[14] Holm / Shilling (1982)
[15] Again excepting cases not composed of modals as defined in the current paper.
[16] Here and in what follows, the current author provides the Standard English equivalents whenever they are not found in the original work.

f. Mrs. Jones should might have gone with her sister to Winston-Salem. (Coleman 1975:98)
'Perhaps Mrs. Jones should have gone with her sister to Winston-Salem.'

Lastly as has been mentioned, the MMCs in AAVE bear great similarity to those of Southern US dialects. According to Labov (1972), AAVE has extended the usage of these constructions. Perhaps one of the most striking differences is the possibility of embedding the vacuous auxiliary *do* as shown in (5). Such constructions are not only ungrammatical in Standard English, they are not found in the MM dialects of the Southern US.

(5) a. You must didn't read it too good. (Labov 1972:57)
'You must not have read it very well.'
b. She still might don't even like the thing. (Labov 1972:59)
'She still might not even like the thing.'
c. You might could go to the church and pray a little, but you – that might don't help you. (Labov 1972:59)
'It's possible that you could to go to the church and pray a little, but you – that might not help you.'

In spite of the great variation that we see among MMCs in their respective varieties, a common property has been identified in the literature. According to Brown, in grammatical combinations of Hawick Scots, the first modal has an epistemic value while the final modal has a root sense. As he states, in Standard English the equivalent expressions either replace the first modal with a synonymous epistemic adverb (e.g., *maybe* instead of *might*) or use an alternate periphrastic verb construction in place of the final one (e.g. *be able to* rather than *can*). Christie (1991) makes the same judgment for Atlantic Creoles, as do Coleman and others for US varieties. Newmeyer (1992) notes the logic of the precedence of an epistemic constituent. As it is linked to the speaker's attitude toward the proposition, it takes conceptual scope over a root modal which is part of the proposition itself.

In the opinion of the current author, though widely accepted and largely true, the above assertion is not entirely correct. Certain modal combinations, such as *might could*, may convey either the expected epistemic + root meaning, as in (6a), or a doubled epistemic sense, as shown in (6b). The latter seems to emphasize the speaker's unwillingness to commit to his assertion.

(6) a. He might could tell you more. (Coleman 1975:76)
'It's possible that he would be able to tell you more.'
b. I might could have been eating when you came this morning. (Coleman 1975:93)
'I guess that it's possible that I was eating when you came this morning.'

Given that *might* and *may* are restricted to epistemic usage in all but formal language in American English in general, the combination *might may* seems unambiguously to serve as a double epistemic in the Southern US variety. Sentence (7) would be interpreted again as stressing uncertainty, as in "I guess that it's possible that John will go to the party", and doubtfully as a epistemic + root combination, like "It's possible that John is allowed to go to the party".

(7) John might may go to the party. (Coleman 1975:77)

Conversely, the combination *should ought*, which appears as well under epistemic *might*, seems itself not to have an epistemic component, but instead represents an instance of root + root modality. For example, (8) does not express "It's likely that I feel obligated to go with him," but something like, "I feel quite obligated to go with him".

(8) I should ought to go with him. (Coleman 1975:97)

We notice in each of these cases that the semantic value of the modals is synonymous. Epistemic *might*, *could*, and *may* all convey possibility, often interchangeable in Standard English, while root *should* and *ought* both imply obligation. Each of these combinations thus seems to contain a redundant doubling of modality for emphasis. As discussed by Kilpatrick (c. 2004), MMCs often have highly pragmatic values that go beyond the meanings of the individual components. It is therefore unlikely to explain this redundancy in strictly semantic terms.

Finally, among the combinations listed under the Southern US variety, we find several that in fact represent the opposite of the expected arrangement. According to Coleman, the comparatively uncommon constructions of some North Carolina speakers, {*can*, *could*, *ought to*, *should*, *would*} + *might* are reversals derived from an underlying epistemic + root combination.[17] These constructions, which he labels 'flip-flops', effectively shift emphasis to the root modal by moving it to the initial position. He illustrates this with the lines in (9) from a conversation in which the second speaker's response stresses the sense of root obligation (*ought*) over the tentative epistemic *might*.

(9) a. Husband: We might ought to go. (Coleman 1975:96)
b. Wife: Yes, we ought to might go now.

To summarize, we can make certain generalizations about MMCs and their varieties. First, the earlier assertion that the set of accepted forms varies greatly is confirmed by the above data. Some dialects permit few constructions while others exhibit a broad range. Additionally, there is no mutual collection of allowable combinations.

Secondly, excluding the very few three-modal groups, MMCs are composed of two modals. In general, the first carries an epistemic value while the second is a root. We have seen however that this generalization is not without exception. Certain combinations consist of two epistemic or two root auxiliaries, and a small number reverse the expected arrangement.

A proper syntactic theory must go beyond merely accounting for the possibility of co-occurring modals, which has perplexed the traditional model. It must also seek a solution for this seemingly erratic variability.

3.2. Negation and inversion of MMCs

Even more perplexing to the syntax of MMCs than the variability observed in the previous section, is negation and subject inversion in these constructions. The modal(s) affected by these operations depends not only on the variety or even on the particular combination. Individual speakers may accept more than one possible arrangement.

Hawick Scots exhibits regularity in both cases. Like Standard English, this dialect has two indicators of basic negation: the *-nae* marking on auxiliaries (equivalent to Standard *-n't*),

[17] The triple modal combination *should* + {*may* or *might*} + *ought* is similarly a reversal of the underlying epistemic modal and the intermediate root, leaving the final root in place.

which is exclusively sentential, and *no* (equivalent to Standard *not*), which also serves as a constituent negator. According to Brown (1991), *no* may follow any modal, as seen in (10), in each case taking scope over an appropriate part of the proposition. The unambiguously sentential marker *-nae*, however, is found only on the first modal in a double modal construction, as in (11).

(10) a. He might no could have done it. (Brown 1991:98)
b. He might could no have done it. (Brown 1991:98)
(11) He mightnae could have done it. (Brown 1991:98)
'It is possible that he was unable to do it.'

It is similarly only the first modal in Hawick Scots that may invert with the subject, for example to produce an interrogative sentence as in (12).

(12) a. Will he can do it? (Brown 1991:97)
'Will he be able to do it?'
b. * Will can he do it? (Brown 1991:97)

In Southern US dialects, negation and inversion are not nearly so consistent. The common MMC *might could* has been singled out as the topic of syntactic focus. Battistella (1991) summarizes the literature, identifying three accepted patterns of subject-auxiliary inversion. For some of Di Paolo's (1986) Texas speakers, inversion is outright impossible for this combination. Those who do accept it favor a pattern in which the second modal *could* alone moves, as in (13a), though a few also allow inversion of the two modals together, like (13b). Most of the informants of Coleman's (1975) study of North Carolina speech found this pattern unusual, but did not deem it ungrammatical. The consensus of these researchers is that speakers do not accept the inversion of *might* alone. For the Tennessee informants of Close (2004), this is not the case. They readily accept movement of the first modal alone as in (13c). In fact, for them the choice of inverted modal in (14) alters the sense of the question, as shown in the equivalents.

(13) a. % Could you might go? (Coleman 1975:50)
'Might you be able to go?'
b. % Might could he go? (Coleman 1975:205)
'Might he be able to go?'
c. % Might we could come? (Close 2004:167)
'Would it be possible for us to come?'
(14) a. % What could we might read this week? (Close 2004:168)
'Should we read something this week, and if so, what?'[18]
b. % What might we could read this week? (Close 2004:168)
'What should we read this week?'

According to Battistella, only the second modal of *might could* may be marked by the sentential negator *-n't* as illustrated in (15a), a judgment shared by Close's Tennessee speakers. The informants of Di Paolo do not accept this. For them, the only possible negator is *not*, preferably after *might*, but also possible following *could*, as in (15b & c).

[18] Equivalents are approximated, based on Close's description.

(15) a. % I was afraid you might couldn't find this address. (Battistella 1991:51)
b. They might not could have gone over the state line to get her. (Battistella 1991:51)
c. You better speak up or they might could not understand you. (Battistella 1991:51)

Other combinations with initial *might* show diverse patterns. *Might would* is largely rejected in inversion, but the few speakers who do accept it allow only the movement of the second modal *would*. Negation typically takes the form of *not* between the two modals, but a few accept *not* after *would*. Reduced *-n't* is rejected on either.

(16) a. % Would he might go?
b. * Might would he go? (Coleman 1975:205)
c. He might not would go.
d. * He might wouldn't go.

Inversion of *might ought* is also impossible for most speakers, though some allow the movement of initial *might* and a few, of both. Negation is most typically realized as *not*, usually following *might*, but for a few, after *ought*. Negator *-n't* is possible on *might*, but never on *ought*.

(17) a. % Might he ought to go?
b.%% Might ought you to've done that? (Boertien 86:299)
c. She might not ought to go.
d. % She might ought not to go. (Coleman 1975:200)
e. % I mightn't oughta do that. (Boertien 1986:297)
f. * I might oughtn't to do that.

Speakers generally accept inversion of *might should*, but only together. Negation as either *shouldn't* or as *not* following *should* is preferred. *Not* after *might* is grammatical though not favored.

(18) a. Might shouldn't he go? (Coleman 1975:205)
b. He might shouldn't go.
c. He might should not go.
d. He might not should go.

In the triple modal construction *might should ought*, either the initial two or less commonly *should* alone, potentially moves before the subject. Negator *not* grammatically occurs after any of the three modals, but *-n't* occurs only on intermediate *should* and there, only for a few speakers, according to Boertien.

(19) a. Might shouldn't he ought to go? (Boertien 1986:302)
b. % Shouldn't he might ought to go? (Coleman 1975:205)
c. * Might should ought he (to) go?
d. Mrs. Jones might (not) should (not) ought (not) to have told you about the old courthouse. (Coleman 1975:201)
e. % I might shouldn't oughta. (Boertien 1986:297)

In the corresponding double root *should ought*, Boertien finds that only the initial auxiliary may invert or carry the *-n't* negator. *Not* may follow either.

(20) a. Shouldn't you oughta do that? (Boertien 1986:297)
b. I shouldn't oughta do that. (Boertien 1986:297)
c. We should not oughta do that.
d. We should oughta not do that. (Boertien 1986:297)

Of the remaining MMCs, the data are far less robust. Judgments on MMCs with initial *must* under subject inversion and sentential negation appear to be entirely absent from the literature.

Boertien finds no evidence that any combination not described above allows the inversion of the second modal alone. On the other hand, Coleman claims that *may* + {*can*, *should*, *could*, *would*, *ought to*}; and the flip-flops, {*should*, *ought to*, *could*, *would*, *can*} + *might*, and *ought to should*, simply do not invert. Boertien's data show a strong avoidance of subject-auxiliary inversion in general for the MMCs not listed in the previous paragraphs. As for negation, data on the grammatical usage and position of *-n't* and *not* are simply not available.

To summarize this seemingly erratic data, let us make some generalizations. It is apparent that speakers by and large tend to avoid subject inversion of MMCs. Nevertheless, every possible inversion pattern is realized in a construction deemed grammatical by at least some speakers for at least one double modal combination. Initial modal inversion (i.e., **M1 S M2**) is found in the case of *might ought* and, for Tennessee speakers, *might could*; second modal inversion (i.e., **M2 S M1**), for *might could* and *might would*; and double inversion (i.e., **M1 M2 S**), for *might should*. However, the third modal of the triple modal combination *might should ought* may never precede the subject.

The sentential negator *-n't* is found in at least one double combination on either modal. It marks the initial modal (i.e., **M1-*n't* M2**) of *might ought*, and the second (i.e., **M1 M2-*n't***) of *might could* and *might should*. Though *might would* does not accept this negator, *-n't* may mark only the intermediate modal in *might should ought*. *Not* may in general follow any modal (i.e., **M1 *not* M2** (**M3**), **M1 M2 *not*** (**M3**), **M1 M2 M3 *not***), though given that it serves as both a sentential and constituent negator, some occurrences would in fact not qualify as the equivalent of *-n't*. Finally, we note that *not* never inverts with an auxiliary, just as it does not in single modal constructions in the standard language.

At last, having gathered and considered all of this evidence, we begin to appreciate more fully the challenges that MMCs pose to analysis. In addition to accounting for the variability in acceptable modal combinations observed in section 3, an adequate theory must accommodate complex irregularities that arise in common syntactic operations. Before undertaking this task, we will review several existing hypotheses.

4. PREVIOUS SYNTACTIC EXPLANATIONS FOR MMCS

4.1. A diachronic explanation

Perhaps the most intuitive explanation for MMCs is that they are remnants of Old and Middle English, a possibility suggested (and rejected) by Traugott (1972). This would mean that the varieties which allow them somehow failed to undergo the main verb to auxiliary reanalysis of Standard English described in section 2.2. Since the modals would have the status of main verbs base-generated in VP rather than IP, they would present no dilemma for the traditional syntactic analysis. There are however a number of reasons that this notion is unviable.

To begin, as main verbs we would expect modals in MM varieties to generate nonfinite forms. Though certain modals occur as infinitives in particular dialects (specifically *to can* and

to could in Hawick Scots), main verb modals would also have gerundive forms and perhaps even take direct objects, as in the older language. They have none of these characteristics. Main verb status would further imply an unlimited compatibility with embedding not subject to such a degree of variation in acceptability. Recall as well from section 2.2, that Lightfoot (1988, 1991) claims that the reanalysis of modals to auxiliary status led to further changes in the syntax of Standard English, namely the loss of V° to I° movement of main verbs and the requirement of *do*-support in certain constructions. In the absence of the reanalysis, we would not anticipate either of these changes in MM varieties. However, just as in the standard language, the main verb in these dialects does not move to I°, and negation and inversion require supporting *do* when no other auxiliary is present.

In fact, the syntax of MM varieties is in no respect radically different from that of Standard English. As claimed by Di Paolo (1986), the two are mutually intelligible because they share the same underlying grammar; an opinion held as well by Whitley (1975) and others. Brown (1991) for example finds that the single modal expressions that occur in MM varieties exhibit no syntactic distinction from those in standard varieties. And the syntactic structure of double modal expressions, according to Boertien (1986), differs from single modal clauses only in containing the second modal.

Finally, Nagle (1994) finds no historical evidence that Old and Middle English embedded modal main verbs are connected to MMCs in modern varieties. As he reports, the few attested Old English double modals embed a morphological infinitive. In the most common forms, *must ought* and *shall ought*, the lower infinitive (*agan*) was not followed by a particle equivalent to *to*, which typifies the modern modal *ought* (*to*). The anticipated remnant realizations (*must* (*to*) *ought* V and *shall* (*to*) *ought* V) do not resemble modern forms. As for Middle English, Nagle notes that the most common embedded modal expressions, *shall can* and *shall may*, in which the second verb similarly took infinitive form, do not survive in any modern MM variety. Conversely, current combinations are not attested in Middle English.[19] We must therefore reject the hypothesis that MMCs are remnants of the older language.

Even if MMCs arose in the modern era of the language, they appear to be traceable to one linguistic event. Despite the fact that MM varieties are geographically scattered, they seem to bear an historical connection. Fennell / Butters (1996) demonstrate that they are linked through colonization as follows.

As the reanalysis of modals from main verb to auxiliary status described in section 2.2 spread to northern Britain, speakers there were as well under the centuries-long influence of contact with Nordic peoples whose Scandinavian languages included embedded modals, as did all Germanic tongues. Because of this influence, though the English of these speakers underwent the modal reanalysis, they continued to perceive MMCs as grammatical. Such usages thus became characteristic of the dialects in this region.

As the British began colonization of the Americas, it was the Scottish and Northern English who mainly inhabited the area which is the modern-day Southern US and many of the Caribbean islands, bringing with them their distinctive version of English which became the language of these regions as well. During the era of slavery in the US South, the speech of Blacks inherited many characteristics of the white Southern tongue, including the usage of MMCs. After emancipation when heavy migration of Blacks to other parts of the country began, these constructions were a feature of their language that went with them.

Given that the forms that appear in the four varieties do not correlate, we surmise that it was not the constructions themselves that the speakers in these colonies kept but rather a form of speech in which MMCs are possible. As Fennell / Butters point out, even if Southern US

[19] Close (2004).

MMCs prove to have been spontaneously generated, it is clearly the syntax inherited from the Northern British variety that made them possible.

Unfortunately, one of the greatest barriers to establishing the evolution of MMCs is the lack of historical documentation. Though not perceived as distinctive among their users, the expressions have consistently been stigmatized in areas outside. As a result, when recorded, the language tended to be standardized. As shown in (21), Nagle (1994:202) finds that the earliest documented uses of double modals are in Northern British English, reported by Grant / Murison (1931-74) from 1756 and 1768, long after the reanalysis of modals to auxiliary status. Southern US usage is documented from the early 1800s.

(21) a. If we get a German doctor, not one of us will can speak to him. (Calderwood)
b. The youth himself may can to rule the rost.

Because of the lack of textual verification, the above developmental account which connects the varieties remains speculative. Nevertheless, the facts concerning colonization, which are well established, suggest that such an explanation is likely valid. As part of the analysis of MMCs, in section 7 we will return with a tentative account of the change which occurred in Northern Britain enabling the exceptional occurrence of MMCs, assuming that other varieties subsequently inherited the special characteristic as described above.

4.2. Synchronic explanations

The theories that have been proposed for the syntax of MMCs fall into three types: 1) those that claim that the first constituent of a double modal is in reality an adverb, 2) those that treat modal combinations as idiomatic lexical compounds, and 3) those that attempt to explain them as individual auxiliaries.

Labov, Cohen, and Lewis (1968) and Labov (1972) are among the first to suggest that double modals are syntactically combinations of adverb + modal auxiliary. According to Di Paolo (1986), their argument is based on the assumption that only the second modal is marked for tense, inverts with the subject, and is marked for negation, all of which she rejects as invalid. Boertien (1986) also points out that the initial modal has non-adverbial characteristics. First, certain speakers accept negation following the first modal, which is not possible for adverbial elements, as shown in (22). Furthermore as we saw in section 3.1, inversion either of the first modal or of the modals as a unit is grammatical for certain MMCs for some individuals, as in (23). Adverbs do not invert in this way nor can they play the role of an auxiliary in subject inversion. Boertien deduces that in order for combined modals to produce such constructions, each modal must have auxiliary status.

