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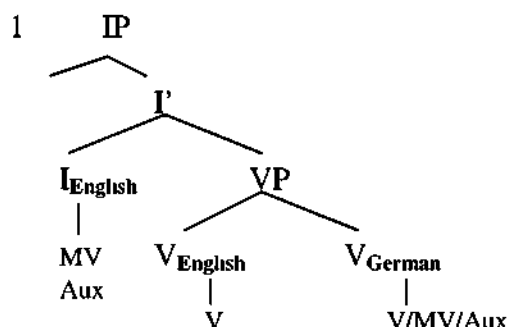# On the syntax and semantics of modal verbs in German

Der Kollege versteht von der Sache nicht viel und macht ausgiebig Gebrauch davon
(gemurmelter Kommentar eines Nachbarn bei einer IdS-Tagung)

"Zu den Modalverben fehlt eine Menge an Literaturhinweisen,
darunter die Habilschrift von T F , die noch nicht veröffentlicht ist '
(Kritik eines Fachzeitschriftenherausgebers zu einem eingesandten Artikel)

1. Introduction:
What's different between English and German modal verbs? a lot!

The traditional view of the difference between modal verbs (MVs) in English and in German is that, since English cannot project non-finite forms, English MVs project into the syntactic I(n-flection) category, while German projects into V. See (4) below (1995: 469 ff ; Sprouse/Durbin 1997; see in particular Abraham1998 for the difference between English and German). Recall that main verbs in English, modals as well as finite Auxs such as *have* and *be*, surface in V. (1) displays the s-structure of both English and German. One assumes standardly that English modals are base-generated in I (although this is contested, on a typological comparative basis, by Rohrbacher 1998)

```
1       IP
        /\
           I'
         /    \
    I English    VP
      |        /    \
    MV      V English   V German
    Aux       |          |
              V        V/MV/Aux
```

The English modal verb (MV) is represented under I, whereas the MV in German has the syntactic status of a full lexical, V. However, this is not the whole story about the German MV since its root, or deontic (DMV), reading and its epistemic reading (EMV) must be distinguished. In (4) below, the syntactic distinguishing characteristics are listed

(2)	ENGLISH		GERMAN
a	s/he can(*s), may(*s), must(*s) etc	INFLEXION	*ihr könnt, durft, mußt, wollt*
b	*s/he musted, might may[+past]	PAST	*er kann B konnte (mich)*
c	*has could, should, would	PERIPHRASIS	*habe gekonnt, gemußt, gedurft,*
d	*interesting to can/may work	TO-INFINITIVE	*interessant arbeiten zu konnen/ durfen*
e	*must can work	INFINITIVE EMBEDDING	*muß arbeiten konnen*
f	*I can German	FULL V	*ich kann Englisch*

g	*I work not B	NEG	*er sieht/kann/darf das nicht*
	I do/must not work	SUPPORT-V2	
h	*Works Mary? B	V1	*sieht/muß Klaus das?*
	Must/Does Mary work?		
j	*Mary works hard, worksn't she?	TAGGABILITY	0
	Mary can work hard, can't she?		0
k	*that Claus that not sees/can	V-LAST	*daß Klaus das nicht sieht/kann*
l	can, shall (SG = PL)	SG ... PL	*kann/können, darf/dürfen, mag-mögen, muß/müssen*

Notice that a number of the distributional properties can be deduced from the fact that the English MV is base-generated in I - something which excludes full lexical status. Such inferrable properties pertain to (2c-k) above, while (2a,b,l) are independent features, at least at first sight, requiring extra explanation. It will be argued that it is an inherent aspect quality that this behavior is due to - one that is present in German, but not in English.

Now, let us see what Dutch and Norwegian do in the characteristic distributional cases.[1]

(3) DUTCH | NORWEGIAN
a	hij kan-jullie kunnen,	dere kan/må/vil
	mag-mogen, moet-moeten	
b	Dat kan die!	han kan - kunne
c	heb gekund, gemoeten	ha kunnet/måttet
d	om te kunnen werken	å kunne arbeide
e	moet kunnen werken	må kunne arbeide
f	ik kan Engels	jeg kan engelsk
g	hij kan/mag/moet dit niet	han ser/kan/må det ikke
h	moet/mag ik dat?	Ser/må Klaus det?
j	0	0
k	dat Klaas dit niet kan	at Klaus ikke ser/kan det
l	kan-kunnen, mag-mogen,	? no Sg-Pl-distinctions?
	moet-moeten, zal-zullen	

There is no Norwegian MV-lexical for German *dürfen*, English *may*. Instead, the full verb construction *få lov* `get permission´ is used as long as *kunne* does not do the job. What this shows is that modal verbs in Norwegian are less severely epistemicized, or still more deontic and of the status of main verbs, than the counterparts in English. There must be a particular reason for this deficiency in English. We shall argue that this is due mainly to the absence of the aspectual properties that deontic MVs and their main verb status have retained in German and Norwegian. How such a status can be established will be shown in the next section.

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1. Syntactic reflexes of the root vs. epistemic distinction

The syntactic reflexes of the root vs. epistemic distinction in German show a surprising dependency on the distributional criteria as spelled out in (1a-g). Furthermore, aspect, or, more precisely, lexical Aktionsart plays a discriminating role. See (4) (according to Abraham 1995, ch. 6: 472 f.; for (5) cf. Sprouse/Durbin 199863). For the criterion in (4a,c), compare the distribution of the raising verb *scheinen* as displayed in (4b,d). `E,T´ in the distributive characterization of (6a-c) stands for the Reichenbach notation of event tensing (E= event, T= speech act temporal point).

(4)	MV-FINITENESS:		DMV	EMV
a	NON-FINITENESS			
	Er hat(te) viel Geld verdienen wollen/müssen/sollen		+	*
b	Das muß so sein zu scheinen		(0)	(*)
c	FINITENESS			
	Er wollte/mußte/sollte viel Geld verdienen		+	+
d	Das scheint so sein zu müssen		(0)	(+)
(5)	AKTIONSART:			
a	Er will/soll/muß geschlafen haben	[-Perf]	*	+
b	Er will/soll/muß eingeschlafen sein	[+Perf]	*	+
c	Er will/soll/muß Geld verdienen	[-Perf]	+	+
(6)	MV-TEMPORAL NON-FINITE EMBEDDING			
a	Es ist wichtig in der UB		+	*
	arbeiten zu können/müssen/dürfen	[E,T]	+	*
b	*Es ist dem Angeklagten sehr wichtig in der UB gearbeitet haben zu können/			
	müssen/dürfen	[E _T]	*	*
c	*Es ist dem Angeklagten sehr wichtig in der UB arbeiten können/müssen/dürfen			
	zu werden	[T_E]	*	*
(7)	EMBEDDED (PERIPHRASTIC) TENSE			
a	Von ihm muß/soll/will viel Geld verdient			
	werden		+	+
b	Von ihm muß/soll/will viel Geld verdient			
	worden sein		*	+
(8)	MV-EMBEDDING UNDER MV			
a	Er muß diesen Brief geschrieben			
	haben mögen/dürfen		*	+
b	Er müßte diesen Brief geschrieben			
	haben mögen/dürfen		*	+
c	Es muß/müßte sein, daß man sagt, er hat diesen Brief geschrieben			
(9)	LINEAR ORDER IN THE V-COMPLEX			
a	Er muß/müßte diesen Brief geschrieben haben können		*	+
b	Er muß/müßte diesen Brief haben			
	schreiben können/*gekonnt		*	+

c   Er muβ/müβte diesen Brief schreiben haben
        können/*gekonnt   *   +
(10) INDEPENDENT FULL VERB
a   Sie mag/kann/*darf/*muβ/*soll Deutsch   (+)   (*)
b   Er tut Englisch können/mögen

2.   Deontic MVs, ordinary Vs, and tense/aspect Auxiliaries
2.1.   The prenominal active participial construction

If DMVs in German behave syntactically like full verb lexicals, we expect a distributional beha-
viour not unlike that of the latter. This is fully born out (con Sprouse/Durbin 1998).

(11)
a   alle Deutsch sprechenden Studenten
b   alle Deutsch (sprechen) könnenden/müssenden/dürfenden Studenten
c   alle Deutsch gesprochen habenden Studenten
d   alle gerade angekommen- (seiend-)en Studenten
e   alle Deutsch gelernt haben müssenden/könnenden/dürfenden Studenten
f   (?)alle Deutsch lernen müssen/können/dürfen habenden Studenten
g   alle Deutsch lernen *gemuβt/*gekonnt/*gedurft habenden Studenten

2.2.   The periphrasis with *tun*

The periphrasis with *tun* is common in colloquial, spoken German B although it is by far not unr-
estricted. Sprouse/Durbin (1998) derive a lot from the specific collocations and non-collocations
of Mvs and *tun*. But it is dubious whether any relevant conclusions can be drawn from the
illustrations below.

(12)a   Er schreibt gut Englisch, aber er spricht nicht so gut
    b Er tut gut Englisch schreiben, aber er tut nicht so gut sprechen
(13)a   Er kann gut Englisch
    b   ?Er tut gut Englisch können
(14)a   Er hat Englisch gesprochen
    b   **Er tut gut Englisch gesprochen haben

If we adopt a Minimalistic position *tun* is an Aux alright, but it is of a sort differing from tensing
AUxes; *haben*, as a true tensing AUX, has priority over *tun* when going to T.

(15)a   Er muβ Englisch gelernt haben   only EMV; cf. (3a) above
    b   **Er tut Englisch gelernt haben müssen   only DMV, because non-finite
    c   **Er tut Bulgarisch sprechen müssen, weil ich immer nur *da* verstehe   EMV!
(16)   *Er kann gut Englisch sprechen tun
(17)   *Englisch wird gut sprechen getan

It needs to be emphasized (con Sprouse & Durban (1998), however, that such distributions do not tell us much about the specific status of the modal verbs in German, simply because of the fact that its main function in the spoken vernacular is that of a prosodic and discourse-function- al nature (cf. Fischer/Abraham 1998).

2.3. Passivization

As (13) demonstrates DMV-uses are grammatical, and are retained, under passivization. This is in line with the full verb status of DMV in German, but not in English and only with reservation in the other Germanic languages.

