

PRINCIPLES FOR A SYNTACTICO-SEMANTIC CONTRASTIVE ANALYSIS OF THE MODAL VERBS IN ENGLISH AND DANISH

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1. Introduction

This paper presents the main principles of a project concerning the semantic subcategorization of modality in modern English and Danish as well as a syntactico-semantic contrastive analysis of the modal verbs in the two languages. A taxonomy functioning as *tertium comparationis* for the semantic analysis has been established in which the categories are defined as imprecise (Boolean) as well as a combination of, on the one hand, the distinction between epistemic and non-epistemic modality and, on the other hand, the modal operators possibility and necessity.

1.1 The project: background and purpose

It very often turns out that Danish students of English, even at university level, run into problems when using the highly frequent modal verbs, and the idea of the project is therefore to analyse and contrast the semantics of the modal verbs in English and Danish in such a way that the results of this contrastive analysis can be used for the production of new teaching material for Danish students of English at an intermediate and advanced level. Consequently, it is also a precondition of the project that only the semantic subcategories which seem necessary for an adequate contrastive analysis of English and Danish are included, and these subcategories are considered cross-linguistic rather than universal. It is thus the aim of the project, firstly, to establish a taxonomy for the analysis of modality, primarily the modal verbs, based on theoretical linguistic principles, and, secondly, to carry out a contrastive analysis of the modal verbs.

What will be presented in the following is primarily a description and brief discussion of the principles underlying the above-mentioned taxonomy; at the moment the taxonomy and the first contrastive analyses are being tested on large corpora and the results presented here must therefore to a certain extent be considered preliminary.

1.2 Contrastive Analysis

As it is a compulsory precondition for any contrastive analysis that an adequate *tertium comparationis* is established on the basis of which an analysis in categories that are not language specific may be carried out, it was the original intention of the project to use a set of categories that were only semantically defined. A syntactic analysis was thus only meant to be a description of the forms which were to be contrasted in the semantic analysis. It has turned out, however that the categorization in logico-semantic categories is strongly supported by morpho-syntactic factors, and as a consequence of this the levels of morphology, syntax and semantics are interrelated in the analysis of the modal verbs. The categories of the superordinate taxonomy will be defined below.

2. Definition of a category

It is hardly surprising that a project like this one cannot assume that a given item belongs totally inside or totally outside a given category, that is, that there is a binary distinction between 1 and 0. It has therefore been necessary to define a linguistic category as being imprecise enough to capture the dynamic element of natural language but at the same time precise enough to deserve the label category.

2.1 Fuzzy sets

One of the few linguists who explicitly assumes that the semantic categories to be used in a semantic analysis of the modal verbs cannot possibly be discrete is Coates (1983), cf. also Leech & Coates (1980). She uses a definition of fuzzy sets taken over from mathematics, but this is not a very satisfactory solution because instead of operating with the binary distinction between 1 and 0, fuzzy set theory allows a stepwise gradation between 1 and 0, and it seems unreasonable to attempt to distinguish between whether a given linguistic element is a member of a given category in the degree of, say, 0.4, 0.6 or 0.8.

2.2 Imprecise categories

In place of the categories of fuzzy set theory, this project defines the modal categories as Boolean imprecise categories as does e.g. Dahl (1985). He defines an imprecise category, which may be either one or multi-dimensional, as follows (1985:3):

By an imprecise category I mean a category which cannot be defined in such a way that for every member x of its domain (that is, the set of things to which the category can be meaningfully applied), the definition determines a truth value to the statement that x belongs to the category in question. Instead, even if some members of the domain clearly fall under the category and some clearly do not, there is in an imprecise category a zone in the middle where membership is not clearly defined.

