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The Semantic Uses of the Modal Must and the Related Frequency of Subjects and Verb Phrases

0.1. Like several other modals in English the modal *must* has two different and well distinguished semantic uses: it may mark either *"obligation"* or *"conclusion"*. It has been suggested that clear-cut syntactic differences exist between the two semantic uses of *must*. Thus Palmer[1] says that the two uses "are to be formally distinguished with reference to the past time analogues, and to the forms used analogously for negation, and also by the fact that only one may be used with future reference". His examples which illustrate this statement are:

(1) I must go now
(2) I had to go then
(3) I needn't go now.
(4) There must be a hundred people there.
(5) There must have been a hundred people there
(6) There can't be a hundred people there.

In his opinion only (1) and (3) can refer to future time.

0.2. Palmer's view about the formal distinction between the two semantic uses of *must* is not endorsed by Huddleston[2] who finds counterexamples to prove that a/ both semantic uses of *must* may refer to the future time; that b/ *must* in the phrase with the perfective *have* may refer to the past not only in the sense of (logical) conclusion but also in the sense of obligation; and also that c/ *needn't* is used for the negation of *must* not only in the sense of "obligation" but also in the sense of "conclusion". Huddlestone's counterexamples are:

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[1] G. R. Palmer, *A Linguistic Study of the English Verb*, Longmans, 1965, p. 119.
[2] R. F. Huddleston, *The Sentence in Written English*, Cambridge Universtity Press, 1971, pp. 311 ff.

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a/ (7) look at those clouds: it must surely rain before we get home.

b/ (8) you must have been born British to get a job in MI 5

c/ (9) All known examples of lunar luminiscense seem to be directly or indirectly related to some activity of the sun, but the relation is not simple and *need not* be based on overall sunspot activity.

0.3. For the purpose of the present paper most relevant in this disagreement is the fact that what was considered an absolute syntactic feature connected with the two semantic uses of *must* is now viewed as a mere probability, in this case, we must add, a very high probability. The present paper will also deal with probabilities of occurrence related to the two semantic uses of *must*, namely, with the occurrence of contextual elements which show the tendency to turn up more frequently with one rather than with the other meaning of *must*. This problem has received little attention in the literature although characteristic differences in the frequency of these elements stand out quite clearly when any corpus of language material is examined.

The data of this kind, apart from their intrinsic interest, may prove of some use to linguists in studying various aspects of this modal as well as in studying the expression of obligation, command, guess, and assumption in English.

0.4. As evidence that linguists do refer to questions of frequency of both the subject and the verbal phrase with the modals when describing their characteristics, and with the modal *must* in particular, a convenient quotation from Householder may be appropriate here. Speaking about the meanings of *must* the author says:

"There is also a homograph 'must' always with full grade vowel, which marks an inference — hence *rarely* occurs in the present with 'I' or 'You' except in expressions like 'I/You must be out of my/your mind', and *in general* is almost confined to progressive or perfective context except with be and have as in 'He must be in New York by now' or 'He must have read the book already'."[3]

Householder characterizes here the "conclusion *must*" not by means of absolute syntactic features as Palmer does, but relies on elements which are common to both semantic uses with the only difference that they occur more freqently with one meaning of *must* rather than with the other. The data

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[3] Fred Householder, "Mood, Modality and Illocution" in *Linguistic Speculations,* Cambridge University Press, 1971, p. 87.

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from a defined corpus of material that we are going to present are meant to substantiate or modify what Householder and some other linguists say relying on introspection and logical assumptions about the frequency of some these contextual elements.

0.5. Our corpus consists of examples of *must* from 15 novels and long stories and 8 short plays of a more recent date by British and American authors.[4] This body of modern English written material has yielded 1143 examples of the modal *must*. The negatived *must* has been excluded from consideration so that our data are based on 1032 occurrences of the modal *must*.

0.6. Assigning the examples to the two meanings of must has been done with a continuous reliance on their wider context as a great number of occurrences of *must* within a single--clause boundary are potentially ambiguous. In the process of classifying the examples there seems to develop with the reader a kind of "first-glance interpretation" based on the combination of available formal and semantic signals which in many cases may prove correct on further checking, but in some cases has to be changed.

The following examples would undoubtedly be interpreted within the context of a single clause as "obligation" (10) and "conclusion" (11):

(10) He must find the books.

(11) He must find the books difficult.

but the same examples with some additional context would require a different interpretation:

(12) He is always reading. He must find the books somewhere. I don't buy them for him.