(22) a. I shouldn't oughta do that. (Boertien 1986:297)
b. * I probably -n't / not oughta do that.
(23) a. Shouldn't you oughta do that? (Boertien 1986:297)
(inversion of 'You shouldn't oughta do that')
b. Might ought you to've done that? (Boertien 1986:299)
(inversion of 'You might ought to have done that')
c. * Probably you ought to do that?

More recently, Battistella (1991) makes a case for the adverb + modal hypothesis built on similar syntactic data. His argument, based strictly on the *might could* construction in one dialect, cannot be extended to other combinations which invert and negate in different patterns that vary from dialect to dialect.

Di Paolo originates the proposal that modal combinations are lexical compounds that head single syntactic projections. This hypothesis nicely explains both the fixed order and the variation in acceptable forms in different varieties and among individuals. The forms that a speaker deems grammatical exist in his own lexicon. However, as Close (2004) brings to light, this notion incorrectly predicts that as lexical entities, multiple modals should remain adjacent. She demonstrates that they may in reality be separated by an adverb as seen in (24a), by a subject in inversion as in (24b), or by a negative element as in (24c). Boertien adds that floating quantifiers like *all* may also intervene, as in (24d). We must therefore reject this hypothesis as well.

(24) a. If we had known, we may *still* could have done it. (Close 2004:137)
b. Heather, could *you* might find you a seat somewhere? (Close 2004:137)
c. I thought maybe I better put it [her hearing aid] on (or) I might *not* could understand you. (Close 2004:137)
d. They might *all* oughta do that. (Boertien 1986:308)

The final explanation for MMCs, that each element is indeed a modal auxiliary, is the hypothesis that the current paper will promote in section 6. Let us first consider the nature of the syntax described in a previous proposal.

Though his research is essentially descriptive and semantic in nature, Coleman (1975) offers one of the earliest suggestions that each modal is truly an auxiliary. An initial attempt at the relevant syntax comes from Boertien (1979), who identifies two configurations that double modals may take: either the two form a node that heads a single VP dominating the main verb VP; or the first modal selects a VP headed by the subsequent modal, which in turn selects the main verb VP. The first case he claims describes combinations like *might could* in (25a), while the second is exemplified by *should ought* in (25b). Conveniently as shown in (25c), this structure further allows the placement of the third modal in the triple modal construction *might should ought*.

(25) a. $[_{VP}\ [_{V}\ [_{V}$ might$]\ [_{V}$ could$]]\ [_{VP}\ [_{V}$ V$]$
b. $[_{VP}\ [_{V}$ should$]\ [_{VP}\ [_{V}$ ought$]\ [_{VP}\ [_{V}$ V$]$
c. $[_{VP}\ [_{V}\ [_{V}$ might$]\ [_{V}$ should$]]\ [_{VP}\ [_{V}$ ought$]\ [_{VP}\ [_{V}$ V$]$

Theoretically, there is some difficulty with classifying modals as main verbs as this fails to explain the fundamental differences. Additionally, as pointed out by Close, (at least) some of the structures in (25) incorrectly predict that the modals may only appear adjacent. As this point brought about the abandonment of Di Paolo's theory above, so does it cast heavy doubt on Boertien's. Nevertheless, this idea foreshadows a solution, that with a few adjustments in light of recent syntactic research, will be shown to be sound.

Before beginning our analysis of MMCs in section 6, it will be necessary to reconsider the prominent theory of the syntax of auxiliaries in Standard English. This will open up a greatly simplified and consolidated way in which to explain the grammar of MM varieties.

5. A NEW SYNTACTIC ANALYSIS OF THE ENGLISH AUXILIARIES

5.1. Auxiliaries in the extended IP

In recent years, investigation has indicated that the structure described in section 2.1 is far too simplistic to explain cross-linguistic word order observations. In his seminal work, Pollock (1989) analyzes the position of French finite and nonfinite verbs and auxiliaries relative to

certain adverbs, floating quantifiers, and sentential negation, and concludes that IP should in fact be reinterpreted as three separate projections which he associates with tense, agreement, and sentential negation. Subsequently, in what has come to be known as the cartographic syntactic approach, an explosion of research (e.g., Rizzi (1997), Cinque (1999), and many others) has revealed that each of the clausal domains that have traditionally been labeled CP, IP, and VP, indeed corresponds to a structural hierarchy in which multiple functional heads may project.

Cinque offers what is likely the most exhaustive analysis of the IP-domain to date. He makes the important observation that adverbs that furnish inflectional information to the clause fall in an order that is universally fixed with regard to the type of information they contribute. For example, an adverb of completive aspect necessarily follows one of habitual aspect, as seen in (26), while modality of obligation precedes modality of ability, as in (27).

(26) Mona (usually$_{\text{AspHAB}}$) completely$_{\text{AspCOMPL}}$ (*usually) misses the point.
(27) Gianni will (inevitably$_{\text{ModOBL}}$) clumsily$_{\text{ModABIL}}$ (*inevitably) drop the cup.
(based on Cinque 1999:90)

Under the traditional notion that these elements are VP-adjuncts, such rigidity is unexpected. If however, as Cinque deduces, each adverb merges in a distinct projection, then under the supposition that as specifiers, adverbs remain *in situ*, it is unsurprising that their relative order should not vary. Armed with the empirical data, he proposes a universally uniform hierarchy of around thirty distinct functional projections (FPs), each with a specific inflectional orientation, including various moods and modalities, tenses, aspects, and voice. Importantly, Cinque finds that the projection of sentential negation, NegP, is not a universally positioned projection, but rather varies parametrically.[20] A partial listing of Cinque's hierarchy is given in (28).[21]

(28) $\text{Mood}_{\text{SPEECH ACT}}\text{P} > \text{Mood}_{\text{EVALUATIVE}}\text{P} > \text{Mood}_{\text{EVIDENTIAL}}\text{P} > \text{Mod(al)}_{\text{EPISTEMIC}}\text{P} > \ldots$
$\text{Mood}_{\text{IRREALIS}}\text{P} > \text{Mod}_{\text{ALETHIC NECESSITY}}\text{P} > \text{Mod}_{\text{ALETHIC POSSIBILITY}}\text{P} > \text{Mod}_{\text{VOLITION}}\text{P} >$
$\text{Mod}_{\text{OBLIGATION}}\text{P} > \text{Mod}_{\text{ABILITY/PERMISSION}}\text{P} > \text{Asp(ect)}_{\text{HABITUAL}}\text{P} > \ldots \text{Asp}_{\text{PERFECT}}\text{P} >$
$\ldots \text{Asp}_{\text{PROGRESSIVE}}\text{P} > \ldots \text{Asp}_{\text{COMPLETIVE}}\text{P} > \ldots$ VoiceP …

Under the general principles of generative syntax, the feature projecting an FP in Cinque's hierarchy might be borne not only by an adverb (i.e., a specifier), but alternately, within the grammar of an appropriate language, by a head. Cinque finds evidence that confirms this prediction. In Korean, an agglutinating language, as the verbal head moves through a series of FPs, it left adjoins the associated inflectional affixes, creating a polymorphemic word carrying the inflectional information conveyed by adverbials, parenthetical expressions, and implicit force elements, in a non-agglutinating language like English. Cinque borrows the example in (29) from Sohn (1994) which demonstrates the point. The English translation might more elaborately be given as 'I assert that that bird evidently must have died!'

(29) Ku say-ka cwuk-ess-keyss-kwun-a! (Cinque 1999:53)
that bird-NOM die-ANTERIOR-EPISTEMIC-EVALUATIVE-DECLARATIVE
'That bird must have died!'

[20] This is in line with the findings of others such as Zanuttini (1991).
[21] The symbol ">" indicates structural dominance.

In accordance with Baker's (1985) Mirror Principle, the order of the affixes in (29) reflects the order in which they attach to the verbal head and by extension the inverse of the structural hierarchy in which the associated FPs are arranged. The data from agglutinating languages helps Cinque to establish the arrangement of his hierarchy.

Near the opposite end of the morphological continuum, the verbal-inflectional system of English is essentially isolating with certain fusional elements. Like closely related Germanic and Romance languages, English tense and agreement features are carried by (overt and covert) verbal inflections. Information associated with other IP projections is generally carried by elements of other classes like adverbs.

It is argued here that auxiliaries are also heads bearing the features of certain FPs of the extended IP structure. Evidence for this assertion comes from the observation that clauses containing an auxiliary can often be paraphrased by choosing an appropriate adverb. For example, in English the modality of epistemic necessity conveyed by auxiliary *must* in (30a) may be expressed synonymously with the adverb *certainly* in (30b). Similarly, the progressive aspect represented by auxiliary *be* (and the accompanying verbal marker *-ing*) in (31a) may alternately take the form of the aspectual adverb *currently* in (31b). We thus conclude that auxiliaries are alternate bearers of the inflectional features of the functional hierarchy proposed by Cinque.

(30) a. (It's very late.) Kristy must be at home.
b. (It's very late.) Kristy is certainly at home.
(31) a. Laura is studying philosophy at the university.
b. Laura currently studies philosophy at the university.

Unlike an adverb, which merges as the specifier of its FP, an auxiliary is a head and, like the agglutinating morphemes of Korean, inserts in F°. Whereas an adverb will (in general) remain *in situ* and have no effect on head relationships, an auxiliary will potentially insert in multiple projections. Just as the relative order of adverbs is assumed to remain fixed throughout the derivation for reasons of non-movement, so will the relative order of auxiliaries not change because of locality constraints (cf., Relativized Minimality (Rizzi (1997 and elsewhere)), the Minimal Link Condition (MLC), a.k.a., the Head Movement Constraint (HMC)). The relative order of adverbs to auxiliaries, however, may vary, given that the latter potentially insert in projections to both sides of the adverb's position.

We see this in the above examples. In (30a), the feature of epistemic necessity is borne by the auxiliary *must*. Copular *be* may not raise above this projection, because *must* intervenes. In (30b), on the other hand, *certainly* bears the same feature of modality, but as an adverb, it does not prevent *be* from moving to a higher head. In spite of the word order at Spell-Out, we conclude that the projection in which copular *be* is base-generated is in fact dominated by the FP of *certainly*.

5.2. The cartography of auxiliaries

To undertake a revised analysis of the syntax of auxiliaries, let us restate that we have abandoned the traditional view of CP – IP – VP in favor of a more elaborate and empirically justifiable structure of $\{\ldots CP\ldots\} - \{FP_1 - FP_2 - \ldots - FP_n\}_{IP} - \{\ldots vP\ldots\}$, where each FP_i is the projection of a feature with some specific inflectional orientation.[22] An auxiliary is a head that bears the feature projecting such an FP.

[22] The question arises as to whether each FP projects into every clause, as suggested by Cinque. Though it is peripheral to this paper, we concur with Starke (2004) that only those features corresponding to marked values

In the previous example, while copular *be* is finite in (30b), it is nonfinite in (30a). This observation, of course, is nothing new. It is well established that only the initial verb form (auxiliary or main verb) in a Standard English clause may be finite. For this reason, a sentence like (32a) is grammatical while (32b) is not. This naturally extends to clauses with modal auxiliaries as well. In (33a), *could* not only bears the feature of ability, but also a [+PAST] feature. Past marking on the main verb rather than the modal, as in (33b), is impossible. Even in the case of a modal like epistemic *must*, for which no past form exists, tensing of a subsequent verb as in (34a) is ungrammatical. An alternate expression of anteriority as in (34b) is instead required.

(32) a. We had been to the market before noon.
b. * We have were to the market before noon.
(33) a. I could swim across the lake when I was young.
b. * I can swam across the lake when I was young.
(34) a. * William must forgot to telephone me.
b. William must have forgotten to telephone me.

We also recognize that agreement morphology is found only on the initial verb form in English, though it is visible only for 3S subjects in the non-past in paradigms excluding modal auxiliaries. For example, (a) is the lone grammatical option in (35).

(35) a. Zaviory does not speak Norwegian.
b. * Zaviory do not speaks Norwegian.

It is widely accepted that non-3S subjects also bear agreement features in non-past forms, albeit with no overt morphological reflex; but it is debated as to whether past tense subsumes agreement.[23] Even more contentious is the question of whether modal auxiliaries lack agreement features altogether.[24]

The current paper maintains that agreement marks the highest verb form in every finite Standard English clause, in spite of its frequent concealment. This assertion is based on the premise that agreement or φ-features are found in every finite clause. Such phenomena as subject-raising out of [Spec, vP] and nominative Case assignment have been attributed to these features. With regard to past tense marked verbs, we see clear evidence of agreement in the paradigm of *be*, in which *was* and *were* bear not only the [+PAST] feature, but also a [PERSON] feature. Naturally, this implies that both tense and agreement features are present in the structure as well.

As for modals, though we see no overt morphological evidence in the paradigm of the auxiliaries themselves, the fact that they bear agreement is apparent in the clause as a whole. Let us consider two expressions, (36a) with a simple main verb, and (36b), in which the epistemic modal *may* is inserted. In the former sentence, overt agreement inflection is visible on the verb, while in the latter it is not. Under the premise that φ-features are present in the structure, we anticipate that they are borne by one of the two verb forms in the sentence. If it were the main verb, then there would be an overt morphological reflex and the resulting sentence would look like (36c). As this is not grammatical, we conclude that it is the modal

are obligatory in syntax while unmarked values are interpretatively recoverable at the LF interface and thus need not project.

[23] E.g., Iatridou (1990).

[24] E.g., Roberts (1985) and others argue that modals do not inflect for agreement.

itself that is marked for agreement, but that the overt 3S morpheme is exceptionally lacking from its paradigm. [25,26]

(36) a. Owen arrives tomorrow.
b. Owen may arrive tomorrow.
c. * Owen may arrives tomorrow.

Finiteness and agreement aside, it is also well established that only the initial auxiliary in a Standard English clause participates in certain operations. It is the only verb form that may invert with the subject, as in (37), or that may precede the sentential negator *not* or alternately be marked by the equivalent morpheme *-n't*, as shown in (38) and (39).

(37) a. Has William been called?
b. * Been William has called?
(38) a. William has not been called.
b. * William has been not called.
(39) a. William shouldn't have been called.
b. * William should haven't been called.

The implications are evident. First, only this verb form potentially bears the [+Q] feature and thus moves to $C°_{[+Q]}$ at Spell-Out to produce an interrogative sentence.[27] Secondly, the initial auxiliary is also the only form that may Spell-Out in a head as high as Neg°. But the case of negation is not so simple.

According to the NEG-criterion of Haegeman / Zanuttini (1991), negation requires the obtainment of a particular configuration: a head with a negative feature must insert in a position whose specifier is a negative operator; and conversely, a negative operator requires that a head with a negative feature insert in its projection. Haegeman (1995) finds that in English this relationship must be established at Spell-Out.[28]

The sentential negations seen in (38a) and (39a) result from similar derivations in which different negative elements have phonological realization. As Haegeman claims, as a sentential negator, *not* is an overt operator in [Spec, NegP] which satisfies the NEG-criterion in conjunction with a covert [+NEG] head. The morpheme *-n't*, on the other hand, is a negative head that merges with Neg°, obtaining the required configuration with a phonologically empty operator in [Spec, NegP]. Let us consider this more closely.

In the case of sentential *not*, as the negator is a specifier, we do not anticipate that it will affect head relations. Take the case of auxiliary *have*, which is base-generated in a projection lower than NegP, as evidenced by the word order in (40a). When it is the initial auxiliary, as seen in (40b), *have* indeed occupies a position above *not*.

But in light of the theory of an extended IP in which the auxiliary bears a feature lower than negation and moves to a position higher, then under the premise that a [+NEG] head must insert in Neg°, it is anticipated that this head would block the raising of *have*, as illustrated in (41). We therefore infer that the auxiliary itself must bear the negative feature, and that this

[25] The lack of overt 3S morphology on modals is easily accounted for as the result of their unusual history. As Denison (1993) explains, English modal auxiliaries derive from an exceptional class of Proto-Germanic preterite-present verbs whose 3S non-past form was identical to the 1S form. Cognates in other modern Germanic languages similarly lack the regular 3S non-past morphology, though it is undisputed that they bear agreement features. (Abraham 2002).
[26] Ellison (2006) offers additional support that modals bear agreement features.
[27] For simplicity, we attribute inversion to the [+Q] feature, but acknowledge that certain other non-interrogative features also trigger I°-to-C° movement.
[28] In Haegeman's terms, the NEG-criterion must be satisfied by a [+NEG] chain.

feature satisfies the NEG-criterion. Clearly, the negative feature has no overt phonological manifestation on the auxiliary, which therefore is identical to the non-negated correlate. A preliminary representation of the corresponding derivation is shown in (42).[29]

(40) a. William should not have been called.
b. William has not been called.

(41) * $[_{IP}$ William $[_{I}$ has$]$ $[_{NegP}$ not $[_{Neg}$ Ø$_{[+NEG]}]$ $[_{F\{HavePERF(ECTIVE)\}P}$ $[_{F\{HavePERF\}}$ <has>'$]$[30,31]

(42) $[_{IP}$ William $[_{I}$ has$_{[+NEG]}]$ $[_{NegP}$ not $[_{Neg}$ <has$_{[+NEG]}$>$]$
$[_{F\{HavePERF(ECTIVE)\}P}$ $[_{F\{HavePERF\}}$ <has$_{[+NEG]}$>'$]$

In the case of sentential negator *-n't*, by contrast, we encounter no such dilemma. According to the prominent current analysis, as the morpheme is a dependent head, it must attach to a lexical host, that being the highest auxiliary in the clause. The auxiliary *has* again offers an understanding of how the NEG-criterion is satisfied. In (43a), *has* first moves to Neg° in which it left-adjoins *-n't*, then the inflected head raises to its higher Spell-Out position. The structure of this suggested derivation is shown in (43b).

(43) a. William hasn't been called.
b. $[_{IP}$ William $[_{I}$ has-n't$]$ $[_{NegP}$ OP$_{NEG}$ $[_{Neg}$ <has>+<-n't>$]$ $[_{F\{HavePERF\}P}$ $[_{F\{HavePERF\}}$ <has>$]$

There is a problem with this analysis. As will be discussed in section 5.3, certain English modal auxiliaries, like epistemic *must*, bear a modal feature that is structurally higher than negation. This would suggest that a lower auxiliary might raise to Neg° and adjoin to that head, as in (44a). However, we have already established, as seen in (44b), that only the initial auxiliary may grammatically bear the *-n't* marking, implying the derivation shown in (44c). Yet under the premise that the raising head should left adjoin, we cannot account for the form of *mustn't* instead of **n'tmust*.