(18)   DMV = FULL LEXICAL Vs
a   Hier wird/wurde alles versucht
b   Hier wird/wurde alles gekonnt/gewollt/gedurft
c   Auch in der Schweiz wird/würde gerne Deutsch gekonnt
d   Selbst in der Schweiz wurde dies gemußt (- nämlich die Guthaben der Juden offenzulegen)

3. Epistemic and root modals in Modern German: the epistemic reading on perfective embedding

The terms *deontic* vs. *epistemic*, central to this essay, will be used in their original Greek meanings and their direct (i.e. quasi-Greek) application in the work of logicians such as von Wright (1951). *deontic* (from the past participle Gr. *deon* "the necessary; the appropriate"), in this original sense, is appropriately replaced by *root meaning* in the linguistic grammatical tradition. *epistemic* (from the Greek noun *episteme* "(human) knowledge, ability (to recognize)"), however, has many terminological variants, motivated presumably by the intention to make more transparent what remains foreign as an Old Greek word: *conceptual; inferential; subjective*. For an overview of the terminology see, among many others, von Wright (1951: 1f.); Rescher (1968: 24ff.); Palmer (1990: 6f.); Lyons (1977: 792); Sweetser 1982. *epistemic* is thus simply some person's (speaker's, addressee's) knowledge, or belief, operating upon the root meaning of the modal verb: for *will* it is some "belief with respect to someone's wish"; for *must* it is "belief with respect to someone's obligation"; etc..[2] We thus note a polysemy relation to hold between the deontic and the epistemic readings, in the sense of a hypero- versus hyponym relation. The epistemic meanings of the different MVs are thus by no means equivalent on the basis of some "hear-say", or inferential, common denominator. Rather, each of the individual epistemic meanings retains some component of its individual modal root meaning (my own conclusion;

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2   The distinction of epistemics and evidentials does not appear to lead to any finer-grained characteristics necessary for our purposes here. The same holds for the differentiation of epistemics and alethics. *alethic* is derived from the Greek *alaetheia* "truth". Note that the alethic *can/können* does not share the systematic homonymy of deontic and epistemic of the rest of the modal verbs.

W.A.). This entails that this polysemy must be disambiguable, in a systematic way, according to linguistic or pragmatic clues. I will show that such clues are of a strictly linguistic, i.e. non-encyclopedic, nature.

The following three subsections will present three independent instances of evidence that MVs in German are aspect-sensitive. In the fourth subsection, it will be demonstrated that this is due, in some sense, to the fact that the root homonyms of the MVs, but not the epistemics, can be said to be subcategorized for the thematic subject role of AGENT and THEME/PATIENT, respectively. Subsection 5 is devoted to properties that are typically shared by main lexicals as well as the DMV sharing with them characteristics in terms of semantic roles as well as aspectual (Aktionsart) properties, which are not shared, however, by the ancillary (purely raising) EMVs. It will be suggested that this is the deeper reason for the deficiency in the deontic (root) paradigm of English MVs.

3.1. TEST CASE 1: epistemics fail under perfective embedding

German MVs systematically have two readings, an epistemic one (EMV), which is essentially truth-functional, and a root (deontic, permissive, or volitive) meaning (DMV). The question usually is whether there are typical, or even unfailing, disambiguating contexts. See (19a-c) for such temporal disambiguating contexts.

(19)a   *Er will/muß/kann/soll/mag zuhause sein*[-terminative]   ... DMV, EMV
       he will must can shall may at home work

    b   *Er durfte zuhause arbeiten[-term]*   ... DMV, *EMV
         he may-PRET at home work

    c   *Er dürfte zuhause arbeiten*   ... *DMV, EMV
         he might at home work

Abstracting from *können* "can", which is alethic and, consequently, can hardly be distinguished from an epistemic reading, what we see is that any MV other than *können* is stuck with the root reading as soon as the dependent main verb is perfective (inchoative). See (20).

(20)a   Sie will/muß/soll/kann/mag einschlafen/Ärztin werden[+term]
       she will...   in-sleep/a doctor become   ... DMV, *EMV

    b   *Sie will/muß/soll/kann/mag schlafen/Ärztin sein*[-term]
       she will...   sleep/ a doctor be   ... $^{(?)}$DMV, EMV

Note the equivalent distribution in English below ((a,c) are perfective, (b,d) are non-perfective.)

(20)c He *must* die[+term]   ...DMV, *EMV

    d He *must* be dying[-term]   ...*DMV, EMV

As expected, another disambiguating factor would be adverbials excluding the inferential (epistemic) reading, such as *sicher (-lich), gewiß* "certain(ly)", *offensichtlich* "obvious(ly)". Furthermore, EMV is restricted to the present tense or preterite predication. Posteriority (future tense) is excluded. See (21).

(21)a *Sie will/muß/mag einen Diamanten kriegen/Arztin werden*
   she will   a diamond get/a doctor become   ... DMV, *EMV

   b *Sie will/muß/mag/soll einen Diamanten haben/Arztin sein*
   she will   a diamond have/a doctor be   . $^{(?)}$DMV, EMV

Other than, for example, the equivalent in Danish (according to Hansen 1972 and Vikner 1988), German (21b) does not fill up the epistemic paradigmatic gap created by the unacceptable (21a). The conclusion is again that reference to the future under no circumstances yields an epistemic reading. Rather, future refence merges the range of readings into the modal root reading. We shall have to see later whether there is any further extension of tense reference possible and whether or not this observation fits into some further generalization.

The chart in (22) schematizes the distribution between EMV/DMV and terminativity: [+term] on the embedded main verb disambiguates the MV-homonymy by excluding the epistemic reading. Notice that we have no explanation for this generalization

(22)

	[-perfective]	[+perfective]
EMV	+	-
DMV	+(?)	+

This legitimates the conclusion that in German the root meaning is the unmarked one, whereas the epistemic reading is the derived, marked one because of the observed restrictions Note that this does by no means render an *explanation* for the systematic distribution in (20) und (21).

Let us now look at another distributional fact which relates to temporal periphrastics.

3.2. TEST CASE 2: periphrastic tense and the distribution of EMV/DMV

The examples below permit the conclusion that it is the specific auxiliary in the periphrases that restricts the temporal forms to the root meanings excluding thereby the epistemic, subjective, and inferential interpretations The examples illustrate only the perfect and pluperfect temporal complexes, see (21) above for the future periphrasis (*werden* "become" occurring also as an inchoative (main) verb) aligning completely with this observation

(23)a *Er hat(te) Geld verdienen wollen/mussen/sollen*   . .DMV,*EMV
   he has/d money earn   will

   b *Er wollte/mußte/sollte viel Geld verdienen*   . DMV, EMV
   he will-/must-/shall-PRET money earn

Notice that the auxiliary in these "modal periphrases" is selected by the modal verbs, not, however, by the main verb. This is shown by the fact that *sein*-selecting main verbs are embedded

under *haben* "have" all the same. (24a) presents ergative/inchoative verbs which always select *sein*. All this appears to follow directly from our premisses in (1) above: EMV are in the category of I, while DMV are in V. Periphrastics require that the Aux is in I leaving only V for the modal verb. From this follows that only deontics can occur periphrastically, not, however, epistemics - something which is borne out.

(24)a Er *ist/*hat* angekommen/gestorben
         he is   has   arrived   died

   b Er *ist/hat* ankommen *wollen/müssen/sollen*   ... DMV, *EMV
         he is   has arrived   will/must/shall

Recall that (24a) follows from the V-status of DMV, while EMV is ungrammatical because of its I-status. In (24b), on the other hand, both modal verbs raise from V to I. Note the difference between (23b) and (24b). (24b) corresponds to (23a). (24) unmistakably shows that tense and modality are projected via *haben* onto the MV, not, however, onto the main verb. This may appear somewhat truistic given the linear order of the verbal cluster in German. Note, however, that this linear order is not mirrored by any other Germanic language, except Frisian. See (25) for an inverted order of AUX/V in Dutch (SOV) as well as in Danish (SVO, although with a linear domain resembling the German *middle field*, i.e. the domain between V in clause-second position and V in clause last position in dependent sentences; see Abraham 1988a; the Danish example is due to Vikner 1988: 6).

(25)a DUTCH: *Hij *is/heeft willen/moeten aankomen*   ... MV-V/?V-MV
                    he is has will   must   arrive

   b GERM.: *Er hat ankommen wollen/müssen*   ... *MV-V/V-MV

   c DANISH: *Han har villet tjene mange penge*   ... MV-V/*V-MV
                    he has will-ed earn much money

As soon as we give up the periphrasis, i.e. under the synthetic preterite form on the main verb, the reading of the verbal cluster is different. Compare (23a),(24b) showing MV-periphrasis, with (8) with periphrasis on the main verb.

(26)a *Er will/soll/muß Geld verdient haben*   ...*DMV, EMV
         he will/shall/must money earned have

   b *Er will/soll/muß angekommen sein*   ...DMV, EMV
         he will...   arrived be

   c *Er will/soll/muß Geld verdienen*   ...DMV, EMV
         he will..   money earn

(26) corresponds to (23b). See the different grammaticality checks in (22) above. When AUX and MV change functions, as compared to (23b) and (24b), in the role of tense and aspect periphrasis, respectively, the readings in (26) are the inverse of those in (24).

While (27) displays distributional characteristics under periphrasis on MV: a periphrastic MV excludes the EMV-reading; see (23a),(24b) vs. (23b). (28), collapsing (22) and (27), summarizes the constraints for the analytic forms on the main verbs.

(27)

MV	PRETERITE	PERFECT/PLUPERFECT/ FUTURE
EMV	+	-
DMV	+	+

(28)

MV	αPERFECTIVE	PRESENT INFINITIVE	PRETERITE PARTICIPLE + *haben/sein*
EMV	+	-	+
EMV	-	+	+
DMV	+	+	-
DMV	-	+	-

The distributional chart in (27) contains the wider generalization since both periphrases with *haben/sein*+PP "have/be + past participle" and *werden* + infinitive "become + infinitive" are covered. Inherent (= Aktionsart) terminativity on the main verb is thus distributionally equivalent to the temporal periphrasis (PP+*haben/sein/werden*). In other words, terminativity on the embedded main verb displays the same distribution as MV under temporal periphrasis. This also proves the close affinity between lexically inherent aktionsart and temporal periphrasis in German. Notice, however, that while interesting correlations have been noted no explanation has been provided. Needless to say that this correlation makes a unified account all the more urgent.

