WILL, WILL, AND MUST

A STUDY IN FAMILY RELATIONSHIPS

Abstract

I propose to do here some philosophically interesting linguistics and then show why I consider it philosophically interesting.

The class of English modal verbs is set up and modal predicates distinguished from their arguments. These may be epistemic or mandatory, intransitive or transitive, binding or releasing. The major subsystems 1, 2, 3, 4, 4a are taken up serially and the distinctions applied to them. Finally the minor performative subsystems 5, 6, 7, 8 are described briefly.

The linguistic nature of these investigations is brought out and described. The philosophical implications of the following features of this system are then suggested : (i) the absence of any serious constraints on the Propositus that constitutes an Argument of the Modal Predicate; (ii) the relevance of tense-considerations in explicating modal sentences; (iii) the interrelations within each subsystem and between subsystems that define how modal sentences can be disputable, refutable, or infelicitous.

It is hoped that this account will induce some fresh digging at the problem.

As many of you are no doubt aware I am no philosopher—not by a professional chalk anyway. Not unless occasionally worrying about problems that customarily get called ' philosophical ' entitles one to be taken for a philosopher. Only politeness then will make you hold back the question, What is this professional linguist (for that's what I am) doing here in a gathering of philosophers ? I can of course answer this question quite truthfully at a personal level. Well, I can hear myself saying, I'm here

because some philosopher friends of mine have encouranged me to believe that, since language has been worrying philosophers a good deal lately, what a linguist has to say is likely to be of professional interest to philosophers. So I'm here in a sort of representative capacity.

Now I'm sure that philosophers will find such an answer too personal. So let me see if I can't get any philosophical milage out of this question. I shall therefore offer my guess about the true relationship between formal linguistics and the loosely defined body of activity known as 20th-century linguistic philosophy. Briefly put, while some linguistic philosophers have tried to naturalize ideal languages, other linguistic philosophers have tried to idealize natural languages. In so doing, they are to be credited with or accused of doing linguistics informally—not all the time to be sure, but some of the time. This is especially true of the second group busy holding up ordinary language and saying, Behold the language !

Allow me to suggest that history is repeating itself here. The domains of Natural Philosophy and Moral Philosophy have now been largely annexed by Natural Science and Social Science respectively. As if in recognition of the pioneering work done by philosophers in these fields, the sciences serve philosophy by presenting it with certain brute facts. Let Copernicus propose the heliocentric system, or Darwin biological evolution, or Heisenberg the uncertainty principle, or behaviour scientists various types of conditioning and philosophers sit up and take notice. Ordinary language analysis has already lost some of its charm for philosophers, while linguists are moving into the territory with enthusiasm. The maps that linguists make will presumably continue to be of interest to philosophers at least on two counts—to distil language is to distil the native wisdom of generations of language users and this native wisdom has been brought to bear upon all the principal areas and modes of experience that

a philosophers is likely to be concerned about, and, secondly, the design of language itself apart from what language has to ' say ' is too important an aspect of characteristically human activity for philosophers to ignore brute facts about language.

Having presented my credentials as it were, let me now put my cards on the table. First, I shall present here an analysis of the English modal verbs. In so doing I shall naturally try to select those aspects of the system that will be of interest to philosophers— I shall not, for example, say anything about the substitution of *shall* for *will* or about the relation between modal verbs and the expression of time or about certain interesting facts about their behaviour in relation to sentence accent. Further, I shall concentrate on the bold features of the modal system, neglecting fuzzy edges, special cases, and the like. Even after selecting philosophically interesting aspects, I shall deal in greater detail with only some of the sybsystems, content to present only a sketch of the remaining sybsystems. It is in the second part of this study that I shall try to suggest possible philosophical implications.

I

An English sentence often has two verbs—that is, in addition to the usual main verb, there is a modal verb apparently sharing the same subject and embodying some comment on the speaker's part on the validity of the rest of the sentence. The modal verbs that we shall be concerned with are : *will, may, can, must, ought, should, let, shall, would, might, could,* and, to some extent, *need.* We shall leave out the modal-like uses of *have* (he has to go), *manage* (he managed to go), *be* and *be* combinations (he was to go, he was able to go, he is going to come), and *dare* (he dare not show his face). Explicating the modal is essentially explicating its relation to the validity of the rest of the sentence. From now on, we shall use the term PROPOSITUS to avoid repeating the awkward phrase ' the rest of the sentence ' : the PROPOSITUS is simply the event, state, process, action etc. referred to by the

main verb together with its accompaniments (subject, object, complements, manner adverbials, and the like). To keep matters simple we shall keep the tense variable constant—in all the examples that follow PAST time reference is excluded, it is either PRESENT or FUTURE. And, until towards the end, we shall stick to the affirmative polarity. NOT introduces a complication in that we have to decide whether it belongs to the PROPOSITUS or to the MODAL in the sentence. Consider :

(1) You must speak frankly.

(2) You mustn't speak frankly.

Here (2) cannot be paraphrased as—

(2a) It is not the case that you must speak frankly.

Rather, (2) should be paraphrased as—

(2b) You must abstain from speaking frankly.

If what one wants to say is (2a) and not (2b), one has to resort to (3)—

(3) You needn't speak frankly.

Need is, as it were, a variant of *must* appropriate when *not* negates the MODAL. When the PROPOSITUS is negated, *mustn't* is quite appropriate. So—

(i) MODAL (PROPOSITUS) (example 1)

(ii) MODAL (NOT–PROPOSITUS) (example 2)

(iii) NOT–MODAL (PROPOSITUS) (example 3)

Coming now to the MODALS proper, we have to establish certain distinctions to begin with. First, a distinction between EPISTEMIC modals and MANDATORY modals. Compare (1) with (4)—

(1) You must speak frankly.