(44) a. * William must haven't been called.
b. William mustn't have been called.
c. $[_{IP}$ William $[_{I}$ must-n't$]$ $[_{F\{MustEPIST(EMIC)\}P}$ $[_{F\{MustEPIST\}}$ <must>+<-n't>$]$
$[_{NegP}$ OP$_{NEG}$ $[_{Neg}$ <-n't>$]$

It is proposed here that *-n't* is not a syntactic affix, but rather constitutes a part of a set of fusional "negative auxiliaries". These negated forms enter the numeration from the lexicon "as is", bearing the [+NEG] feature. In the spirit of Halle / Marantz's (1993 & elsewhere) Distributed Morphology, this means that these lexical items bear not only the auxiliary functional feature but also that of negation (cf. Giorgi / Pianesi's (1997) "syncretic" category).[32] In (44b), for example, it is not the suffix *-n't* that satisfies the NEG-criterion, but rather the [+NEG] feature of *mustn't* itself.

[29] This structure will be adjusted below.
[30] F$_{\{HavePERF\}}$P denotes the projection of perfect aspect associated with *have*. We opt here not to employ the labels identified by Cinque (1999) for the various FPs of the IP structure for two reasons. First, the objective of section 5.3 will be to locate a number of these projections based on empirical evidence from Standard English. Secondly, there are indications that the hierarchy of inflectional FPs is in fact even more finely grained than the structure that Cinque proposes.
[31] For the moment, we continue to use the label IP for the highest FP in the structure.
[32] In addition to the elimination of the theoretically problematic right adjunction seen in (44c), there is further support for the proposed negative auxiliaries in place of the traditional analysis of *-n't* as a syntactic affix. From a phonological perspective, we observe that *-n't* marked auxiliaries are highly irregular. While the morpheme has

This assertion, of course, forces a revision to the structure in (43) as well. Though the derivation as described presents no theoretical problem for left adjunction, we reason that the *-n't*-negated form is nonetheless also a fusional negative auxiliary. In contrast to *mustn't*, the aspectual feature of *hasn't* is structurally lower than negation. Nevertheless, it too is a fusional form that bears the [+NEG] feature that satisfies the NEG-criterion.

In essence, in a sententially negated clause, the initial auxiliary necessarily bears a [+NEG] feature. When the auxiliary has a negative form (i.e., *-n't*), the morphology associated with the feature is overt; when it does not have a negative form, though the auxiliary bears no visible morphology of negation, its [+NEG] feature satisfies the NEG-criterion in conjunction with the operator *not* in [Spec, NegP].[33]

We can now summarize the preceding observations and offer an initial analysis of the syntactic nature of auxiliaries. As has been asserted, an auxiliary bears a functional feature in the IP structure. In this way, it is like the adverbs analyzed by Cinque (1999). We note that with the exception of *do*, English auxiliaries bear the feature of a modal, aspectual, or voice projection, which we infer motivates its selection into a numeration. Henceforth, let us refer to that feature as its "core feature". Unlike inflectional adverbs, which are specifiers, auxiliaries are heads and thus potentially bear multiple functional features, but are subject to locality constraints.

In the case of non-initial verb forms, we have seen no evidence of multiple features, as is demonstrated by the comparison of the paraphrases in (45). Though some sort of restricted movement of *have* in (45a) can certainly not be ruled out, it is not of the type associated with insertion in a projection toward the left periphery of IP as it does as the initial auxiliary in (45b). We can now account for the motivation of the movement of the highest auxiliary.

(45) a. William must have forgotten to call.
b. William has certainly <has> forgotten to call.

An auxiliary is not simply the bearer of a functional feature of aspect, modality, or voice, i.e., its core feature; it is instead potentially a bundle of fused features. In English, certain

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syllabic status in certain cases (e.g., *isn't*, *hasn't*, *couldn't*, *mustn't*), in others it does not (e.g., *aren't*, *can't*, *shan't*). Furthermore, the pronunciation of a non-negated auxiliary is often altered in producing the negated counterpart, as in the cases in (i), and the highly divergent auxiliaries in (ii) (American English pronunciations).

(i)	a.	*do* /duː/	> *don't* /doʊnt/	cf. */duːnt/
	b.	*must* /mʌst/	> *mustn't* /mʌsn̩t/	cf., */mʌstn̩t/
(ii)	a.	*will* /wɪl/	> *won't* /woʊnt/	cf. **willn't* /wɪln̩t/
	b.	*shall* /ʃæl/	> *shan't* /ʃænt/	cf. **shalln't* /ʃæln̩t/

Additionally, from a morphological perspective, certain negative auxiliaries exist in few or no dialects of the language, such as %**amn't*, %%*daren't*, or %%*mayn't*. Under the hypothesis of syntactic affixation, these gaps are unexpected.

As pointed out by Eric Haeberli (personal communication), it could be argued that these are merely cases of allomorphy, as in the traditional analysis. I maintain that in light of the extended IP hypothesis, given the scope differences to be discussed in section 5.3, the fusional-lexical explanation for these observations is more viable.

[33] Incidentally, the suggestion that an auxiliary not marked with *-n't* may bear the [+NEG] feature begs the question of why it may or must not always have a negative interpretation. For example, why is it not necessary or at least possible to interpret (i) as sententially negated, i.e., as "William must not have been called"?

(i) William must have been called.

As Haegeman (1995) explains, because negation is an overt category, a non-overt operator must be associated with overt material in order to be interpreted. In other words, it is not possible for both the NEG-operator and the negative head to be covert. In essence, the lexical entry *must* is underspecified for negation (i.e., [±NEG]), and can only be construed as negated in conjunction with an overt NEG-operator like *not*.

characteristics set the initial auxiliary apart from all other verb forms in the clause. Except for the main verb in a finite clause lacking auxiliaries, it is the only form that may bear overt tense and agreement morphology, and we have claimed that it in fact must bear the tense and agreement (φ-) features. Furthermore, the fact that it is the only verb form that may precede the sentential negator *not* or be marked with the *-n't* morpheme, leads us to the conclusion that, whenever a clause is sententially negated, the first auxiliary necessarily bears a [+NEG] feature. Whereas a negative auxiliary (marked with *-n't*) always carries a [+NEG] feature, an auxiliary not marked with *-n't* is underspecified for negation, i.e., [±NEG]. In and only in conjunction with an overt NEG-operator like *not* in [Spec, NegP] is the [+NEG] feature activated; otherwise, the interpretation of the auxiliary will be as unnegated. Finally, because no other verb form may invert with the subject, we concluded that the initial auxiliary is also the only form that may bear a [+Q] feature. As there is no overt morphology associated with this feature, we can say that the auxiliary is underspecified, i.e., marked [±Q]. Whenever the feature projects, by moving to $C°_{[+Q]}$, the auxiliary renders it interpretable. Henceforth, we will refer to all of the features borne by an auxiliary excluding its core feature as the "non-core features".

In contrast, non-initial auxiliaries are not potentially marked for any of the above features. The lack of tense and agreement features is evident in their forms, given that overt morphology indicating 3S non-past agreement and past tense occurs in their paradigms but never in a non-initial position. Furthermore, in this position, auxiliaries never participate in the indication of negation or inversion. We thus infer that they are transparent to these operations, meaning that they simply lack the capacity to bear the related features. Since a negative auxiliary lacks the potential for transparency to negation, given that its [+NEG] feature is morphologically activated (by *-n't*), it is expected that it could not insert in the projection of the core-feature of a non-initial auxiliary.

The lack of any of the features that trigger the movement of the initial auxiliary is what gives the impression that a non-initial auxiliary is more or less static in the structure. Though it bears the core feature of the appropriate F°, it does not bear tense, agreement, [NEG], or [Q] features.

Still the question of main verbs remains open. Before moving on, let us remark that the above analysis suggests an account for this last group of verb forms as well as a straightforward explanation for the phenomenon of vacuous auxiliary *do* insertion.

There are two well-established observations of the syntax of lexical verbs in English. First, like auxiliaries, when a main verb is the first verb form in the clause, it bears tense and agreement features associated with overt or covert morphology. Whereas auxiliaries potentially Spell-Out toward the left periphery of the IP structure, main verbs remain in VP. Secondly, certain operations such as negation and subject inversion require the presence of an auxiliary, a main verb alone being ungrammatical. When no meaningful auxiliary is present in the clause, supporting auxiliary *do* must be inserted as a last resort to rescue the derivation.

As has been claimed, because of their lexical nature, initial auxiliaries have the potential to bear negative and question features. The fact that lexical verbs alone are unable to produce such expressions grammatically, indicates that like non-initial auxiliaries, they lack the potential to bear the [+NEG] or [+Q] feature.

Because *do* is an auxiliary, it shares the characteristic underspecification for [NEG] and [Q] and thus potentially bears either feature. As it is semantically vacuous, *do* contributes no additional meaning to the clause as would any other auxiliary. What sets *do* apart is thus that it has no core feature.[34] Clearly, since it is the initial verb form, *do* will necessarily bear the

[34] Under a stricter definition of "core feature" as the motivation for the presence of an auxiliary in the derivation, we could say that *do* has a core feature of either [+NEG] or [+Q]. This sets it apart because it lacks a modal,

tense and agreement features; however, it is the Neg° and / or $C°_{[+Q]}$ feature that motivates its insertion.

Succinctly, *do*-support is required, not because the tense and agreement on the main verb in VP are blocked from a local relation (for example, by the covert negative head), but rather because the main verb lacks the potential to bear the features [+NEG] and [+Q].

5.3. Locating features in the English clause

The analysis proposed above offers a theoretically viable explanation for the syntax of auxiliaries in line with the empirical data from English. As will now be shown, it further allows us to make certain immediate inferences concerning the extended structure of the clause based on superficial word ordering.

As was discussed in section 2.1, in Standard English there is a fixed arrangement of the auxiliaries in a clause. Though a grammatical sentence may contain no auxiliaries, those that are present must respect the relative order of modal – perfective *have* – progressive *be* – passive *be*. Due to locality constraints, section 5.1 claimed that the relative order of auxiliaries is constant throughout the derivation. We infer, based on the fixed order of auxiliaries, that their arrangement reflects the structural hierarchy indicated in (46), one which happily concurs with the findings of Cinque (1999) shown in (28).

(46) all modal auxiliary FPs > $F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$

In the previous section, it was claimed that every auxiliary, with the exception of *do*, bears a core feature. The clause-initial auxiliary is furthermore a bundle of features that include tense and agreement, and potentially [+NEG] and [+Q]. This means that, whereas a modal and *do* will always be a feature-bundle, an aspectual or voice auxiliary will bear only its core feature whenever not initial. From this, we can draw the further conclusion that all of the bundled features borne by the initial auxiliary must be positioned structurally higher than the core features of aspectual and voice auxiliaries. This reveals a second piece of the structural hierarchy, shown in (47).[35]

(47) $\{CP_{[+Q]}, TP, FP_{[+Agr]}, NegP\} > F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$

We can further refine both (46) and (47) by considering word order in subject-auxiliary inversion. Whenever the initial auxiliary is not marked as [+Q], it has a Spell-Out position to the right of the subject. In contrast, a [+Q] feature will trigger the auxiliary to move to $CP_{[+Q]}$, giving an inverted sequence. Given that the presence of none of the other features is associated with such movement, we infer that $CP_{[+Q]}$ dominates all of the other listed projections.[36] This gives us the revised hierarchies in (48) and (49).

(48) $CP_{[+Q]}$ > all modal auxiliary FPs > $F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$

(49) $CP_{[+Q]} > \{TP, FP_{[+Agr]}, NegP\} > F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$

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aspectual, or voice feature. Either of the core features of *do* is subsumed by the presence of another auxiliary since it potentially bears the feature.

[35] In light of the controversy surrounding the existence of AgrP and the inconclusive evidence as to the projection on which agreement (φ-) features are located, the associated projection is represented here as $FP_{[+Agr]}$.

[36] Perhaps this is trivial, as it is generally held that $CP_{[+Q]}$ dominates the entire IP domain, as evidenced by the CP label itself which places [+Q] among the clause's force elements. Nonetheless, it is significant in the establishment of the order of projections.

A preliminary observation based on these revised orders is that modal features and the features of tense, agreement, and negation occupy a common region below $CP_{[+Q]}$ and above the aspectual and voice projections. But let us look more closely at each of these partial hierarchies.

Unfortunately, there are certain relationships that cannot be deduced from word order data. First, because modal auxiliaries do not co-occur in Standard English, we are unable to deduce the arrangement of their associated modal features in order to produce a more detailed account of (48). As was mentioned in section 3.1, grammatical modal combinations in MM varieties are in general composed of an initial epistemic and a final root modal. This would indicate, in agreement with Cinque's findings, that projections of epistemic modality are structurally higher than projections of root modality. However, there is little more along these lines from which to garner helpful information.

With regard to (49), it is also true that word order provides little enlightenment as to the arrangement of TP, $FP_{[+Agr]}$, and NegP since the features associated with these projections are consistently bundled, borne by the initial verb form of the clause. In principle, only because the initial auxiliary is triggered to move above the subject due to its [+Q] feature, were we able to deduce the location of this feature's projection. There is no overt morphological manifestation of the feature.

In fact, it is widely recognized that English inflectional morphology is relatively poor. With the exception of the paradigm of *be*, agreement has a morphological reflex only on 3S non-past verb forms, excluding modal auxiliaries. The agreement-inflected past forms, *was* and *were*, are fusional, revealing no sequence of features. If the negative auxiliaries (marked with *-n't*) were the result of syntactic affixation; then under the principle that a raising head left-adjoins, the negative suffix would reveal the order of affixation and thus the position of the associated projections. However, as suggested in section 5.2, these special auxiliaries are in fact fusional lexical entries, revealing no such information. Concisely, there seems to be no hope of extracting a more refined representation of (49) through the analysis of either word order or morphology.

But let us return to the above observation that the tense, agreement, and negation features are situated in the same region of the structure as modal features are. In fact, there is strong evidence that these two groups are intermingled; that is, for example, that the core features of certain modal auxiliaries position above NegP while those of others are below it; and likewise that some but not all modal features are structurally higher than tense. Let us see how this notion can be exploited to produce a more finely grained extended IP hierarchy.

To begin, the two sentences in (50) constitute a minimal pair in which the only distinction is the core feature associated with the different modals, *should* and *can*. It has been established that in addition to its core feature, as the initial verb form, each of the negative auxiliaries bears agreement, tense, and negation features, i.e., [+3S], [-PAST], [+NEG].[37] However, the way in which the negative and the core features semantically "interact" is not equivalent.

(50) a. James shouldn't swim across the river.
b. James can't swim across the river.

In (50a), the modality of root (implied) obligation conveyed by *should* takes semantic scope over the negation of the proposition that follows. Decomposed as [OBLIGATION [¬(*swim*)]], this sentence could be paraphrased as "James is compelled [not to swim across the river]." In contrast, in (50b) the modality of root ability associated with *can* is within the semantic scope

[37] We disregard the [Q] feature as it is not relevant here.

of negation. The meaning, paraphrased as "James is not [able to swim across the river]", is represented by [¬[ABILITY (*swim*)]].

We assume, as is commonly held, that semantic scope is a manifestation of syntactic scope, which is defined by c-command. A head takes syntactic scope over its complement, i.e., its c-commanded domain. Thus an element interpreted as taking scope over another occupies a higher position in the structure. In the case of (50a), we deduce that the negative auxiliary *shouldn't* is interpreted as obligatory negation because its core feature [+OBL(IGATION)] takes scope over [+NEG], revealing a structural arrangement such that $F_{\{ShouldOBL\}}P > NegP$. Conversely, the core feature [+ABIL(ITY)] must fall in the scope of [+NEG] in (50b) in order to produce the interpretation of *can't* as negated ability. This means that $NegP > F_{\{CanABIL\}}P$.[38]

The same logic can be applied with regard to the tense feature. As in the preceding pair of sentences, (51a) differs from (52a) only in the modality of the respective auxiliaries. Along with its core feature, each modal bears [+3S] agreement, [-PAST] tense, and (perhaps) [-NEG] negation features.[39] The non-past expression in (51a) becomes past referential when the modal *can* is replaced by the morphologically tensed *could*, as in (51b).[40] In this pair of sentences, the same core feature of root ability is borne by both auxiliaries. The difference in meaning derives from the fact that *can* is marked for [-PAST] tense, while *could* is a [+PAST] form.

(51) a. James can swim across the river.
b. James could swim across the river when he was young.
(52) a. James should swim across the river.
b. * James should swim across the river yesterday.
c. James should have swum across the river yesterday.

In the case of (52a), however, no such past marked form of *should* exists to permit grammatical tensing (cf. (52b)). In fact, past reference of the sentence is only possible through an alternate expression with the auxiliary *have* in (52c).

This sentence exemplifies one of several constructions that in English consistently prompt the insertion of auxiliary *have***,** not in its conventional role of indicating perfective

[38] Given that sentential negation may alternately be realized via the specifier *not*, we must question whether the sentences in (i) might convey an interpretation different from the corresponding sentences in (50). Section 5.2 proposed that the syntactic derivation is identical for clauses in which negation is overtly marked on the auxiliary, as in (50), and those in which the auxiliary bears no morphological reflex, but nevertheless carries the [+NEG] feature, which is activated by an obligatorily overt NEG-operator like *not* as in (i). The sole difference is whether the operator or the head is overtly marked. Under such a proposal, we would predict that the interpretation of the sentences in (i) is no different from those of (50). This is exactly what we find. The scope relationships between the sense of modality and negation are [OBLIGATION [¬(*swim*)]] for (ia) and [¬[ABILITY (*swim*)]] for (ib).

(i) a. James should not swim across the river.
b. James can-not swim across the river.

On one hand, this offers additional support to the claim that initial auxiliaries always bear the [+NEG] feature in a sententially negated clause. On the other, it indicates that only one of the two possible manifestations of sentential negation needs to be considered to establish the scope relationship between negation and the core feature of any given auxiliary.

[39] Though *should* may also serve as the past form of *shall*, it is clearly non-past when it carries the sense of obligation as in (52a). This is evidenced by its compatibility with non-past temporal adjuncts, as in "James should swim across the river after he arrives tomorrow."