3.3. Test case 3: Linear order, scope, and the meaning split between DMV and EMV

If, as we noted, periphrasis plays a role in disambiguating the EMV/DMV-homonymy we need to know the exact place of its influence: on the MV or on the embedded main verb. To pursue this course, let us look exclusively at the linear order within the verbal clusters in German; cf. (24) und (25) above. The following operator restrictions hold. [The operator linearity in (29a,b) is the mirror image of the basic V-last order of German; i.e. the operator with the widest scope is represented here as the leftmost element, which is not in agreement with the overt order and scope relations.]

(29)a   for EMV the following operator relation holds: $MOD_1(TEMP\ (p))$; cf. (30a,b)
     b   for DMV: $TEMP(MOD_2\ (p))$; cf. (31a,b)

That this is a correct generalization is confirmed, in addition to (21a,b), by the following examples. [Operator order reversed, since in dependent clauses the scope relations are extended from right to left]:

(30)a *daß er in A. gewohnt[p] haben[TEMP] soll/muß[MOD]*   ... *DMV, EMV
that he in A. lived have shall/must
"that he was supposed to have lived in A."

b *daß es ein Fehler gewesen sein soll/muß*   ... *DMV, EMV
that it a mistake been be shall/must
"that it must have been a mistake"

(31)a *daß er in A. wohnen[p] sollen[MOD] hat[TEMP]*   ... DMV, *EMV
that he in A. live shall has
"that he was supposed to have lived in A."

b *Es hat ein Fehler sein können*   ... DMV, *EMV
it has a mistake be can
"It could have been a mistake"

(30a,b) mirrors the scope relation in (29a) above and (32a) below, while (31a,b) reflects that in (29b) as well as the operator relation in (32b). Notice that the synmtactic head in (32a) is MOD, while in (32b) the head is TEMP/ANT.

(32)a (= 11a)

SUPPOSE	(ANTERIOR	(V))	... *DMV, EMV
MOD$_1$	TEMP	p	
soll-	*ge-t hab-*	*wohn-*	
shall-	been have	live	

b (= 11b)

ANTERIOR	(OBLIG	(V))	... DMV, *EMV
TEMP	MOD$_2$	p	
hab-	*soll*	*wohn-*	
(ge-t)			
have been	shall	live	

This confirms our syntactic assumptions: EMV are above the AspectP, since in I, while DMV is in AspP, just above V. The structural hierarchy, then, with I-split, would appear to be that in (32c).

(32)c MOD > T/ASP > V

Note that, while we have extended the generalizations covering different types of facts, we had nothing to say about how these generalizations across such divergent facts are to be explained.

A word about Dutch modal verbs is in order at this point. Barbiers (1995) likewise has concentrated on the distinction between root readings and epistemic ones ('polarity' vs. 'probability' readings, in his terminology). One of the main differences between German and Dutch is the fact that Dutch MVs take non-verbal complements (nouns as well as adjectivals and adverbs), a feature that Standard German fails to satisfy completely. While regiolectal and dialectal variants of German would seem to tolerate adjective complents of a certain type to be discussed presently, nominal complements are out in any variant (cf. Dutch *Hij moet die meid niet*

'Er-sollte-diese-Meid-nicht'), which is acceptable and understandable across all variants of German only under an elliptical reading: *Er muß/darf/sollte diese Meid (nicht) (haben)* "He must not have this girl". Adjective as well as adverbial complements such as *Er muß/darf/kann weg/ hoch/runter* "He must/may/can off/up/down" are very idiomatic in the substandards of German, but are felt likewise to be elliptical. However, this type of adjectival complementation is far from freely extendable. The best one can generalize upon is to see these examples as elliptical predications of movement: *Er muß/darf/kann weg/hoch/runter(steigen)* "He must/may/ can off/ up/down (climb)". The data distinctions in Dutch and German alone justify approaches as different as the present one on the basis of German (cf. already Abraham 1990) and that of Barbiers (1995) based on Dutch. They likewise legitimate the difference in terminology: Barbiers has been led by the nominal and adjectival complementation to project a *polarity* range for the root syntax and semantics of modal verbs (as distinct from *probability* readings for the epistemic uses in our terminology), whereas for German we set an aspectual frame of generalization and explanation. Notice that the latter aspectual framework accounts also for the historically original status of the modal preterite presents, which were perfectives until late into Middle High German and whose paradigmatic morphology as well as their distributional syntax (cf. above) attests to this in traces of this diachronically prior state.

4. DMV/EMV and time referential properties

4.1. The Reichenbachian representation

On the basis of the distributional differences discussed in 2.3. above and given the obvious relation to the temporal system it may be fruitful to ask what explanation can be given of these facts in terms of Reichenbach's tense-logic.

The following fundamental relations can be posited:

(33)a   Temporal reference is to be considered as a relation between Reichenbach's reference points S and E; see (29): TEMP = [S,E] for *gewohnt haben/hat sollen* "lived-have/has-should" (infinitive replacing the participle)

   b   Modal reference is the relation between the referential points R and E (see (30)): MOD = [R,E] for *soll [gewohnt haben]* "shall-lived-have"

When this is applied to the periphrastic perfect references in (26) and (29), the following empirical generalizations hold. [")" ... "correlates with"]

(34)a   EMV) (E < R) ... see (17) for (30)
   b   DMV) (R < S) ... see (18) for (31)
   c   DMV) (R ε E)

Compare the illustrations, in terms of Reichenbach's one-dimensional temporal reference, standing for (30a,b) and (31a,b), respectively.

(35)   *ge-t haben*   preterite participle + *have*
       -| |---------------| with ANT(E,R) and EMV
       E   R,S   (speaker oriented): see (34a)

(36)   *hab- sollen*   *have shall*-infinitive
       -| |-------------| with ANT(R,S) and DMV
       E,R   S   (event oriented); see (34b)

The following, thus, holds beyond (34a,b):

(37)a DMV = [S,{R,E}] ... i.e. priority of TEMP holds for the scopal relation because of (34a)
     b EMV = [{S,R},E] ... MOD-priority for the scopal relation holds because of (34b)

This is in agreement with the scopal relations in (30a,b), which are identical with (29a,b). See
(38). The constituent order of MOD_2, TEMP, MOD_1 and p in (38a,b) below reflects the hierarchal
relations between the functional and lexical categories in the clausal tree: $ModP_2$ above TP above
$ModP_1$ above V(-final). Likewise, it reflects the raising routes the finite predicate elements have
to cover (irrespective of whether V is final, as in the embedded clause in German, or whether it
is in V-second as in its matrix position).

(38)a   for EMV holds: $MOD_2(TEMP(p))$ (= (29a))
     b   for DMV holds: $TEMP(MOD_1(p))$ (= (29b))

(38a,b) has several implications. First, what (38b) says, is that, if MOD has narrow scope over
p, only the deontic reading is elicited, not the epistemic. Second, if TEMP, or aspect is part of the
verb (like with aktionsart), then the deontic component of the verbal cluster must be part of the
main verb, too. Third, the epistemic modality component always has widest scope over p (and the
verbal cluster). Translated into a syntactic tree, this should require E-MOD to occupy a higher
node, probably INFL or AGR, to signal the required c-command over VP, while D-MOD with
narrow scope sits low within the V-node. Cf. Picallo (1985). The two mode operators are clearly
distinguished with respect to the scope they extend, which in turn is reflected in overt linear
properties.

To be sure, (38) holds not only for the periphrases of the perfect and the future, but also for
the synthetic present, albeit without directly reflecting the surface scope of the periphrastic forms
expressed through the linear orders between MV and AUX.

In order to disambiguate the E/D-homonymy of MV, one can also expect adverbial scope to
yield such effects. Let us look at the ambiguous (39).

(39)   *Er muß seit 1983 in A. wohnen*
        he must since 1983 in A live

The DMV-reading has the Reichenbach representation in (40a).

(40)a | |
       {1983}   E   S
       { R }

Compare the paraphrase for the deontic root meaning of *müssen* "must" (obligation) as well as the scope of the temporal adverbial in (40b).

(40)b   *Er ist seit 1983[TEMP] verpflichtet[MOD] s[in A. zu wohnen[p]]*
he is   since 1983   required   in A. to   live

In (40b), the deontic reading of obligation secures scope of TEMP over MOD-obligation. However, (39) also has a EMV-reading:

(40)c | |
        1983   E   S,R

The indication of time in the paraphrase of this epistemic reading of (39) is in the embedded clause, as opposed to the representation of the root meaning in (40b).

(40)d   *Man sagt[MOD] s[daß er seit 1983[TEMP] in A. wohnt[p]]*
one says   that he since 1983 in A. lives

All this confirms is that widest scope of MOD (over TEMP/ASPECT and V) correlates with EMV, while narrow scope (under TEMP) leads to DMV.

4.2.   Linearity correlates

In 4.1. a link was discovered between the linear order of the verbal elements, restrictions with respect to temporal reference, and the distribution between modal root meanings and their epistemic counterparts. The empirical fact observed in 3.3. correlates nicely with the time-referential representations in (35) und (36). However, what is still missing is some fundamental insight into the general character underlying all three distributional types observed above. To pursue this goal let us turn now in some more detail to the event structures of the main verbal classes: transitives, intransitives, and the so-called "ergatives", which are in complete class union with inchoatives in German.

Yet, the question as to what a plausible generalization over the three separate observations about the correlations could be, remains open. The following section will prepare the answer.

4.3. The event structure of MV: perfectivity[3]

The following distinction in terms of event structure in Reichenbach's terms is due to Abraham (1990).

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3   As to the terminology used in the present article, *perfectivity* no doubt should be replaced by something like *terminativity*, or *resultativity*, and be that alone for the good reason to distinguish Aktionsart and clausal aspect. This has been the tradition all along in Slavic and in German grammatical terminology. However, I have made the painful experience that terms such as *terminativity* are not understood, since not introduced, in English linguistic terminology. This is why I have to stuck to something that will sound misleading to many readers

(41)a perfective (in)transitive verbs:

$$| >>>>>>>> | \text{———} |$$
$$t_1 \quad E_1 \quad t_m \quad E_2 \quad t_n$$
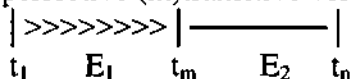
b non-perfective (in)transitive verbs:

$$| \sim\sim\sim\sim\sim\sim | \sim\sim\sim\sim\sim\sim |$$
$$t_1 \quad E_1 \quad t_m \quad E_2 \quad t_n$$
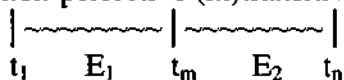
Key: t_1, t_m, t_n are points on the temporal axis representing the event. The event structure of perfective verbs is biphasic containing an approach phase as well as a resultative phase ($\forall t_{x \, x\epsilon(1-n)}$ $(t_1-t_m)(E_1) \neq (t_m - t_n) (E_2)$); t_m is a referential point belonging to both event phases simultaneously, E_1 as well as E_2. On the other hand, the event structure of non-perfective verbs is mono-phasic ($\forall t_{x \, x\epsilon(1-n)}$ $(t_1 - t_m)(E_1) = (t_m -t_n)(E_2)$)).