(4) You must be crazy to speak so frankly.

And compare the pair (1)–(4) with the pair (5)–(6) :

(5) He must be careful.

(6) He must be careless.

Clearly, (5) and (6) can be said together without any contradiction, as in—

(7) He must be careless. It's a pity; for he must be careful
you know.

The simplest way of accounting for these examples is to say that *must* is open to an EPISTEMIC interpretation where grounds for believing the PROPOSITUS are being evaluated and a MANDATORY interpretation where grounds for implementing the PROPOSITUS are being evaluated. (1), (5), and (5) as a part of (7) favour the MANDATORY interpretation; (4), (6), and (6) as a part of (7) favour the EPISTEMIC interpretation.

The two groups of examples also illustrate another distinction —the one between INTRANSITIVE modals and TRANSITIVE modals. With the former, the PROPOSITUS is the subject of the modal. With the latter, the MODAL and the PROPOSITUS genuinely share a common subject. Thus, (4) and (6) in their normal interpretation show an INTRANSITIVE *must*, (6a) being a suitable paraphrase of (6)—

(6a) That he is careless must be the case.

So, in (6) *he* is only apparently or superficially the subject of *must*, somewhat as in (8). (Compare (8) with (8a).)

(8) What happened ? He happened to visit my place.

(8a) It happened that he visited my place.

So *must* of (6) and (6a) is a one-place predicate with the PROPOSITUS as its argument. The *must* of (5) is on the other hand transitive—a two-place predicate.

(iv) *must* (PROP) (examples 6, 6a)

(v) *must* (*he*, PROP) (example 5)

As we shall see later on EPISTEMIC modals can be transitive too and MANDATORY modals can be intransitive too.

The third distinction concerns the amount of value that we place on the grounds being offered for believing (or implementing, as the case may be) the PROPOSITUS. The grounds may be made explicit as in the marked portion of (4) or (9) or implicit as in (6).

(4) You must be crazy *to speak so frankly.*

(9) They must be newly-weds : *they look so happy.*
Now, in these two examples the grounds are so strong to the speaker that in his eyes they BIND one to believe the PROPOSITUS. But suppose the grounds are not strong enough to effect such a BIND ? (As in 9*a.*)

(9*a*) They needn't be newly-weds : *they aren't ecstatic enough.*

NOT–*must* (PROP)

At the same time there is no ground for a negated PROP. (As in 9*b.*)

(9*b*) They mustn't be newly-weds : *they look unhappy.*
           must (NOT–PROP)

So that one may want to retort to (9*c*).

(9*c*) Well, they can be newly-weds : *they look happy enough.*
So, while there is no BIND to believe their recent marriage there is a RELEASE to that effect.   While *must* is a BIND modal, *can* is a RELEASE modal.   The modal negation of (9*c*) will bring us back to (9*b*)—so (9*d*) is a more idiomatic version of (9*b*).

(9*d*) They can't be newly-weds : *they look so unhappy.*

NOT–*can* (PROP)

Armed with these three distinctions, we can look at some subsystems of English modals :

(vi) epistemic/mandatory

(vii) intransitive/transitive

(viii) bind/release

(Note their interrelationship :

BIND (PROP) = NOT−RELEASE (NOT−PROP)
as seen in the equivalence of (9) and (9e).)

(9e) They can't not be newly-weds : *they look so happy.*
(colloquial).

Where there is a WILL there is a MAY

Consider examples (10)–(13) :

(10) Mary will leave if John comes.

(11) Mary may leave if John comes.

(12) Mary would leave if John came.

(13) Mary might leave if John came.

Let us apply our three pairs (vi)–(viii). These are all
clearly EPISTEMIC—we are being asked to believe in the
PROPOSITUS—namely, Mary's departure on John's arrival.
Again, these are all INTRANSITIVE; they are readily paraphra-
sable as—

(10a) It will be the case that Mary leaves if John comes.

(11a) It may be the case that Mary leaves if John comes.

(Compare the idiomatic use of ' maybe ' for ' perhaps ').

(12a) It would be the case that Mary leave if John came.

(13a) It might be the case that Mary leave if John came.

Finally, while (10) and (12) have the force of a BIND, the other
two (11) and (13) merely connote RELEASE. Thus, there is
nothing odd about (10b), (11b), (11c).

(10b) Mary will leave if John comes; and I believe it.

(11b) Mary may leave if John comes; but I don't believe it.

(11c) Mary may leave if John comes; or she may not.
(*may not* here is *may* (NOT–PROP))

On the other hand (10c), (10d), (11d) will be distinctly odd :

(10c) Mary will leave if John comes; but I don't believe it.

(10d) Mary will leave if John comes; or she will not.

(11d) Mary may leave if John comes; and I believe it.

While (11c) can mean that both PROP and NOT–PROP are equally probable, (10d) is defensible only if we give it a purely analytic interpretation as an application of the principle of the excluded middle. (11d), again, is defensible only if ' it ' is interpreted not as ' Mary's leaving if John comes ' but as ' Mary may leave if John comes '.

Certain clarifications are needed at this point. First, the presence of an *if*-clause seen in (10)–(13) is not an essential feature. The *if*-clause may be left suppressed. (Compare the suppression of a *since*-clause in (6) and its presence, in various guises, in (4), (9), (9a–d).) Consider—

(14) He will/may/would/might know the answer.
      (Possibly with an implied–' if you ask/asked him '.)