In other words, such an imprecise category consists of a kernel of prototypical elements and some non-prototypical elements outside the kernel. This may be illustrated as in fig. 1:

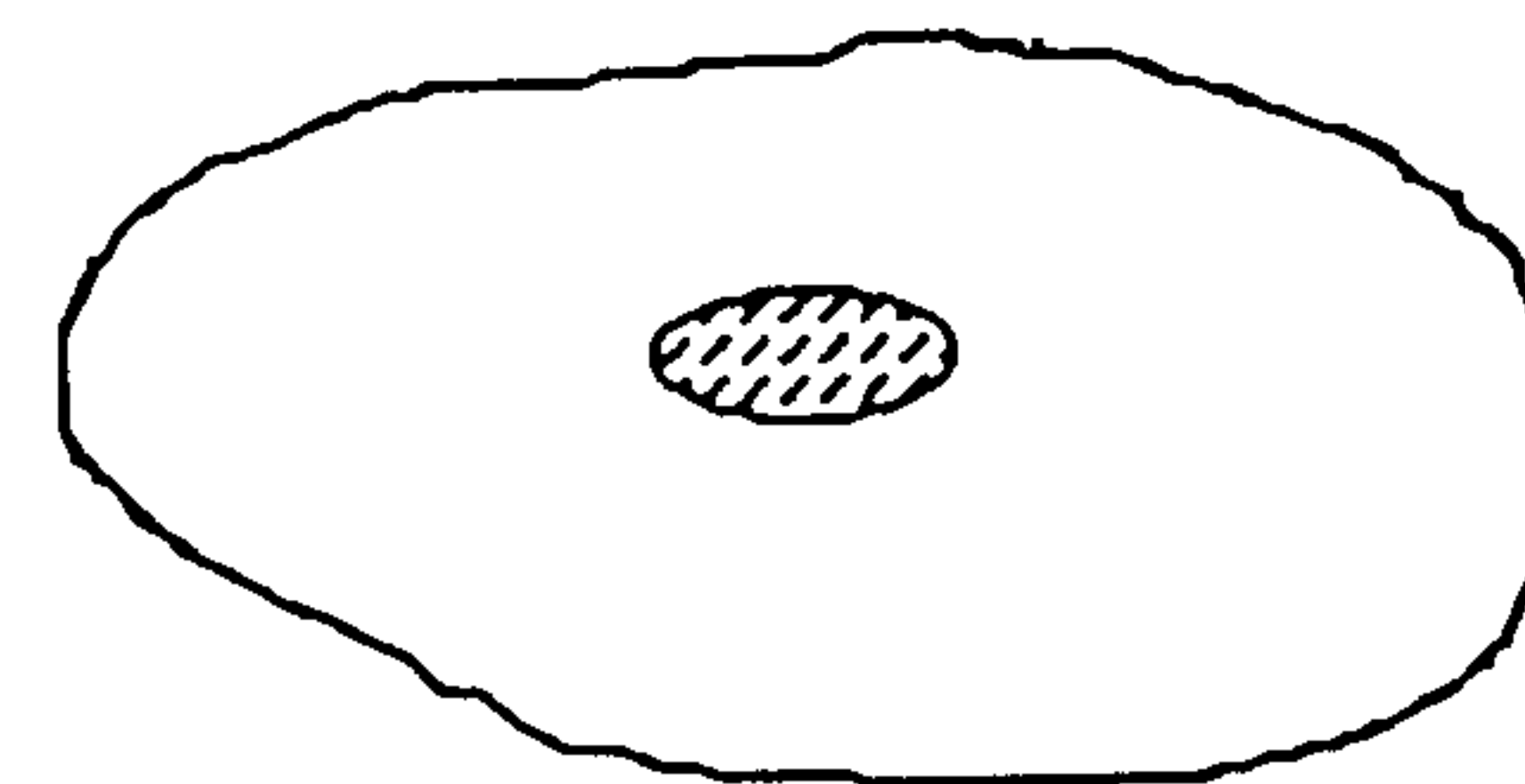


Fig. 1: Imprecise category with kernel and periphery

Two imprecise categories totally independent of each other may lead to ambiguity; this may be illustrated as in fig. 2; and in fig. 3 it is finally illustrated how two imprecise categories may overlap:

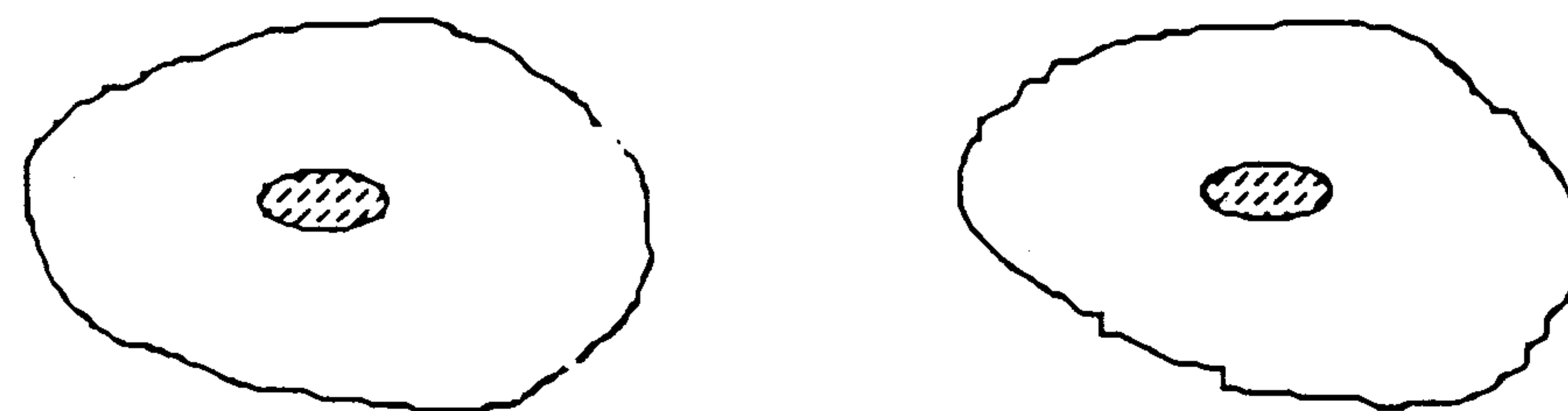


Fig. 2: Ambiguity between two imprecise categories

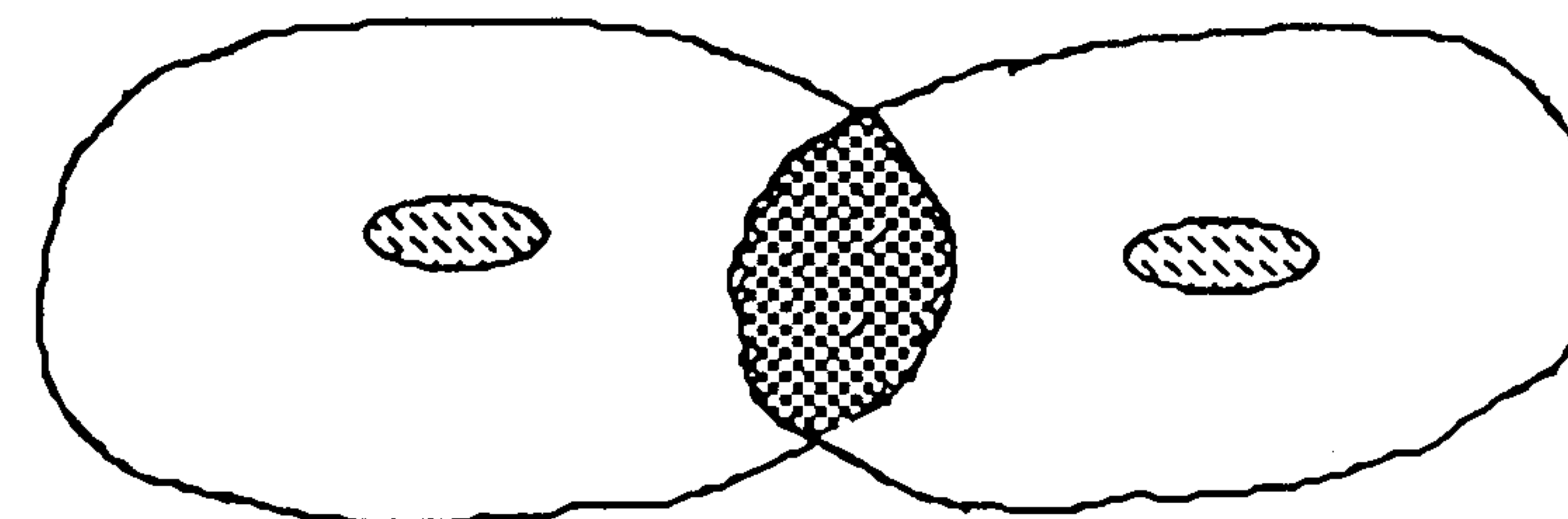


Fig. 3: The overlapping of two imprecise categories

In the definition of such imprecise categories it is thus possible to assume central prototypical features as well as nonprototypical ones. Furthermore, some features may be said to dominate other features, and the definition of an imprecise category may be sharpened stepwise so that it ends up as a precisely defined category which only comprises central prototypical features. It may therefore be concluded that a prototypical element must contain the prototypical features of the category to which it is said to belong. For further discussion of such Boolean categories, cf. Dahl (op. cit.).