(41a) describes perfective, or resultative, events. The time-axial structure is bi-phasic. (41b), on the other hand, describes non-perfectives, duratives as well as states (mono-phasicness as *genus proprium*). (42) and (43) show how the verbal arguments, iA and eA, are to be mapped on the event phases. [Abbreviations: ($\forall$ ... universal ('all') operator; tV ... transitive verbs, eV ... "ergative" (=perfective-intransitive) verbs, iV ... intransitive (non-perfective) verbs; EvP ... event passive, StP ... stative (adjectival) passive; PPP .. perfect participle passive ; PPA ... perfect participle active, iA ... internal argument (direct object); eA ... external argument (subject)].4
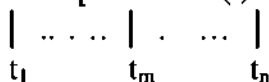
(42)a perfective tV: viz. *umbringen* "kill"

$$| >>>>>>> | \text{———} |$$
$$t_1 \qquad t_m \qquad t_n$$
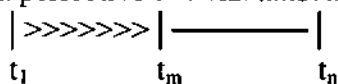
eA: $eA(t_1) \cap .. \cap eA(t_{m\,1})$
iA: $iA(t_1) \cap ... \cap iA(t_m) \cap ... \cap iA(t_n)$

b perfective iV (=eV): viz. *sterben* "die"

$$| >>>>>>> | \text{———} |$$
$$t_1 \qquad t_m \qquad t_n$$
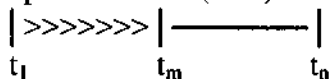
iA: $iA(t_1) \cap ... \cap iA(t_m) \cap ... \cap iA(t_n)$

(43)a non-perfective (i)tV: viz. *schlafen* "sleep"

$$| .. . .. | . ... |$$
$$t_1 \qquad t_m \qquad t_n$$

eA: $eA(t_1) \cap ... \cap eA(t_n)$
(iA: $iA(t_1) \cap ... \cap iA(t_n)$)

The quasi-auxiliaries (raising verbs, according to their syntactic derivational properties) *scheinen* "seem" and *pflegen* "be used to" are mono-phasic; they, thus, have no similarity to perfectives and their event structure, respectively. This is in line with the picture that we receive about EMVs as well as the epistemic readings of *drohen* "menace" and *versprechen* "promise" in their use as semantically bleached raising verbs. Their control readings are bi-phasic according to the following characteristic (viz. *The heat promises to break*, which has a futural meaning (see the contributions by Palmer 1990, Coates 1995, Bybee 1995) Note the similarity with the bi-phasic event structure for deontics below in (41a)/(42a) above

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4 This providing a logical account of perfectivity, or aspectual boundedness, there is no reason any longer to take recourse to a purely argumental description of 'ergative' verbs in German (see Haider (1985/1994 235) for the former position See Abraham 1990 for the logical-semantic basis, which has been assumed to correlate with a secondary predication (small clause) syntax (Abraham 1997)

(44)a DMV/control-V: $|<<<<<<|$—————$|$

$\qquad\qquad\qquad\qquad\qquad\quad$ t_1 $\quad$ $\neg E$ $\quad$ t_m $\quad$ E $\quad$ t_n

b argument match: $A(t_1)\cap...\cap A(t_m)$

c event identification: $\neg t_1(E)...\neg t_m(E)$ $)\cap t_m(E)$; i.e. t_m has the event characteristic of the approach phase as well as that of the resultative, or achievement, phase.

d EMV/raising-V: $|\sim\sim\sim\sim|\sim\sim\sim\sim|$

$\qquad\qquad\qquad\qquad\qquad\quad$ t_1 $\qquad\quad$ t_m $\qquad\quad$ t_n

Recall that no epistemic reading was available for embedded perfective predicates; see (2a). This is accounted for by (44b) in that the MV under the epistemic interpretation does not project any event structure of its own onto that of the embedded durative.[5] In other words, the scope of E-MOD (EMV-reading) cannot de-terminativize a perfective verb. This is the matching mechanism between MV and [α term]-V. The DMV-reading, on the other hand, provides an event identification of its own as in (44a), overlaying its argument onto the embedded event structure in the sketched way.

Now see the similarity between the event structures for perfective full verbs (as in (42)) and DMV. Both lexical perfectives and modals with their DMV-readings are bi-phasic. Event identification under the DMV-reading is not possible in the 1st phase (t_1-t_m); its characteristic, E (denoted in the full lexical predicate), holds not until the inception of phase 2 (t_m-t_n). As in the case of full perfective verbs, the medial temporal reference point, t_m, is a border point satisfying either event characteristic: that for DMV and that for the lexical predicate. What this boils down to is that the complete event characteristic under the DMV-reading assimilates, by virtue of the special event characteristic of the border point (t_m), the satisfaction of bi-phasics, i.e. the intensional link between approach phase and result phase for perfective predicates. Another parallel consists in the fact that the event references of both DMV and perfective (i)tVs is specifically satisfied in the 1st phase as well as in the border reference point of the time axis.

There is thus a specific convergency between terminativity and the DMV-reading accountable by distinct event structures. I claim that this is the explanation for the first 2 empirical facts (in 2.1. and 2.2.) as well as the 3rd fact observed in 2.3.. (40) yielded the result that the [-term]-EMV does not correlate with an embedded [+term]-V; (27) showed that [-term]-EMV does not match with the aspectual, [+term], periphrasis; and, finally, according to (29) and (32) the following correlations were established: D-MOD) (narrow) verbal scope) [+term] aspect; and: E-

4 For further identification of events and the projection of arguments for duratives, see Abraham (1990a). I restrict my discussion to root modals, i.e. DMV.

MOD) wide, clausal, scope, which leaves the lexical event characteristic unaffected (cannot determinativize [+term]-V or periphrastic V-cluster).

Let us now turn to the projections of the verbal arguments. The main question to be asked is: do DMV and EMV have different characteristics in terms of semantic roles? Note that, if this were indeed the case, this would yield another correlation between temporal reference and event identification on the basis of semantic roles.

5. Argument structure and modal verbs
5.1. The status of the subject and semantic role assignment

Vikner (1988: 12ff.) has suggested that only the DMV-readings, not, however, the EMV-readings, of Danish modals assign semantic roles to their subjects. This is a fundamental distinction, which is in principle open for empirical verification in other languages. Note that, in order to make sense of it, we would like to bring this distinction in focus with the distributional distinctions which are seen to hold for DMV and EMV in German.

The assumption that the modal (DMV) assigns its subject a thematic role meets with a specific conceptual difficulty, however. If, according to common assumption (see, e.g., Evers 1975, 1986), modal verbs are raised to the full lexical verb to form a verbal cluster, two thematic roles would collide thereby violating the Projection Principle ("each verbal argument carries only one thematic role"). This constraint is immediately plausible since it is not realistic, e.g., that a verb, complex or not, assigns both Agent and Patient to one single clausal constituent in argument function. How is this conceptual dilemma to be avoided?

Vikner's (1988) suggestion (following Zubizarreta 1982) is that, in the case of verbal clusters as the ones under inspection, the subject may adopt, next to its main and strong thematic role assigned by the full lexical verb, one, but not more than one, extra and weak thematic role. See the following examples from Danish. Note that Danish, as each of the other Germanic Scandinavian languages, has two passives: a periphrastic one using *blive* "become" as an AUX; and the synthetic *s*-passive (Vikner 1988: 13ff.). The crucial observation is that the two passives have different distributions under embedding under the two types of modals.
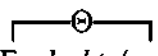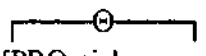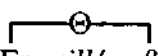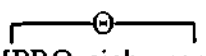
(45)a	Hun *vil* *blive* *arresteret*	... *DMV, EMV
	he *AUX* become arrested	
b	Hun *vil* *arresteres*	... DMV, *EMV
	he *will* arrested (become)	

Since Vikner assumes that the Danish auxiliaries (auxiliary uses of) *blive, få* and *komme* assign extra semantic roles the subject in (45a) would collect three thematic roles (one for *vil*, another one for *blive*, and yet another one for *arresteret*) on *hun*, which is out irrespective of any specific assumption made with respect to assignment of semantic roles. This renders the deontic reading in (45a) ungrammatical. This is different in the case of EMV, which does not assign a semantic role of its own. Under the specific suspension of the strict Projection Principle ("each clausal constituent has only one semantic role"), (45a) receives an epistemic interpretation: *vil* in the function of an AUX (for German "werden", not, however, "wollen"!) does not assign the subject, *hun*, a third semantic role. In other words, (45b) also restricts the discharge of the semantic role on *hun* to 2 semantic roles, but different from that in (45a): one, under lexical government, executed by the participle of the main verb, *arresteres*, and a second, weaker one discharged by *vil*. So

far the specific assumption made by Vikner (1988) and his attempt to account for the distinct distribution of the two Danish passives embedded under the specific modal readings.

There are, as far as I can see, two ways to avoid this violation of the intuitively plausible Projection Constraint ("Only one thematic role for one clausal argument, as well as only one clausal argument for one single thematic role; no thematic role to be assigned twice") in the case of embeddings under DMV, as opposed to EMV. One would be to block double thematic assignment (by DMV as well as the embedded main verb) unless the two semantic roles are identical. Whether or not this is the correct answer is empirically open. The second path to follow is to think of two different mechanisms clustering the two modal verbs with their embedded lexical verbs: raising for EMV (where no double assignment is imminent since EMV does not assign a semantic role in the first place); and the control mechanism for the aspectual, subject-thematic DMV. See (46a,b) below where the control mechanism is spelled out for the root version of *drohen* "threaten" as well as the root meanings of the true modals *wollen/müssen/sollen* "will/ must/ shall". [Θ for semantic role assigned by the predicate; PRO = empty subject of the embedded infinitival clause.]