(15) (An early morning doorbell ring.) That will/may/
      would/might be the milkman.

The versions with *will* under (14) and (15) also serve to bring out a second fact. While *will* has been saddled with the duty of providing a future tense for English by traditional grammarians brought up on Latin and hence missing it in English, *will* actually ranges over present as well as future. (It is obvious that *would, might,* and ' if John *came* ' are bereft here of their PAST time force.)

Thirdly, the condition introduced by *if* (or the concession introduced by *though*) may be counterfactive as in (12), (13) with a strong suggestion that John's arrival is never going to come about or it may be nonfactive as in (10), (11) where *if* can easily be replaced by *if and when.*

The second subsystem to be considered now matches this except that the modals there are TRANSITIVE.

Dispositions and capacities : One would if one could

I have already hinted that EPISTEMIC modals can be TRANSITIVE. Consider (16)–(19) which match (10)–(13).

(16) Mary will say yes if John proposes to her.

(17) Mary can say yes if John proposes to her.

(18) Mary would say yes if John proposed to her.

(19) Mary could say yes if John proposed to her.

The comparison of the two sets should serve to bring out the two meanings of *will*.

(*ix*) *will* (PROP) (*will*–1 in example 10)

(*x*) *will* (Mary, PROP) (*will*–2 in example 16)

Consider the following which illustrate both the subsystems together.

(20) If Mary will–2 not marry John, she will–1 not.

(21) If what beggars will–2 beggars can, then beggars may—nay, beggars will–1.

While (10)–(13) BIND (or RELEASE, as the case may be) one to believe PROP, (16)–(19) BIND (*will*–2) or RELEASE (*can = be able to*) one to believe *of someone* that PROP is the case. Thus (22) and (22*a*) are paraphrases of each other under *will*–1 but not under *will*–2.

(22) Mary will not marry John.

(22*a*) John will not be married to Mary.

The contrast between *will*–2 (willingness, disposition) and *can* (ability, capacity) is of course a fundamental one that runs through the world of man and certainly through the world of cognition. What one *will*–2 say is what one thinks or believes. What one *can* say is what one knows.

(23) What one can't say one mustn't speak.
   (Here *must* is MANDATORY modal as in (2).)

This will be one possible paraphrase of the Wittgenstein dictum (*Tractatus logico–philosophicus* 7.1).

Is ought a must ?   And can a may ?

We have already seen how *must* is either intransitive and epistemic or transitive and mandatory.   Both are, however, BIND modals.   The *can* of (9c) is the epistemic modal of RELEASE. We are actually dealing here with the third and the fourth subsystems.   Let us take up the epistemic subsystem first.   (We will suppress the grounds for brevity's sake.)

(9) They must be newly-weds.

(24) They ought to be/should be newly-weds.

(9c) They can be newly-weds.

Two questions immediately arise.   What is the difference between the *will–1/may* pair of subsystem 1 and the present *must/ can* pair of subsystem 3 ?   (This *can* is of course different from the ' *be–able–to* ' *can* in the *will–2/can* pair of subsystem 2.)   Both pairs are epistemic and intransitive.   Compare (25) with (26), and (27) with (28).

(25) That will be four shillings.

(26) That must be three shillings.

(27) He may be annoying sometimes.

(28) He can be annoying sometimes.

The *must–can* pair is certainly more contentious in tone than the *may–will* pair.   While the shopkeeper will use (25) (with an implied ' as a matter of course '), the customer must use (26) !   The grounds of validity being offered in each case are different in character—knowledge about relevant circumstances (KRC) in

one case and belief about relevant circumstances (BRC) in the other case. The schemata for (25)–(28) are respectively:—

(xi) *will* (PROP) = BIND (BRC, anyone, BELIEVE–PROP)

(xii) *must* (PROP) = BIND (KRC, anyone, BELIEVE–PROP)

(xiii) *may* (PROP) = RELEASE (BRC, anyone, BELIEVE–PROP)

(xiv) *can* (Prop) = RELEASE (KRC, anyone, BELIEVE–PROP)

BRC is associated with *if*–clauses, KRC with *since*–clauses. (27) may be continued appropriately with *as far as I know*; while (28) may be continued appropriately with *such is his nature* or *he is unable to help it.*

The second question concerns the place of *ought* and *should* in the *must–can* system, for it seems clear that they belong there and call for KRC. Both, one may add, are BIND rather than RELEASE modals. But there is a crucial difference between *must* and *ought/should*—one who concedes (9) will readily concede (24), but one who concedes (24) needn't concede (9) at all. So (24) presents a weaker version of (9), it is what one believes but doesn't know for sure. Let us symbolize this added element found in *ought/should* but not in *must* as THINK. Going back to *may* and *can*, one may point out an additional difference between the two—*may* has a THINK element in it but *can* hasn't, which means that conceding (27) implies conceding (28) but not the other way round.

The three EPISTEMIC modal verb systems can now be calibrated with each other and with the EPISTEMIC modal adjectives which philosophers feel more at home with.

(xv) EPISTEMIC (i.e. BELIEVE–PROP) modal verbs and adjectives

	Subsystem 1 Intransitive (BRC, any-one, BELIEVE-PROP)	Subsystem 2 Transitive (BRC, any-one, Agent, BELIEVE-IMPLE-MENT-PROP)	Subsystem 3 Intransitive (KRC, any-one, BELIEVE-PROP)	Modal adjectives
(A) BIND	*will*-1	*will*-2	*must*	*certain*
(B) THINK (BIND)	..	..	*ought/should*	*almost certain, more than probable*
(C) THINK (RELEASE)	*may*	..	..	*probable, more than possible*
(D) RELEASE	..	*can*	*can*	*possible*

Note: Gaps in the system are indicated by .. In respect of less careful usage, however, .. may be interpreted as ditto signs. Thus, *ought/should* are used not only for B-3 but also for C-3; similar observations hold good for *will*-1, *may* and *will*-2.