[40] Note that the temporal adjunct indicates that the modal is interpreted unambiguously as a past form rather than the polysemous *could* of hypothetical ability, as in "James could swim across the river tomorrow if the water is not too cold."

aspect, but instead as a purely temporal marker.[41] For instance, the embedded infinitive clause in (53a) is situated at a time prior to the event of the matrix clause due to the presence of *have*. Without the auxiliary, as in (53b), the infinitive can only be interpreted as concurrent with the matrix verb. *Have* is often also required to indicate unambiguously that an embedded finite clause precedes a past matrix event, as in (54a). Without the auxiliary, the two verbs in (54b) are generally interpreted as contemporaneous in the absence of additional lexical or contextual information.[42]

(53) a. Nancy claimed to have been ill.
b. Nancy claimed to be ill.
(54) a. Nancy claimed that she had been ill.
b. Nancy claimed that she was ill.

In his analysis of this phenomenon, which he labels Past Tense Replacement (PTR), Hofmann (1976) deduces that in English, when past reference cannot be realized through verbal inflection, the auxiliary *have* assumes the role. As Drubig (2001) infers, this means that PTR is a last resort mechanism in English. That this is the case in (53a) is obvious, since in any nonfinite clause, past inflection is impossible by definition. Hofmann also reasons that PTR constructions with certain modal auxiliaries are the response to the lack of a corresponding past-inflected form, as was seen to be the case of *should* in (52c). It is our claim that a similar trigger applies in a past perfect expression like (54a) but for a slightly different reason. Past verbal inflection is indeed present in the embedded clause, overtly marking the initial auxiliary as expected. However, when it is subordinate to another past tense clause, the tense morphology is in general adequate only to synchronize the two times. The insertion of *have* provides a second indication of anteriority, or "dual anteriority", which ensures the disjunction associated with the "past-in-past" reading (i.e., Reichenbach's (1947) E_R_S).

Drubig builds on Hofmann's hypothesis to provide a syntactic account of PTR. Analyzing the specific case of PTR in expressions with epistemic modal auxiliaries, he proposes that the impossibility of past reference through verbal inflection reflects the fact that TP projected by a [+PAST] feature is unavailable in the clause. He argues that clauses containing epistemic modals may be tenseless, in syntactic terms meaning that the auxiliaries do not select TP. There is a degree of logic to such a notion. As Palmer (2001) states, because epistemic modality is a reflection of the speaker's judgment of the assertion, it necessarily pertains to the time of speech; therefore, an epistemic auxiliary cannot convey an opinion other than that which is current. Nevertheless, it is certainly possible that a speaker might wish to offer such an opinion of an event set in the past.

Consider the past assertion in (55a) modified to reflect a sense of epistemic possibility via the auxiliary *may*. As we know from section 5.2, since only the initial verb form may bear the tense feature in a Standard English clause, it is correctly anticipated that inflectional

[41] In the English present perfect, aspectual *have* corresponds to the Reichenbach's (1947) anterior present, or E_S,R. The resulting "current relevance" yields it ungrammatical with punctual temporal adjuncts that place the reference time in the past, as in (ia). When *have* is used as a past reference marker, it is compatible with such adjuncts, as in (52c), meaning that the reference time precedes the speech time, i.e., it is not perforce currently relevant. This corresponds to either the anterior past (i.e., past perfect) E_R_S, or in the case of (52c), to the simple past E,R_S. In either case, the auxiliary conveys anteriority (e.g., past reference) rather than aspect.

(i) a. * James has swum across the river yesterday.

[42] We acknowledge that the telicity of the respective verbs plays a role in the temporal interpretation. For example, "Nancy claimed that she ate an apple" will generally be interpreted such that the embedded clause precedes the matrix event. This however is peripheral and will be set aside.

morphology on the main verb, as in (55b), will be ungrammatical. On the other hand, although *might* serves at times as the past form of *may*, its epistemic sense is strictly non-past. Sentence (55c) therefore is not a (past) epistemic version of (55a) but rather of its non-past equivalent. The only means through which the epistemic modal can take scope over the past assertion is the PTR construction in (55d).

(55) a. Barry ate your apple.
b. * Barry may ate your apple.
c. # Barry might eat your apple.
d. Barry may have eaten your apple.

Drubig therefore proposes that in past assertions, the feature heading TP must be [-PAST] in order to meet the selectional requirement of the modal. The insertion of *have* is a last resort that provides the necessary past reference.

Let us expand on Drubig's hypothesis. The suggestion that PTR results from the unavailability of a [+PAST] feature in T° is indeed insightful. It is clearly the case in infinitive constructions like (53a); given that they are nonfinite, a [+PAST] feature would be contradictory. But a past perfect expression like (54a) unquestionably contains a past feature, for it is overtly detectable in the marking on the highest verb form, *ha-d*. However, as mentioned above, in order to convey dual anteriority or "past-in-past" unambiguously, certain embedded clauses in English require two distinct indications of past reference. Under the assumption that only one instance of T° occurs in the extended IP structure,[43] the second signal of anteriority must be realized through the last resort PTR. In other words, though [+PAST] feature projects (borne by *had* simply because it is the highest verb form), the resulting anteriority ambiguously places it as contemporaneous with the past matrix clause. The insertion of *have* itself provides the second indicator of past reference allowing explicit dual anteriority.

We propose that an adjustment to Drubig's account will also explain PTR with modal auxiliaries. From a semantic perspective, it is widely held that finiteness implies temporal location. As we take semantics and syntax to be representations of each other, this indicates that a [±PAST] tense feature necessarily occurs in every finite English clause. Certain clausal elements subsume tense. This was seen above to be the case of epistemic modal auxiliaries, which necessarily relate to the moment of speech.

According to our proposal, like all initial verb forms in Standard English, these auxiliaries bear the fixed bundle of features that includes tense. The fact that no past tense form exists reflects the fact that the associated modality inherently takes semantic scope over tense, i.e., necessarily entails that it be non-past. In structural terms, this indicates an arrangement in which the FP projected by the modal's core feature dominates TP. While this differs from Drubig's account of epistemic auxiliaries in non-past assertions, it is similar to his idea that in a past assertion, T° cannot have a [+PAST] feature under epistemic modals. The past reference demanded by the intention triggers the last resort PTR mechanism.[44]

[43] We recognize that many current works represent multiple instances of TP in a single clause (e.g., Giorgi / Pianesi (1997)). In terms of the proposal of the current paper, each of these projections would correspond to a unique FP in the extended IP hierarchy.

[44] It is also possible for the epistemic auxiliary to take scope over an assertion whose event time is firmly fixed in the future for example by a temporal adjunct as in (i). Unlike the past assertion which triggers PTR to differentiate the reference time from the speech time, there is no such conflict in the case of the future assertion. We assume that this is because the two times correspond to the same [-PAST] feature of T°.

(i) Barry may eat your apple tomorrow.

As (52c) demonstrates, it is not only epistemic auxiliaries that require the insertion of *have* for past reference in English, but certain root modals as well. In this sentence, *should* implies obligation, which like epistemic modality, reflects the speaker's judgment or mental state at the moment of speech. Along a similar line of reasoning, we deduce that the core features of such modals project structurally higher than TP.

Thus, as in the case of negation, it is evident that while the core features of some modal auxiliaries project above TP, those of others project below it. Whereas [+ABIL] borne by *can* falls in the scope of tense, revealing that TP > $F_{\{CanABIL\}}P$; the core feature [+OBL] of *should* scopes over tense, meaning that $F_{\{ShouldOBL\}}P$ > TP.

With respect to tense and negation, there are four possible configurations in which the core feature of a modal auxiliary might fall. First, it may take scope over both, as was seen to be the case of [+OBL] of *should*. Secondly, like [+ABIL] of *can*, it might fall within the scope of the two.

In the third possible configuration, the core feature takes scope over tense but falls within the scope of negation. An example of such a modal is epistemic *could*, as can be demonstrated using the same analysis as was employed above. Sentence (56a) relates the speaker's current speculation that his assertion is presently valid. When the modal is marked as [+NEG], the resulting sentence in (56b) is such that the epistemic value is negated. An appropriate paraphrase would be, "It is not the case that [that could be Octavio at the door.]" However, there is no means through which *could* might modify the same assertion with past reference utilizing past tense morphology, as is entirely expected, given that it is true of all epistemic auxiliaries. The grammatical solution is the last resort mechanism of PTR, as shown in (56c). This of course implies that epistemic *could* renders tense unavailable as a [+PAST] feature and hence that its core feature takes scope over T°. The resulting arrangement of projections can be represented as NegP > $F_{\{CouldEPIST\}}P$ > TP.

(56) a. That could be Octavio at the door.
b. That couldn't be Octavio at the door.
c. That could have been Octavio at the door this morning.

The final potential order of projections reverses these scope relations. The core feature of modality falls in the scope of tense but takes scope over negation. Ellison (2006) analyzes the scope relationship that the core feature of each modal auxiliary in Standard English bears to negation and tense, based on the above methodology and extensions thereof. Taking into account the distinctions that define the various functions of these often polysemous verb forms, it determines that no auxiliary has a modal value that can be marked for past tense yet is not negated in a sententially negative clause. Conversely, every modal whose core feature takes scope over negation is inherently marked [-PAST]. Hence, no English modal auxiliary falls in the fourth potential configuration.

This finding has two important implications. First, the scope relations of all core features to negation and tense fall in a single alignment in English such that the associated structure has the arrangement shown in (57).[45] Secondly, the fact that no auxiliary belongs to the

[45] The specific arrangement of the FPs projected by the core features of modal auxiliaries to NegP and TP as revealed in Ellison (2006) is given as:

potential fourth class in which the core feature scopes over negation but not tense is a welcome discovery. If it were not the case, then the fundamental premise of this paper based on notion that the clause has a rigidly fixed "cartographic" structure would be brought into question. That it is indeed the case, we take as evidence that said premise is valid. In other words, the inconsistent way in which modal auxiliaries interact with negation and tense is explainable on solid syntactic grounds rather than attributed to mysterious pragmatic factors.

(57) $F_{\{MODALS\text{-}I\}}P > NegP > F_{\{MODALS\text{-}II\}}P > TP > F_{\{MODALS\text{-}III\}}P$

Recall the arrangement of the projections in (49), repeated here for convenience. In the absence of morphological and word order information, we have managed to refine this hierarchy based on semantic scope relations, arriving now at the structure in (58). However $FP_{[+Agr]}$, the unidentified projection on which agreement features are located, remains unplaced.

(49) $CP_{[+Q]} > \{TP, FP_{[+Agr]}, NegP\} > F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$
(58) $CP_{[+Q]} > NegP > TP > F_{\{HavePERF\}}P > F_{\{BePROG\}}P > F_{\{BeVOICE\}}P$

The syntax of agreement remains controversial. The early suggestion of an associated projection of its own, AgrP, has by many been dismissed on the grounds that agreement features are uninterpretable, motivated by grammar rather than meaning. Chomsky (1995) proposes that φ-features are found in TP, a view currently held by much of the syntactic community, but by no means universally. Let us offer a possible alternative.

To begin, given that agreement does not contribute to meaning, it would be impossible to establish its syntactic scope relationship to other features in terms of semantic scope as was possible in the cases of negation and tense. An analysis similar to those of NegP and TP above is therefore not an option.

But let us make an observation. In the framework that has been presented here, the auxiliary *shouldn't*, indicating root obligation in (59a), bears features of modality, negation, tense, and agreement; [+OBL], [+NEG], [-PAST], and [+3S], respectively.[46] Putting the last among these aside, the proposed order in which these features fall in the hierarchy is such that $[+Should_{OBL}] > [+NEG] > T[-PAST]$, as represented in (59b). As the resulting word order properly reflects the sentence as Spell-Out, there would appear at this point to be no reason to speculate on the presence of an additional dominating projection. We therefore tentatively represent the subject as the specifier of the FP of the core feature.

(59) a. Brian shouldn't forget about the incident.
b. $[_{F\{ShouldOBL\}P}$ *Brian*$^{?}$ $[_{F\{ShouldOBL\}}$ shouldn't$_{t[+ShouldOBL]/[+NEG]/[-PAST]}]$
$[_{NegP}$ OP_{NEG} … $[_{TP}$ $[_{T[-PAST]}$ …

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core feature FPs of {*may*$_{EPIST(EMIC)}$, *might*$_{EPIST}$, *must*$_{EPIST}$, *must*$_{OBL(IGATION)}$, *ought*$_{EPIST}$, *ought*$_{OBL}$, *shall*$_{EPIST}$, *shall*$_{OBL}$, *should*$_{EPIST}$, *should*$_{OBL}$, *would*$_{EPIST}$, *will*$_{EPIST}$}
> NegP
> core feature FPs of {*can*$_{EPIST}$, *could*$_{EPIST}$, *could*$_{HYPO(THETICAL)\text{-}ABIL(ITY)}$, *could*$_{HYPO\text{-}PERM(ISSION)}$, *might*$_{HYPO\text{-}PERM}$, *should*$_{HYPO\text{-}PRED(ICTION)}$, *would*$_{HYPO\text{-}PRED}$}
> TP
> core feature FPs of {*can*$_{ABIL}$ / *could*$_{PAST\text{-}ABIL}$, *can*$_{PERM}$ / *could*$_{PAST\text{-}PERM}$, *dare*, *may*$_{PERM}$ / *might*$_{PAST\text{-}PERM}$, *need*, *shall*$_{PRED}$ / *should*$_{PAST\text{-}PRED}$, *will*$_{PRED}$ / *would*$_{PAST\text{-}PRED}$}

[46] Again, we disregard the [Q] feature for simplicity.

It was proposed earlier with regards to negation that the derivation is no different in the case in which the NEG-operator has overt realization as *not*. The auxiliary similarly bears a [+NEG] feature, though it no longer shows a visible morphological reflex. It is therefore anticipated that the equivalent to (59a), shown in (60a), corresponds to the structure (60b) which is syntactically indistinct from (59b).

(60) a. Brian should not forget about the incident.
b. $[_{F\{ShouldOBL\}P}$ *Brian*$^{?}$ $[_{F\{ShouldOBL\}}$ should$_{[+ShouldOBL]/[+NEG]/[-PAST]}]$
$[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ …

In the case of an auxiliary whose core feature is structurally lower than negation, a similar derivation appears to be less suitable. As established above, the core feature of root ability borne by *can't* falls in the scope of the tense and negation features. Again disregarding the agreement features, in a sentence like (61a), the highest feature borne by such an auxiliary is negation. It is impossible however that the subject is inserted as the specifier of NegP, as this position is occupied by the covert NEG-operator; therefore, a derivation like (61b) cannot be correct. The presence of some higher projection, labeled F*P in (61c), is inevitable to provide the observed subject position. As it is associated with no change in word order, however, it is uncertain whether the auxiliary heads this projection or instead heads NegP at Spell-Out.

(61) a. Brian can't forget about the incident.
b. * $[_{NegP}$ OP_{NEG} *Brian* $[_{Neg}$ can't$_{[+NEG]/[-PAST]/[+CanABIL]}]$ $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …
c. $[_{F*P}$ Brian $[_{F*}$ _ */can't*$_{[+NEG]/[-PAST]/[+ShouldOBL]}^{?}$$]$
$[_{NegP}$ OP_{NEG} $[_{Neg}$ *can't*$_{[+NEG]/[-PAST]/[+CanABIL]}^{?}]$ $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

It becomes clear, though, by looking at the corresponding covertly negated auxiliary in (62a). If *can* did not occupy a position higher than Neg° at Spell-Out, as in (62b), then the resulting word order would be that of (62c), which is ungrammatical. The auxiliary clearly occupies a higher head, which we speculate to be F*°, as shown in (62d). Moreover, given that the derivation of (61a) and (62a) are assumed to be identical, it is reasonable that the proper representation of (61c) also places *can't* in F*°.

(62) a. Brian can-not forget about the incident.
b. * $[_{F*P}$ Brian $[_{F*}$ _ $]$ $[_{NegP}$ not $[_{Neg}$ can$_{[+NEG]/[-PAST]/[+CanABIL]}]$ $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …
c. * Brian not can forget about the incident.
d. $[_{F*P}$ Brian $[_{F*}$ can$_{[+NEG]/[-PAST]/[+CanABIL]}]$ $[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

Thus far, the only recognized type of feature borne by English auxiliaries that has not been located in the extended IP hierarchy pertains to agreement. Though it is conjectural, in the absence of any other potential trigger for this projection, we suggest that F*P is the location of agreement features. This implies, of course, that even modals like *should(n't)* in (59) & (60), whose core features scope over negation and tense, in fact occupy this position associated with agreement features, higher than their feature of modality. To reflect this, the representations in (59b) & (60b) must each be revised to include the F*P projection.[47]

[47] It appears that an inflectional F° projecting above NegP, whose feature is borne by an adverb, i.e., a specifier, makes available a position (or "landing site") in which an auxiliary may remain at Spell-Out. This is illustrated by (ia). Along with the alternate insertion in F*° in (ib), there will be two grammatical word orders representing the same numeration. The appropriate structures are shown in (ii a & b), respectively.

(i) a. Brian probably can-not forget about the incident.

On the positive side, this proposal concurs with Chomsky (1995) in that it places the auxiliary and the subject in a local configuration. Agreement (φ-) features are generally recognized to include nominative Case, realized on the subject, and number and gender, borne by the highest verb form. It is hence quite logical that such a configuration is valid. Yet given that we have located TP much lower in the clause than Chomsky assumes, it is unsurprising that we do not concur that it is attributed with agreement.

But the fact that we have not identified a valid label for F*P leaves a theoretical dilemma. Under Minimalist principles, since agreement consists of nothing more than uninterpretable formal features and thus lacks interface instructions, it is theoretically unviable as an independent projection, i.e., AgrP. Several recent works, such as Cardinaletti (2004) and Rizzi / Shlonsky (2005), offer evidence of an independent functional projection, SubjP, structurally higher than TP, which attracts the subject to its specifier position. The interpretable value of the projecting feature is in terms of "aboutness", relating the subject to its predicate (i.e., as topic and comment). In light of the fact that φ-features are found not only on the auxiliary, but on the subject as well, we tentatively speculate that F*P corresponds to SubjP. We leave the issue for future investigation.[48]

We conclude by bringing together the preliminary hierarchies shown in (48) and (49), repeated below, and placing the FPs in the most finely grained representation possible under the analysis of this section. The result, shown in (63), includes the projection F*P, which we have tentatively associated with agreement. The FPs of modal auxiliaries are split into three groups corresponding to the syntactic scope relationship that the core feature bears to the other elements of the clause. For example, while a modal in group I, such as *should* of root obligation, takes scope over negation and tense; a group III modal falls in the scope of each, like *can* of root ability. Each of these groups (I – III) encompasses the projections of several modal auxiliary core features.

