MARTIN HUNTLEY

THE SEMANTICS OF ENGLISH IMPERATIVES

1. INTRODUCTION[1]

Imperatives can be used to issue orders, commands, demands, requests, threats, exhortations, permissions, concessions, warnings and advice – to mention some of their more common uses. This illocutionary flexibility cannot be adequately explained without a pragmatic theory of the role of context in interpretation. It needs to be determined, however, to what extent the interpretation of an utterance of an imperative as constituting the performance of a particular illocutionary act is determined by the semantic structure of the sentence, and to what extent it is determined by context. A particular question which suggests itself in this regard as a question for semantics is whether a given imperative sentence has a core meaning which will figure in any explanation of its various uses.

In the case of declarative sentences, which similarly have the potential for a number of different illocutionary uses, semanticists have few reservations about abstracting from the variety of such uses and working with a propositional core meaning identified as common to them all. What makes this possible is the fact that most such sentences can, regardless of their use, be correctly described as 'true' or 'false' (or alternatively, what they express can be so described). Imperative sentences, of course, are notoriously resistant to such description. It is this fact which has made them traditionally problematic for truth-conditional semantics. If they do have a core meaning, how can it be propositional like that of declarative sentences when truth-values can be ascribed to the latter but not to the former? And if the core meaning of imperatives is not propositional, what is it?

The central assumption of this paper is that it is a requirement of adequacy for a semantic theory of imperatives that it do justice to the intuition that they are not true or false. Equally, however, it must do justice to two further facts which make them look much more like declaratives than their lack of truth-value would suggest.

First, someone cannot be said to understand an imperative sentence if he does not recognize what has to be true for the command, request etc. issued by utterance of it to be complied with. Arguably, then, a state of affairs, or proposition, *is* represented by the sentence, even if it is represented not as obtaining at the time of utterance but as something

which is to be brought about.

Second (and this is closely related to the previous fact), someone does not understand an imperative sentence if he cannot give a third-person report of *what* it is that an utterer of the sentence commands, requests, etc. in using the sentence. The understanding of main clause imperatives goes hand in hand with the understanding of those clausal structures which function as their embedded counterparts in descriptions of illocutionary acts performed by use of those imperatives. While the imperatives themselves do not have truth-values, these descriptions do; and the embedded counterparts of the imperatives contained in them contribute in a regular way to their truth conditions.

It is the task of giving a semantic account of imperatives which deals adequately with these facts which is the concern of this paper. What I will argue is that imperatives do have a core meaning. In order to account for the above facts, this meaning cannot be represented as too different from that of declarative sentences, but I will argue that there is nonetheless a semantic difference between the two sentences types which underlies and is not reducible to their differences in illocutionary potential. Briefly, I will propose assigning imperatives values of the same semantic type as are assigned declaratives, but doing this in a way which provides for imperatives not being describable as 'true' or 'false'. The minimal semantic difference between the two sentence types which I will provide will then be shown to have further applications. In particular, it will permit a reasonable account of an apparently quite different and otherwise somewhat recalcitrant construction, that of infinitival embedded questions.

Before proceeding, I should make quite explicit that by 'imperative sentence' and 'declarative sentence' I mean sentences of quite specific syntactic types. It is sentences, not utterances, that I am talking about and I assume that they can be identified as of the two types in question independently of their characteristic illocutionary functions. I will discuss the syntax of these sentence types as the argument requires it, but I take the most salient surface feature of the imperatives as contrasted with the declaratives to be that their main verb appears in non-finite form. While the most distinctive imperatives also lack an overt subject, imperatives can contain subjects, in particular second person and certain quantified third person subjects. I do not count as imperatives sentences with modals such as 'You can/will X' or 'Can/will you X?', despite the fact that they can be used as imperatives are. The following are a few examples of what I include as imperatives:

(1)   (You) be writing the letter when I get there!

(2)   Someone close the door!
(3)   Girls go to the front of the room, boys to the back!
(4)   Be ready when the bell rings!

2. THE STANDARD SOLUTION

The insistence that imperative sentences not be assigned truth-values has its detractors, notably David Lewis (1972), who adopts a position regarding non-declaratives which is similar to that of the 'performative analysis' (cf. Ross, 1970). He takes non-declaratives, including imperatives, as exact paraphrases of what Austin (1962) calls 'explicit performative formulas', assigning meanings to the latter in a straightforwardly compositional way and then assigning this same meaning to the non-declaratives also. Thus, he treats

(5)   Open the door!

as a paraphrase of

(6)   I (hereby) command you to open the door!,

the two being assigned the same intension. Lewis argues, *contra* Austin, that the explicit performatives do have truth-values, the distinctiveness of the performative (6) as compared with the non-performative

(7)   I commanded you to open the door.

being merely that the former unlike the latter is guaranteed true by its felicitous utterance. But treating the imperative (5) as an exact paraphrase of the performative (6) then requires it also to have a truth-value; in fact, it too must be guaranteed true by its felicitous utterance.

This is counterintuitive to say the least. The claim that explicit performatives have truth-values and are in a sense 'self-verifying' can be made entirely credible (see also K. Bach, 1975), but its credibility does not extend in any obvious way to the imperative sentences themselves. And Lewis' somewhat cavalier dismissal of the issue does not serve to alleviate the counterintuitiveness.

I see no problem in letting non-declaratives have the truth-values of the performatives they paraphrase; after all, we need not ever mention their truth-values if we would rather not. (p. 210)

In any case Lewis' account has a further problem. It requires the imperative sentence (5) to be as many-ways ambiguous as there are distinct illocutionary uses of it, since it will have to be regarded as

paraphrasable by a number of other performatives which are not synonyms of each other, including

(8)   I $\begin{Bmatrix} \text{request} \\ \text{demand} \end{Bmatrix}$ that you open the door.