(13) He must find the books difficult otherwise he won't read them.

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[4] The material has been collected from the following British and American novels and plays: *British:* A. Cristie: A Pocket Full of Rye (PFR); A. Wilson: Anglo-Saxon Attitudes (AS); M. Innes: A Private View (PV); Hammond Innes: The Mary Deare (DM); John Braine: The Room at the Top (RT); John Wain: A Travelling Woman (TW); K. Amis: Lucky Jim (KLJ); Graham Green: A Burnt-Out Case (GBOC); C. P. Snow: The Masters (M); J. Osborn: The Entertainer (Ent); Graham Green: The Potting Shed (PSh); Hugh Mills: The House by the Lake (HL); *American:* Saul Bellow: Herzog (BH); Saul Bellow: Dangling Man (SBDM); Saul Bellow: Seize the Day (SBSD); John Updike: Centaur (JUC); John Updike: Pigeon Feathers and Other Stories (UPF); James Gould Cozzens: Morning, Noon, Night (CMNN); The Best Plays of 1950's: L. Hellman: The Autumn Garden (API); T. Williams: Camino Real (APII); R. Anderson: Tea and Sympathy (APIII): M. V. Gazzo: A Hatful of Rain (APVIV); E. Albee: The Zoo Story (APV).

The change of the interpretation in the above cases has been effected through the influence of the additional context which changed the time relations in the clauses: (10) suggests future time reference while (12) refers to the present time; on the other hand (11) refers to the present time and (13) to the future ("... when he comes across the books").

The addition (or deletion) of a predicate complement may easily change the probability of an interpretation as in

(14) He must find the books.

(15) He must find the books difficult.

where as a result the meaning of *find* has been changed from the root into the derived meaning.

Elicitation tests with native speakers (or more precisely readers) would give interesting results with regard to the "most probable interpretation" of clauses containing *must* and the surface structure items contributing to such interpretations. There seem to be "expected" and "unexpected" subject- verb combinations occurring with each of the two semantic uses of *must* and such tests would help in pointing them out. But whatever the results, they would always remain probabilities not absolutes.

0.7. Going back to the language material we should perhaps note that the ratio of the "obligation *must*" and the "conclusion *must*" is 573: 461 examples, or 55 per cent versus 45 per cent, which is considerably different from what Michael West has obtained for his "Service List"[5] where the "*conclusion must*" is represented with only 12 p. c. of the ocurrences of *must*.

0.8. We shall now consider the subjects of *must* in the two semantic uses and try to see how adequate was Householder's statement concerning the frequency of 'I' and 'You' occurring with the "*conclusion must*". We shall also compare the distribution of frequencies of subjects with the two semantic uses of *must*.

Table 1 shows the distribution of the frequency of subjects with the *conclusion and obligation must* referring to the present time (i.e. without the phrase *must-have-etc.*)

Table 1

Subj.	Conclusion	%	Obligation	%
I	11	4	273	48
You	39	16	131	23
3rd	185	80	167	29
Total	235	100	571	100

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[5] Michael West, *A General Service List of English Words*, Longmans, 1953.

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Table 2 shows the frequency of the subjects of the "conclusion *must*" referring to the past time and occurring in the phrase *must have etc.*

Table 2

Subj.	Concl.	%
I	24	15
You	37	16
3rd	165	69
Total	226	100

0.9. The data shown on Table 1 have more or less substantiated Householder's and general logical expectations but have also shown precisely what "rare" means in a body of written material.

Some examples from the material may illustrate to the reader the type of sentences in which the "conclusion must" occurs with the "rare" subjects 'I' and 'You'.

(16) Sissler was trying to make Moss feel at home — *I must* seem obviously shook up — and Libby looked concerned. ABH 103

(17) ... of myself I can say what is my substance whereof 'I' must be made of, but that said all I know is said.

(18) You must think you are very interesting HLM 180

(19) You must know him, he's always around Dufton RTJW 163

(20) You must love her — I think you do .. ABH 115

These and similar examples in the material show that one should be careful in agreeing with Householder who says that the 'I' and 'You' subjects are rare except in expressions like "I/You must be out of my/your mind". Our material does not support his view as none of our examples with the first and the second person subjects is of this type; on the contrary, most of them have a variety of predicates which are not, more or less, fixed expressions like Householder's example. His example, however, is a typical pattern with the "conclusion *must*" for which there is a high probability that it is going to be interpreted in the intended meaning and will not look ambiguous even when separated from its wider context. Compared to it, example (18) is certainly less resistant (or more susceptible) to the "obligation" interpretation. In this connection it is also to be noted that the 'you' subject occurs much more frequently than 'I'.