(48) $CP_{[+Q]}$ > all modal auxiliary FPs > $F_{\{HavePERF\}}P$ > $F_{\{BePROG\}}P$ > $F_{\{BeVOICE\}}P$

(49) $CP_{[+Q]}$ > {TP, $FP_{[+Agr]}$, NegP} > $F_{\{HavePERF\}}P$ > $F_{\{BePROG\}}P$ > $F_{\{BeVOICE\}}P$

(63) $CP_{[+Q]}$ > $FP_{[+Agr]}$ > FPs of modal auxiliaries (I) > NegP
> FPs of modal auxiliaries (II) > TP > FPs of modal auxiliaries (III)
> $F_{\{HavePERF\}}P$ > $F_{\{BePROG\}}P$ > $F_{\{BeVOICE\}}P$

5.4. The benefits of the cartographic approach to auxiliaries

The analysis that has been proposed here moves auxiliaries into the framework of cartographic syntax, a promising, relatively new direction in the field of generative grammar. With fundamental cartographic notions in mind, we have constructed a reasonable hypothesis of auxiliaries and seen that it stands up well against the empirical evidence. Not only does this support the proposal at hand, but it further validates the underlying principles of the

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b. Brian can probably not forget about the incident.

(ii) a. $[_{F*P[+3S]}$ Brian $[_{F*}$ __ $]$ $[_{F\{ProbablyEPIST\}P}$ probably $[_{F\{ProbablyEPIST\}}$ $can_{[+3S]/[+NEG]/[-PAST]/[+ CanABIL]}]$
$[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

b. $[_{F*P[+3S]}$ Brian $[_{F*}$ $can_{[+3S]/[+NEG]/[-PAST]/[+ CanABIL]}]$ $[_{F\{ProbablyEPIST\}P}$ probably …
$[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

[48] Pollock's (1989) original split of IP posits that TP > NegP > AgrP. A contemporary examination of Italian verbal morphology and word order by Belletti (1990) indicates the reversed arrangement, i.e., AgrP > NegP > TP. Though the projection of negation varies from language to language (per Cinque (1999)), and furthermore φ-features may also be parametric; it is evident from the current analysis that English falls in line with the proposal of Belletti.

cartographic approach itself. To conclude this section, let us briefly consider some benefits of our analysis over the traditional theory.

Section 2.1 summarized the prominent X-bar account of auxiliaries and identified certain inherent weaknesses. To begin, while VP is the location in which the main verb is base-generated, thematic relations are established, etc., IP is associated with the inflectional information of the clause and thus conceptually linked to auxiliary forms. What we observe in Standard English is that, although a clause is endowed with a single I°, more than one auxiliary may be present. While a modal may occur only as the initial form, aspectual and voice auxiliaries freely occur with each other and with modals. To explain this, the traditional theory claims that modals are inserted directly in I° while *have* and *be* head VPs, and as such do not move to I° if not the initial verb form. This paradoxically categorizes aspectual and voice auxiliaries as a subclass of main verbs rather than auxiliaries.

Furthermore, perfective *have*, progressive *be*, and passive *be* are not randomly arranged, but may occur at most once and in the fixed order indicated. An adjustment to the traditional theory posits that they subcategorize for the possible subsequent projections. We claimed that this modification is *ad hoc*, complex, and imprecise.

Under the cartographic approach proposed here, the contradictory and *ad hoc* modifications fall out. Aspectual and voice forms bear inflectional core features in the IP hierarchy making them structurally like modal auxiliaries. Both groups thus are covered by a similar syntax and are categorized as subclasses of auxiliaries, as is theoretically and intuitively appropriate.

The fixed order in which auxiliaries co-occur is also explained in straightforward terms. The idea that *have* and *be*, as the heads of VPs, somehow subcategorize for the subsequent verb form is no longer necessary, as this type of selection is subsumed by the fixed order of the respective features in the structural hierarchy of the clause. This of course extends to explain the fact that a modal necessarily precedes any other auxiliary, given that all modal core features are positioned higher than those of non-modals. As each core feature occurs at most once in the structure, it further accounts for the impossibility of a doubled aspectual or voice auxiliary.[49]

What is left to explain is the limit to one modal auxiliary in a Standard English clause. According to the investigation of section 5.2, the initial auxiliary is consistently a feature-bundle that, in addition to a core feature, includes tense, agreement, [±NEG], and [±Q]. In contrast, subsequent auxiliaries appear to bear only a core feature. The fact that, unlike aspectual and voice auxiliaries, a modal appears only in the initial position is logically due to the fact that it does not exist in a form in which it is not a feature-bundle. Given that it always bears the listed features which furthermore may occur at most once in the clause, the insertion of an additional modal would result in redundant features, yielding ungrammaticality.

The idea that modals are obligatorily finite, which is what this explanation boils down to, is nothing new. It is the underlying motivation for which the traditional theory claims that these auxiliaries are inserted directly in I°. The account from a cartographic perspective, however, is more complete as it further allows us to explain the inconsistent scope relationships of auxiliary core features to other clausal features.

[49] Progressive *be* and passive *be* are of course distinct auxiliaries.

6. THE SYNTAX OF MULTIPLE MODAL CONSTRUCTIONS

6.1. The cartography of MMCs

To the inherent weaknesses of the traditional X-bar account of English auxiliaries just identified, we can add a third. As reviewed in section 4, a satisfactory explanation has yet to be proposed that allows for more than one modal in a clause. In the framework of the cartographic account of auxiliaries proposed in section 5, the syntax of MMCs, which has defied explanation under the traditional theory, moves from mysterious to predictable. Though certain details demand further consideration and the residual question of variation across dialects remains, the underlying syntax is straightforward.

It is fundamental to the cartographic hypothesis, and extensively demonstrated by Cinque (1999), that the label IP corresponds to an extended hierarchy of FPs, each of which is projected by a feature with some specific inflectional orientation. According to our claim, certain of the features in the extended IP domain are potentially borne by an auxiliary. Relatively few of the FPs identified by Cinque have a value that corresponds to an English auxiliary, and in a more finely grained structure, the proportion would be even lower. Nevertheless, the number and the semantic range of English auxiliaries are both substantial. It is therefore no surprise that more than one of these features might be present in the structure of a single clause on the grounds of the interpretative demands, and that more than one modal auxiliary might therefore be selected for the numeration. From this perspective, the question shifts from explaining why MMCs are grammatical in their varieties to asking why they are not grammatical in Standard English.

In fact, this question was just answered. Since modal auxiliaries are obligatorily bundles of features that include tense and agreement, as well as [±NEG] and [±Q], the insertion of an additional modal would result in ungrammatical redundant features. In contrast, in the varieties in which modals do co-occur, it is a natural inference that they are not perforce bundles of the above features, at least not all of them.

We find corroboration for this suggestion. The fact that Standard English disallows nonfinite modal constructions is well established. The explanation according to the traditional account is that they are obligatorily finite. However, in some MM dialects, such as Hawick Scots, certain modals are grammatical as infinitives, as shown in (2), repeated as (64). There is little doubt these modals do not bear a tense feature as there is no T° in the structure.

(64) a. I want to can do that.
b. I would like to could swim.

This essentially mirrors the flexibility that aspectual and voice auxiliaries exhibit in the standard language, allowing them to appear in nonfinite constructions, and to occur freely with each other and with modals. If modals in MM varieties similarly share the potential not to bear non-core features, then it is expected that they will also be free to co-occur.

In Standard English, there is something of an "all-or-nothing" characteristic of auxiliaries. When initial, they necessarily bear the entire bundle of non-core features; otherwise, only their core feature. There is no theoretical reason not to assume that modals in MM varieties may instead carry a subset of the non-core features, subject to certain structural constraints. First, all non-core features in the structure must be borne by some verb form. Secondly, at most one verb form may bear any given non-core feature; otherwise, the redundant feature would result in ungrammaticality. Finally, the features borne by each verb form must constitute a structurally contiguous set to prevent a violation of locality constraints.

Let us consider this idea in light of the empirical data, concentrating for the moment specifically on double modal constructions (DMCs) which constitute an overwhelming majority of the observed MMCs. To begin, it was noted in section 3.1 that a property that is generally held to be common to all MMCs is that the initial modal is epistemic while the final modal has a root sense. According to the findings of Cinque that were listed in (28), this arrangement concurs with the universal ordering of inflectional FPs.

As they reflect the speaker's current attitude, epistemic elements are inherently non-past referential; a fact that, in section 5.3, we took to indicate that all epistemic core features take syntactic scope over tense. In Standard English, given that all modal auxiliaries necessarily bear the tense feature, epistemic auxiliaries naturally mark tense as [-PAST], rendering it unavailable to a past reference assertion which therefore requires PTR, as in (65a).

In principle, an epistemic element need not be marked for temporality at all. *Possibly*, in the paraphrase (65b), bears the same core feature that *may* does in (65a); but as an adverb, it has no association with T°, requiring that some other element bear tense. As the highest verb form, the lexical verb must bear the feature; and as the assertion is past referential, that feature is [+PAST]. Nevertheless, in spite of no overt indication, it is understood that the epistemic element, *possibly*, expresses the speaker's assessment as he speaks.

(65) a. Cary may have gone to the library.
b. Cary possibly went to the library.

In a dialect of English in which modal auxiliaries do not perforce bear all non-core features, as we have suggested to be the case of MM varieties, it is conceivable that an epistemic auxiliary could easily dispose of tense without losing any of its meaning. As with epistemic adverbs, the auxiliary's intrinsic current temporal reference is interpretatively evident regardless of the clausal tense.

In the strictest sense that finiteness equates to bearing a tense feature, such a modal would not be labeled finite; so at first glance, it might be suggested that this analysis is no different from previous proposals that the initial modal is in fact categorically an adverb. But this is not at all the case. Unlike an adverb, which merges in FP as a specifier, these auxiliaries are legitimate heads. Though they do not carry tense, they potentially bear other non-core features, particularly those that are structurally higher (like the feature of F*°, on which we speculate that agreement features are found) which cannot be borne by the subsequent modal due to locality constraints.

Given the infinitive constructions in (64), it is evident that root modals do not obligatorily carry tense either. However, into a DMC (or an MMC in general), which is a finite clause, tense must project by definition. Since the initial epistemic modal does not bear the feature, it is the subsequent root modal which must. With respect to tense, in section 5.3 we saw two possible structural arrangements to the core features of root modal auxiliaries: those that take scope over tense, like the root obligation [+OBL] of *should*, and those that fall in its scope, like the root ability [+ABIL] of *can*.

Since the core feature of *can* falls in the scope of tense, the modal potentially bears either a [-PAST] or a [+PAST] feature, corresponding to the interpretational demands of the derivation. When tense is past, there is a morphological reflex such that *could* is the selected form, overtly representing the temporal value. In (66a), *could* effectively tenses the non-past construction in (66b).[50] An alternate like **might can played*, in which tense is carried by the main verb, is predictably ungrammatical.

[50] The analysis of English modal auxiliaries is a delicate matter. As almost every one represents a number of polysemous forms, which in fact bear distinct core features, it is important to consider carefully the meaning in

(66) a. John might could play the piano 10 years ago. (Di Paolo 1986:30)
'It's possible that John was able to play the piano ten years ago.'
b. John might can play the piano.
'It's possible that John is able to play the piano.'

In contrast, since [+OBL] of *should* scopes over tense, the auxiliary has no such past marked form. Instead, as in single modal constructions with the same auxiliary, PTR is required to provide past reference to the assertion. In (67a), PTR places the epistemic assertion of (67b) in the past. **Might should was studying* is not possible.

(67) a. I might should have been studying but I wasn't. (Coleman 1975:93)
'Perhaps I should have been studying but I wasn't.'
b. I might should be studying.
'Perhaps I should be studying.'

The placement of the tense feature thus presents no theoretical dilemma to the typical epistemic + root DMCs. Since an epistemic modal is independently inherently temporal, it is the root modal that will bear the clausal feature. However, the distribution of other non-core features has not been addressed. As they prove to be complicated, consideration of the [NEG] and [Q] features will be postponed, but we can quickly deal with agreement here.

We have speculated that agreement (φ-) features are found in F*P, placing them above all other IP features considered.[51] It is natural that, as the highest verb form, the initial epistemic modal must bear these features. Is it feasible that the subsequent root modal does not need these features for grammaticality?

In fact, agreement consists exclusively of uninterpretable formal features, motivated by grammar, not by meaning. Their validation is thus not essential to the interpretation of any given verb form. What is important is simply that the marked element be local. From this perspective, not only is it inconsequential to any given modal whether or not it bears agreement features, but it is moreover not critical to the theory at hand whether or not our conjectured location of agreement features proves valid.

It was mentioned in section 3.1 that the claim that MMCs always consist of an initial epistemic and a final root seems to be an overgeneralization. The combination, *might could*, at times represents a double epistemic, as in the case of (6b), repeated as (68a), which gives past reference to (68b).

(68) a. I might could have been eating when you came this morning. (Coleman 1975:93)
'I guess that it's possible that I was eating when you came this morning.'
b. I might could be eating when you come (tomorrow).
'I guess that it's possible that I will be eating when you come.'

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each instance. For example, it might be argued that the future adjunct in (ia) invalidates the classification of *could* as the past form of *can*. However, this is a polysemous form that conveys a hypothetical or tentative sense not detected in *could* in (ib). Notice that past reference of (ia) requires PTR, as in (ic), a clear sign of inherent marking as [-PAST].

(i) a. John could play the piano tomorrow.
b. John could play the piano 10 years ago.
c. John could have played the piano yesterday.

[51] Excluding $CP_{[+Q]}$, of course.

This presents no problem. It is anticipated that two auxiliaries whose modalities take scope over tense would not be structurally incompatible, given that neither instance requires a tense marker to be temporally interpretable. In the combination at hand, the core feature of epistemic *might* scopes over negation. This is verified by the Standard English sentence (69) whose paraphrase, "It is possible that [Crystal doesn't know your sister]", places negation in the scope of epistemic modality (cf. #"It is not the case [that it's possible that Crystal knows your sister]").[52] In contrast, the core feature of epistemic *could* is in the scope of negation as was demonstrated in section 5.3. It is therefore clear that in spite of their similar meanings, *might* and *could* bear modal features associated with distinct FPs, and that *might could* adheres to the predicted ordering of inflectional features.

(69) Crystal might not know your sister.

As was typical in the cases above, *might* as the initial epistemic modal lacks tense. Even though it is also epistemic, as the final modal, *could* obligatorily bears tense. As before, its pertinence to the moment of speech imposes a [-PAST] feature, and as a result past reference requires PTR, as was seen in (68a).

Section 3.1 also claimed that the combination *should ought* contradicts the epistemic + root generalization as a double root DMC, as illustrated by (8) repeated as (70a). In single modal constructions, each of these auxiliaries requires PTR for past reference and each takes semantic scope over negation, indicating that its core feature is positioned higher than tense and negation. Like epistemic modals, we asserted in section 5.3 that *should* of root obligation reflects the speaker's judgment at the moment of utterance. It is therefore logical that the temporal reference is similarly recoverable even in the absence of a tense marker. Though the temporal reference of *ought* is similarly fixed, as the final modal, it inherently marks tense as [-PAST]. PTR is therefore required for past reference, as demonstrated by (70b). The analysis of this root + root combination is in no significant way different from that of epistemic + root DMCs.[53]

(70) a. I should ought to go with him. (Coleman 1975:97)
"I feel quite obligated to go with him."
cf. # "It's likely that I feel obligated to go with him."
b. I should ought to have gone with him.
"I feel strongly that I should have gone with him."

Finally, beyond DMCs, section 3.1 listed instances of MMCs with more than two modals. In Hawick Scots, any of the grammatical double modal combinations composed of epistemic *might* or *should* followed by root *can* or *could*, may be preceded by *will* to create a triple modal construction. Since Brown (1991) asserts that the initial modal is consistently epistemic in this dialect, these are evidently all cases of double epistemic + root combinations.

While we know that the modality of root *can* falls in the scope of tense, its past form being *could*; the modalities of epistemic *will*, *might*, and *should*, all take scope over negation and tense, as scope tests will validate. We infer that their observed arrangements respect the hierarchy of the FPs and present no theoretical problem. In essence, the only difference between these constructions and the typical epistemic + root DMC is the presence of the second epistemic. The features are presumably redistributed in such a way that each bears a contiguous or "local" set.

[52] This test is attributed to Cormack / Smith (2002).
[53] Negation patterns will force an adjustment to this MMC in section 6.3.

A similar constraint on locality presumably applies in the case of the sole Southern US triple modal *might should ought*. Here, however, *might* conveys an epistemic value while *should ought* is the double root discussed above. Like the Hawick Scots constructions, the arrangement of these modals is congruent with the structural hierarchy of the IP domain that is being promoted.[54]

To conclude, though our placement of agreement features on the initial auxiliary is tentative, and we have postponed consideration of [NEG] and [Q], there is a clear division of features in MMCs. While the initial modal bears higher features, the final modal bears lower ones, necessarily including tense. In the event of an intermediate modal, the features must be properly redistributed. Further consideration of these issues will follow.

6.2. Subject inversion and "flip-flop"

The inconsistent effects of sentential negation and subject inversion on MMCs that were observed in section 3.2 pose a serious challenge to any syntactic account. Though the cartographic explanation that has been offered seems viable thus far, we have postponed the consideration of this more difficult data.

We can make an initial assertion with some confidence: given that some of the grammatical patterns of inversion are inherently contradictory from a structural perspective (e.g., with regard to locality constraints), it is unlikely that a unified explanation will be found. Nevertheless, we cannot simply dismiss the inconsistencies as resulting from some exceptional mysterious behavior. Otherwise, the integrity of the theory itself will unravel. For our hypothesis to stand up, it must be fine-tuned without sacrificing theoretical unity.

The previous section proposed that modal auxiliaries in MM varieties are not obligatorily bundles that include all of the clausal non-core features, i.e., tense, agreement, [NEG] and [Q], as they are in Standard English. This allows for their mutual compatibility. Nevertheless, they are subject to certain structural constraints as already stated.