(46)a Er, *drohte/versprach*   [PRO, sich, zu *verachten*]
       he threatened/promised   REFL to despise

   b Er, *will/muß/soll*   [PRO, sich, *verachten*]
       he will/must/shall   REFL despise

drohen/versprechen are canonical subject control verbs. Under their full lexical meaning, they assign a subject-AGENT, while under the quasi-modal reading the subject gets the THEME or EX-PERIENCER role. Note that the root meanings of the modals in (46b) and, likewise, the full lexical readings of *drohen/versprechen* in (46a), with AG assigned for their subjects, do not yield meaningful readings. Rather, what renders some sense is where the subjects receive the status of an EXPERIENCER or THEME. In other words, only the epistemic readings are available; the root meaning in (46b), for example, would require the role of AGENT for its subject, according to (47a) below, which is out for encyclopedic reasons.

The autonomous selection of semantic roles of the single DMV-lexicals is reflected in (47). [The columns "DMV" and "EMV" reflect the readings in English.Note that English does render the D-readings of the German MVs only in two cases, at most, of the total paradigm.]

(47)		SELECTION OF SEMANTIC ROLE	DMV	EMV
a	*wollen*	AG[__] where, further, for German: (+hum)[__]	*wish*	*be supposed to*
b	*mögen*[6]	AG[__] where, further, for German: (+hum)[__]	*like*	*may*
c	*müssen*	TH[__]	*must*	*be supposed to*
d	(*sollen*	TH[__])	*shall*	*be supposed to*
e	*dürfen*[7]	TH[__]	*be permitted*	*may*
f	(*können*	TH[__])	-	*can* (alethic)

EMV, on the other hand, do not select any thematic roles for their subjects. How is this difference in terms of semantic roles and arguments for DMV and EMV to be aligned with the empirical generalizations observed above?

Note that (47) reflects the first class of `main verb modals', in van Kemenade's (1992) classification of Old English modals, which have subject theta roles in their own right and, consequently, correspond to control verbs, as opposed to those modals which have no theta-role for the subject and therefore pattern like raising verbs (such as *seem*). But this is nothing new, of course (see already Abraham 1978). van Kemenade's 'main verb modals' can thus be brought on a line with deontics, which are control verbs, whereas epistemics are subject-thetaless raising verbs. We have seen that epistemics, EMV, can only occur finitely - in minimalistic terms: that they have to raise to AgrS^0. Deontics, DMV, on the other hand, do not have to occur finitely and can therefore be embedded under EMV. this yields the following picture with respect to multiple occurrence of modal verbs.

(48)a   *EMV embedded under DMV/EMV
   b ^{OK}DMV embedded under EMV
   c   DMV embedded under DMV   ... not excluded on theoretical grounds

The theoretical option of (48c) appears to be supported empirically in languages that have DMVs.

This is the conclusion to this section of our discussion: While German (and Dutch, West Frisian, and Yiddish) have the options described in (48a-c), English does not appear to. This must be due to the fact that english has lost its DMV-uses next to what are clearly EMV- and purely temporal uses. We shall argue that this development is a consequence of the loss of the aspectual properties of the MVs. This position, which has been reached on empirical-comparative grounds,

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5   Cf. OE *mugan, maeg* "to be able"

6   See OE *θearf, θurvan* (a praeterito praesens), later *θorfte*, which has no reflex in Modern English, as opposed to all other Germanic languages, among which the Scandinavian ones.

contests Lightfoot's thesis that the emergence of the modern MVs in English are solely rooted in syntax (Lightfoot 1979).

5.2. On the interdependence between the thematic properties of MV and the aspectual nature of the embedded main verb

The inherent resultative characteristic of perfective transitive verbs (tV) presupposes that they be agentive. Perfective intransitives, on the other hand, are typically non-agentives; their distributional properties identify them as passive-like, or "unaccusative" (or "ergative"). For the class of these phenomena, both lexical and syntactic, in German see Abraham 1986. If unaccusative verbs (or "ergative" verbs; henceforth "eV") are passive-like their subjects consequently are THemes, or PATients, but never AGents. Note that eVs are perfective iVs.[8]

The selection of semantic roles of DMV in (47) as well as the lexical converse relations on the basis of the feature [+α intention of the subject referent], as opposed to [-α intention of the subject referent], reflect the properties of the two perfective classes of main (content) verbs. *wollen* "will" is a member of the class of perfective tV; *müssen* "must" (and, possibly also, *sollen* "shall") aund *dürfen* "may", on the other hand, classify as eV (= perfective iV). See (49)-(50) below. [AG...Agens, PAT/TH...Patiens/Thema, EXP...Experiencer; Θ = semantic role]

(49)a Sie₁ *muß/soll*   PRO₁ ihn ärgern/unterhalten...   DMV:_[PAT__]
       she must/shall   him irritate/entertain

Θ₁ = MUST/SHALL (x) = OBLIGED (x) = PATIENT/THEME (x)
Θ₂ = IRRITATE/ENTERTAIN (x) = AGENT (x)
or
Θ₂ = EXPERIENCER/THEME (x)

However, the assignment of EXPERIENCER/THEME for Θ₂ does not yield an acceptable reading; see (49b) below and compare with (49a) above.

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7 This is an underspecification Verbs of transport, for example, may be unaccusative-terminative/inchoative as long as they select accusatives of direction (as opposed to someother selection, in particular of non-directive locatives), while not necessarily selecting THeme-subjects; viz. the verbal complex *in den Schuppen hineinreiten* "into-the-barn/ACC-in-ride", which has definitely an AG-subject on account of the lexical "ride". This suggests two conclusions first, that the property of inchoativity, or terminativity, need not be a matter of an inherent lexical prerequisite alone, but, rather, may be elicited, as in the case of the German directive accusatives, by the selection frame of morphological case. This is not restricted to German; rather, it is a property of old valid for most of the Indo-European languages. Note that it is this accusative of direction which renders just any non-movement verb terminative in terms of the class of transport verbs.

The second important conclusion is that the emergence of Aktionsart and/or aspect such as inchoativity/terminativity) in dependence upon the selection of morphological case is not constrained to the lexical, subsyntactic, level. See again the example above, where *in den*

Schuppen hineinreiten (as opposed to the interminative intransitive *reiten* "ride") presumably has the following constituent structure: [vp[v[p in [np den Schuppen]]] [v[pp hinein][v reiten]]] and where the Aktionsart property in question is evoked by the V-adjunct *hinein* as well as the V'-sister, the PP *in den Schuppen hinein*. The Aktionsart property is thus evoked by constituents far beyond the V°-borderline defined by the lexical *reiten* or even *hineinreiten*. In other words, this type of Aktionsart determination is some mechanism operative beyond the otherwise autonomous levels of the lexicon and syntax.

$$\overset{\ulcorner\text{———}\Theta_2\text{———}\urcorner}{}$$

(49)b Sie, *muß/soll*   PRO$_1$ ihn ärgern/unterhalten   ... EMV: _[__]

Θ_2 = EXPERIENCER/THEME (x) or Θ_2 = AGENT (x)

$$\overset{\ulcorner\Theta_1\urcorner}{}\qquad\qquad\overset{\ulcorner\text{———}\Theta_2\text{———}\urcorner}{}$$

(50)a Sie, *will*   PRO$_1$ ihn ärgern/unterhalten   ... DMV, $^?$EMV

she will   him irritate/entertain

Θ_1 = WILL (x)= AGENT (x)

Θ_2 = EXPERIENCER/THEME (x) or Θ_2 = AGENt (x)

b Er *will* ein guter Syntaktiker sein

   he will (= wants to) a good syntactician be   DMV: AG[__] $\neq$ EMV: _[__]

c Er *will* gute Aufsätze schreiben   ... DMV; EMV

   he will good essays write

d Er *will* den Marathon (gut) laufen   ... DMV; $^{??}$EMV

   he will the marathon well run

Note that the epistemic reading of the intentional, agentive *wollen* "will" is either restricted to some property reading of the embedded infinitive, or else the reference points of the speech act and the event coincide. Then, and preferably then, EMV is the correct interpretation. Let us try to generalize this observation further. See (50c) with the alethic *schreiben können* "be able (= *can*) to write" pinpointing the above presumption. Furthermore, (50d) shows that only under some property reading (elicited by, e.g., *können* "can") an acceptable interpretation is yielded. That also pertains to the agentive MV *wollen*. On the other hand, in the case of the non-agentive MVs, *müssen* "must" and *sollen* "shall", no deontic reading is possible, ruled out for incompatibility with pure property predicates. What remains are epistemic interpretations. Compare (51b-d) and (50b-d).

(51)b Er *muß/soll* ein (guter) Syntaktiker sein   ... $^{??}$DMV, EMV

      he must/shall a good   syntactician be

c Er *muß/soll* gute Aufsätze schreiben   ... DMV, EMV

   he must/shall good essays write

d Er *muß/soll* den Marathon (gut) laufen *können*   ... $^{??}$DMV, EMV

   he must/shall the marathon well run   can

(51c) is ambiguous. Under the DMV-reading, it satisfies the event in the future, whereas under the EMV-reading the reference is on the time of the speech act predicating some property. (51b, d), on the other hand, with readings restricted to properties on the basis of the copula *sein* "be", are disambiguated since stative *sein*-predications are incompatible with anything but the epistemic variant.

All these distributional facts allow several conclusions which will be taken up one by one in what follows.

5.3. The distribution of semantic roles

The distributions observed do not force the conclusion that there are selective restrictions between the semantic role of the DMV and that of the object of the embedded predicate. In other words,

the suggestion that there has to be identity of the semantic roles between the DMV-subject and the embedded subject does not hold.

5.3.1. DMV and temporal reference

As we have observed in (44), the modal root (deontic) readings of the MVs, especially those of *müssen* "must" and *sollen* "shall", and *wollen* "will", exclude reference of the present (speaking) time. Rather, they satisfy the event property of the embedded predicate only under some future reference (i.e. under the relation POSTERIOR (S,E/R)). This extends the generalization for DMV made in (51) in the following way:

(52)a For DMV the Reichenbach reference points E and R must coincide. See (51c).

  b For DMV holds: for (E/R,S) ANTERIORITY or POSTERIORITY. In other words, coincidence of E and S, or R and S, is excluded. See (51b).

Note that the generalization expressed in (52a,b) receives support through the cryptic inchoative readings. The modal root readings elicit the following lexical transfers. See (53).

(53)a NP/ADJ +*sein*+DMV   : NP/ADJ +*werden*+DMV
                be   become
  b NP   +*haben*+DMV : NP   +*bekommen*+DMV
                have   get
  c Es muß morgen schön *sein/werden*   ... DMV, *EMV
  d Er will morgen eine Eins *haben* (=*bekommen*)   ... DMV, *EMV

(53a,b) illustrate that the modal root readings are bi-phasic also in what are state events at first sight. It will be recalled that this bi-phasicness was seen to be a characteristic of DMV, not of EMV. See again (44a) above.