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10. Looking at the third person subjects it is worth noticing another feature which shows a considerable difference in frequency between the two semantic uses of *must* and that is the number of animate and inanimate surface subjects. With the "conclusion must" inanimate subjects of the third person occur three times as frequently as the animate subjects, and the inanimate subjects are in 50 p. c. of the cases the so-called formal subjects, primarily *it* (less frequently there, this, and that). About fifty per cent of the occurrences of the "conclusion must" with inanimate subjects are found in patterns like:

(21) It must be terrible to know so much. AJUC262
which occur comparatively rarely with the *"obligation must"* and when they occur it is usually with the verbal past participle i.e. in the passive like

(22) It must be faced.

Thus in establishing characteristic frequencies of subjects with the two semantic uses of *must* it may be claimed that inanimate subjects, in particular *it*, are dominant among the third person subjects taken together. With the *"obligation must"*, on the other hand, there is a definite prevalence of animate subjects (of 117 : 50 cases)

Further analysis of the inanimate subjects and their context with the "obligation must" reveals that 27 examples out of 50 have passive predicates and that the active subjects of all these passive clauses are animate.

Still, we cannot claim that even here an absolute restriction exists which makes inanimate subjects unacceptable although such claims have been put forward by at least one transformationist (R. Hofman)[6] who defines the restriction by stating that the underlying subject of all *"obligation must"* occurrences must be animate.

Returning to the surface subjects we may see that besides the 27 passive predicates there are still 23 examples of the "obligation must" with inanimate subjects and non-passive predicates to be accounted for. Several of these subjects are used in a sense which could be interpreted as animate in their contexts. Such are nouns like college, court, government, e.g.

(23) If the *government* must publicize the makings of these things it is not to be expected that small boys won't show a healthy curiosity. PVSJ 21

(24) ... I consider that the *college* would be grossly impudent not to use the next few months to resolve on the dispositions *it* must make. MCra 79

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[6] T. Ronald Hofmann, "Past Tense Replacement and the Modal System", Mimeographed. M. I. T. 1964.

The following subjects however are somewhat more difficult to personify:

(25) In my opinion History must override all personal considerations ASGM 165

(26) Things happen as they must. MB 133

(27) Our first thoughts must go to his family ... MDS201. Thus in spite of the strongly expressed tendency for the "obligation *must*" to occur with the animate subject or at least with the active animate subject in the passive constructions, inanimate subjects do occur with *must* in this sense.

11. Some of the data on the subjects of *must* that have been found in the present corpus could have been foreseen through logical assumptions based on its two semantic uses, as has been done by Householder, only such assumptions tend to be too general and tend to miss some points that a corpus brings forth. In our case the data have shown how 'rare' the 'I' and 'You' subjects are when *must* means inference, how their frequencies compare with the same subjects of the "obligation *must*", and the data have also drawn our attention to the difference of the ratio of animate and inanimate subjects of the third person occurring with the two semantic uses of *must*.

12. Let's now look into the data concerning the frequency of various types of the verb phrase with the two semantic uses of must.

The verb phrases which proved most interesting for our analysis are:

must-V	must write
must-be-Ven	must be written
must-be-compl.	must be (tall) (tired) (a soldier) etc.
must-be-V-ing	must be writing
must-have-(V-en) (compl.)	must have (written) (been tall)

Table 3

		conclusion	%	obligation	%
1	must-V	57	12	513	89
2	must-be-V-en	8	2	35	6
3	must-be-compl.	156	34	23	4,7
4	must-be-V-ing	14	3	2	0,3
5	must-have-(etc)	226	49	—	—
	Total	461	100	573	100

As the phrase *must-have-etc.* is found exclusively with the "conclusion *must*" and refers to the past time (for which analogical construction *had to* is used with the "obligation *must*"), we shall exclude it from our further analysis. We shall concentrate on the "conclusion *must*" referring to the present time and on its comparison with the "obligation *must*", which refers to the present or future time. Suffice it to point out that *must-have-etc.* is the most frequent type of the verb phrase with the "conclusion *must*", as Table 3 shows, and that we were unable to ascertain any examples of this construction expressing obligation. (see Huddleston, 1971)

The data as presented on the following table with *must--have-etc.* phrase excluded will be more convenient. for our comments.