The first of these is that all present non-core features must be borne by some verb form. This seems unproblematic, given that auxiliaries in general have the capacity to bear these features. Conversely, all non-core features may be borne by at most one verb form, meaning that duplication is prohibited, as the additional redundant feature would result in ungrammaticality. Finally, the collection of (non-core and core) features that any verb form bears must correspond to a contiguous set in the hierarchy of the clause. If not, then locality constraints would be violated.

Based on these restrictions, let us first make some structural predictions with regard to the syntax of inversion. First, it seems sufficiently straightforward that the modal that inverts with the subject necessarily bears the [+Q] feature. The suggestion that the operation triggers this modal to move to $C°_{[+Q]}$ while another element bears the feature is theoretically implausible. Additionally, given that $CP_{[+Q]}$ dominates the entire IP domain, it stands to reason that only the structurally highest auxiliary potentially bears the [+Q] feature. An intervening head would block the movement. At least at face value, this would indicate that it is only the initial modal in an MMC that may invert with the subject.

In many such constructions, this is exactly what we find. For example, as discussed in section 3.2, the first modal in Hawick Scots is consistently the only candidate for subject inversion; and in the judgments of at least some Southern US speakers, the same is true of certain MMCs, like *might ought* and *should ought*, and even *might could* in the Tennessee Idiolect investigated by Close (2004). These cases fall nicely in line with the prediction and pose no theoretical challenge.

[54] The exact analysis of this construction will also be modified in section 6.3.

In the same section, in addition to this **M1 S M2** pattern, we observed two other configurations of modals in inversion which are attested in the Southern US variety. While *might would* and, for most speakers *might could*, show second modal inversion (**M2 S M1**), movement of both modals (**M1 M2 S**) is required for *might should* and allowed by some for *might could*. The triple modal construction, *might should ought*, accepts inversion of the intermediate modal alone (**M2 S M1 M3**), but prefers movement of the first two together (**M1 M2 S M3**). As these orderings clearly do not correspond to the prediction, they pose a dilemma for our proposal if it cannot accommodate them.

Let us recall the unusual subset of MMCs that contradict the general epistemic + root ordering, labeled "flip-flops" by Coleman (1975), and accepted by only a few of his informants. These include, among others, {*can*, *could*, *ought to*, *should*, *would*} + *might*, and *should might ought*. In the exchange in (9), repeated as (71), the reversed sequence of auxiliaries in (b) places stress on the root modality. This led Coleman to claim that the order is derived from the underlying epistemic + root combination. Since we accept that epistemic modality takes scope over root modality, this assertion seems valid.

(71) a. Husband: We might ought to go. (Coleman 1975:96)
b. Wife: Yes, we ought to might go now.

From a structural point of view, flip-flops seem to be the equivalent of the necessary intermediate step in second modal inversion. Beginning with the unmarked Spell-Out order, **S M1 M2**, the lower auxiliary must move to a position resembling the flip-flop order, **S M2 M1 <M2>**, before finally raising to $C°_{[+Q]}$ for the inverted order **M2 S <M2> M1 <M2>**. We note then the strong parallel between the derivation of flip-flops and second modal inversion.

Within our current framework which defines auxiliaries as heads, it is structurally impossible for the order of two modals to reverse, as it would violate locality constraints. Theoretically, flip-flops and second modal inversion should be ruled out. The fact that both phenomena are observed implies that in the clauses in which they occur, one of the two modals does not have head-status in the IP hierarchy, but instead merges as the specifier of its modal FP. As the projection of root modality is lower in the clause than that of epistemic modality, and more importantly, as it is the root modal that inverts, the epistemic form is clearly the non-head. As such, it does not block local relationships of the root nor its potential to move to the higher projection.[55]

Let us compare the allowable positions of *might* with those of the adverbs *perhaps* and *possibly*, two elements that convey a similar sense of epistemic possibility and that also merge as specifiers. As seen in (72a), any of these elements may Spell-Out in a position between the subject and the auxiliary *could*; a position which is maintained when *could* moves to $C°_{[+Q]}$ in inversion, in (72b). None of them may itself move to a pre-subject position as an alternate indication of interrogation, as (72c) shows (noting that with marked intonation in specific contexts, *perhaps* becomes acceptable).[56]

[55] Close's (2004) analysis must be acknowledged here. Since the initial modal *might* inverts and precedes negation in the DMC *might could* in Hawick Scots and the Tennessee Idiolect, she assigns it head status as we do. We also mirror her claim that *might* in the same DMC has a different status in constructions in which the second modal inverts and accepts the *-n't* marker, as in Arkansas English. However, as will be discussed below, we do not similarly label *might* as an adverb in this latter case. Though our proposal clearly bears a theoretical resemblance, it is not the same.

[56] Here of course, we consider only the judgments of MM speakers who do not accept initial modal inversion with *might could*.

In other positions, however, *might* patterns differently from the adverbs. *Perhaps* and *possibly* may follow *could* either immediately as in (72d), or in a clause final position, as in (72e). Though *could might* is possible for the few speakers who accept flip-flops, *might* is never found in a lower position. Additionally, while *perhaps* naturally occurs in a clause-initial position in the declarative sentence, (72f), and *possibly* does so at least in certain contexts, initial *might* is impossible. Moreover, at least in unmarked speech, neither *perhaps* nor *possibly* precedes the inverted modal as in (72g). Interestingly, however, for speakers who accept the **M1 M2 S** pattern of *might could*, *might* may do exactly that.

(72) a. He {perhaps / possibly / might} could go.
b. Could he {perhaps / possibly / might} go?
c. {#* Perhaps / * Possibly / * Might} he could go?
d. He could {perhaps / possibly / % might} go.
e. He could go, {perhaps / possibly / * might}.
f. {Perhaps / # Possibly / * Might} he could go.
g. {#?? Perhaps / #?? Possibly / % Might} could he go?

As mentioned in section 4.2, one of the earliest hypotheses of DMCs posited that they are combinations of an adverb and an auxiliary. This is disproved as a universal explanation in view of the many combinations whose first element behaves solidly as a head. As Close (2004) suggests, however, it may accurately account for DMCs whose inversion pattern is **M2 S M1**. Noting that even in these cases, the initial modal does not demonstrate behavior consistent with adverbs, we reject this claim. Though the initial modal is a specifier rather than a head, it retains its other inherent auxiliary characteristics.

What does this mean? Let us begin by considering epistemic modals in general. Speakers of Standard English, and of all MM varieties, are familiar with the epistemic modals like *might* which regularly serve in single modal constructions. In these standard expressions, such words never exhibit behavior that would be construed as adverbial. They bear the appropriate non-core features, Spell-Out in a position higher than negation, and grammatically invert with the subject. Adverbs, of course, do not exhibit this set of properties. As a result, the status of these auxiliaries as heads is firmly rooted in the lexicon.

As has been noted in the literature,[57] many English speakers are perfectly comfortable with the inversion of certain epistemic auxiliaries like *can*, *could*, and *would*, but generally avoid the inversion of others like *might* and *must*, which, for instance, suggest a formal air to the American ear. In a single modal construction, a typical alternate that fills the resulting gap is to use one of the more naturally invertible modals, an epistemic adverb, or an appropriate matrix clause.[58] In spite of their firm status as heads, this set of epistemic auxiliaries is often avoided in a derivation that requires modal insertion in $C°_{[+Q]}$, apparently for lexically based reasons.

In the case of inversion of MMCs, these two factors clash. On one hand, the modal that resists inversion bears the highest modal feature in the clause. At the same time, the [+Q] feature must be borne by an auxiliary which is necessarily triggered to move to $C°_{[+Q]}$. The dilemma is clear: How can inversion take place when the highest auxiliary resists?

There are essentially three solutions. First, the initial modal may simply invert, sacrificing lexical felicity for structural ease, resulting in the **M1 S M2** pattern. This appears to be the choice of Close's Tennessee Idiolect informants.

[57] E.g., Battistella (1991) and others.
[58] For example, as a question, "He might have forgotten" would take a form like "Did he possibly forget?", "Could he have forgotten?", or "Is it possible that he forgot?"

Conversely, the second modal may bear the [+Q] feature and raise to $C°_{[+Q]}$, the result being the **M2 S M1** order. For this to occur, however, the initial modal cannot constitute a barrier to the movement. In the terms that we are utilizing, this requires that the initial modal lose its head status, merging instead as a specifier. Nevertheless, given that these initial auxiliaries do not pattern with adverbs and that they do for all other purposes pattern with auxiliaries, we dismiss the suggestion that they are categorized as adverbs, and instead assert that speakers perceive them as auxiliaries, in spite of their exceptional merge as specifiers necessary for the inversion of the second modal. In the discussion of negation below, we will return to this issue.[59]

The final way in which to resolve the dilemma of inversion is the most simple: the speaker may simply choose an alternate way of expressing his intention that avoids what would necessarily feel odd, whether it is the inversion of the first or second modal. This in fact appears to be the most common choice. We recall from section 3.2 that although researchers of Southern US dialects have determined acceptable patterns of inversion, they all report that many informants reject or at least avoid the usage of many MMCs in inverted forms.

The syntax of MMCs whose first modal merges as a specifier is straightforward. In the case of double modal combinations, the derivation is no different from that of single modal expression in Standard English; the second modal is a bundle of all non-core features. Clearly, in its canonical order, this auxiliary does not occupy a position higher than the initial modal, though such movement does explain the unusual flip-flop MMCs. It is apparent instead that it occupies a lower head at Spell-Out. This is not problematic.

As footnote 47 pointed out, an adverb that bears a feature projecting higher than negation provides a potential landing site for an auxiliary. In sentences (i) of said footnote, repeated as (73), we find two synonymous expressions that differ only with respect to the relative order of the adverb and the auxiliary. In (73b), the modal *can* heads the projection of its highest feature, associated with F*P, placing it above all other inflectional elements. In contrast, in (73a), it occupies the head of the modal FP whose feature is borne by the adverb *probably*, and there is no intervening head blocking a local relation with F*°. Both are demonstrated by the respective derivations in (74).

(73) a. Brian probably can-not forget about the incident.
b. Brian can probably not forget about the incident.

(74) a. $[_{F*P}$ Brian $[_{F*}$ __ $]$
$[_{F\{ProbablyEPIST\}P}$ probably $[_{F\{ProbablyEPIST\}}$ $can_{[F*]/[+NEG]/[-PAST]/[+CanABIL]}]$ …
$[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

b. $[_{F*P}$ Brian $[_{F*}$ $can_{[F*]/[+NEG]/[-PAST]/[+CanABIL]}]$
$[_{F\{ProbablyEPIST\}P}$ probably … $[_{NegP}$ not … $[_{TP}$ $[_{T[-PAST]}$ … $[_{F\{CanABIL\}P}$ …

The parallel derivation of the MMC is shown in (75) with the structural representations in (76). Admittedly, whereas the order of (73b) is quite natural, the equivalent order of the MMC in (75b) (i.e., the flip-flop) is judged grammatical by few speakers and, even then, only in marked contexts. We speculate that this is again due to the fact that, though the initial modal merges as a specifier, it retains inherent auxiliary characteristics that make this order infelicitous. The eventual move to $C°_{[+Q]}$ results in (c).

(75) a. He might could go with us.
b. % He could might go with us. (Coleman 1975:190)
c. Could he might go with us?

[59] It must be stated that nothing in this analysis hinges on the initial modal not being labeled an "adverb".

(76) a. $[_{F*P}$ He $[_{F*}$ __ $]$ $[_{F\{MightEPIST\}P}$ might $[_{F\{MightEPIST\}}$ could$_{[\ldots]}]$ …
b. $[_{F*P}$ He $[_{F*}$ could$_{[\ldots]}]$ $[_{F\{MightEPIST\}P}$ might $[_{F\{MightEPIST\}}$ <could$_{[\ldots]}$>] …
c. $[_{CP[+Q]}$ $[_{C[+Q]}$ could$_{[+Q]/[\ldots]}]$ $[_{F*P}$ he $[_{F*}$ <could$_{[+Q]/[\ldots]}$>] …
$[_{F\{MightEPIST\}P}$ might $[_{F\{MightEPIST\}}$ <could$_{[+Q]/[\ldots]}$>] …

With regard to second modal inversion in the triple modal construction, *might should ought*, the syntax is essentially no different. Unlike the DMCs, in which the second modal bears all non-core features, here the features will be distributed between the final two as described in section 6.1 to be the general syntax of MMCs. Again, *might* bears only its core feature and merges as a specifier.

The outstanding question is how the **M1 M2 S** (**M3**) order that is judged by some speakers as grammatical inversion for certain MMCs is derived. For this we unfortunately find no solid satisfactory answer. We reject the idea of a merged head, as this would result in the unattested left-adjoined configuration of **M2 M1 S**. As we have ruled out duplicated features, the notion that both auxiliaries are marked [+Q], triggering two individual movements, is also contradictory to our proposal. Nevertheless, a couple of speculations can be offered.

It has been claimed here that in **M2 S M1** inversion, the initial modal merges as the specifier of its FP. Given its lower base position, when the second modal inverts, it must move through the head of that projection in order to arrive at its higher Spell-Out position of C°$_{[+Q]}$. We might imagine that the initial modal is potentially pied-piped, accompanying the head to its pre-subject position, perhaps due to the auxiliary (non-adverbial) characteristics. The preserved relative order would render the **M1 M2 S** configuration.

Such movement admittedly is not theoretical ideal as it entails the splitting of the constituent (the movement of an FP stranding its complement). We remark that such movement is observed in DP-splitting in languages like French. Here, a WH-operator optionally moves alone to CP, stranding its complement as in (77). In any case, this is an avenue that could be explored.

(77) Combien$_i$ as-tu lu [t$_i$ de livres]? (Mathieu 2004)
how-many have you read of books
'How many books have you read?'

We can also suggest a second possibility. It is well known that modal auxiliaries, particularly those that are interpreted as subjunctive, are often used as politeness markers in English. For example, the pragmatic intention of the expression "Could you pass the rolls?" is not to learn whether the addressee has the ability to perform the mentioned task, but rather to request that he do so. Here, the modal *could* softens, or more politely conveys, what might otherwise be interpreted as a brusque imperative, "Pass the rolls." MMCs, particularly those including an initial auxiliary of epistemic possibility, often heighten this sense of courtesy.

In another subset of MM expressions, the epistemic modal is chosen specifically to emphasize the speaker's unwillingness to commit to his assertion. We claimed this to be the case of (7), "John might may go to the party", which is interpreted as "I guess that it's possible that John will go to the party", essentially doubling the epistemic value. And in the view of Kilpatrick (c. 2004), double modality questions the volition to act.

With this in mind, it is feasible that in double modal inversion, what actually takes place is the inversion of the second auxiliary as a head, as described above, rendering an **M2 S M1 <M2>** (**M3**) configuration. Subsequently the initial auxiliary moves from its specifier position to some higher projection in the CP-domain, in which clausal force features project. At least in the contexts described above, the epistemic modal does in fact carry a

force component. The pragmatically charged initial modal moves essentially to take scope over the entire question. The movement of the two would therefore be independent, but the resulting order of modals, **M1 M2 S <M1> <M2>** (**M3**), would mirror their relative arrangement before inversion.

Whatever the solution to this arrangement may be, we repeat from above that any inversion of MMCs, including the easily explained **M1 S M2** pattern, is consistently judged grammatical by only a portion of Southern US MM speakers. This may well be due to an intuitive perception of the syntactic and lexical confusion that has been brought to light here.

While the inconsistent inversion patterns that we observe pose a challenge to any theory on MMCs, it is significant that they do not appear to present any evidence that contradicts our general proposal, nor are they outside the realm of explanation within our framework.

6.3. Sentential negation

As negation also results in dissimilar patterns in MMCs, let us continue by again making some predictions based on the cartography of the clause. The intermediate hierarchy that was revealed in section 5.3, given in (57) and repeated in (78), reflects the fact that while the core features of certain modal auxiliaries (group I) take scope over negation, those of others (groups II and III) fall in its scope.

(78) $F_{\{MODALS\text{-}I\}}P > NegP > F_{\{MODALS\text{-}II\}}P > TP > F_{\{MODALS\text{-}III\}}P$

With regard to MMCs, we expect that a sentential negator will always respect this arrangement. Explicitly, interpretation and word order should be such that sentential negation never takes scope over the modality of a group I form but always takes scope over that of other modals. While this might appear restrictive, it in fact allows a great degree of flexibility. In a DMC that combines a group I modal with one from group II or III, either of the two potentially bears negation provided that the other does not bear any intervening feature. Certain variations in the choice of negatively marked auxiliary are therefore within structural achievability.

As semantic scope tests verify, the modalities of all epistemic auxiliaries, with the exception of *can* and *could*, take scope over negation, placing them in group I. As these latter two take scope over tense, they belong to group II. In contrast, the core features of a majority of root modals fall within the scope of negation. Though most of these belong to group III, having morphological forms for both non-past and past tense; the hypothetical roots require PTR, placing them in group II. The exceptional group I roots are those that imply obligation, *shall*, *ought*, and *should*; and *must* which expresses necessity or strong obligation.[60]

We saw in section 3.2 that every potential pattern of negation is grammatical in the judgment of some speakers for at least one DMC; *-n't* may mark, or *not* may follow, either modal. A quick glance back at section 3.1 will also confirm that a majority of DMCs across varieties constitute group I epistemic + group II / III root modal combinations. Given that the core feature of each auxiliary is positioned on the opposite side of negation, this configuration is quite amenable to analysis.

As in inversion, Hawick Scots exhibits far greater consistency in negation patterns than do the dialects across the Southern US variety.[61] According to Brown (1991), the reduced negator *-nae* (equivalent to Standard *-n't*) may mark only the initial modal of an MMC in this

[60] See footnote 45.
[61] Brown provides no data on negation of Hawick Scots triple modal constructions.

dialect, as in (11), repeated as (79a). Here we have a group I initial modal followed by one from a negatible group (either II or III), a pattern that we can represent as **M1**$_{[I]}$-***n't*** **M2**$_{[\neq I]}$.