The MANDATORY modal systems in English are not entirely parallel. They merge C and D.

(xvi) (A) *must*   : *essential, more than desirable*

       (B) *ought/should* : *desirable/advisable, more than permissible*

       (C-D) *may/can* : *permitted/entitled*

The appropriate schemata will be—

(xvii) *must* (Agent, PROP) = BIND (KRC, Agent, IMPLEMENT-PROP)

(xviii) *ought/should* (Agent, PROP) = THINK (BIND (KRC, Agent, IMPLEMENT-PROP))

(xix) *may/can* (Agent, PROP) = RELEASE (KRC, Agent, IMPLEMENT-PROP)

The Known Relevant Circumstances may be the various demands on the Agent (of law, custom, fashion, morality, common sense, and the like) or the interests of the agent. (When *should* has this latter sense, it can be paraphrased by *had better.*) The source of the demands made on the Agent may be someone other than the Agent—very often the Speaker who wants to declare them (*you must, he may*) or the Addressee who is being asked about them (*may I ?, should he ?*) or some third party (*I must, must you ?, he can*). Note that KRC of (xvii)–(xix) is *known* relevant circumstances in subsystem 4 but *knowledge of* relevant circumstances in subsystem 3.

It is significant that *must, ought, should, can,* and *may* have each an EPISTEMIC (see (xv)) and a MANDATORY (see (xvi)) interpretation. (Originally they were all transitive and, with the exception of the last two, mandatory.) Ordinary language frequently paraphrases the EPISTEMIC in terms of the MANDATORY.

(29) This must be true = I must say that this is true.

(30) This ought to/should be true = I ought to/should say that this is true.

(31) This may/can be true = I may/can/dare say that this is true.

It also permits mutual embedding as in—

(32) I must say that this can be true.
(Here the contentious EPISTEMIC *can* is embedded in the PROP of the MANDATORY *must.*)

(33) I can say that this may be true.

(34) It is possible/is probable/may be the case that you must speak frankly. (Here the MANDATORY *must* is embedded in the PROP of EPISTEMIC modals.)

(35) He may certainly/probably/possibly be careless.
(EPISTEMIC inside EPISTEMIC)

When wishes are the horses, performatives will ride them

When the Known Relevant Circumstances take the shape of the Author of the Speech Act, the Speech Act takes on a performative force.   This is seen in four minor subsystems—one EPISTEMIC and three MANDATORY.

The fifth subsystem has *let* as the only member.

(36) Let John come, and Mary will/may leave.
   (This is a paraphrase of (10), (11) respectively.)

(37) Let A be equal to B, and B will be equal to A.

(38) (Let yourself/anyone) scratch a Russian, and you/he
   will find a Tartar.   (One could retort :
   (Let yourself/anyone) scratch a Russian, but you/he
   won't find a Tartar.)
   (Here the first two words, are usually left understood.)

The following schema covers the *let*-sentences :

(xx) *let* (PROP) = BIND (SPEAKER, anyone, SUP-
   POSE–PROP)
   (If BIND is replaced by RELEASE the condition
   with *let..and* is converted into the   concession with
   let..but.)

The sixth subsystem has *may* and *let*.

(39) (May) God bless/damn you !

(40) (Let) Devil take the hindmost !

The respective schemata are—

(xxi) *may* (PROP) = BIND (SPEAKER, BRC, IMPLE-
   MENT-PROP)

(xxii) *let* (PROP) = RELEASE (SPEAKER, BRC, IMPLE-
   MENT-PROP)

Let can also be a BIND modal as in (41), a line from Rabindranath Thakur.

(41) Into that Heaven, O Lord, let my country awake !

For the Speaker to invoke the world (Believed Relevant Circumstances, to be precise) to implement the PROPOSITUS is certainly a brave performative act that harmonizes poorly with the modern world (whence the archaism of (39)).

The seventh subsystem has *shall* as the only member.

(42) They (shall) pay now/later.

(43) Either they (shall) go or I (shall) go.

The appropriate schema will be—

(xxiii) *shall* (PROP) = BIND (SPEAKER, SPEAKER, IMPLEMENT-PROP)

The Speaker is here, so to say, staking his honour on that the PROPOSITUS be carried out. There is an epistemic suggestion also—' what I undertake to implement *will* come about '.

All the three subsystems above are intransitive. The eighth one is transitive. If the source of the demands on the Agent is someone other than the Agent, the appropriate modal is *shall* (*I shall, shall I ?, thou shalt not, they shall*). If it is the Speaker, the appropriate modal is *will*. If it is someone other than the Agent, the appropriate modal is *let*. The distinction between BIND and RELEASE is somewhat blurred in this subsystem. Some of the permissible types are illustrated below.

(44) Let me join you, shall I ?

(45) Let us have our own way, will you ?

(46) Let's/Let me and you draw lots, shall we ?

(47) I will/shall write to you later.

(48) (You will) leave this place, will you ?

(49) (You will) give us a chance, won't you (please) ?

(50) (You will) leave before it is too late.

(51) (You will) pay later if you like/please.

(52) You shall report to me tomorrow.

(53) (You will) get well soon, won't you ?