(9)   I $\begin{Bmatrix} \text{permit} \\ \text{exhort} \end{Bmatrix}$ you to open the door.

Lewis does not treat non-performative declaratives as multiply ambiguous in this way, although these too have a range of illocutionary uses. It is not the desire to avoid such ambiguity, however, which leads him to treat the declaratives differently. He declines to extend his version of the performative analysis to declaratives on the grounds that it is not plausible to say, as he would be committed to saying, that

(10)   The earth is flat.

has the same truth-value as

(11)   I state to you that the earth is flat.

But then why be prepared to accept the multiple ambiguity of imperatives, especially when it involves the implausibility of imperatives having truth-values just like their performative counterparts? An argument is needed that the multiplication of meanings in the case of imperatives is necessary while it is not in the case of declaratives, and no such argument is provided.

However, the less radical theory which Lewis discusses in the version presented in Stenius (1967) and which similarly tends to assimilate imperatives to declaratives is more promising. This theory has been espoused in one version or another by so many philosophers and logicians[2], to the point that it has become virtual dogma, that I shall discuss it in general terms as what I will call 'the standard solution'. This is the view that there is a core meaning common not only to all the different illocutionary uses of a given imperative sentence but also to the various uses of the cognate declarative and interrogative sentences. Sentences of each of these three types have as their core meaning a proposition, which proponents of this view typically represent in abstraction with a *that*-clause (e.g. *that the door is open*). What differentiates the sentences is that they each have a different range of illocutionary force markers.

The imperative

(5)   Open the door!

is analysed as having two components semantically, the one corresponding roughly to the performative clause of the performative analysis, the other to the lower S constituent. But here, in contrast to Lewis' account, the propositional content of the sentence is exhausted by that of the lower S. The performative clause does not contribute to the propositional content (i.e. the truth conditions) but simply provides illocutionary force information. The standard solution does not, therefore, face the difficulties of Lewis' proposal because it does not involve any necessary commitment to the imperative being a paraphrase of its performative counterpart. In the explicitly performative sentence, by contrast with the imperative, the reference to the speech act provided by the main verb can be permitted to be part of that sentence's propositional content as well as conveying illocutionary force information. Correspondingly, although an adherent of this view might regard imperatives as being as many-ways ambiguous as there are distinct uses of them, the ambiguity for him would be illocutionary force ambiguity only. He does not have to claim that an imperative has truth conditions which vary with its use, nor must he maintain that an utterance of it is 'self-verifying' as is the case with explicit performatives.

Clearly this view provides imperatives with a core meaning which functions *prima facie* as a specification of the state of affairs to be brought into effect by compliance with the order, request, etc. made by uttering the sentence. The key feature of the standard solution is the assumption that this core is propositional, that is, that it is something which is true or false. Where this core meaning permits one to characterize the declarative sentence containing it as true or false, it functions in the imperative to specify what has to be true for the order, request, etc. to be complied with. Similarly, this proposal promises a uniform treatment of the contribution of complement sentences to the meaning of those declarative sentences expressing indirect reports of speech acts. The assumption is that the postulated core meaning can function to specify what in a given use of the imperative is being commanded, requested etc., just as it can be used to specify what in a given use of a declarative is asserted, promised etc.

This theory appears, then, to account for most of the facts mentioned earlier reasonably well. The one outstanding question it leaves is how to deal with the fact that imperative sentences are not true or false. If declarative and imperative sentences alike have a common propositional core and it is the truth or falsity of the proposition expressed by a given declarative which permits that sentence to be described as 'true' or 'false', why cannot the imperative which also expresses that proposition be similarly so described? A typical response is that only declarative sentences used assertorically have *truth* conditions properly so-called. Im-

peratives on the other hand have *compliance* conditions, interrogatives have *answerhood* conditions. But this does little more than redescribe the facts. One wants to know if there is any underlying reason for these facts. Where 'satisfaction conditions' is used as the general term covering not only the evaluation conditions of sub-sentential expressions and the truth conditions of declaratives but also the compliance and answerhood conditions of the other sentence types, one wants to know if one is justified in proposing the same type of satisfaction condition for these various sentence types, albeit one that is labelled differently as associated with these different sentence types. I will argue that the justification for such a proposal is not as straightforward as it might at first appear.

3. A PROBLEM WITH THE STANDARD SOLUTION

It is no accident that the propositional content allegedly in common between cognate declarative and imperative is typically expressed using a clausal form like *That the door is open*. This is a forceless form, but it is also the forceless form which one is virtually required to adopt if one wants to represent a content the main feature of which is that it can be characterized as true or false. Thus, only the first of the following sentences is grammatical:

(12)   That the door is open is true/false.

(13)   *The door's being open is true/false.

(14)   *To open the door is true/false.

But, while this form is clearly appropriate for expressing the content of an assertoric utterance of a declarative sentence, i.e. what is stated, asserted, etc., it is *not* appropriate for expressing the content of an utterance of an imperative.

What the standard solution glosses over is that the *that*-clauses suitable for use as complements of imperative verbs have a distinctive 'subjunctive' form which contrasts with the indicative form of the complements of declarative verbs. The following pairs illustrate the difference:

(15)   Bill $\left\{\begin{array}{l}\text{said}\\\text{asserted}\\\text{stated}\end{array}\right\}$ that $\left\{\begin{array}{l}\text{Mary will invite Joe.}\\\text{Joe is allowed to drive}\\\text{*Mary invite Joe.}\\\text{*Joe be allowed to drive.}\end{array}\right.$

(16)　　Bill $\begin{Bmatrix} \text{demanded} \\ \text{requested} \\ \text{ordered} \end{Bmatrix}$ that $\begin{cases} \text{*Mary will invite Joe.} \\ \text{*Joe is allowed to drive.} \\ \text{Mary invite Joe.} \\ \text{Joe be allowed to drive.} \end{cases}$

In view of doubts one might have about whether English really has a true subjunctive, I will refer to the permissible complements in (16) as non-indicative *that*-clauses, or sometimes (following Lakoff (1968)) as non-finite *that*-clauses, as contrasted with the finite, indicative *that*-clauses of (15). This terminology has the merit of drawing attention to the fact that main clause imperatives and the *that*-clauses which are an embedded counterpart of them have their most salient feature in common, the non-finite form of their main verb. I will return to this shortly, but note that, on the question of truth-value, these non-finite *that*-clauses are *not* possible subjects for 'is true' and 'is false'; cf.