(79) a. He mightnae could have done it. (Brown 1991:98)
'It is possible that he was unable to do it'

b. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might**nae**$_{[MightEPIST]/[+NEG]/[\ldots]}$>] [$_{NegP}$ OP$_{NEG}$ …
[$_{F\{CouldABIL\}P}$ [$_{F\{CouldABIL\}}$ <could$_{[CouldABIL]/[\ldots]}$>] …[62]

In structural terms, two things are immediately evident: the initial negative auxiliary bears negation; and both auxiliaries bear the core feature of their respective projections. This arrangement, represented by (79b), demonstrates that the scope relationships that are observed in single modal expressions are similarly established here. It further reveals that only the initial auxiliary potentially bears a feature above negation, and only the subsequent auxiliary may bear a feature below its core feature (obviously disregarding the features not borne by modal auxiliaries, i.e., aspect, voice, etc., as well as those borne by adverbs). Features between negation and the lower modality are potentially borne by either modal, provided that the set of each modal's features constitute a structurally contiguous set. For example, since the modality of a group II auxiliary takes scope over tense, a second position modal of this group obligatorily bears the tense feature. In contrast, since the modality of a group III auxiliary is below tense, the structure in theory allows the tense feature to be borne by either the initial group I modal or the subsequent form.

As Brown confirms, the negator *no* of Hawick Scots (equivalent to Standard *not*) serves the dual role of a sentential and a constituent negator. In DMCs, it may occur following either of the modals, as shown in (10), repeated as (80a) and (81a). The former represents the **M1**$_{[I]}$ ***not*** **M2**$_{[\neq I]}$ pattern, and the latter, **M1**$_{[I]}$ **M2**$_{[\neq I]}$ ***not***.

In the first of these sentences, *no* clearly serves as a sentential negator, within the scope of epistemic modality but taking scope over the root as predicted. Brown's paraphrase (given in (79a)) reflects this. There are two imaginable derivations for this word order, shown in (80b & c). The first is no different than (79b), with the exception that the phonologically overt negative element is the NEG-operator rather than the negative head (*might*$_{[+NEG]}$). The derivation in (80c), however, entails that the lower auxiliary bears the negative feature. There appears to be no structurally based reason why either of these would be ruled out, or even preferred. And though there is a genuine syntactic difference, interpretatively the two are indistinguishable, as all scope relationships are equivalent. Either is compatible with and supported by the proposal of the current paper.

(80) a. He might no could have done it. (Brown 1991:98)

b. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[+NEG]/[\ldots]}$>]
[$_{NegP}$ no … [$_{F\{CouldABIL\}P}$ [$_{F\{CouldABIL\}}$ <could$_{[CouldABIL]/[\ldots]}$>] …

c. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[\ldots]}$>]
[$_{NegP}$ no [$_{Neg}$ <could$_{[+NEG]/[CouldABIL]/[\ldots]}$>] … [$_{F\{CouldABIL\}P}$ …

When *no* follows the second modal, a sentential interpretation will only be possible if that auxiliary bears the negative feature. A [+NEG]-marked initial modal would block the potential for such a position. Nevertheless, it is not possible that the second form Spells-Out in Neg°, as in (80c), since the resulting word order would be (80a). We surmise that some projection

[62] The structures in this subsection are marked only for the crucial features of modality and negation. This is intended to allow the structures to be more generally representative as the scope of the tense to modal features varies depending on whether the second modal is of group II or group III.

between the initial modal and Neg° provides the necessary landing site. Such a derivation is represented in (81b) in which the landing site is labeled Fx°.

(81) a. He might could no have done it. (Brown 1991:98)
b. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[…]}$>]
[$_{FxP}$ [$_{Fx}$ <could$_{[+NEG]/[CouldABIL]/[…]}$>] [$_{NegP}$ no … [$_{F\{CouldABIL\}P}$ …

Although the final possible negation pattern of a group I + group II / III combination, **M1**$_{[I]}$ **M2**$_{[\neq I]}$***-n't***, is not found in Hawick Scots, it is judged grammatical for the DMC *might could* by some Southern US speakers, as in (15a), repeated as (82a). One viable derivation in (82b) mirrors (80c), the second possibility given for (80a). The necessary adjustment is merely that negation is phonologically overt on the head rather than the NEG-operator.

(82) a. % I was afraid you might couldn't find this address. (Battistella 1991:51)
b. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[…]}$>] …
[$_{NegP}$ OP$_{NEG}$ [$_{Neg}$ <couldn't$_{[+NEG]/[CouldABIL]/[…]}$>] … [$_{F\{CouldABIL\}P}$ …
c. … [$_{F\{MightEPIST\}P}$ might$_{[MightEPIST]}$ [$_{F\{MightEPIST\}}$ <couldn't$_{[+NEG]/[CouldABIL]/[…]}$>] …
[$_{NegP}$ OP$_{NEG}$ … [$_{F\{CouldABIL\}P}$ …

We speculate, however, that another derivation may alternately underlie this arrangement for certain speakers. It appears that some of the informants who accept this pattern are among those who also prefer second modal inversion of the same combination.[63] It is therefore feasible that the initial modal in these unusual circumstances similarly merges as the specifier of its modal FP, and that the second is the bearer of all non-core features, as we proposed in the section 6.2. The resulting derivation for (82a) would be the representation in (82c). For reasons discussed in the previous section, *couldn't* does not move to a position higher than the head of F$_{\{MightEPIST\}}$P, thus maintaining the observed word order.

One argument that this is an accurate assessment is that it further allows for the attested negative inversion pattern *couldn't* S *might* in the same dialect, shown in (83). As a specifier, *might* does not constitute a barrier to the movement of the negative auxiliary *couldn't* to the higher C°$_{[+Q]}$ position.

(83) a. Couldn't I might go? (Close 2004:152)
b. [$_{CP[+Q]}$ [$_{C[+Q]}$ couldn't$_{[+Q]/[+NEG]/[CouldABIL]/[…]}$] …
[$_{F*P}$ I [$_{F*}$ <couldn't$_{[+Q]/[+NEG]/[CouldABIL]/[…]}$>] …
[$_{F\{MightEPIST\}P}$ might$_{[MightEPIST]}$ [$_{F\{MightEPIST\}}$ <couldn't$_{[+Q]/[+NEG]/[CouldABIL]/[…]}$>] …
[$_{NegP}$ OP$_{NEG}$ … [$_{F\{CouldABIL\}P}$ …

This returns to our earlier assertion that, in such constructions, *might* retains most of its inherent auxiliary characteristics. While judgments on reduced ("clitic") negation in MMCs vary among Southern US speakers, it appears that the **M1** ***not*** **M2** pattern is largely accepted, as in (15b), repeated as (84a).[64] This word order is possible only when an auxiliary, i.e., a head, precedes *not*; never when a lone adverb occupies the position, as in (84b). We take this as additional evidence that *might* is in fact not an adverb, but rather exceptionally merges as a

[63] For example, Close's (2004) Arkansas English speakers.
[64] The **M1**$_{[I]}$ **M2**$_{[I]}$ **not** pattern is also accepted by a few speakers. The relevant derivation is the same as either that of (81) or that of (82) with a phonologically overt NEG-operator. Both are structurally sound.

specifier in the infelicitous cases of inversion and reduced negation.[65] The relevant structure of (84a), of course, is the same as that of (80).

(84) a. They might not could have gone over the state line to get her. (Battistella 1991:51)
b. * They probably not could have gone over the state line to get her.

Among the data for Southern US DMCs are also the negation patterns for *might should*, which is comprised of two group I modals in an epistemic + root configuration. The relevant examples from (18) are repeated in (85). As an important preliminary observation, we confirm that all three of these sentences correspond to an interpretation, "It is possible [that he is obligated [not to go]]". Possible nuances concerning the emphasis of negation notwithstanding, the scope relationships between negation and modality, established in (78), are all respected here.

Each of these patterns is derivable in the proposed arrangement of the projections, as shown in the respective representation in (86). The **M1**$_{[I]}$ **M2**$_{[I]}$***-n't*** pattern of (a) and **M1**$_{[I]}$ **M2**$_{[I]}$ ***not*** in (b) vary minimally in the choice of the overt negative element.[66] In the less preferred **M1**$_{[I]}$ ***not*** **M2**$_{[I]}$ pattern of (c), *should* occupies Neg° at Spell-Out. Importantly, we note that there is no intervening head creating a barrier to the modal F°.

(85) a. He might shouldn't go.
b. He might should not go.
c. He might not should go.

(86) a. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[\ldots]}$>] …
[$_{F\{ShouldOBL\}P}$ [$_{F\{ShouldOBL\}}$ <shouldn't$_{[ShouldOBL]/[+NEG]/[\ldots]}$>] [$_{NegP}$ OP$_{NEG}$ …
b. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[\ldots]}$>]
[$_{F\{ShouldOBL\}P}$ [$_{F\{ShouldOBL\}}$ <should$_{[ShouldOBL]/[+NEG]/[\ldots]}$>] [$_{NegP}$ not …
c. … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <might$_{[MightEPIST]/[\ldots]}$>]
[$_{F\{ShouldOBL\}P}$ [$_{F\{ShouldOBL\}}$ ___] [$_{NegP}$ not [$_{Neg}$ should$_{[ShouldOBL]/[+NEG]/[\ldots]}$] …

As (87) shows, in the **M1**$_{[I]}$***-n't*** **M2**$_{[I]}$ pattern, the second modal constitutes a barrier to the potential for *mightn't* to bear both negation and its modal feature, rendering the sentence ungrammatical. As speakers consistently reject this pattern, their judgment aligns with the prediction.

(87) a. * He mightn't should go.
b. * … [$_{F\{MightEPIST\}P}$ [$_{F\{MightEPIST\}}$ <mightn't$_{[MightEPIST]/[+NEG]/[\ldots]}$>] …
[$_{F\{ShouldOBL\}P}$ [$_{F\{ShouldOBL\}}$ <should$_{[ShouldOBL]/[\ldots]}$>] …
[$_{NegP}$ OP$_{NEG}$ [$_{Neg}$ <mightn't$_{[MightEPIST]/[+NEG]/[\ldots]}$>] …

In fact, the only structural restriction regarding negation concerns this circumstance. Each of the patterns **M1** ***not*** **M2**, **M1 M2** ***not***, **M1 M2*****-n't***, is structurally available to combinations of group I + group I / II / III modals. The pattern **M1*****-n't*** **M2** is possible for group I + group II / III combinations, but entails a locality violation in group I + group I DMCs and thus is

[65] As discussed in the previous section, *might* inversion is generally avoided by many speakers of English. We claimed this underlies the unexpected second modal inversion in certain MMCs with initial *might*. It is also true that many speakers of both Standard English and MM varieties negate single modal constructions with *might* only via *not*, sensing that *mightn't* is less natural (see for example Di Paolo (1986)). We see then that the two conditions under which *might* merges as a specifier are those which otherwise would force it to "behave" in an unnatural, or infelicitous, way.

[66] We acknowledge that the alternate derivation for some speakers would place *might* in the specifier of its modal FP. At any rate, the syntax of the structure remains valid.

ungrammatical.[67] A review of the Southern US negation patterns in section 3.2 will confirm that all anticipated word order arrangements of MMCs are in line with this set of predictions, with the significant exception of certain MMCs ending in *ought*.

In the DMCs *might ought* and *should ought*, as well as the triple construction *might should ought*, the final auxiliary *ought* sometimes occupies an unexpected position at Spell-Out. In the first of these, the most accepted pattern of negation is **M1**$_{[I]}$ ***not*** **M2**$_{[I]}$, though some speakers permit **M1**$_{[I]}$ **M2**$_{[I]}$ ***not***, neither of which is problematic. Surprisingly, a few allow **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$, which we have just established should be unavailable to a combination of two group I modals. The relevant examples from (17) are repeated as (88). From a semantic perspective, the scope relationships are consistent, placing negation in the scope of both epistemic and root modality as expected. While (88a & b) mean "It is possible [that she is obligated [not to go]]", (88c) is likewise interpreted as "It is possible [that I am obligated [not to do that]]" (cf. *"It is possible [that I am not [obligated to do that]]").

(88) a. She might not ought to go.
b. % She might ought not to go. (Coleman 1975:200)
c. % I mightn't oughta do that. (Boertien 1986:297)

As discussed in section 3.1, *should ought* represents a double root combination that emphasizes the sense of obligation. The acceptable sentences from (20), repeated in (89), demonstrate the anticipated **M1**$_{[I]}$ ***not*** **M2**$_{[I]}$ and **M1**$_{[I]}$ **M2**$_{[I]}$ ***not*** patterns and again the unexpected **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$ as well. Once more, the interpretation of all the sentences adheres to structural predictions, placing negation in the scope of the stressed modality, i.e., "I / We are quite obligated [not to do that]" (cf. for example, "It's likely [that I / we are not [obligated to do that]]"), yet defying the predicted word order.

(89) a. I shouldn't oughta do that. (Boertien 1986:297)
b. We should not oughta do that.
c. We should oughta not do that. (Boertien 1986:297)

The final such construction, *might should ought*, is essentially the same, but with an added complexity. Sentence (19d), repeated as (90a), and the corresponding sentence (90b) with reduced negation, are both interpreted as "It's possible [that Mrs. Jones was quite obligated [not to tell you …]]" (cf. "It's possible [that Mrs. Jones was not [quite obligated to tell you …]]", again reflecting the structural scopes but not the word order predicted.

In (90a), *not* may occur after any modal. Whereas the **M1**$_{[I]}$ **M2**$_{[I]}$ ***not*** **M3**$_{[I]}$ and **M1**$_{[I]}$ **M2**$_{[I]}$ **M3**$_{[I]}$ ***not*** are anticipated, **M1**$_{[I]}$ ***not*** **M2**$_{[I]}$ **M3**$_{[I]}$ is not since the feature of the group I modal *ought* should intervene between the modal feature of either *might* or *should* and negation (see (80)).

In (90b), whereas the impossibility of **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$ **M3**$_{[I]}$ is predicted, that of **M1**$_{[I]}$ **M2**$_{[I]}$ **M3**$_{[I]}$-***n't*** is not. Nevertheless, finding that an available pattern is not realized does not constitute ungrammaticality. What is unexpected, however, is the **M1**$_{[I]}$ **M2**$_{[I]}$-***n't*** **M3**$_{[I]}$ pattern, on the same grounds as we expressed for the **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$ configuration of *should ought* above.

[67] Note that the available data on negation in MMCs does not include any combination whose initial modal is not of group I.

(90) a. Mrs. Jones might (not) should (not) ought (not) to have told you about the old courthouse. (Coleman 1975:201)

b. % Mrs. Jones might(*-n't) should(-n't) ought(*-n't) to have told you about the old courthouse. (Coleman 1975:201)

We suggest that there are two factors at work that explain the exceptional position of *ought* in these expressions while at the same time rendering the interpretations predicted by the hierarchy of IP. First, let us recall that the *should ought* combination, both in the DMC and in the related triple construction *might should ought*, is a doubling of two synonymous root modals that emphasizes the sense of obligation carried by either individually. In semantic terms, however, it would not be decomposed as [OBLIGATION [OBLIGATION [verb]]] (for example, (89c) does not signify "We are obligated [to be obligated [not to do that]"), but rather [*EMPHATIC* OBLIGATION [verb]]. In essence, only one of these modals bears an actual modal feature, while the other is merely emphatic.

Given that *should* is always found in a position that is predicted by the structure while *ought* is not, in these modal combinations we surmise that the former is the true modal of obligation while the latter is in fact modally vacuous. This does not mean that *ought* is not an auxiliary, for it clearly exhibits the anticipated syntactic behavior. We therefore posit that in the *should ought* combination, *ought* merges in a position lower than NegP, which it occupies at Spell-Out while *should* bears the higher features in line with the theory at hand.[68] As for the emphasis that *ought* conveys, we note simply that, in English, no obligatory movement is associated with such a feature.[69] The doubling of the synonymous modal is tantamount to reduplication.

While this suggestion clarifies the unexpected negation patterns of *should ought* and *might should ought*, it cannot be extended to the grammatical **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$ of *might ought*, which is comprised of two modally meaningful elements. For this we suggest another tentative explanation.

The vast investigation into Standard English syntax has lead to the conclusion that, while *not* potentially takes either constituent or sentential scope, *-n't* is unambiguously sentential. There appears to be no reason to question the validity of this finding. The hypothesis that, as sentential negators, *not* serves as a NEG-operator while *-n't* marks a negative head in conjunction with a covert NEG-operator, has been widely promoted and accepted by the current article. However, there is no reason to assume that the same is true of these operators in non-standard varieties.

Let us imagine that *not* in [Spec, NegP] immediately following a modal in a higher position might in the PF component take a reduced form that resembles the head-borne morpheme. This is not an unreasonable suggestion, particularly in light of the far more frequent occurrence of *-n't* as an authentic head in single modal constructions. These abbreviated forms would easily influence the pronunciation of the modal + *not* counterparts in MMCs. In speech and thus in writing, the resulting representations would mimic negative auxiliaries having standard *-n't* marked forms and be mistaken as such.

It is suggested here that the grammatical occurrence of *mightn't ought*, as in (88c), is not in fact a structurally contradictory **M1**$_{[I]}$-***n't*** **M2**$_{[I]}$ pattern, but instead represents the predicted **M1**$_{[I]}$ ***not*** **M2**$_{[I]}$ order in which *not* takes on a phonologically reduced form in PF. In the associated derivation, shown in (91), *ought* occupies Neg° at Spell-Out. There is no barrier

[68] It is evident that *ought* alternately may bear the negative feature, making available the **M1**$_{[I]}$ **M2**$_{[I]}$ ***not*** and **M1**$_{[I]}$ **M2**$_{[I]}$ **M3**$_{[I]}$ ***not*** arrangements of *should ought not* and *might should ought not*, respectively.

[69] Intonation, for example, is a typical means through which emphasis is realized, e.g., "He SHOULD do that."

to its modal FP. The reduction of the NEG-operator to *-n't* is possible only because it is located in the pronounced position that immediately follows *might*.[70]

(88) c. I mightn't oughta do that. (Boertien 1986:297)

(91) … $[_{F\{MightEPIST\}P}\ [_{F\{MightEPIST\}}\ <might_{[MightEPIST]/[\ldots]}>]\ [_{F\{OughtOBL\}P}\ [_{F\{OughtOBL\}}\ \_\_\ ]\ \ldots$
$[_{NegP}$ n't $[_{Neg}$ $ought_{[OughtOBL]/[+NEG]/[\ldots]}]\ \ldots$

6.4. Tying up a loose end

So far in section 6, an exceptional MMC that contradicts the fundamental cartographic hierarchy has been intentionally overlooked. As was seen in section 3.1, among the attested combinations of modals of Jamaican Creole is *would've must*. Double modality aside, assuming that these auxiliaries are all heads, this ordering which positions the group I modal *must* after the auxiliary *have*, clearly violates locality constraints.[71]

've (*have*) in this construction does not represent perfective aspect, but rather the anteriority of PTR. Without committing to a precise location, we can deduce from word order data that the core feature of anterior *have* is at least below those of group II modals (e.g., "It couldn't have been raining" means "It is not [possible [that it was raining]]", placing past reference in the scope of the modality of *could*, which is in the scope of negation).