2.3 General and language-specific categories

In connection with the problem of establishing linguistic categories there are some additional factors which will be briefly mentioned here; these concern the difference between establishing and labelling categories, cf. e.g. Thrane (1983). Establishing a category must necessarily take into account distributional criteria, and it must therefore be assumed that it is a primarily language-specific procedure. Contrary to this, semantic criteria are used in naming or labelling a category; consequently this phase does not need to be language specific, but may be general. Finally, it must be assumed that it is not individual elements but whole language-specific categories which are members of general cross-linguistic categories, and as a consequence of this such semantic crosslinguistic categories as for instance time, causality and modality are well suited as *tertium comparationis* in a contrastive analysis, which requires a comparative basis that is not language specific. It must be stressed, however, that the categories are only regarded as being cross-linguistic, that is, they are not considered universal. This is due to the fact that the modal categories established for this contrastive analysis of English and Danish seem to serve the description of the two languages well, but it is not possible on the basis of this analysis to infer, or postulate, that the categories established are consequently universal. On the contrary, there are good reasons to believe that the well-known criteria for establishing modal categories, which are rooted as far back as Ancient Greece, are relevant for the description of a number of languages belonging to the same language family, primarily the Germanic languages, and to a certain extent the Indoeuropean languages, but that they do not apply to language which are more exotic from a North European point of view, cf. e.g. Palmer (1986) in which, as an example, the so-called evidentials are discussed.

3. Mood and modality

What purpose does the definition of the imprecise linguistic categories and the distinction between general and language-specific categories serve in the contrastive analysis of the modal verbs in English and Danish? The term

linguistic category is obviously used at different levels of linguistic analysis, but in the first place it is used for the distinction between mood and modality. In the linguistic literature there is much variation in the use of these terms and it is therefore necessary to define what is understood by them in the analyses presented here. By modality is understood a (cross-linguistic) semantic category which may be defined on the basis of the interrelations between, on the one hand, the logical operators possibility, predictability, and necessity and, on the other hand, the distinction between epistemic and non-epistemic (deontic and dynamic) modality (cf. below). The semantic category of modality is thus defined as a general, not language-specific category which may be expressed by means of different grammatical categories in the individual languages: for Danish and English in the moods of the verb phrase (imperative and the rudimentary subjunctive found in both languages), analytic mood, i.e. the modal verbs, cf. Huddleston (1984:164-176), tense (non-temporal use of the past tense) and finally it may be lexicalized or expressed by means of certain syntactic structures such as conditional clauses. So far the project has concentrated on analytic mood, and in the following the other ways of expressing modality will not be taken into account.¹

By mood — as opposed to modality — is understood, quite traditionally, the grammatical category which contains the inflected verb forms indicative, subjunctive and imperative. Generally speaking, the indicative does not express modality (except for modal past) whereas the oblique moods generally do.

4. The semantic definition of modality

As already indicated in chapter 3 above, modality is defined as a (cross-linguistic) category on the basis of the interrelations between the logical operators possibility, predictability and necessity plus a distinction between epistemic and non-epistemic modality. In the following this will be dealt with first.

By modality is thus understood the grammaticalization or lexicalization of the speaker's (or another modal source's) attitude or meaning concerning the possibility, predictability or necessity of whether a given proposition is true or false or that a given event or situation is brought about. If the attitude of the speaker concerns the truth value of the main proposition we are faced with epistemic modality, if it concerns the bringing about of a given event or situation, we are faced with deontic modality.