Table 4

		conclusion	%	obligation	%
1	must-V	57	24	513	89
2	must-be-V-en	8	4	35	6
3	must-be-compl.	156	66	23	4,7
4	must-be-V-ing	14	6	2	0,3
	Total	235	100	573	100

Comparing the distribution of frequencies of the types of the verb phrase which occurs with the two semantic uses of *must,* as shown on the above table, some ratios stand out more clearly than others. Thus the verb phrase *must-V* is by far the most frequent structure in which the "obligation *must*" occurs and it is quantitatively characteristic of this semantic use of must (89 p. c.), in much the same way the phrase *must-be-compl.* (66 p. c.) seems characteristic of the "conclusion *must*". The same phrase, i. e. *must-V*, with the "conclusion *must*" is of a considerably lower absolute and relative frequency and, in addition, it apparently entails restrictions on the kind of verb. This restriction, or perhaps relative restriction, becomes evident when we look into the list of verbs occuring as exponents of V. The following is the list: affect, appear, contain, come (2), expect, exist, feel (2), find, follow, get (3), happen, have (8), interest, know (4), look (3) love, live, make (3), mean (3), notice, remember, require, see, seem (4), strike, take, think (3), trust (1). As we can see from the list the majority of verbs belong to the stative and private verbs[7] and have a common feature of

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[7] Palmer, *ib.,* p. 97—100.

incompatibility with the progressive. The verbs like *come, get, look, strike,* etc. which normally occur in the progressive are used here in the non-progressive sense cf:

(28) . . . the presence . . . is meant to and must *strike* callow youth as something splendid ACCMNN 150

(29) It must *come* from not thinking. API50 43

(30) You must *get* that from your mother, she is a real femme. (AJUC 172)

(31) . . . a place from which the crowd that runs the A and P must *look* pretty crummy. UPF 194

That the list of verbs occurring in this position is a specialized one is evident in the material from the tendency towards the repetition of the same verbs in this structure which is less evident with the "obligation *must*" as the following improvised test demonstrates. In the 57 examples of *must-V* structure with the "conclusion *must*" there occurred 30 different verbs as exponents of V, and in the same number of examples of the same phrase with the "obligation *must*" taken at random, there were 43 different exponents of V.

We shall return to this phrase later and say more about it after looking into another characteristic ratio in our material.
13. The structure that is so frequently found with the "conclusion *must*" and shows a considerably lower frequency with the "obligation *must*" is the verb phrase number 3 on Table 4. The symbol *must-be-compl* stands for the verbal phrase which includes various language items as exponents of *compl,* the same that one finds in the slot of the nominal predicate after copula. In our material the most frequent exponent of *compl* with the "conclusion *must*" is the noun, after which comes the adjective etc., while with the "obligation *must*" the adjectival forms in -ing and -ed prevail.

It should be also pointed out on Table 4 that the structure 2, the passive construction with *must,* a purely verbal construction, occurs slightly more frequently with the "obligation *must*".

14. The attention of the reader should now be drawn to a correspondence that exists between what we find in our body of material concerning the most frequent verbal phrases, and what transpires from the quotations supporting the definitions of the two semantic uses of *must* in some scholarly dictionaries of the English language.

Webster Third International illustrating the "obligation *must*" (subdivided into six different semantic uses) supplies 24 quotations, only two of which have the verb phrase containing the element "be" *(they must be made to obey; why must you*

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be so stubborn) all others having *must* incorporated into the phrase *must-V (we must obey the rules)*. On the other hand quotations illustrating the "conclusion must", and subdivided into two semantic uses, contain exclusively *must-be-compl* phrases *(it must be nearly dinner time)* and, of course, the perfective phrase *must-have-*etc.

OED as a historical dictionary may not be appropriate for a comparison with the present state of the language in some cases; but quotations supporting the definitions of the two principal meanings of *must* correspond very well with what our material suggests to be the type of high-frequency context: the "obl. *must*" there is illustrated mainly by the *must-V* phrase with a single example of a phrase containing "be", and the "conclusion *must*" mainly by the phrase containing "be" with only four examples of the phrase *must-V*.

Smaller dictionaries repeat the same pattern. COD supplies five quotations illustrating the "obligation *must*" all containing exclusively *must-V* constructions, and four quotations for the "conclusion *must*" containing "be" or perfective "have" and only one with the *must-V* phrase.