    As to EMV and temporal reference, see (47) and (50). The generalization, beyond (51), is this: what characterizes EMV is the coincidence of S and R. E may be a durative/state event type or some property.

5.3.2. Correlations: time reference and event structure

Our observations about the characteristics of German MV in terms of semantic (Θ-) roles and their properties in terms of time-referentiality yield the following correlations:

(54)a for DMV: subject-Θ   + bi-phasicness   + [S ≠ R]
  b for EMV: no subject-Θ   + mono-phasicness   + [S = R]

We have seen that biphasicness is characterized by non-monotony, i.e. by an approach phase and some emerging result phase; monophasicness, on the other hand, refers to some monotonous event configuration.

    We have seen further that the relation between the Reichenbach points, [(E = R) ≠ S], characterizing DMV-readings (see (51a,b) as well as (19a,b)), aligns with the denotation of TENSE in the predicate head; [E /= (R = S)], for EMV (see (51b) as well as (19b)), expresses MODALITY in the finite predicate head.

Let us compare these results once again with the basic distributional differences evoked by the periphrastic expressions. [The futural AUX *werden* in (38) denotes, in its main verb reading, an inchoative "become".[9]]

(55)a Er *hat* in G. wohnen *müssen* ⎤ (≠ Er *muß* wohnen)
     he has in G. live must   ⎥   ... DMV
   b Er *wird* in G. wohnen *müssen* ⎦ (= Er *muß* wohnen)
     he AUX in G. live must   he must live
   c Er *muß* in G. gewohnt *haben*   ... EMV
     he must in G. lived have
   d *Er *muß* in G. wohnen *werden*
     he must in G. live AUX

The scope relations for DMV are those in (39a); those for EMV are reflected by (39b). However, if *haben*(+PP)/*werden*(+Inf) are understood as aspectual denotations rather than temporal ones (see Abraham 1990a), then (55a,b) are reinterpretable as in (56a,b), which might translate into syntactic descriptions as in (56c,d) (much abbreviated)..

(56)a (ASPECT (DMV (Aux))) ... cf. (55a)
   b (EMV (ASPECT (V))) ... cf. (55b)

c

d

Raising landing site

Raising source site
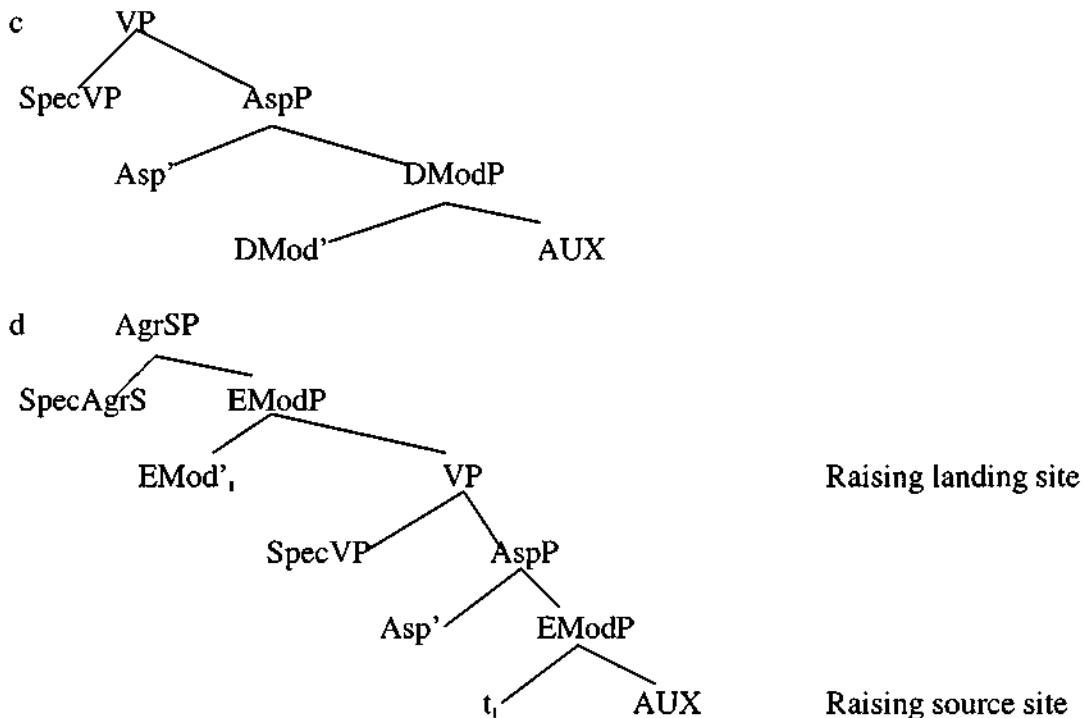
In (56a), deontic modality expressed by the lexical MV ranges over aspect expressed periphrastically by an AUX. The scope relations with an epistemic sentential operator as in (56b), however, are reverse to those with a deontic operator, epistemics ("inferential", "subjective", "conceptual")

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8 Just as the MVs, German *werden*, both in its auxiliary and its main verb use, always denotes some bi-phasicness of the event structure.
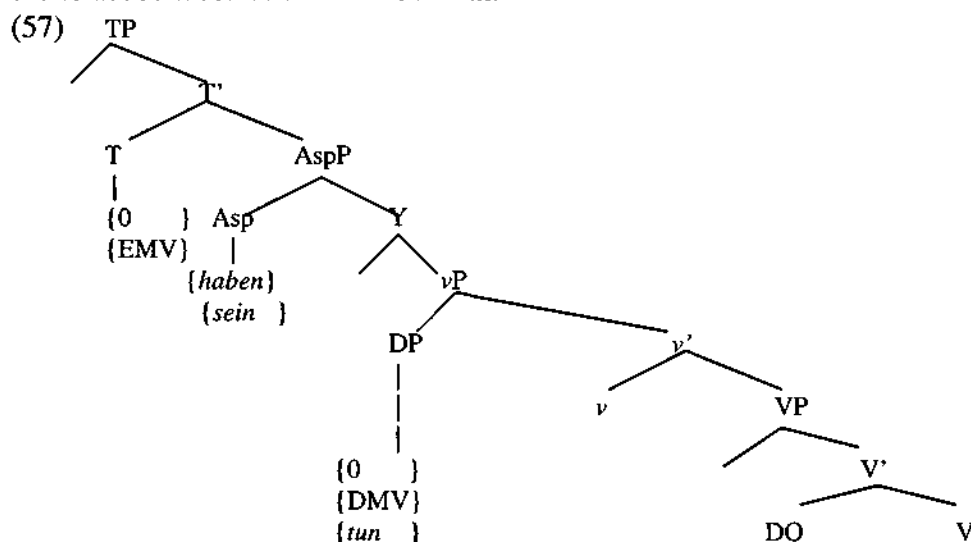
extending the widest scope covering even aspect. Since EMV occur only tensed and finite with respect to person and number checking, one has to assume that the structural position of EMV in (56b) above is no lower than AgrS.

Note that, according to (56), (55d) should have an EMV-reading. However, such a reading is out - which confirms nicely our generalization in (57), according to which the future and the inchoative reference expressed with *werden* excludes the epistemic interpretation. It is to be assumed that the weaker, more general, futural reference of the MV *müssen* cannot include the specific futural scope of *werden*. The reason is possibly some independent general principle.[10] See, on the other hand, (55b), where the less specific reference of *müssen* in the scope of the more specific *werden* yields an acceptable reading.

Within the context pursued here I will suspend the discussion of how a minutely argued for syntactice structure aligns with the linearly reflected scopal differences in (56). See Abraham (1994 as well as 1995, ch. 6). See also, in this context, Solà (1996), who assumes a functional aspect node in the clausal syntax of the West Germanic languages for totally independent reasons.

4. Syntactic derivation

Let us assume (along with Sprouse/Durbin (1998), with minor adaptations) the following structure to account for D/EMV in German.

(57)

```
            TP
           /  \
          /    T''
         /    /   \
        T         AspP
        |        /    \
       {0  } Asp        Y
       {EMV}  |        / \
           {haben}       vP
           {sein }      /  \
                      DP      v'
                      |      /  \
                      |     v    VP
                      |         /  \
                    {0  }      /    V'
                    {DMV}     /    / \
                    {tun }   DO       V
```

10 Two observations come to mind that seem to be in support of this generalization. Note, first, that in one single NP the more specific adjectival attribute is bound to occur in head adjacency.

    (i) some big, gigantic piece of luck

    (ii) *some gegantic, big piece of luck

This carries over to clusters of clausal modal particles in German. From among two modal particles in preverbal position, the more specific one has to be placed after the less specific one. Note that this presupposes a verb-final typology, SOV, for German, i.e. V as clausal head is the rightmost sentential element.

    (iii)   Komm *doch bloß* rechtzeitig heim!
            come PART PART on time   home
            "Do come home on time, by all means!"
    (iv)   *Komm *bloß doch* rechtzeitig heim!

All this relates to (54) and (55) under the presupposition that the canonical serialization warrants both verbal leftward government as well as extension of modal and temporal scope from right to left: viz. ((*gewohnt*) *haben*) *muß* for (54d). It is this general direction of government as well as the modal and temporal scope extension that establishes the relevant and interesting correlation supporting the generalization about the three independent pieces of evidence.

Finite inflected forms need to be accounted for in T. Thus, the only-finite EMV has to be located in T. Since the *tun*-support is restricted to finites also, we might modify (57) to accommodate the spoken-language occurrences of *tun* in T also (con (57) by Sprouse / Durbin 1998).

Now, Sprouse/Durbin (1998) do not account for the distinct behaviour under the perfective/imperfective, or present/periphrastic, distribution. Cf. again (2)-(3) above. Notice that the resultative-state aspect of the perfective (accompanied without exception by the AUX *sein*) must be lower in the structure than the first event component, the `approach´ component, t_1-t_m (co-occurrence of the Aux *haben*!), due to the restriction that the subject of a *sein*-predicate cannot be agentive.

(58)   DMV: |<<<<<<|--------|
                     t_1 E_1 t_m E_2 t_n ... für $E_1 \neq E_2$

From this, (59)-(61) can be deduced as representations of perfectives and imperfectives. If the claim that DMVs are perfectives can be maintained, (59)-(61) should be able to represent the necessary distinctions in syntactic terms.