(54) He will/shall report to me tomorrow. (Said by the boss)

(55) Let him pay later if he likes. (Said by the boss)

(56) Let him pay later if he likes. (Someone reporting the boss)

(57) He shall report to our boss tomorrow.

Out of these, all except the last two have a performative force—in (44), (45) the Speaker seeks direction from the addressee; in (46) he makes a proposal to the Addressee which may amount to a direction; in (47) he makes a promise (in this case, to the Addressee); in (48) to (52) he seeks to direct the Addressee respectively by way of command, request, advice, permission, and demand; the advice in (50) can be mock-advice—that is, a disguised threat; in (53) the Speaker makes a mock-request which really conveys a wish; in (54) he issues a command or a demand; in (55) he conveys a permission, request, or advice. The last two, (56) and (57), are of course only relays of performative acts—the quotation marks are left understood, as it were. Note that (47) lacks the solemn urgency of (43); and that (53) lacks the solemn urgency of (39)—for obvious reasons.

The mandatory modal subsystem of *must*, *ought/should*, and *may/can* described earlier is mildly performative in that these convey the Speaker's endorsement of the BIND or the RELEASE over and above his report of it. Compare (58) which conveys endorsement with (59) which does not.

(58) The girls may not wear miniskirts in this school (which is at it should be).

(The parenthetical addition is a MANDATORY embedding the earlier MANDATORY !)

(59) The girls are not permitted to wear minishirts in this school. (This may be continued with : ' which is idiotic '; (58) cannot be so continued.)

(60) You have to speak frankly at times. (This lacks the appeal of (1) to the Addressee.)

This completes in broad outline the description and analysis of the English modal verb system.

II

You may have observed that I have so far jealously tried to keep all my eggs in the basket of linguistics. Not only will a good deal of this stuff be familiar to linguists—familiar insights contributed by generations of linguists from Jespersen the Dane to Antinucci and Parisi the young Italian students. But whatever innovations, renovations, and departures I have made and whatever insights I have taken over from logicians (for example, the interlocking logic of *require/bind* and *permit/release*) and philosophers (for example, the distinction between *alethic/ epistemic* and *deontic/mandatory* and the notion of the performative aspect of utterances), I have done so without ceasing to look for the sort of arguments that a linguist will look for. Though I have naturally refrained from presenting such arguments at length in this study, the flavour of such arguments may have become apparent by now. A linguist will look for formal correlates of dinstinctions of use or meaning : the mandatory *must* never loses its accent; epistemic *may not* is NOT–PROP and mandatory *may not* is NOT–MODAL; *will*-1 is passive-transparent while *will*-2 isn't (examples 22, 22a). Of course, these formal correlates may be fairly subtle sometimes—for example, the arguments for establishing the deeper intransitivity of some modals.

It may be noted in passing that information about earlier stages of language (say, about Old English and about the buried

relationship between *may/might* and *might/mighty*) or about cognate languages (say, about modals in German) is, strictly speaking, unnecessary and inconclusive for analytic linguistics, though there is no denying its suggestive value. This self-denying ordinance which linguists have imposed on themselves lately need not upset one if it is realized that information of this kind is not available either to the child learning his very first language— become as little children if ye will enter the heaven of linguistic analysis.

There is another kind of empirical evidence that the linguist uses—namely, observations on the mode of use (e.g. the solemn urgency of *may* in (39) and its absence in the comparable use of the Imperative in (53); the sort of continuations that are admissible and the sort that aren't). This kind of evidence could also include logical judgements of compatibility, incompatibility, and the like offered by language users (e.g. our discussion about the *must/ought* contrast). Some of the constraints can be traced to the logic of communication as such (e.g. one has no occasion to put a question about one's own wishes or to inform the addressee of the latter's wishes).

Now whether it is the behaviour of forms within the linguistic system or the behaviour of speakers and addressee within a linguistic transaction that a linguist is examining, in either case he is playing the anthropologist. If by the term ' category ' we understand how members of a society sharing a culture custo- marily attribute similar characteristics to a class of things, res- pond similarly to these, and discriminate them from other cate- gories, then it is the linguist's job to identify linguistic categories by observing linguistic transactions. His interest is not in the linguistic transactions as such; his interest in them is for sake of the shared linguistic intuitions or categories of the users of that language that are revealed through them.

Finally, while the starting point of a linguist's investigation is quite often an intuited family resemblance, the object of his investigation can more properly be called family relationships. He has no interest in a single sense of a single term as such—say, the ability sense of *can* or the mandatory sense of *ought*—but rather in the whole fabric of relationships from which the term derives its whole raison d'être. Thus, rather than look at the moral *ought* in splendid isolation, a linguist relates this particular use first to the whole mandatory range of *ought* as seen in—

(61) You ought to try these biscuits : they're delicious.

(62) The red ought to go here and the blue there.

(63) We ought to bump off the old man one of these days.

then to the other members of the subsystem *must, should, can, may*; then to the other epistemic use of *ought*; and finally to the matching modal adjectives *desirable* and *more than permissible*. In working out these systems, a linguist is always ready to come across untidy gaps and accretions, fossil items, blurred edges and the like. Being an anthropologist, he will almost be disppointed if he doesn't !

After his analytic job is over, a linguist may want not only to analyze the next language in view but also, within the framework of his discipline, to compare languages as wholes or in respect of some chosen detail—say, modal components of the verbal system. Such comparisons may be either historical—that is, undertaken to investigate relationships of descent and influence —or correlative—that is, undertaken to find what trait in one language translates (in the broadest sense of that term) what trait in another. For example, he will point out to the matching ambiguity of (64) in English and (64a) in Marathi.