(17)　　*That Joe be allowed to drive is true/false.

The question this raises is whether this is just an idiocy of idiom or whether there is a substantive difference between the finite (indicative) and non-finite (non-indicative) clause forms which is not being taken account of by the standard solution with its postulation of a common propositional core. I suggest that there are reasons to think that there is a substantive distinction here, though it is difficult to get a handle on.

In the first place, it is by no means unique to English for there to be a difference in grammatical form between the complements of declarative and imperative verbs. In fact, continued traditional use of the term 'subjunctive' for the English complements in question perhaps owes much to other languages (e.g. Latin, French) which have a distinct inflected form of the verb which is required in the complements of imperative verbs. Other languages (e.g. Russian) have a 'conditional mood' for this purpose.

Secondly, there is intuitively a semantic difference between the indicative and non-indicative clauses. Where the indicative is used a situation is represented as actual in a way that it is not where the non-indicative is used, but it proves difficult to make the contrast more precise.[3] One way of putting it which I will elaborate on shortly is that an indicative clause, even in the future tense, represents a situation (truly or falsely) as obtaining in the actual world (thought of as historically extended), whereas the non-indicative clauses represent it as being merely envisaged as a possibility, with no commitment as to whether it obtains, in past, present or future, in the actual world.

Now, the response one might expect from a proponent of the standard solution is that the difference in grammatical mood between these two types of clause is just a superficial reflex (an echo as it were) of the illocutionary force designated by the verb in the matrix sentence, just as the distinctive differences in surface syntactic form between main clause declaratives and imperatives are merely the syntactic representation of their differences in illocutionary force potential. This, however, will not stand scrutiny. The indicative/non-indicative mood contrast is too pervasive to be so regarded. Both grammatical moods are found occurring independently of the illocutionary distinctions that they are associated with here.

The indicative clauses are found, for example, in *if*-clauses, in the disjuncts of disjunctions, and embedded under non-illocutionary verbs, notably psychological attitude verbs like *believe* and *know*. In none of these cases does the clause itself carry assertive force, nor is it within the scope of a verb of asserting (*pace* the performative analysis). The non-indicative clauses are also found in *if*-clauses (though apparently only in the forms with *be* and then rarely; cf.

(18)   If the accused be found mentally competent, he will stand trial.)

and embedded under non-illocutionary verbs, notably in this case verbs of desiring. These verbs much more readily take infinitival complements, but they do take the non-finite *that*-complements in, for example, pseudo-cleft constructions like

(19)   What Billy wants is that Joe be invited.

In these occurrences the non-indicative clause does not carry imperatival force, nor is it within the scope of an imperative verb. I conclude that it is not plausible to regard this grammatical mood distinction as a mere reflex of difference in illocutionary potential. (See Huntley (1980) for further discussion.)

Let me note in passing that it is especially significant that these two distinctive clause types pattern as they do with verbs of believing and desiring. This is clearly no accident. It has often been observed (e.g. Kenny, 1963) that, while the declarative sentence is the paradigmatic form for the expression of beliefs, the imperative sentence is the paradigmatic form for the expression of desires. It is not surprising then that the contents of beliefs and desires as represented by the complements of sentences attributing these attitudes should be represented in the same way as the contents of acts of asserting and ordering respectively.

The fact that embedded counterparts of declaratives and imperatives

are different in the way I have outlined and that this distinction is apparently not reducible to the differences in illocutionary potential between main clause declaratives and imperatives undermines the standard solution's postulation of a common core, expressible by a finite *that*-clause, which can be described as 'true' or 'false' even though the imperative sentences incorporating this core cannot be so described. It is not only the imperative sentences which cannot have truth-values attributed to them; the same applies equally to the contents of imperatival speech acts and to the contents of certain psychological states. Where these are represented by *that*-clauses, they have to be represented by the non-finite *that*-clauses which resist attributions of truth-value just as much as the imperatives themselves. The inappropriateness of attributing truth-values to imperatives must then have a deeper source than the standard solution allows for.

4. A NEW PROPOSAL

The thesis that the contrast between indicative and non-indicative moods is syntactically and semantically significant has been developed recently (in somewhat different ways) by Ransom (1977) and Jacobs (1981). Both offer detailed support for the significance of this distinction and both relate it to the distinction between declarative and imperative sentences, but neither directly addresses the issue of attributions of truth-value, since neither offers an explicit truth-conditional account of the distinction.[4] My aim is to sketch and motivate such an account. In the interests of explicitness I will present the account as a modification of the theory presented in Montague (1973), henceforth PTQ; but the goal here is to outline a general way of approaching the problem which could be realized in other frameworks, not to defend the Montague program nor the particular realization of it used here. The presentation will, therefore, be somewhat programmatic.

The main modification I make to the theory of PTQ is that I employ three different sentential category labels, t, t' and t'', where Montague employs just one. These catogories stand in the same relation to each other as the categories t/e, t//e and t///e in PTQ, namely, they are distinct syntactic categories but expressions of these categories are assigned values of the same semantic type.