(59)   DISTRIBUTION OF THE AUXILIARIES: *haben* >have=versus *sein* >be=
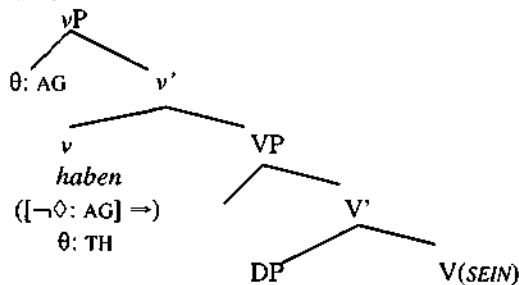
(60) IMPERFECTIVE VERB:
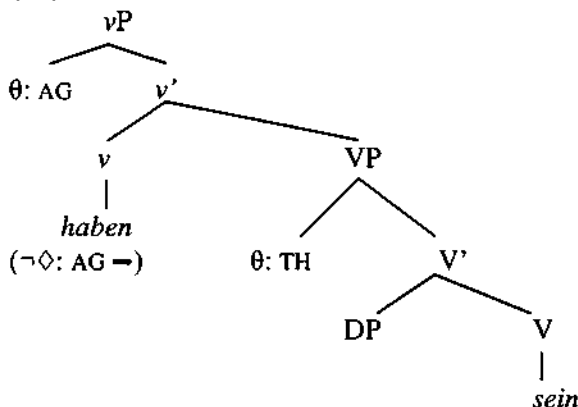
(61)   PERFECTIVE VERB (AUX *sein*):

```
              vP
           /     \
   θ: AG          v'
              /      \
            v          VP
          haben      /    \
        θ: TH/* AG  ...     V'
            |            /     \
         [ge__t]ᵢ     DP/AP      V
                                 |
                                 tᵢ
```

Perfective and imperfective verbs are clearly distinguished also syntactically. Notice that the question whether or not perfective and imperfective verbs select AUXs in complementary distribution (i.e. *be* for perfectives, *have* for imperfectives) is not touched by this *a priori* syntactic distinction. It is well-known that the overall picture of a clean complementary distinction in terms of Aux-selection does not hold in German (while in Dutch, it is almost 100%).

6. Summary

These are the corner stones of the syntax and semantics of modal verbs (MV) and the distribution of epistemic (EMV) and deontic readings (DMV) that we have observed.

(62)a   Any DMV-reading implies an EMV-reading, but not *vice versa*! Compare Abraham (1995: 470 ff.). Can one draw the conclusion from this that evidentials need to derive from more concrete lexical meanings?

   b   The above restriction, 1., is valid only for finite MV-usage. From this follows immediately that EMV needs to be the highest embedding predicate and, vice versa, that it cannot project e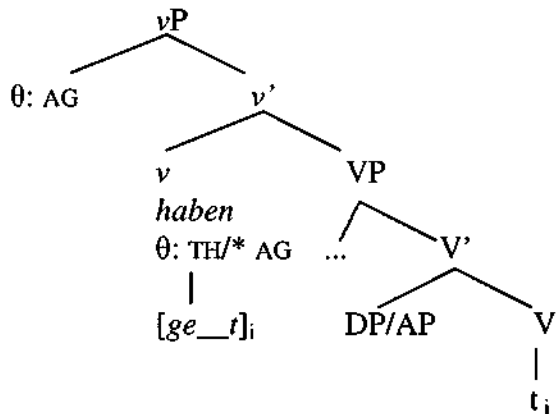pistemic meaning in an embedded (=non-finite) syntactic position. Can this constraint be expressed in categorial terms: cf. the all-Indoeuropean tradition of assigning the categorial features [+N,+V] to the infinitival (which is not in line with the categorial matrix for the four lexical categories in the generative spirit, where the adjectival would carry the features [+N, +V]).

   The restriction in 1. Above does not hold for non-finite uses: cf. Abraham (1995) as well as the example (4) above. Is there a good reason for this constraint? How is this with evidential lexicals?

   c   Only DMV surfaces as an independent predicate. Where the epistemic reading prevails, such as in English where only the temporal uses of MVs is preserved, no non-finite forms exist. This is reflected also by the fact that no language in its truly temporal paradigms (Past, Future) provides non-finite forms.

   d   With an embedded perfective (`unaccusative`) verb, the DMV-reading is lost to an all EMV-reading. However, under embedding of an imperfective, both the DMV and the EMV readings are possible. Is there a good functional explanation for this aspectual constraint?

e   With an embedded periphrastic perfect construction, the DMV-reading is lost to an all EMV-reading. Cf. (3a). How does this relate to the almost equivocal aspectual constraint under 4. above? Is there a good functional explanation for this aspectual constraint?

f   Often (always?) it is the case that the tense Aux and the MV can change their embedding/embedded positions. Cf. (2a) and (3a), which are meaning equivalents. In such an inversion situation, with *haben* in the finite predicate position the EMV-reading is ungrammatical, whereas in the embedded, non-finite, position it shares the grammaticality with the DMV-reading. What is behind that?

g   Other than in the present tense, with perfect tensing by means of *haben/sein*+PAST PARTICIPLE, the DMV-reading is deleted and only the EMV reading is preserved.

7. Conclusions

What follows from these four generalizations? Let us make the following further assumptions with respect to syntax.

(63)
1. The standard assumption is that MV-complexes arise by either raising left-embedded full verb structures, or else they have to abide by some mapping restriction (cf. Haider, GLOW Venice). The question, however, can be raised why raising should be assumed in the first place, and to which node? In order to arrive at V-MV-AUX, nothing needs to raise out of their base structures with left embedding!
2. Do we need a below-zero-syntax to derive MV-complexes?
3. Perfective MV-embeddings are Small Clauses; imperfective full verb embeddings are not. Is there any interrelation to the general view that DMVs are control verbs, while EMVs are raising verbs?
4. If the free functional (= grammatical) morpheme *zu* or the bound, equally functional (grammatical) past participle morpheme, *ge__t*, sits in Spec,*v*P, and, consequuwntly, control PRO is a non-assumption (all there remains is a theta selection on the part of the embedding verb and the pertinent theta mapping on the embedded verb), how are DMV and EMV distinguished? Does our refutation of PRO-theory have an impact on raising assumptions just as well (IJbema 1997!)? Could there be a common base to the very general theta role mapping assumption such that control and raising, while superfluous, can be covered alike by the theta-based generalization (theta role mapping by V-relation identity in the case of ´CONTROL´-V, but `theta absorption´ in the case of no theta projecting RAISING verbs! Cf. Abraham (1995: 282 ff.) for *haben* as full lexical verb versus *haben* as an Aux: where the latter has no theta role for the external as well the internal argument positions eA and iA.

What follows from these generalizations with respect to grammaticalization and the difference between English and German? Let us draw conclusions from the above again with respect to syntax.

(63)   What is at the base of EMV surfacing as finites only? Or, in other terms: if Auxs and RAISING VERBS (RVs) have empty theta slots in their theta grids, what distinguishes EMVs from Auxs and Rvs? Can Auxs and Rvs also occur only in finite predications? Witness:

(64)a	Er verspricht/rat ihnen gegessen/vergessen gehabt zu haben	AUX
	he promises/advises them eaten/forgotten had to have	
b	Er verspricht/rat ihnen einen Vorrat zu haben	FULL V
	he promises/advises them a provision to have	
c	Die Sonne versprach zu scheinen	FULL V
	the sun promised to shine	
d	**Die Sonne versprach scheinen zu scheinen	**RV
	the sun promised shine to seem	

From this, the following conclusions need to be drawn- see (65):

(65) RVs behave just like EMVs: no non-finites are possible! In other words, the (non-finite) full V-lexical carries a lexical meaning that neither EMVs nor RVs can carry. In this sense, the lexical entries in (47) above provide sufficient information! Further reasoning: EMV and RV identify alike as members of an evidentiality category or a grammatical category which is strongly derived and has lost its lexical meaning in the course of grammaticalization

In what follows a striking similarity between MVs as in West and North Germanic languages and what are evidential meanings of verbal forms will be discussed. The bridging property is perfectivity that we found to hold for DMVs and which play a basic role in evidential forms in a wide number of unrelated languages.

8. Modal verbs in German and the semantic classification of evidentials

The inferential uses of MVs (EMVs) in West Germanic (of which I have illustrated only German, but which material could easily be extended to cover also Dutch, West Frisian, and Yiddish as well as the substandards and dialects of German; see Abraham 1998) possess an ostensive, striking similarity with evidentials, both in terms of their particular illocutive, non-veridical function and as regards their diachronic emergence from lexical or other grammatical elements and functions. Since the interrelations between EMVs and evidentials (EVs) have never been sketched, to the best of my knowledge, and since this is a major component of the present workshop topic, I would like to pursue a few obvious paths of consideration.

Notice, first, that the discussion of EMVs as emerging from DMV-meanings allows - or, rather, forces - a more concrete understanding of the retained lexical specifics despite the encompassing bleaching results, which are due to grammaticalization. In the following list of EMV-inferentials in German, the evidential meanings of each lexical are in some way weakly reflecting the original deontic meaning (Abraham 1998: 232).

8.1. The heterogeneous evidential meanings of German modal verbs

Given the many readings of what evidentiality is in the different languages (see our brief terminological discussion in the beginning) it may be interesting to see what the exact evidential background to each modal verb of German is. Quite clearly, the discussion of EMVs as relating to DMV-meanings allows - or, rather, forces - a more concrete understanding of the retained lexical specifics despite the encompassing bleaching results, which are due to grammaticalization. In the following list of EMV-inferentials in German, the evidential meanings of each lexical are in some way weakly reflecting the original deontic meaning. Quite clearly, (66a,b) correspond closely to the *auditive*, possibly also to the *admirative*, while (66c,d) mirror more closely the concepts of *subjective* or *inferential*; all *subjective, vremya neočevidnogo deystviya, Nichtaugenzeugenschaftsmodus* and *epistemic* fit as cover concepts for the four meanings as a whole.

(66)
a X [$_{EMV}$ *will-*]+V   = "X will/wants others to believe V"   = "X pretends"
b X [$_{EMV}$ *soll-*]+V   = "X soll/must be the case according to others"   = 'hear-say'
c X [$_{EMV}$ *muß-*]+V   = "X muß/must be due to the accompanying facts"   = "X's
                                                                                     factual conclusion warranted"
d X [$_{EMV}$ *mög-*]+V = "X is capable of V-ing"   = "X is possibly V-ing"

There is thus a common source to this array of evidentials in German, i.e. inferentiality. However, none of them has bleached to the point where the original lexical source (deontic meaning) is depleted completely. There is no reason to assume that, in some future time, the four meanings will merge to one common evidential function: not because the different meanings are meaningful distinctions upon the common reading of non-veridical evidentiality; and, second, because of the ever virulent principle of *one form, one meaning'* in German.