4.1 Epistemic versus non-epistemic modality

The semantic distinction between epistemic and non-epistemic modality is reflected in syntactic differences between the modals expressing epistemic and

¹ The various modal expressions in English are analysed in Perkins (1983).

non-epistemic modality respectively. Whether these syntactic differences justify a categorization of the epistemic modals as auxiliaries (like BE, HAVE and DO in English) and the non-epistemic ones as semi-auxiliaries or semi-full verbs as does Davidsen-Nielsen (1990) is actually not crucial for our present purposes; we shall therefore leave out further discussion of this matter just as we shall refrain from contributing to the longstanding dispute concerning the syntactic status of the modals, in particular the English ones, from a theoretical linguistic point of view.²

In example (1) below it is not possible without a context to decide whether the modal verb expresses epistemic modality (with the paraphrase "It is possible that the company makes...") or deontic modality (with the paraphrase "It is possible for the company to make"):

- (1) a. The company may make a lot of money on this project.
b. Firmaet kan tjene en masse penge på dette projekt.

If perfect aspect is added to the Danish example (1b), there are two possibilities: perfect in the modal proposition as in (2a) and perfect in the main proposition as in (3a):

- (2) a. Firmaet her kunnet tjene en masse penge på dette projekt.
b. The company has been able to make a lot of money on this project/It has been possible for the company to make a lot of money on this project.
(3) a. Firmaet kan have tjent en masse penge på dette projekt.
b. The company may have made a lot of money on this project.

If the perfect is added to the modal proposition as in (2), the modality can only be interpreted as non-epistemic. In Danish it may still be expressed by means of the modal verb, but English requires a paraphrase like the ones found in (2b). In example (3), on the other hand, *kan* and *may* express epistemic modality and the perfect of the the main proposition expresses past time reference rather than perfectivity as the distinction between perfectivity and non-perfectivity is neutralized. In other words, only the epistemic modals occur

² Cf. e.g. the discussion between Huddleston and Palmer in Huddleston, R. (1974) "Further Remarks on the Analysis of Auxiliaries as Main Verbs" in *Foundation of Language*, 11. (1976) "Some Theoretical Issues in the Description of the English Verb" in *Lingua*, 40. (1980a) "Criteria for Auxiliaries and Modals" in Greenbaum, S., G. N. Leech, & J. Svartvik (eds) *Studies in English Linguistics for Randolph Quirk*. London: Longman. (1980b) "On Palmer's Defence of the Distinction between Auxiliaries and Main Verbs" in *Lingua*, 50 – and Palmer, F. R. (1974) *The English Verb*. London: Longman. (1979b) "Why Auxiliaries are not Main Verbs" in *Lingua*, 47. Generative grammarians like Steele et al. (1981) *Encyclopedia of AUX: A Study in Cross-linguistic Equivalence* (Cambridge, Mass.: The M.I.T. Press) claim that the modals are not verbs at all.

together with perfect aspect in the main proposition, and this perfect then expresses past time reference rather than perfectivity. Perfect aspect in the modal proposition is only possible for Danish non-epistemic modals.

There are deviations from the general tendencies presented here, however. This primarily concerns English SHALL and Danish SKAL when they are categorized under the subcategories deontic predictability and deontic necessity. In the present paper, however, only the general principles and tendencies are considered. For the very same reason the modals of the examples occur in their non-negated present tense form even though it is taken for granted that the modals in their past tense form may be analysed along the same lines.

Another syntactic difference between the epistemic and non-epistemic modals is seen in (4) and (5):

- (4) a. They may/must build the new county hospital on this site.
b. De kan/ma bygge det nye amtssygehus pa denne grund.

Out of context example (4) is ambiguous as to whether the modal verbs are epistemic or non-epistemic; if, however, (4) becomes part of a conditional construction, there is no doubt about the interpretation:

- (5) a. If they may/must build the new county hospital...
b. Hvis de kan/ma bygge det nye amtssygehus...

In Danish as well as in English only a non-epistemic interpretation is possible in (5) ("If they are able to build.../If they are allowed to build.../If they are obliged to build..."), and it may therefore be concluded as a general principle that only the non-epistemic modals occur in conditional clauses.

The above examples (1)-(5) seem to demonstrate that there are certain syntactic restrictions which apply to the epistemic modals, but not to the non-epistemic ones. As far as the question of perfectivity and conditionality is concerned it appears intuitively obvious that a linguistic element which expresses the speaker's attitude to the truth value of a given proposition must appear in a non-perfect and non-conditional form. From a semantic point of view it also seems intuitively obvious that only the epistemic modals may occur with the progressive aspect in the verb phrase expressing the event of the main proposition:

- (6) a. The editor may/will/must be writing today's editorial.
b. Redaktøren kan/wil/ma være ved at skrive dagens leder.