The t-phrases are sentential expressions with a subject but with neither tense nor modal auxiliaries (or adverbs) and with the verb in its non-finite form. These are built up in just the way the t-phrases of PTQ are built up, but without the syncategorematic introduction of verbal inflections and

modal *will*. Examples of expressions of this category are:

(20)   [$_t$you be happy]

(21)   [$_t$he$_2$ meet him$_1$]

These might be thought of 'proto-sentences', except that this might
suggest that there are no expressions of this category in English. But it is to
this category that I assign main clause imperatives and also the non-finite
that-clauses exemplified by (16).

The t′-phrases are infinitival clauses which are produced by combining
t-phrases which have as subject a variable, he_n, with the infinitive
complementizer *to*, which is of category t′/t, so that the complementizer
replaces the variable while retaining the variable's subscript. (The latter
detail is designed to permit control of the infinitive.) Some examples of
t′-phrases are:

(22)   [$_{t'}$to$_2$ meet him$_1$]

(23)   [$_{t'}$to$_1$ invite Sue to the party]

These t′-phrases are my counterpart of the INF-phrases of Thomason
(1976), except that he derives his infinitival phrases from sentential
abstracts, his AB-phrases, so that they get assigned semantic values of the
same type as those assigned to IV-phrases. His analysis of the infinitivals
is, thus, semantically in line with that of PTQ where they are treated
directly as IV-phrases. It is crucial to my analysis that the infinitivals be
treated semantically as sentences and some support for this will be offered
later. But let me note now that this analysis of these infinitivals as
t′-phrases has the desirable feature of explicitly excluding tense and
modals from infinitives. Thomason's analysis does not have this feature,
since on his analysis there are no restrictions on the form of the sentences
from which the AB-phrases which are the source of the infinitives are
derived. In particular, AB-phrases can be constructed from full sentences
containing tense and modals.

The t″-phrases are sentences with tense and/or modals which are
obtained by combining t-phrases with t″/t-phrases. At least provisionally, I
treat modal auxiliaries like *can* and *must* as of this latter category and also
include as a basic expression of this category an operator, *IM*, which can
be thought of as an 'indicative mood' operator. It will be the semantic
interpretation of expressions in this category that is critical for capturing
the semantic distinction between finite and non-finite clauses. Tensed
sentences are derived by treating the tenses (past and present) as of
category t″/t″. Some examples of t″-phrases are:

(24)   [$_{t'}$John can invite Sue to the party.]

(25)   [$_{t'}$John was happy]

These are the declarative sentences and the finite *that-* clauses.

This treatment of the finite clauses is only provisional. Treating tense as of category t''/t'' will on the one hand permit there to be tenseless t''-phrases and on the other will permit tense to iterate. Neither of these may be desirable, though the analysis as it stands does have one required result, namely, that there be at most one modal auxiliary per clause. However, a more adequate analysis might be obtained by treating the t''/t category as containing no basic expressions and as more like a traditional Aux category, with the indicative mood operator, modal auxiliaries and tenses all so categorized that t''/t-phrases are built up out of them. I will not develop this here since many of the details involved in trying to work this out are not directly pertinent to showing what makes the non-finite clauses semantically distinctive. Some of the details, however, are relevant to this enterprise. The underlying idea is to provide an account of what makes the non-finite clauses (imperatives included) semantically distinctive in terms of a particular way of analyzing them as different from finite clauses in that they lack a full auxiliary. But the auxiliary *be* can occur in non-finite clauses, including imperatives (e.g. (1)), and the auxiliary *have* can at least appear in the infinitival clauses (more on this below). The account I am proposing is incomplete insofar as it does not account for these facts, but, since I cannot here undertake the full-scale analysis of the English auxiliary which a complete account will require, I will just assume that an appropriate, more detailed account of the auxiliary can be developed.

There are, however, other potential problems with the syntax being proposed for non-finite structures which warrant further discussion. For, even though the primary motivation of the analysis is to provide an appropriate semantics for imperatives, this should not be at the cost of an unreasonable syntax. And it might well be maintained that the syntax I have sketched is unreasonable insofar as it allows imperative sentences to embed.

The claim that imperatives do not embed has a certain initial plausibility, but I suspect that it gets much of that plausibility from failing to distinguish sentence type from illocutionary function. Certainly the embedded counterparts of imperatives do not generally, if ever, have the same illocutionary function as main clause imperatives. But if one insists on a purely syntactic characterization of imperatives, the case for embedded imperatives has some merit.

Consider first imperative sentences with overt subjects. These forms

show up in embedded position as the non-finite *that*-clauses. Thus, for example, the same surface form appears both as (26) and as the complement of (27):

(26)   You be here at 5.00.

(27)   John demanded that you be here at 5.00.

In particular, of course, it is the characteristic non-finite (bare stem or BE + V-*ing*) form of the verb of the main clause imperative which distinguishes these particular *that*-clauses.

Subjectless imperatives do not appear as such as *that*-complements since the latter require a subject. But non-finite *that*-clauses are not in any case the most characteristic embedded counterparts of imperatives. As noted earlier, many verbs select infinitival complements as well as, or in preference to, non-finite *that*-complements, cf.

(28)   John ordered you to open the door.

(29)   John wants to open the door.

It is these which Jacobs (1981) cites as embedded imperatives (or 'hypothetical clauses' as he calls them (p. 105)). Again, of course, it is the non-finite form of the verb which the main clause imperatives and these infinitivals have in common.

There are, however, significant syntactic differences between the main clause forms and these two types of complement which do create problems for analyses which assimilate them. First, the non-finite *that*-clauses freely take both first and third person subjects, while the main clause imperative does not. Correspondingly, the infinitival clause can be readily controlled by first and third person NPs. Second, while main clause imperatives can take temporal adverbs, it is often maintained that these cannot be past time adverbs, cf.

(30)   Do the job $\left\{ \begin{array}{l} \text{tomorrow} \\ \text{*yesterday} \end{array} \right\}$!

(though one might doubt that the asterisk is deserved on the grounds that descriptions of time travel are not linguistically ill-formed). The embedded forms, however, can take past time adverbials, although only under certain conditions, cf.