In Standard English, *must* as the modal of root obligation is unusual, even among auxiliaries whose modalities take scope over tense (i.e., those of groups I and II). Unlike epistemic modals and *should* and *ought* of weaker (implied) obligation, root *must* is not compatible with past reference, through either tense or PTR. Sentence (92b), with the auxiliary *have* indicating anteriority, assigns an unambiguously epistemic value to the modal. It does not serve to place the root modal interpretation of (92a) in the past.

(92) a. Jeff must water the plants today.
b. # Jeff must have watered the plants yesterday.
c. Jeff had to water the plants yesterday.

Like weak obligation and epistemic modality, the stronger obligation of *must* is necessarily linked to the moment of speech. Differently, as Palmer (1983) claims, the use of *must* in this sense constitutes a performative act, at times imposing a demand; at others, merely reporting one. In either case, it conveys a sort of assurance on the speaker's part. The idea of placing such a demand at a time prior to the illocutionary act is illogical. Hence, *must* is not compatible with past reference, even with PTR, because an intention deriving such a construction is conceptually impossible.

To compensate for this gap, English requires an alternate expression with a similar value of obligation, most typically the periphrastic lexical verb *have to*, as in (92c). Again according to Palmer, though *have to* is virtually synonymous to *must*, it lacks the related performative force. For this reason, it is compatible with past reference.

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[70] Thanks to Eric Haeberli (personal communication) for pointing out that by accepting this sort of PF reduction of the operator *not* as an explanation for *mightn't ought*, we invite a similar analysis for *-n't* in general. Given that *-n't* moves with the auxiliary in subject-auxiliary inversion and is thus a head, this is an undesirable consequence. We note however that in the case of the *mightn't ought* combination, inversion of the reduced negation is unattested, clearly allowing for the possibility that it does not have head status. PF reduction of a specifier might indeed be the explanation for this gap.

[71] In fact, this arrangement also defies the traditional model as the auxiliary *have* selects the finite IP rather than a main verb, i.e., $[_{VP}\ [_{V}$ have $[_{IP}\ [_{I}$ must].

In other MM varieties, constructions like *would've must* are not attested. Though the infelicity of root *must* with PTR may be a contributing factor, it is the structurally incongruous arrangement of anterior *have* + group I modal that rules the combination out on theoretical grounds. Nevertheless, as the construction does exist in Jamaican Creole, it requires an explanation.

The Atlantic Creoles are the historical blending of the native African languages of imported slaves and the European languages of colonizers. As such, they typically exhibit some but not all of the attributes that characterize each of their ancestors. We speculate that *must* in Jamaican Creole, likely under the influence of other source languages, evolved to have not only a modal status, but as well, that of a legitimate lexical verb. This means simply that it is similar to *dare* and *need* of the standard language in being dually categorized.

As a result, *must* may merge in VP, lacking the performative component (like the synonymous standard *have to*), and in line with its position, it may grammatically follow the auxiliary *have*.[72,73]

6.5. Limitations and variations

Our analysis of MMCs faces two final challenges. The first is to account for the observed limit in the number of modals that occur in grammatical MMCs, and the second is to explain their cross-dialectal variation.

From one perspective, the cartographic proposal simplifies the mysterious MMCs to an almost trivial status. However, along with the benefit of allowing for these constructions, it has the intrinsic disadvantage of over-generation that forces us to account for the observed limitations. More than one modal auxiliary may occur in a clause because there may be more than one corresponding modal feature. But given that there are a number of distinct modal FPs associated with auxiliaries, why do we find very few triple modal combinations and no occurrence of four or more modals in the same clause?

By far, the prevalent composition of MMCs places an epistemic before a root modal. Section 6.1 showed that one factor that makes this possible is that epistemic elements in general have an intrinsic non-past value that does not require temporal marking. We surmise that in contrast, root modals, even those whose core feature takes scope over tense, always bear the tense feature. In essence, just as modals in Standard English exist only as bundles of all non-core features, the feature-bundle of root modals in MM varieties necessarily includes tense. For this reason, we do not expect the occurrence of two of these auxiliaries, as one would bear an ungrammatical redundant feature.[74]

In the data, we have identified only one combination that contradicts this assertion. *Should ought*, (and the related *might should ought*) contains two root modal auxiliaries. From a semantic point of view, as the modality of obligation associated with both of these modals takes scope over tense, the temporal value is interpretable even in the absence of tense. In section 6.3, however, we established that in reality this pair does not represent double modality, as *ought* provides emphasis but is modally vacuous. We suspect that this exceptional circumstance permits the absence of the tense feature on one of the modals.

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[72] It is anticipated that *must* will fall in the scope of sentential negation in this construction, but we lack data to confirm this.

[73] Throughout this article, we have regarded the *could must* combination included by Brown (1991) among acceptable MMCs in Hawick Scots as a typographical error (see footnote 12). If this construction proves to be valid, unexpectedly allowing a group II epistemic + group I root configuration, then it is likely that *must* similarly has a dual status allowing it to head VP as a lexical verb in addition to its standard functional auxiliary role.

[74] We recall that at least in Hawick Scots, root modals *can* and *could* occur in nonfinite clauses. The obligatory tense marking apparently applies only in finite clauses.

In contrast, we observed several MMCs that include two epistemic auxiliaries, including *may might* and some instances of *might could* of Southern US English. Each of these modals individually carries a sense of epistemic possibility. As discussed in section 3.1, the doubling here is emphatic in that it stresses the speaker's unwillingness to commit to the assertion. The triple constructions of Hawick Scots, *will* + {*might* or *should*} + {*can* or *could*}, also include to two epistemic auxiliaries, the first of which is predictive while the second expresses possibility or probability, respectively.

From a structural perspective, there appears to be no restriction on the number of these elements; but conceptually, a sequence of epistemic elements (auxiliaries and / or adverbs) quickly becomes either contradictory or redundant and thus meaningless. Even a grammatical Standard English clause like "Martha certainly probably possibly arrived before noon", or simply "It's possible that Martha probably must have arrived before noon" is conceptually infelicitous. Multiple occurrences of epistemic modals are therefore ordinarily excluded on pragmatic grounds.

Of the two challenges that began this section, perhaps the more elusive concerns variation across dialects. We must ask on one hand, why permissible patterns of negation and inversion differ; and on the other, why the set of specific MMCs judged grammatical in dialects varies so greatly. That is, why are certain constructions judged grammatical by speakers of Hawick Scots yet not allowed by those in the Southern US and vice versa. Moreover, why are some syntactically viable combinations not attested in any MM variety?

The question of inversion was considered in section 6.2. In certain dialects (e.g., in American English in general), inversion of *might* is unnatural. As a means of overcoming the infelicity, certain MM speakers choose second modal inversion, forcing the unusual merge of *might* as the specifier of its modal FP. As the same auxiliary in other dialects is not infelicitous in inversion, the **M2 S M1** pattern would not serve in a similar "rescuing" role, and thus would not occur.

With regard to negation, however, it is interesting that certain structurally possible configurations do not occur in some dialects, for instance, the exclusion of $\mathbf{M1}_{[I]}$ $\mathbf{M2}_{[\neq I]}$***-n't*** by speakers of Hawick Scots. This seems to indicate that not every modal found in MMCs in a given dialect potentially bears the negative feature. Perhaps the most glaring example is in AAVE.

It is generally the case that in MM varieties, though certain modal auxiliaries are sometimes not bundles of all of the non-core features, the potential for them to bear all of these features is also available. Any of these auxiliaries may also serve as the sole modal in a single modal construction. Succinctly, Standard English expressions are in principle grammatical within the parameters of the MM dialect.

AAVE appears to be an exception. Recall from (5), repeated as (93), that a marked difference between this variety and Southern US English is the permissible modal + *do* construction.

(93) a. You must didn't read it too good. (Labov 1972:57)
'You must not have read it very well.'

b. She still might don't even like the thing. (Labov 1972:59)
'She still might not even like the thing.'

c. You might could go to the church and pray a little, but you – that might don't help you. (Labov 1972:59)
'It's possible that you could to go to the church and pray a little, but you – that might not help you.'

The prominent syntactic explanation for the insertion of supporting *do* is that it is a last resort mechanism that rescues a derivation that lacks an element bearing certain non-core features (e.g., [+NEG], [+Q]). In Standard English, only when the numeration selects no meaningful auxiliary is *do* required; otherwise, it is not grammatical. It appears then that the modal in each of the AAVE expressions in (93) varies from the standard equivalent in lacking the potential to bear one of the present features.

First we note that as the auxiliaries requiring *do*-support here are epistemic, they have inherent non-past temporal values. Each also takes scope over negation, placing it in a group I projection. Sentence (94a) shows that in the absence of negation, such an auxiliary grammatically bears the tense feature, as evidenced by the requirement for PTR to indicate past reference as in the standard language. Furthermore, the non-group I root modals in (94b & c) are both negative auxiliaries, clearly marked for the feature of negation.[75]

(94) a. Bruce must'ə left, and Sue must'ə, too. (Green 1998:63)
'Bruce must have left, and Sue must have, too.'

b. I might can't get no more fines, neither. (Labov 1972:58)
'I might not be allowed to get any more fines, either.'

c. Cause I'll be done put – stuck so many holes in him he'll wish he wouldna said it. (Labov 1972:56)
'Because I'll have already put so many holes in him that he'll wish that he hadn't said it.'

We assert that in AAVE, epistemic *might* and *must* (and perhaps all group I modals, or at least the epistemic subset) lack the potential to bear the sentential negative feature. As a consequence, when this feature is present, it constitutes a barrier to the lower features, tense in particular. As a result, the epistemic auxiliary cannot bear both its modal feature and tense. Supporting *do* rescues the derivation, enabling grammaticality, but also necessarily bears tense. In essence, the exceptional potential of epistemic modals not to bear tense in MM varieties when preceding another modal, is imposed on these forms in AAVE whenever negation projects.[76] It is possible that similar constraints mark certain modals in other MM varieties, effectively limiting the negation patterns that the constructions may produce.

Finally, there is the variation in grammatical modal combinations themselves. Needless to say, certain constructions are ruled out on structural grounds. The combination of a group II epistemic followed by a group I root modal, such as *could ought*, would violate locality constraints, and is predictably unattested.[77]

Furthermore, it is perfectly feasible that only a subset of modals in a given dialect are grammatical as partial feature bundles, others necessarily bearing all the non-core clausal features as in Standard English. In such a system, certain modals would never occur in MMCs as the redundant features would result in ungrammaticality. In Southern US dialects, for example, *shall* and *will*, with either an epistemic or root sense, are found only in single modal expressions. And though the latter of these occurs in Hawick Scots MMCs, certain other modals do not.

However, much of the observed variation in the inventory of MMCs lies outside of the structural domain. It must be acknowledged that our cartographic hypothesis does not

[75] While the modality of *can* places it in group III; hypothetical *would*, requiring PTR, is in group II (*would-n-a* → "would-n't have").

[76] It is interesting that in AAVE, a negated infinitive construction also requires *do*-support as in (i).

(i) … to don't throw bottles and rocks. (Labov 1972:57)

[77] We note the exceptional flip-flops whose underlying arrangement is structurally sound (see section 6.2).

manage an all-encompassing explanation, and it is extremely unlikely that any other syntactic proposal would. Other factors must also play a role.

The fact that the lexicon varies across dialects and varieties of a language is nothing new. Modal auxiliaries are particularly prone to such lexical variation. As Brown (1991) states, in Hawick Scots *might* and *must* are restricted to epistemic uses and *shall*, *may*, and *ought* are typically not used at all. Though *might* and *should* are common, they are used exclusively in a non-past hypothetical sense and not as past forms of *may* and *shall*. Similarly, *may*, *might*, and *must* in Southern US English generally carry an epistemic value, being replaced by *can*, *could*, and *have to* in root senses; and certain functions of *will* and of past reference *would* are expressed instead as *be going to* and *used to*. *Need* and *dare* function as main verbs rather than as auxiliaries.

As MMCs are non-standard, they stem from the colloquial uses of their components within their respective dialects. If a modal does not serve a particular function identified in Standard English, or if it is not used at all, then it would be unlikely for it to co-occur with other modals.

This points toward what is almost certainly the true limitation on the grammaticality of MMCs: convention. In the course of the current investigation, judgments were collected from six North Carolinians on a variety of MM expressions. The results were erratic. Certain sentences, that were considered by some to be part of their own speech patterns, were by others described as utterly impossible. The data in fact were so inconsistent that they were deemed not to impart any syntactic insight.

But another realization emerged. A strong factor underlying the inconsistencies was the uncertainty of how to judge sentences. After his interview, one participant apologized for not having categorized any of the sentences as absolutely impossible, explaining that due to the "poor grammar" of his co-workers (in a textile mill), he was accustomed to accepting a very wide range of constructions (in his words, "anything").

Quite unknowingly, he was providing the answer to our question. The combinations of modals that are judged to be acceptable are those that are familiar to the speaker. The forms that do not occur in his dialect will be judged ungrammatical or marginal simply because they are not recognized. Other informants made comments effectively stating that many of the unacceptable MMCs were perfectly interpretable, but that they were simply not used.

We surmise then that in addition to legitimate structural limitations, the wide variation in permitted MMCs, as well as the absence of certain combinations from the inventory of any MM variety, is attributed to lexical factors. The colloquial usage of individual modals in a dialect may be different from that of another dialect, and moreover from Standard English. Furthermore, lexical selection, or familiarity with a given modal combination, will also influence the speaker's willingness to accept it.

7. A SPECULATIVE DIACHRONIC ACCOUNT OF MM VARIETIES

It was mentioned in section 3.1 that, according to Di Paolo (1986), speakers of non-MM varieties of English who immigrate to Texas quickly incorporate MMCs into their speech. She considers this to be evidence of how minute their syntactic differences are. According to the proposal of this article, although MMCs represent a conspicuous deviation from the standard tongue, the underlying syntax is actually the same. The only real difference is that modal auxiliaries in the nonstandard dialects do not perforce bear all of the non-core features of the IP domain – essentially a lexical explanation. As a final step, let us attempt a brief diachronic account of the factors that brought about the distinctive constructions of MM dialects.

As previously stated, because no attested occurrences of MMCs exist from their early development, probably because of their substandard nature, we can at best speculate on the

history. As a starting point, we will accept Lightfoot's (1988, 1991) account of the syntactic reanalysis of Standard English modal verbs to auxiliaries, as described in section 2.2, and Fennell / Butters' (1996) history of the origin and spread of MMCs in section 4.1.

Modal verbs in Middle English were syntactically main verbs that selected infinitive complements; they did not constitute a distinct grammatical category. As in Old English, overt morphology marked not only the finite modal, but also the lexical verb as an unambiguous infinitive.[78] When their syntactic reanalysis took place, since modal verbs lost their infinitive uses, it was naturally the finite form that the new auxiliaries took. As such, they inherently bore agreement and tense features. This classification survives in the modern forms of the standard language.

The speakers in Northern Britain were under the continuing influence of the Scandinavian tongues of Nordic peoples in whose languages modals were main verbs, thus not incompatible with embedding. We suggest that, due to this influence, when the reanalysis of modal verbs reached this region, although modals were reclassified as auxiliaries, they retained the potential to co-occur. For this to happen, the non-core features were necessarily redistributed among the auxiliaries, which was facilitated by two other characteristics of the language. First, verbal agreement morphology had by that time been depleted, and in the case of modal verbs, the paradigm was essentially invariable. Secondly, the functions of all past inflected modal verbs had expanded to include non-past hypothetical (subjunctive-like) uses. They were therefore not perceived as intrinsically tensed. So due to the lack of overt morphology, there was no barrier to reinterpreting modals as potentially not bearing tense and / or agreement features.

From there, the spread of MMCs resulted from colonization by speakers of Scottish and Northern English dialects, as described by Fennell / Butters. Though the set of specific modal combinations did not survive, the lexical trait of modals allowing them potentially not to bear all non-core clausal features did.

8. CONCLUSION

In spite of its many theoretical merits, the traditional X-bar model, which represents the clause simply as CP – IP – VP, fails to account adequately for the syntax of English auxiliaries. The grammaticality of clauses containing more than one modal auxiliary in certain varieties has consistently defied an explanation within this framework.

Based on recent works that demonstrate a much richer "cartographic" clausal structure, we have proposed that auxiliaries are special inflectional heads that potentially bear the same types of features that adverbs do. In this framework, ordering restrictions, variable scope relationships between modality, negation, and tense, and a number of other observations, are the natural results of the structural hierarchy. Furthermore, multiple modal constructions move from mysterious to straightforward. In essence, they simply reflect lexical variation. While modals in Standard English necessarily bear the features of tense and agreement, as well as negation and [Q] (or another inversion-inducing feature) when present, at least some of them in MM varieties potentially lack some or all of these features. We have demonstrated how this concept applies, also addressing certain residual problems such as variation across dialects and unattested modal combinations. We take the very existence of MMCs as strong evidence that the cartographic theory is on target.

One thing has become clear. A great barrier to developing a comprehensive theory of MMCs, from a syntactic perspective or any other, is the lack of adequate data. A majority of the research into these unusual forms has been conducted on very small samples of speakers

[78] Nagle (1994).

in restricted areas. The reported judgments show great inconsistency even among informants of the same dialect. This forces us to question the validity of the linguistic resources currently available to analysis.

In the view of the current author, a native speaker of one of the most flexible Southern US dialects investigated to date (that of the northern Piedmont of North Carolina), many of the findings in Coleman's (1975) study of this speech are invalid, not due to any fault on his part, but simply because it is difficult to obtain legitimate data. Grammaticality judgments are prone to error. Some informants hesitate to reject an expression that they would not themselves produce, merely because they understand it. Conversely, others may disallow a combination that they use, as they are influenced by the knowledge that it is "bad grammar" as defined by the prescriptive rules.

It is hoped that at some point, more reliable data will be established and an analysis of this type will have more solidly defined parameters in which to work. Nevertheless, it is also hoped that this synchronic and diachronic account will offer some insight into the structure of these unusual constructions which have proved puzzling to syntactic theory.

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