8.2. Conclusion: the diachronic-developmental stage of epistemics

Let us draw conclusions from the above.

(67)   The historical change from the pure perfect to the regularized readings of the perfect evidential has, at the bottom of the phenomenon, nothing to do in any direct fashion with what Traugott (1988: 409), and, in a less direct way, also Sweetser (1990), have called the general tendency of change from external, fact-bound, relations to internal, speaker-oriented relations, and, consequently, from external to internal causality. Much rather, and a lot more pointedly and empirically soundly, this turns out to be a result of, and thus dependent upon, the weakening of selection constraints of the subject actants in the agreement carrying predicates (from fact-bound to person-bound subjects; thus from 'objectification' to 'subjectification'). There is no need to assume that a term such as 'subjectification' is in any way explanatory in a sense truly committed to detailed linguistic analysis unless this term in itself is explained on the basis of the weakening selection constraints on the part of the predicates.

(68)   The diachronic account that EMVs, just as EVs in general, are derived historically, and, thus, are diachronic dependents upon, DMVs is correct only to the extent that the basic selection restrictions were not relaxed from scratch, i.e. relaxed already in historical times.

In fact and to the contrary, Traugott (1988) has observed numerous cases where such selection relaxations force readings much in the sense of modern EVIDENTIALS. Notice that this observation also nags on the triggering status of 'subjectification' as a historical explanation. EMVs, to recall the point of departure of the present section of this paper, are thus to be seen as diachronically concomitant with DMVs from scratch depending purely on the linguistic 'stringency' of the language user.

(69)   The various features of sensitivity of the German MVs under perfect and perfective weight is thus no longer surprising if judged against the two obvious parameters of historical weight: the fact that MVs were preterites with a resultative meaning at stages of the Germanic languages when these, for one, were still highly aspectual, and, second, when the synchronic constraints under perfect and perfective weight in Modern German (and Dutch, Yiddish, and West Frisian) apply. It is to be noticed in this context that the perfect in Georgian triggers the observed evidentials only in the temporal-aspectual context of an aspectual system, where the aorist contrasts eminently in function with the perfect. German, in this sense, in no longer a languagec aspect-prominent in any paradigmatically based way. Yet, there are sufficient syntactically distributional characteristics retained which reflect the previous former aspectual status of German, in what may be called a 'retrieving syntagmatic-combinatorial syntactic and semantic sector of a former temporal-aspectual paradigmatics'.

(70)   The distinct evidential meanings of EMV in Modern German support the more general observation that the resultative perfect and evidentials are interlinked in other, less subclassifying languages. German lends support to this general findings by retaining some of the deontic, 'root' semantics of DMV in its evidential intension, while echoing the common factor of perfectivity in the verbal subclass of 'preterite presents'. Proof of this can be derived from studies on oral German texts entertained by Letness (1998: 9) with the result that occasionally the specific EMV soll- cannot be substituted by one of the other MV.

(71)   As a general conclusion with respect to Lightfoot's general assumption that the Middle English MVs relinquished the main paradigm of verbs, one may assume on the basis of our insights that this is due to the fact also that aspect as well as morphologically reflected aktionsart was totally lost as a determining factor. This, in turn, must have been a consequence mainly of the pervasive attrition of verbal inflectional and derivational morphology during the Middle English period - certainly a revolutionary development not reflected in the other Germanic languages, which were never under such profound exposition to, and influence of, a fundamentally different language as Old English, and thus never subject to such profound creolizing influences as Middle English.

8.3.   The epistemic-evidential puzzle of German modal verbs

The epistemic-evidential puzzle of German modal verbs has remained unsolved so far. A list of the criteria for the distributional and diachronic emergence of epistemic modal verbs in German and evidentials across languages provides a clue as to what matters in the comparison of the two categories.

(72) German EMV   EVIDENTIAL

    a   *in periphrastic perfects   ≠   occur primarily in periphrastic perfects

    b   *in non-finite contexts   =(?)   does not arise in non-finite contexts (?)

    c   *in perfective contexts   ≠   occur primarily in perfective contexts

Notice that there does not appear to be a clue that evidentials do not arise in non-finite contexts. Thus, we may want to say that German modal epistemics and evidentials have no mean of triggering properties.

German EMVs relate syntactically to DMVs according to the following range of possibilities and their illustrations. Recall that EMV, occurring only as raising verbs, have to surface finitized.

(73)a   EMV dominates DMV: DMV [$_{FIN}$ EMV], but * EMV [$_{FIN}$ DMV]

     b   *EMV [$_{FIN}$ EMV]

     c   DMV [$_{FIN}$ DMV], at least unless disallowed semantically (for example, for 'horror aequi modi')

(74)a   daß das gehorsame Kind   *müssen*[¬◊EMV]   *wollte*[◊EMV]
        that the obedient child   must-INF   would-FIN

     b   daß das gehorsame Kind   *wollen* [¬◊EMV]   *mußte*[◊EMV]
                               will -INF   must-FIN

     c   daß er zuhause sein   *mußte*[◊EMV]
        that he at home   be-INF   must-FIN

     d   daß er zuhause hat sein   *müssen*[¬◊EMV]
        that he at home   has-FIN be-INF   must-INF

Compare (74c,d) with (74a,b) above. With true evidentials, of course, the finiteness criterion never popped up, in contrast to epistemic modal verbs in German. The following illustrations testify to this generalization. ['E' stands for 'epistemic reading, 'D' for 'deontic' reading]

(75)   Wenn sie dürfen(D/*E) soll(D/E), aber nie können(D/*E) will(D/E), dann mag(D/E) sie auch nicht müssen(D/*E). Wenn sie aber wollen(D/*E) dürfte(*D/E), dann mag sie auch sollen, und dann kann sie auch müssen.

What remains, then, are the following two conclusions.

(76) **Alternative 1 – the 'exclusion model':** The obvious similarity of epistemic denotations of MVs in (West) German(ic) on the basis of the meaning may be due to the original status of perfects of what were originally 'preterite presents'. This distribution alone legitimates the crucial parallel between modal verbs in German and those evidentials restricted to the occurrence in the context of the perfect and/or the perfective. The fact that and temporal and aspectual distributions are such that they do not support epistemic readings of the MVs is a phenomenon which has to be kept apart and allows no direct conclusion as to the first typological comparison above. Modern modal verbs, thus, once were, but are no longer, subject to the perfect(ive) trigger for the epistemic/evidential reading.

(77) **Alternative 2 – the 'definiteness parameter':** Another conclusion with an interesting methodological purport is this: the Aktionsart-distributional sensitivity is diachronically young and has to do with the complementary finiteness distribution. The fact that EMVs are incompatible with the lexically inherent verbal feature [+term] may have to do with the fact that it cannot occur in a non-finite clausal function.This is all the more true since the modern periphrastic perfect has no perfect(ive) reading any longer, but has given way to a true preterite reading under preterite loss - at least in German and its dialects (among which Yiddish), but probably also in English and other Germanic languages. Our expectation that German modal verbs, once preterite presents, would have to show distributional sensitivity to the periphrastic perfect is thus unfounded in the first place. Now, if the finiteness parameter is historically younger than the aktionsart trigger of modal verbs, then we have a means to narrow in on the historical period of these two stages in terms of a *argumentum post quem* or *ante quem non*. No doubt, this is a speculation. But it is worthwhile investigating in the absence of a better, more promising, claim, and in the presence of the evidence that perfectness and perfectivity is amenable to the emrgence of evidentiality. We intend to investigate Old High German and Middle High German material with an eye on this question.

(78) **Methodological conclusion:** If the finiteness parameter is historically younger than the aktionsart trigger of modal verbs, then we have a means to narrow in on the historical period of these two stages in terms of a *argumentum post quem* or *ante quem non*.

Is there reason to assume that there is some diachronic reality behind this conclusion? Fritz (1997) does not provide one single illustration for a double occurrence of modal verbs in Old High German or Middle High German. Nor is there any evidence in the general grammars of Middle High German about any change of the subcategorizing properties of modal verbs toward something like the finiteness parameter.

Another question that needs to be asked is whether there are epistemic uses, next to deontic ones, in the early phases of German. (79) provides some evidence for EMV-readings of 'may/can/must' below (according to Fritz 1997: 94-100; see also Fritz 1998: 128-129); examples are restricted to the earliest occurrences. Highlighting is both for finite modal occurrence and for its early documentation, which is important for our course of the argument.

(79)a thaz *mag* thes wanes wesan meist
    'this may have contributed the most to this idea'   Otfrid II.7.50 (863-871 A.D.)

  b wie *kan* gesein in deinr gewalt   Kaufringer, Sappler 1972, 3.426
    die hell und auch das himelreich   (15th cent.)
    'how may both hell and heaven be under your power?'

  c der (gekreuzigte) ist erstanden werlich/   Alsfelder Passionsspiel 7392;
    das *dorffen* mer (die Sodaten am Grab) woil sagen sicherlich   DWbN 6, 1799
    'he has truly arisen, as we may say with certainty'   (15th cent.)

  d min herre was biderbe gnuoc,   Hartmann, *Iwein* 2033-35
    aber jener der in da sluoc,   (early 13th cent.)

der *muose* tiurre sin dan er [...]
'my master was good enough,
but he who beat him,
had to be even knightlier than him ...'

This is all we can provide, for the time being, in terms of evidence for the mere plausibility of our speculations in (29)-(31). (32) alone confirms our assumption that EMV-readings are triggered by properties of strict subcategorization and semantic selection – i.e. not by metaphoric or metonymic extension. Nothing prevents such changes alongside the first written occurrences of modal verbs and their DMV-readings. Before this horizon, the concept of E-readings being derived appears to be a misnomer. As to the *finiteness parameter* and the evidence of double occurrence of MVs in the course of the historical development of German, as well as the emerging arguments *post quem* and *ante quem non,* we shall probably have to wait for a felicitous historical finding in the future. Our speculation, thus, cannot be proved; however, it cannot be disproved either. We shall probably have to wait for a felicitous chance finding in the histrory of any of the West Germanic languages.

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