(64) It ought to rain today : it has been very sultry for some time.

(64a) *āj pāus paḍāvā : phār ukaḍta āhe.*

One doesn't know if the ground (sultriness) is being offered as a symptom of the rain in the EPISTEMIC mode or as a justification for desiring rain in the MANDATORY mode.

Philosophically, correlative comparisons are going to be the more interesting of the two in that they are expected to reveal either language universals or deep-seated cleavages between languages.

Having thus let you have a peep into the linguist's kitchen which may be of special interest to conceptual analysts, I shall now proceed to keep my promise to indicate possible philosophical relevance of the foregoing analysis of English modals verbs, which, as modal verb systems in ordinary language go, probably present an unusually perspicuous example of this species. Marathi and French, which I know something of, are probably pretty messy and Hindi is rather sparse on this given point. In selecting English, it is as if a botany teacher happily picked up a flower of unusual " normality " as a classroom specimen.

Everything is grist to the Embedding mill

A negative feature of this system is that we have had no occasion to state any salient constraints on the sort of predicates and arguments that can go into the PROPOSITUS when a modal of a certain type is dominating it. We have already seen that modals can embed other modals rather freely with results that are not always calculated to make a logician happy. We have also seen mutual paraphrase relations (as in (29) to (31)) between Subsystems 3 and 4. The nearest to such a constraint that one can think of is the recommendation that the PROPOSITUS of a transitive modal have an identifiable Agent. The identifiable agent need not be overt.

(65) With the newer techniques a ten-storey building can be built in as many weeks. (ability *can*)

And, of course, since this is only a recommendation, the Agent need not be there at all, as in (64) or (64*a*) above in their MANDATORY interpretation. In spite of this lack, (64) is as firmly tied to the desirability *ought* as it is distinct from (66), (67), and (68).

(64) It ought to rain today : it has been very sultry for some time.

(66) May it rain today !

(The continuation in (64) will be incongruous here.)

(67) I wish that it rain today.

(68) I will be happy if it rains today.

Clearly there is a shadow subsystem by the side of the fourth subsystem—both are MANDATORY but while the fourth is transitive, the shadow (let us call it Subsystem 4a) is intransitive. So the schema appropriate to the intransitive MANDATORY *ought* as seen in the desirability interpretation of (64) is—

(xxiv)*ought* (PROP) = THINK (BIND (KRC, HAPPEN-PROP))

Note that BIND, RELEASE in Subsystem 4a will be not three-place but two-place predicates and that IMPLEMENT (attempt and accomplish HAPPEN) will be replaced by HAPPEN. Another example of this *ought* is (69), which is a paraphrase of (70).

(69) Your parents ought to be helped.

(70) Someone ought to help your parents.

(71) will be an appropriate parapharase of (69) and (70) :

(71) It is desirable that your parents be helped.

On the other hand, (72) will paraphrase as (73)—

(72) He ought to help your parents.

(73) It is incumbent on him that he help your parents.

Going back to (69) and (70), consider (74)—

(74) Your parents deserve to be helped.

(74) implies (69)–(71), but not the other way round. The reason probably is that (74) says all that (69)–(71) have to say (though in a different format) and something more; (74) can be paraphrased as—

(75) Your parents being what they are, they ought to be helped.

Note, incidentally that while (72a) will be all right. (72b) will be distinctly odd.

(72*a*) Your parents deserve to be helped by him.

(72*b*) He deserves to help your parents.

In short, Subsystem 4 has a version Subsystem 4*a* in which even the constraint calling for an identifiable Agent is removed. If one considers how philosophers tend to draw a sharp line between truth-claims and judgements of rightness, goodness, beauty, expediency, legality, and the like this casualness about the distinction between EPISTEMIC and MANDATORY modals and the freedom to choose any PROPOSITUS is surprising if not scandalous. Or maybe, turning the tables around, the philosopher's insistence on the sharp line between Subsystems 1–3 and Subsystems 4, 4*a* is surprising. Even more surprising is his insistence on separating, say, (1), (2), (5), (69), (74)—all tame 'moral' judgements from, say, (64 in MANDATORY version) and the group (61)–(63). What separates ' moral ' judgements from other judgements—including ' immoral ' judgements like (63) and judgements of truth—is, it should be apparent by now, not their ' logical grammar ' but something else.

Actually, subsystems 4 and 4*a* supply philosophers with a set of versatile tools that they have not fully exploited. Let us go back to—

(23) What one can't say one mustn't speak.

Compare this with—

(23a) Wovon man nicht sprechen kann, daruber muss man schweigen.

(23b) Whereof one cannot speak, thereof one must be silent. (The accepted translation of 23a.)

What is the status of this injuction of silence ? Is it a moral injunction in the narrow sense ? Or an injuction of some other order ? Consider again the following :

(76) This sight is beautiful.

(76a) How beautiful this sight is !

(76b) I will say/I think that this sight is beautiful.

(76c) One can/ought to/must say that this sight is beautiful.

An aesthetic judgement is exemplified by (76c) and the corresponding interpretation of (76) but not by (76a), (76b), and the corresponding interpretations of (76). The following two are aesthetic judgements of a somewhat different kind—

(77) This sight deserves to be called beautiful.

(77a) This sight being what it is, one ought to say that it is beautiful.

(62) The red ought to go here and the blue there.