The modals in (6) can only be interpreted as expressing epistemic modality, and it does not seem difficult to explain this semantically. It must be taken for

granted that it is possible, by means of a modal proposition, to express views concerning the truth value of a proposition which indicates that a given event is in progress; contrary to this it hardly seems possible, by means of a modal proposition, to permit or order that a given situation is already in progress. Circumstances such as these seem to apply in general to the grammaticalized progressive in English as well as to the lexicalized Danish progressive.³ For further considerations concerning the relations between the syntax and semantics of the modals, the reader is referred to Palmer (1983).

As a final point it should be mentioned that there seems to be a distinction in the use of the so-called *-s*-passive and *blive*-passive in Danish when the main verb of the verb phrase expressing the main proposition accepts both forms.⁴ The *blive*-passive then occurs with the epistemic modals as in (7a) and the *-s*-passive with the non-epistemic modals as in (7b):

- (7) a. Han kan blive udnævnt til administrerende direktør efter nytår.
b. Han kan udna evnesættil administrerende direktør efter nytår.

Davidson-Nielsen (in print) has some further syntactico-semantic criteria in his distinction between the epistemic and non-epistemic modals; for our present purposes we shall limit ourselves to the above examples plus the final point that there also seems to be marked semantic differences between the meaning of the epistemic and non-epistemic modals on a scale from [+abstract] to [+concrete]; this is seen in examples (8)-(10):

- (8) a. Can this be true?
b. Kan dette være sandt?
(9) a. Can I borrow your bike?
b. Kan jeg låne din cykel?
(10) a. Can you swim?
b. Kan du svømme?

The epistemic meaning of *can/kan* in (8) seems to be the most abstract whereas the dynamic meaning in (10) seems to be the most concrete. In between these two extremes is found the deontic meaning exemplified in (9).

For the purpose of a methodological discussion, it should be mentioned at this point that the syntactic analyses have been carried out in the two

³ Danish equivalents to the English progressive aspect are the following: VÆRE VED AT/VÆRE I FÆRD MED/VÆRE I GANG MED + AT + the infinitive or SIDDE/GÅ/LIGGE/STÅ + OG + the infinitive.

⁴ Cf. Lauridsen, K.M. & Lauridsen, O. (1989).

languages respectively and then these two analyses have been contrasted. As far as the examples (1)-(3) are concerned, it is quite obvious that the semantic category may have several different modes of expression, either — and typically — in a finite form of HAVE/HAVE + past participle or in some kind of paraphrase.

As far as the conditional sentences in the examples (4)-(5) are concerned, there is no doubt that we are faced with a semantic category which is typically expressed by means of a subordinate clause in both languages, and that this subordinate clause is typically introduced by means of a conjunction (IF/HVIS).

The examples with the progressive aspect in (6) primarily apply to English where there is almost a one-to-one relation between the semantic category progressive and its grammaticalized expression. That it is possible to compare and contrast this with Danish, is due to the fact that the semantic category has a limited set of lexical expressions in Danish.

The distinction between the *-s*-passive and the *blive*-passive is not found in English and consequently the above-mentioned example (7) is unique for Danish.

An adequate *tertium comparationis* for the project presented here is thus a taxonomy based on cross-linguistic, but not necessarily universal, semantic categories which do not have identical, but still comparable, linguistic expressions in the two languages involved.