(31)   Last week Bill demanded that you do the job yesterday.

(32)   Last week Bill asked you to do the job yesterday.

Third, there are restrictions on passives occurring as main clause imperatives which are not shared by their embedded counterparts; cf.

(33)   ?*(You) be kissed!

(34)   Bill demanded that you be kissed (by someone).

(35)   You wanted to be kissed.

although the passive is not completely excluded from main clause imperatives, since there is nothing wrong with

(36)   Be advised that the meeting has been postponed!

(37)   Don't be pickpocketed while you're shopping!

If these differences require a syntactic explanation, they do create a problem for my analysis. But, in fact, in each case the prospects look good for an explanation in terms of the characteristic illocutionary functions of imperatives. While I will not take the space to elaborate such a functional explanation here, I submit that its availability makes these differences unproblematic. Further discussion is warranted, however, for two further differences, both of which are discussed in detail by Schmerling (1977, 1982).

First, auxiliary *have* can appear freely in the infinitival embedded forms but not in the main clause imperatives. Thus, (38) contrasts with (39) for many speakers, where arguably the *have* in (39) is a main verb and not the auxiliary:

(38)   *Have finished your homework by 5.00!

(39)   Have your homework finished by 5.00!

By contrast,

(40)   John wants you to have finished your homework by 5.00.

is completely acceptable. However, the exclusion of auxiliary *have* from main clause imperatives may not be absolute, as Schmerling (1982) notes, since many speakers who reject (38) permit auxiliary *have* in some negative imperatives; cf. her example

(41)   Please don't have had an accident!

Furthermore, the freer occurrence of this auxiliary in the embedded forms appears to be restricted to the infinitivals. While intuitions may vary somewhat, the auxiliary appears to be excluded from the non-finite *that*-clauses just where it is excluded from the main clause imperatives; cf.

(42)   Bill demanded that
       { *you have finished your homework by 5.00.
       { you have your homework finished by 5.00.

(43)   Bill prayed that she not have had an accident.

A functional explanation for the absence of auxiliary *have* from main clause imperatives might be possible in terms of the analysis of the *have* as a perfective aspect marker, but the situation is more complicated here than in the case mentioned earlier as permitting such an explanation since the two embedded forms pattern differently also. This difference also needs to be accounted for.

But it is the behaviour of negation in imperatives which provides the strongest grounds for treating the imperative as a distinct sentence type which does not embed. Consider the following distribution:

(44)(a) Don't (you) talk to strangers!
  (b) Do not (*you) talk to strangers!
  (c) *(You) not talk to strangers!

(45)   He demanded that { (a) *you don't talk to strangers.
                        { (b) you not talk to strangers.

(46)   He asked you { (a) *to don't talk to strangers.
                    { (b) to not talk to strangers.
                    { (c) not to talk to strangers.

The *do not* form, like the *do* in affirmative imperatives like

(47)   Do (*you) be careful!,

appears only in subjectless imperatives. *Don't* is not similarly restricted, but it also appears only in main clause imperatives and not in their embedded counterparts. A functional explanation of this difference seems hardly likely, thus suggesting that the main clause imperatives are a syntactically distinct sentence type and do not embed.

I treat this as an open question. I do in fact analyze main clause imperatives as not being a separate sentence type, but it is not essential to my proposal to do so. There are two features of the analysis which *are* essential to it. First, main clause imperatives, non-finite *that*-clauses and the infinitival clauses in question are treated alike as all being clausal, and not phrasal. In this, they are like declarative sentences and finite *that*-clauses and are, in particular, required to be assigned semantic values of the same type as the latter. Compelling reasons for assigning imperatives

to a different syntactic category from that of either of their embedded counterparts are consistent with this feature of the proposal as long as it is possible for the category in question to be a sentential category. I could not adopt the analysis Schmerling (1977) is led to according to which imperatives are categorized as non-sentential, but the kind of sub-categorization I employ, which is permitted in a categorial syntax of the type employed by Montague, would allow them to be assigned a sentential category distinct from that of the other clausal expressions.

Second, my analysis requires the non-indicative clauses to have in common some syntactic characteristic which distinguishes them from indicative clauses, this being the source of their semantic distinctiveness. The characteristic I propose is their common lack of the auxiliary modal and tense elements. The one difference between the main clause and embedded forms which might appear inconsistent with maintaining that they are alike in this respect is the presence of *do* in the negative imperatives. But Schmerling (1977) gives convincing reasons for main-taining that the *do* of the *do not* imperatives is not the *do* of *Do*-support.[5] Thus, it need not be analysed as a surface manifestation of an underlying auxiliary. She does also argue that the *don't* of colloquial negative imperatives cannot be treated as a contraction of *do not* and does have more auxiliary-like properties, but her analysis of it as an unanalysed auxiliary is still consistent with treating it as non-modal and tenseless and this is all I really need. (For relevant discussion see Bolinger, 1967.)

My claim is, thus, that main clause imperatives, non-finite *that*-clauses and the infinitival complements which have been cited here have syntactic forms which are alike in all semantically relevant respects. No special argument is needed, of course, for the corresponding claim that the forms of main clause and embedded declaratives are alike. This treatment of the infinitivals requires more discussion than I can undertake here. Bolinger (1967) presents a number of supporting observations,[6] but what is needed is a typology of infinitivals which accounts systematically for the fact that not all infinitivals are plausibly so treated. A partial defense of this treatment will be offered later when I argue that it yields a reasonable analysis of infinitival embedded questions. In the meantime, note that the existence of a semantic distinction between infinitival clauses and finite *that*-clauses paralleling that between the latter and non-finite *that*-clauses is suggested by the observation of Bach (1977) (following Bresnan, 1972) that pairs like the following are non-synonymous.