It is doubtful that lexicographers have followed anything like a quantitatively representative line with regard to the type of the verb phrase in supplying the quotations. However the material at their disposal may have dictated the selection of illustrations along a line which seems to me rather plausible after reading and comparing many examples of *must* in the written material within the boundary of a single clause. It is normal that the dictionary quotation serving to illustrate a certain meaning of an entry should be as free of ambiguity in interpretation as possible even without a wider context which cannot be supplied for technical reasons. Examples of *must* which will be most probably interpreted in the intended meaning are to be found among those occurrences of *must* which are incorporated in the most frequent verb phrase for the wanted meaning. In other words, the frequent (i. e. expected) verb phrase will serve to reiterate the semantic use of *must* with which it turns up most frequently. And this seems to be valid the other way round, namely, that the infrequent verb phrase with that particular meaning of *must* may hamper the intended interpretation.

There is no doubt that the decisive element in the interpretation of *must* (within a single clause or sentence) is the combination of the meanings of the subject and the complement verb but the type of verb phrase structure seems to add to the probability of one or the other interpretation in the written material. This is usually manifested with the reader in such

a way that he must make an extra effort to interpret some of the *must-V* phrases in the sense of conclusion, and, perhaps, some *must-be-compl* phrases in the sense of obligation. But only tests with native informants can throw some light on this question.

15. The phrase *must-be-V-ing*, as Table 4 shows, occurs more frequently with the "conclusion" than with the "obligation must".

Similar to other progressive forms it occurs mainly with the "progressive verbs". The list of verbs that occur in this phrase in our material is the following: display, function, go(2), look, need, pound, quote, save, think(2), try, wonder, worry.

According to the verbs occurring in this phrase and according to their time reference (present, mainly "actual" present) the construction is something of a parallel to the progressive present, much in the same way as *must-V* (referring to the future and general present time with the "obligation *must*", and to the actual present and general present with the "conclusion must") is parallel to the simple present.

Following from this it has been suggested[8] that with the non-stative verbs there is a neat conclusion/obligation pattern in examples like

(32) He must be singing now	*conclusion*
(33) He must sing now	*obligation.*

which is impossible with the stative verbs, and

(34) He must know that

represents both "obligation" and "conclusion".
There are two points to be made here. Example (33) is not absolutely unambiguous which becomes clearer if the adverb is changed. The modal *must* in

(35) He must sing well

i. e. in the *must-V* phrase and with a non-stative verb as exponent of V, may be interpreted as "conclusion".

The other point concerns (34) and the stative verbs. The contrast between the phrases *must-V* and *must-be-V-ing* does not work here as in (32) and (33) but that does not mean that the stative verbs never occur in the letter phrase as the following examples from the corpus bear out.

(36) "Here, have a cigarette", she said, "You must be needing one." EKLJ 43

(37) "You must be thinking: God, here she is again!" ACMNN71

(38) "They must be wondering where they stand . . ." PVSJ

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[8] Hofmann, *ib.,* p. 14.

Whatever the other functions of this contrast, it seems that it adds to the probability of the "conclusion" interpretation and rules out the sense of obligation.

16. To summarise the points made in this paper it may be said that the study of the data yielded by our corpus has pointed out several characteristics of the context of the two semantic uses of the modal *must* from the quantitative point of view. It has been found that the two semantic uses of *must* show different patterns of frequency distribution of the subject over the three persons, but that the assumed exceptional use of "I" and "You" with the "conclusion must" in a limited predicate context has to be rejected or modified. On the other hand in spite of the prevalence of animate third person subjects, inanimate third person subjects are well represented with the "obligation must".

It has been established that far the most frequent verb phrase in which "obligation must" occurs is *must-V*, while *must-be-nom.compl.* is the most frequent phrase with the "conclusion must". That suggests that there exists in language a preference for expressing obligation and command by means of the verbal element denoting "action", while inference, guesses, and logical conclusions tend to be expressed by means of nominal, adjectival less frequently verbal element, i. e. stative verbs denoting a state. It has also been found in this connection that the frequencies of the mentioned verb phrases with the respective meanings of *must* are reflected in the choice of the quotations for the entry *must* in some principal dictionaries of the English language. The body of written material at our disposal has shown that many examples of *must* are potentially ambiguous within the context of a single clause and it has been suggested that the "first glance interpretation" of *must* may be partly influenced by the type of verb phrase in which *must* occurs. The verb phrase found predominantly with one sense of *must* may exert its influence and "activate" that particular sense of *must* when there is no wider context at hand, to clarify the intended meaning.