4.2 Possible worlds

The philosophical basis for the semantic categories is the concept of possible worlds. This may be defined as the idea that things might be or might have been other than they actually are or were, cf. Rescher (1979). It may thus be claimed that a proposition is true in a given world (real or imagined), but false in another. A proposition which may be said to be true in all possible worlds is eternally true. The concept may moreover cover the situation in a given world, for instance the real world, at different points in time, cf. Prior (1957). The concept of possible worlds is used in the project as a basis for the semantic categorization of modality, not least because modality in itself expresses that the real world may be different or may be changed now or at a later point in time, or, finally, it may have been different at an earlier point in time. This last point is important because it is assumed in the syntactico-semantic subcategorizations in the following that expressions of futurity by means of modal verbs may be incorporated in the modal subcategorization. This point of view seems to be justifiable because there is an element of futurity in the modal categories if they are philosophically based on

the concept of possible worlds. In the individual semantic subcategories there are then semantic features for the modal operators (derived from modal logic) and for epistemic or non-epistemic modality combined with semantic features for simultaneity and/or futurity. On the basis of this and the definition of linguistic categories in paragraph 2 above, it does not seem unreasonable to postulate that the modal features generally dominate the temporal ones in the semantic subcategorization, but that the temporal features dominate the modal ones in certain cases. It will be shown below that it is assumed that the necessity operator is split into two main subcategories: one in which the temporal feature of futurity seems to dominate the modal ones, and one in which the modal features seem to dominate the temporal one. In other words, it is claimed that there is an inherent element of futurity in the semantics of the modal verbs, and that this element of futurity becomes dominant in most meanings of WILL (plus some meanings of SHALL) and in most meanings of VIL (and some meanings of SKAL) as it is seen in (11):

- (11) a. He will be appointed editor-in-chief before long (I predict).
 b. Han vil blive udnævnt til chefredaktør inden længe (forudsiger jeg).

Any further discussion of futurity in English and Danish is outside the scope of this paper. Contrary to some recent publications on this subject,⁵ it is assumed here that there are only two tenses in English as well as in Danish (present and past), and that future time references by means of WILL/SHALL and VILL/SKAL are modal.

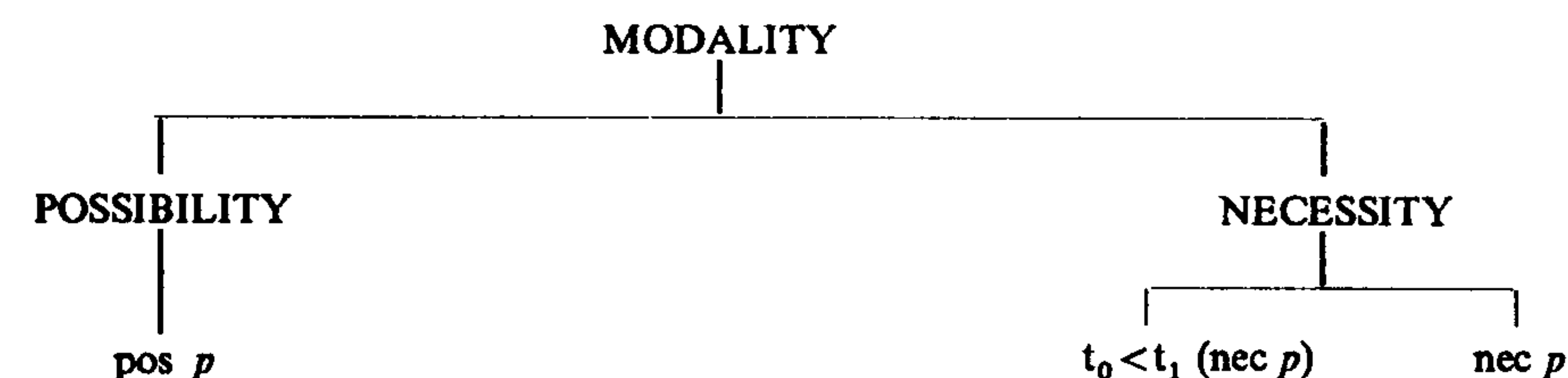
4.3 Modal logic

It has already been mentioned above that the semantic categorization is based on the modal operators: *possibility*, *predictability*, and *necessity*. Modal logic proper is only concerned with the two operators possibility and necessity and their interrelationship, which is as follows.