(48)   It offends him $\begin{cases} \text{that the man acts weak.} \\ \text{for the man to act weak.} \end{cases}$

(this is slightly different from Bach's example). He also notes distributions like the following:

(49)   That the earth is flat is true.

(50)   *For the earth to be flat is true.

(51)   *That you are here is imperative.

(52)   For you to be here is imperative.[7]

That this distinction parallels that between finite and non-finite *that*-clauses is suggested by the fact that (52) appears to be synonymous with

(53)   That you here is imperative.

(Recall also the unacceptability of

(17)   *That Joe be allowed to drive is true/false.)

Furthermore, (48) invites comparison in this respect with the non-synonymous pairs

(54)   Joe $\begin{Bmatrix} \text{insisted} \\ \text{suggested} \end{Bmatrix}$ that $\begin{cases} \text{Bill finishes dinner by 10.00.} \\ \text{Bill finish dinner by 10.00.} \end{cases}$

There seems to be little independent semantic warrant for claiming that *offend*, *insist* and *suggest* are polysemous. Instisting, for example, is intuitively the same thing whether it is a matter of insisting that something is the case or insisting that someone do something. The non-synonymy of the sentences in each of these pairs thus suggests that the different complements are not fully synonymous.

It is semantic facts such as these which provide the motivation for describing the basic difference between these two kinds of clause type, and between imperatives and declaratives in particular, in terms of an in-dicative/non-indicative mood contrast which is not to be assimilated to distinctions in illocutionary force potential.

Employment of the notion of 'mood' in this context risks entanglement in a confused welter of differing understandings of the notion. And suggesting further that there is semantic content to this particular mood contrast runs counter to cautions, such as those of Jespersen (1965), against trying to attribute any unified notional content to what he argues is a purely syntactic contrast. (Cf. similar cautions concerning the in-dicative/subjunctive contrast in Lakoff, 1968.) I propose, however, that there is a minimal semantic contrast between the two clause types which is not unreasonably linked with the notion of mood and which is sufficient to

account for the non-attribution of truth-values to the non-indicative clauses. The contrast I provide is much more meagre than that suggested by the use of labels like 'fact-mood' and 'thought-mood' (Sweet), 'hypothetical' for the non-indicatives (Bolinger, Jacobs) and 'truth modality' and 'control modality' (Ransom). It is consistent with these insofar as it permits, with appropriate contextualization, these and other such descriptions, but is minimal enough to avoid Jespersen's criticisms against using any particular labels such as these across the board. I propose, simply, that the non-indicative clauses are distinguished from the indicatives insofar as they lack an indexical component which the latter have. In short, what makes the indicatives 'indicative' is that they involve indexical reference to a world. It is this that the non-indicatives lack.

The treatment of these two clause types as both sentential requires them to be assigned semantic values of the same type. Specifically, they are assigned as their intensions functions from indices to truth-values, where possible worlds and times are among the coordinates of such indices (cf. Lewis, 1972). These functions are often called 'propositions' (cf. Stalnaker, 1978), but, since on my account they will not always be naturally so-called, I will often refer to them instead as 'states of affairs'. The assignment of such intensions to sentences is relativised to context in the manner of the indexical semantics of Kaplan (1978) and Stalnaker (1970, 1978) in order to deal appropriately with deictic elements. Thus, where tense is deictic, locating states of affairs in time relative to *this time* (i.e. the time of utterance) or some specified reference time which is in turn located relative to the time of utterance (cf. Reichenbach, 1947), an intension is assigned to tensed sentences, which determines truth-values for them at each index, only relative to the contextually determined time of utterance. Tenseless sentences by contrast are assigned an intension which is constant across contexts, not varying with the time of utterance, provided that there are no other time-deictic elements (e.g. temporal adverbs) in the sentences.

It is the adoption of such an indexical semantics which permits there to be a semantic contrast between the indicative and non-indicative clauses while still having them be assigned states of affairs as their semantic values. Actually, the fact that the former are tensed and the latter tenseless already provides such a contrast, as just indicated. The presence of tense in the former requires specification of a time in order to fix the intension; the absence of tense in the latter corresponds to the absence of such a requirement (at least as attributable specifically to tense). However, I submit that the indicative/non-indicative mood distinction itself gives rise to another, independent semantic contrast, one which is the world-deictic

analogue of the time-deictic contrast between tensed and tenseless clauses. Just as tense locates states of affairs in time via reference to *this time* (the time of utterance) or some explicitly specified alternative time (e.g. that specified in a higher clause), so the indicative mood locates states of affairs in a way that makes essential reference to *this world* (i.e. the actual world) or some contextually specified alternative. Non-indicative clauses are not marked by the presence of some distinct, non-indicative mood. Rather, they are distinguished from the indicatives by the absence of the indexical reference to the actual world which is characteristic of the latter.

It is this which is the source of the non-attribution of truth-values to the non-indicative clauses, and the imperatives in particular. Truth-values are assigned to sentences only relative to some contextually specified world (paradigmatically, the 'actual' world) and time (speech time). In the absence of any such specification of a world and time truth-values cannot meaningfully be assigned. In a sense this says no more than the obvious, that predications of 'is true' or 'is false' are understood as predicating truth and falsity at the actual world at the time of utterance. What is not so obvious is the suggestion that reference to the relevant world is supplied deictically in a manner analogous to the way in which reference to speech time is supplied. That the latter is deictic is a commonplace of the literature on temporal reference. There *is* precedent for treating the notion of the actual world as deictic also (notably Lewis, 1970), but why analyse the indicative/non-indicative mood contrast in terms of such world-deixis where this in turn is represented as the basis for declaratives differing from imperatives in permitting the predication of truth-values? After all, the two kinds of clause supposedly distinguished as indicative vs. non-indicative are also treated on this analysis as tensed vs. tenseless. Analysing tensed sentences as distinct from tenseless insofar as the former involve temporal deixis could be argued to be sufficient to account for the non-attribution of truth-values to the tenseless (non-indicative) clauses, given that the indexical reference to speech time required for such attributions is lacking. Why complicate things by invoking world-deixis in addition to the already accredited notion of time-deixis when the latter does the job?