Moods and Tenses

English sentences with modal verbs are sometimes claimed to be tense–neutral. This is not quite true. English has only two tenses–past and nonpast. There is no future tense in English. In a modal sentence, past tense (like negation) can be inserted at two places—in the MODAL and in the PROPOSITUS. This is broadly true of the major Subsystems (i.e. 1, 2, 3, 4, 4a) : the actual facts of usage are rather messy.

(78) He will/would go/have gone for a walk.

(79) He won't/wouldn't confess his crine.

(79a) He can't/couldn't confess his crime.

(80) He can/could be/have been annoying sometimes.

(81) He doesn't/didn't need to go/have gone there.

(82) I think/thought you ought to help/have helped your parents.

The performative force of the four minor Subsystems (i.e. 5, 6, 7, 8) precludes the use of past with the modal; the PROPOSITUS too is always nonpast.

While some languages undoubtedly have a future tense in their formal system, can we say the same thing about their semantic system ?   Does the modal handling of the future in English typify a language universal or does it typify a major cleavage among human languages ?   Whatever answer linguists offer to this question is going to be of interest to philosophers.   Of course the modal substitute for future need not be *will;* it can be *go;* the substitute need not be even modal.   In French *je donnerai* is literally " I have to give " (i.e. " I will give ").

There is no denying of course that English modals have tense connotations.   Consider—

(83) John may be obnoxious/tall.   :

(84) John can be obnoxious.
     (' tall ' will be odd here)

(85) Englishmen may be obnoxious.
     (' tall ' will be odd here)

(86) Englishmen can be obnoxious/tall.

(87) (You will) remain seated.
     (Here the Addressee may or may not be   seated at the time of saying.)

(88) The train may/will be in the station.
(The train may or may not be in the station at the time of saying.)

(89) The train must/can be in the station.
(The reference is to the certainty/possibility of the train being in the station at the time of saying.)

(90) (You will) open your mouth/sit down.
(It will be odd to say this to someone whose mouth is already open/who is already seated.)

(91) The train may/will have left the station.
(This is compatible equally with ' by now ' and with ' by that future time ').

(92) The train may/will leave the station.
(It will be odd to say this if the train is already out of the station.)

Vulnerability of Modals

Are English modals vulnerable ? More exactly, does English permit the Addressee to confront a Statement containing a Modal with its contradictory by way of disputing it ? And further, is one permitted to refute a Modal Statement ? Presumably, disputability is a weaker demand than refutability.

Let us take disputability first. Or rather let us take the linguistic provision for disputing a statement. Usually this linguistic provision takes the form of negation—but not always. Thus (93) can be disputed not by saying (94) which is unavailable in English (and hence starred) but by (95) which doesn't look like the counterpart of (93) with opposite polarity.

(93) The train didn't leave until the Chief Minister boarded it.

(94) *The train left until the Chief Minister boarded it.

(95) The train left before the Chief Minister boarded it.

Our earlier distinction between MODAL and PROPOSITUS negation is relevant at this point.

The Subsystems may now be surveyed from this point of view. (Symbols : MN modal negation, PN propositus negation, I incompatible and so can justify a ' *no, but* ' retort, I* just enough incompatible to justify *or rather*, I** just enough incompatible to justify *but*, I*** just enough incompatible to justify *but* or *though*, C compatible, A collectively exhaustive.)

(xxv) Subsystem 1

       will–1, *won't* are PN, I

       will–1, *may not* are MN, I, A

       may, won't are MN, I, A

       may, may not are PN, C, I**

       will–1, *may* are C, I*

       won't, may not are C, I*

       (This is analogously applicable to *would, might*.)

(xxvi) Subsystem 2

       will–2, *won't* are PN, I

       will–2, *can't* are I***

       can, can't are MN, I, A

       can, won't are I***

       (*will*–2 is more common with the negative.)

(xxvii) Subsystem 3

       must/*ought*/*should, mustn't*/*oughtn't*/*shouldn't* are PN, I

       must, needn't are MN, I, A

       can, can't are MN, I, A.

       must/*ought*/*should, can't* are PN, I.

       can, mustn't/*oughtn't*/*shouldn't* are PN, I.

       ought/*should, needn't* are MN, I***, A

       can, needn't are PN, I**.

       must, ought, should, can are C, I*

(xxviii) Epistemic modal adjectives

> *certain, uncertain* are I, A
> *more than probable, improbable* are I, A
> *probable, more than improbable* are I, A
> *possible, impossible* are I, A
> (The other relationships can be worked out. BELIEVE-PROP can be replaced by CONCEIVE-PROP yielding another set of modal adjectives, *inevitable, contingent, barely conceivable, almost inconceivable, conceivable, inconceivable.* This other set may hold the key to the analytic-synthetic problem in philosophy.)

(xxix) Subsystem 4, 4a

> *must/ought/should, mustn't/oughtn't/shouldn't* are PN, I
> *must, needn't* are MN, I, A
> *may/can, may not/can't* are MN, I, A
> *must/ought/should, may not/can't* are PN, I
> *may/can, mustn't/oughtn't/shouldn't* are PN, I, A
> (The other relationships can be worked out.)

(xxx) Subsystem 5

> *let, don't let* are MN, I, A
> *let*/Imperative, *let ... not/don't* are PN, I

(xxxi) Subsystem 6

> *may/let, may/let ... not* are PN, I
> *let, let ... not* are PN, I
> *may, let ... not* are I, A
> (Note that *let* has two senses : RELEASE and also BIND in Subsystems 5 and 6.)

(xxxii) Subsystem 7

> *shall, shan't* are PN, I

(xxxiii) Subsystem 8

> *will*/Imperative, *won't*/*don't* are PN, I
> *let*, *let ... not* are PN, I
> *let*, *don't let* are MN, I
> *shall*, *shan't* are PN, I
> (The other relationships can be worked out.)