- (12) $\text{pos } p = \text{non } \text{nec } \text{non } p$
 $\text{nec } p = \text{non } \text{pos } \text{non } p$

Pos symbolizes the modal operator of possibility, *nec* that of necessity, and *p* is the main (non-modal) proposition of a given sentence.⁶ It has become apparent, however, that the two operators cannot alone constitute the logical basis for the semantic categorization of modality in natural language, and as a consequence of this the necessity operator is split into two with the modality element as the dominant feature in the one of the subcategories and the temporal element the dominant feature in the other, cf. fig. 4:

Fig. 4:



This distinction between possibility (*pos p*), predictability ($t_0 < t_1$ (*nec p*)), or necessity (*nec p*) and the tripartite distinction between epistemic, deontic or dynamic modality constitute the basic concepts of the modal taxonomy which is represented in the 3x3 matrix in fig. 5:

Fig. 5:

	POSSIBILITY pos p	PREDICTABILITY $t_0 < t_1$ (nec p)	NECESSITY nec p
EPISTEMIC MODALITY	EPISTEMIC POSSIBILITY	EPISTEMIC PREDICTABILITY	EPISTEMIC NECESSITY
DEONTIC MODALITY	DEONTIC POSSIBILITY	DEONTIC PREDICTABILITY	DEONTIC NECESSITY
DYNAMIC MODALITY	DYNAMIC POSSIBILITY	DYNAMIC PREDICTABILITY	DYNAMIC NECESSITY

The horizontal tripartite division in the above matrix between possibility, predictability and necessity is very much in accordance with the categorizations in Perkins (1983); he defines his categories as in (13) below:

- (13) a. Neither *p* nor non-*p* is a logical consequence of/is entailed by *C* (where *C* is a set of circumstances within a system of organized belief).
 b. Neither *p* nor non-*p* is a logical consequence of/is entailed by *C*, but there is a definite bias towards *p* as opposed to non-*p*.
 c. *p* is a logical consequence of/is entailed by *C*.

(13) is comparable to our category of possibility, (13b) to that of predictability, and (13c) to that of necessity.

It is not surprising that it has actually been necessary to further subcategorize the nine subcategories of fig. 5 in the semantic analysis of the modal verbs; the number of subcategories in each of the nine main subcategories, differs from one category to the other because only as many categories as was necessary have been included. The results of these analyses are represented in figs 6-8 below; each of the modal categories has been exemplified by the modal verbs which are the most characteristic of the individual categories in Danish as well as in English. It should be stressed at this point, however, that the

⁵ Cf. e.g. Davidsen-Nilsen, N. (1985) & (1988) and Vikner, S. (1985).

⁶ Cf. e.g. Lyons, J. (1977: 786-849).

modal verbs given as examples are to be regarded as typical of the subcategories they are connected with, but this does not mean that they cannot be found expressing other categories in empirical data. There are semantic overlaps between the categories, which is easily explained by the fact that the individual subcategories are so close to one another that overlaps can hardly be avoided in natural language use. In other words, what has been shown above is the prototypical categories of the language system, the *langue*, which may be, or actually are, blurred by language use, the *parole*.

Fig. 6:

EPISTEMIC POSSIBILITY may/kan
NON-EPISTEMIC POSSIBILITY can (may)/kan
PERMISSION may (can)/må gerne (kan)
ABILITY can/kan

Fig. 7:

	PREDICTABILITY		
EPISTEMIC	PREDICTION/ FUTURE	will	vil/ present tense
DEONTIC	FUTURE ARRANGEMENT	be (to)	skal
	LEGAL ARRANGEMENT	shall	skal/ present tense
	PROMISE	shall	skal
DYNAMIC	VOLITION	will	vil
	HABITUALITY	will	kan

Fig. 8:

	NECESSITY		
EPISTEMIC	LOGICAL INFERENCE	must	må
	SUPPOSED INFERENCE	ought (to)	bør/paraphrase
	REPORT	(is said to)	skal
DEONTIC	COMPULSION/ORDER	must	må/skal
	OBLIGATION	ought (to)	bør

5. Conclusion

In the above the basic principles of the contrastive project concerning the modal verbs in modern English and Danish have been presented. Semantic categories which are not language specific have been used in the taxonomy which functions as the *tertium comparationis* for the contrastive analysis of some language specific modal expressions, in other words, the central modal verbs in English and Danish. The semantic categories of the taxonomy are defined on the basis of logico-semantic features, but these features are to be considered prototypical, and it is assumed that the categories are imprecise and dynamic with the result that they do not rarely overlap. The cross-linguistic semantic categories are not to be regarded as universals; it is only claimed that they are well suited for a comparison of English and Danish, presumably because the two languages are closely related historically as well as culturally.

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