The reasons are two-fold. The first is that the notion of time-deixis is *not* sufficient to account for the difference between declaratives and imperatives. While the latter, unlike the former, are tenseless, tense is not the only source of deictic temporal reference. Imperatives and the other non-indicative clauses do take deictic temporal adverbs even though they lack tense (cf. examples (30)–(32)). Thus, the non-attribution of truth-

values to imperatives containing such adverbs cannot be explained in terms of the absence of the deictic reference to speech time required for such attributions. (I might also add that declining to take the tensed/tense-less dichotomy as the critical one semantically allows for languages with tensed non-indicative sentences.) The second reason hinges upon the fact that the notion of world-deixis is needed anyway, independently of the particular question at issue here. The classical semantic treatment of modal notions, notably the alethic modalities expressed by the adverbs 'necessarily' and 'possibly' and the auxiliaries 'must' and 'can' (on the relevant readings), requires reference to a set of possible worlds accessible from the world at which the modal sentence is evaluated for truth. Typically, this latter world is the actual world, where, as argued by Lewis (1970), the notion of actuality is best understood indexically. Now, while the treatment of the modalities calls for world-deixis, it is also surely no accident that the linguistic devices used for the expression of these modalities, notably the modal auxiliaries but also modal sentence adverbs (see Katz and Postal, 1964, p. 77), cannot occur in imperatives or their embedded counterparts but can occur in declaratives, both main clause and subordinate. In fact, though there is no general prohibition against time-deixis in the non-indicative clauses, despite the specific exclusion of tense, there does appear to be a general exclusion of expressions which need to be interpreted as involving indexical world-reference. It is this fact which motivates analysis of the mood contrast in terms of world-deixis, and which underlies the specific syntactic device of having a category of t''/t-phrases which includes the modal auxiliaries and provides the primary point of differentiation between the non-indicative and indicative clauses.

Recall that I have utilized two categories, t and t', for the non-indicative clauses, the t'-phrases being infinitivized versions of t-phrases, and the category t'' for the indicative clauses, the latter being built up with these t''/t-phrases. The syntactic rationale for this was to account for the restriction of the modal auxiliaries to the clauses identified as indicative and to provide that only in these clauses would the verb appear in finite form, this being the result of tense. Semantically, the indicative clauses are differentiated from the non-indicatives by having the assignment of their intensions relativised to an indexically designated world, where it is the t''/t-phrase incorporated in the indicatives which calls for indexical inter-pretation. The modal auxiliaries, for example *can* and *must*, have their values assigned in terms of some set of possible worlds, the members of this set being those worlds which stand in some suitably restricted relationship to *this* world, the world at which the sentence is being evaluated for truth. Finite sentences without modal auxiliaries are con-

structed with the operator *IM* which is also of category t″/t. This operator is basically interpreted as simply making indexical reference to this world, although to have its value conform structurally to that of other expressions in this category it also can involve specification of a set of worlds, the set in this case being the unit set containing the indexically specified world only. The fact that I earlier glossed this operator *IM* as the 'indicative mood' operator should not be taken to indicate that it is only those sentences constructed with this member of the category t″/t which are truly 'indicative'. The label and its gloss were chosen purely for convenience. In the terminology I am using, all those sentences incorporating a member of the category t″/t, whether modal or not, are appropriately labelled 'indicative', and are distinguished from the 'non-indicatives' just insofar as they are interpreted world-deictically in virtue of their containing a member of this category. In particular, of course, I am proposing that this is the root of the difference between declarative and imperative sentences.

This proposal provides for each of the facts outlined at the beginning. It provides imperative sentences with a core meaning common to all their various uses. Unlike the standard solution, however, it does not assimilate this core meaning exactly to that of declaratives. By making the core meaning of imperatives be of the same semantic type as that of declaratives it can, like the standard solution, account for the fact that imperatives do specify states of affairs; but it does this in a way which accounts also for the fact that imperatives, unlike declaratives, are not true or false. A declarative represents a situation (truly or falsely) as obtaining in this world (the actual world) by indexically identifying this world as the world at which the sentence is to be evaluated. An imperative involves no such indexical reference to a world. It *will* have a truth-value at whichever of the worlds in the set of possible worlds *is* the actual world, but the fact that it does not indexically specify such a world permits it to represent a situation as being merely envisaged as a possibility with no commitment as to whether it obtains, in past, present or future, in *this* world. It is this feature of the imperatives which permits, in context, such varied descriptions of the state of affairs represented by the imperative as being merely thought of or conceived, envisaged as a possibility or hypothetical, planned or hoped for, or as something which appropriate action could conceivably bring about. And it is this feature which makes it inappropriate to characterize imperatives as 'true' or 'false' (i.e. true or false at this world).

Furthermore, in treating main clause imperatives and their embedded counterparts in a semantically uniform way, this account provides semantic values for the complements of imperatival verbs and verbs of desiring

which are in the appropriate respects distinct from those of the comple-
ments of assertoric verbs and verbs of believing. It thus allows these
complements to contribute in a minimally different way to the meanings of
the sentences containing them, and also permits a characterization of what
is commanded, requested or wanted by someone which is not completely
assimilated to the characterization of what is asserted or believed by them.
But it does this while treating all of these complements as sentential.