For the epistemic subsystems 1 to 3 English operates with a five-valued scale which perhaps could be symbolized as $+1$, 0, -1 and two intermediate values. For the mandatory subsystems 4 and 4*a*, a four-valued scale operates with $+1$, 0, -1 and a value intermediate between $+1$ and 0. Subsystems 5 and 6 operate with a three-valued scale $+1$, 0, -1. Subsystems 7 and 8 operate with a two-valued scale $+1$, -1, or perhaps a three-valued one with an intermediate value.

All this is disgustingly messy no doubt to formal logicians. Also, this seems to render hopes for a logic universal to all ordinary languages rather murky.

How do we fare if we pass on from questions of disputability to those of refutability ?

In Subsystem 1, *will* and *won't* are refutable if the PROPOSITUS has a built-in time-bar or condition; *may* and *may not* are not refutable; *would* and *might* and their negative counterparts raise special problems because of the explicit or implicit counterfactive condition.

In Subsystem 2, *won't* and *can't* are refutable, *will* and *can* are refutable if the PROPOSITUS has a built-in time-bar; incidentally only *can* is provable out of the four. The other four *would*, *wouldn't*, *could*, *couldn't* raise special problems.

In Subsystem 3, *must* and *mustn't*/*can't* are refutable if the PROPOSITUS has a built in time-bar or some condition; the rest are not refutable.

Question of refutability in Subsystem 4 and 4*a* are often tied up with similar questions regarding Subsystem 2. Take the familar dictum—*ought* implies *can*, for example. The dictum can be meaningfully discussed in non-ethical domains also : thus, one can argue that

(76*d*) One can say one ought to find this sight beautiful only if one can say one can find it beautiful. (*ought* (*to find*) from Subsystem 4; *can* (*find*) from Subsystem 2; and of course *can* (*say*) from Subsystem 4)

Note, incidentally, that while (76*d*) seems to be a reasonable claim, (76*e*) doesn't which puts the *can* condition inside the propositus of which *ought* is predicated.

(76*e*) One ought to find this sight beautiful only if one can find it beautiful.

The relation of mandatory *ought* with the mandatory *must* and *should* on the one hand and with the mandatory *shall* (Subsystem 7) and *will* (Subsystem 8) on the other needs to be investigated in the context of ethics. We have already identified the element of THINK that marks *ought* and *should* off from *must*. However, some ethical theories seem to use *ought* as a disguised *must* or a disguised *shall*. Either the disguise (and the caution implied by THINK) be given up or the ethical *ought* be used with its face value.

One way of showing that *ought* implies *can* is to show that *ought* implies *will*–Imperative. The logic of Imperatives can be presented in some such terms.

(xxxiv) For A say to B ' (You will) do X ' is felicitous if and only if

(*a*) A believes that B can do X or refrain from doing X (i.e. that B is a potential Agent for doing X).

(*b*) A wants that B do X.

(c) A expects that B will do X if the Imperative is addressed to B by A.

(d) A does not expect that B will do X anyway.

The following Imperatives are infelicitous in that they violate one or the other of these felicity conditions. This normally induces the Addressee to look for other interpretations.

(89) Open your mouth. (To someone whose mouth is open; cf. Keep your mouth open.)

(96) See this clearly. (cf. Look at this carefully.)

(97) Be tall. (cf. Be healthy).

(98) Be funny. (cf. Don't be funny.)

(99) Get well soon. (cf. its interpretation as a disguised wish).

(100) Leave this place and don't leave this place.

(101) Go ahead and ruin your health. (cf. its interpretation as a reproach disguised by irony.)

(102) Go home, will you ?—Where do you think I am going ?

(103) Go home, will you ?—Fat chance !

(104) Go home, will you ?—But I have already decided to go home.

Questions of refutability in Subsystem 2 are connected with similar questions in Subsystem 3—in the context of the philosophy of mind one can discuss, for example, whether will-2 (disposition) implies must epistemic (need).

The notion of refutability when applied to performatives (as the modals of Subsystems 5 to 8 are) takes on the form of the notion of being liable to be exposed as infelicitous—defeliciti-zability, if you can tolerate such a monster of a term.

The other side of the coin of disputing and refuting is justifying a disputed claim and successfully defending it. We have dwelt at length on vulnerability the better to throw light on justifying and defending BELIEVE–PROP or IMPLEMENT–PROP or HAPPEN–PROP. Justifications are of course quite different from explanations. We justify our acts including presumably our acts of belief. We explain or account for facts including presumably our acts. Our acts include our speech acts—explicating an expression is part of the explanation for the speech act concerned.

We have sought so far to explicate expressions containing modal verbs. Have we in the process explained why such expressions are used ? If our explications are correct, we have gone a long way towards explaining their use—but not all the way.

III

Concluding Remarks

Some aspects of these explanations, to be sure, are going to belong to historical linguistics—showing the links between present-day English modal verbs and their Old English ancestors, for example—and thus going to be of no great interest to philosophers. But there is no doubt that the remaining, functional aspects of these explanations are going to be of interest to philosophers.

Have I kept my promise to do in the first part linguistics that is philosophically interesting without constituting philosophizing about language ? And have I have kept my promise to do in the second part philosophizing that is linguistically grounded without being linguistics plain and simple ? And, further, whether I have observed the rules of the game or not, have I succeeded in saying something that will induce you to do your own digging ?

All that naturally is your privilege to decide.

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