It is this feature of the analysis which gives it the advantage over
accounts which assign imperatives semantic values of a different type from
those assigned to declaratives. Hausser (1980), for example, analyses
imperatives as IV-phrases where declaratives are t-phrases (this is Mon-
tague's category t, not mine). Correspondingly, he interprets the im-
peratives as denoting properties, values of type $\langle s, f(IV) \rangle$, where the
declaratives are interpreted as denoting propositions, values of type
$\langle s, f(t) \rangle$. (He intensionalizes all his assignments, which is why his declara-
tives denote propositions rather than truth-values.) It follows that im-
peratives will not have truth-values, and he can still account for an
imperative being understood *in context* as specifying a state of affairs by
incorporating into the intensional logic translation of the imperative a
context-variable which is assigned the hearer as its value in a particular
context. He does not, however, address the issue of the contribution made
to the meaning of compound sentences by the embedded counterparts of
imperatives. If, as I have been supposing, these are best treated as
sentential complements, their distinctive semantic role will still need to be
accounted for. The analysis of the imperatives as IV-phrases promises
little help in accomplishing this. The inadequacy of Hausser's account in
this respect shows that it errs in the opposite direction from the standard
solution, making declaratives and imperatives semantically too dissimilar.

It is, of course, arguable that these complements are not sentential, but I
find no good reason to hold this for the non-finite *that*-complements.
These do not have full auxiliaries, but I know of no independent reason for
treating this as disqualifying them from being sentential. Apart from this,
they have every claim to being sentential, in particular, they obligatorily
have subjects. (Incidentally, it is not at all clear how the IV-analysis of
imperatives will provide for those main clause imperatives with overt
subjects, particularly when the subject is an indefinite third-person NP.)
The status of the infinitival complements is less clear. It is, in fact, a
commonplace of the Montague-inspired literature to treat these also as
IV-phrases, or at least, as in Thomason (1976), as having the same kind of
denotation as IV-phrases. Such an analysis can be made quite plausible,
but there are constructions in which infinitivals occur other than that in

dispute which do seem to favour a sentential analysis, infinitival embedded questions and infinitival relatives being cases in point. I turn now to a discussion of the first of these with a view both to providing some support for the sentential analysis of infinitivals and to showing how the analysis of imperatives that I have presented makes available a suitable semantics for constructions quite remote on the surface from imperatives.

5. INFINITIVAL EMBEDDED QUESTIONS

There is a subtle difference in meaning between sentences incorporating infinitival questions and those containing embedded finite questions. Compare the (a) and (b) sentences in the following pairs:

(54)   John is wondering whether
          (a) he will invite Sue to the party or go alone.
          (b) to invite Sue to the party or (to) go alone.

(55)   John knows whether (or not)
          (a) he will invite Sue to the party.
          (b) to invite Sue to the party.

(56)   John has decided who
          (a) he will invite to the party.
          (b) to invite to the party.

Even though the (a) and (b) sentences may be used more or less interchangeably in some contexts, they are not mutual paraphrases. Broadly put, where the (a) sentences represent John as wondering, knowing etc. which of several alternative situations obtain(s), the (b) sentences represent him as deliberating about which of several alternative courses of action to undertake. Put another way, the (a) sentences represent him as concerned with what is true and the (b) sentences represent him as contemplating what to do.

Correspondingly, while there is no problem with determining what might count as a *true answer* to the questions in the (a) sentences, there is such a problem in the case of the (b) sentences. The infinitival questions do not appear to have answers which can be appropriately described as 'true' or 'false'. The closest one can come to such an answer is a sentence with a modal auxiliary. Thus, for example,

(57)   John should invite Sue to the party.

might be thought to be an appropriate answer to the question embedded in

(54b), and (57) is describable as 'true' or 'false'. But this would be to assimilate (54b) to

(58)   John is wondering whether he should invite Sue to the party or go alone.

where the embedded question is finite; and while in context John's state of mind might be truly described by both sentences, (58) is nonetheless subtly different in meaning from (54b). The embedded question in (58) is more determinate in meaning that that in (54b). John could assent to the description of his state of mind provided by (54b) while rejecting that provided by (58) on the grounds that he is not at all concerned about what he should do since he is a free spirit and not bound by conventional obligations or protocols nor concerned about the consequences of his actions. No doubt utterances of (54b) would permit interpretations in context which are relatively determinate in just the way that the interpretation of (58) is, but the greater determinacy of utterance meaning in such cases should be attributed to the contribution of contextual information whereas in the case of (58) it is the product of the contribution made to the meaning of the sentence by the meaning of the auxiliary.[8] To the extent that the infinitival question is not fully paraphrased by the finite question containing a modal auxiliary the declarative sentence constructed with the auxiliary does not express a proper true/false answer to the former although it does express such an answer to the latter.

This semantic difference between finite and infinitival embedded questions poses particular problems for analyses of questions as denoting sets of propositions, notably for that of Karttunen (1977). His proposal for a Montague-style syntax and semantics for questions, like others in the same vein (e.g. Hamblin, 1973), does not address the question of what to do with infinitival embedded questions – and this despite the fact that his is primarily an account of embedded questions. The fact that part of the distinctiveness of the infinitival questions is the unavailability of true or false answers to them makes them quite problematic in the context of Karttunen's analysis, which treats finite questions as denoting sets of true propositions, the propositions in these sets being those which constitute true answers to the questions. It raises the possibility that that analysis needs radical modification in order to cover infinitival questions, in particular that it needs to assign to the two types of questions extensions of different semantic types. For if 'answers' to the infinitival questions cannot be appropriately described as 'true', this could be because they are not even propositional, let alone true.

It is this feature of infinitival questions which suggests a linkage with

imperative sentences, this being borne out by the fact that, whereas the answer to a finite question is a declarative sentence, a natural 'answer' to an infinitival question is an imperative sentence, as in

(59)(A) I want you to tell me who to invite to the party.
   (B) O.K. I'll tell you. Invite Bill and Mary!

Perhaps, then infinitival questions might be best thought of as 'interrogated imperatives', the task of modifying Karttunen's analysis then becoming that of combining it with an appropriate analysis of imperatives. This is the tack I will take. I will argue that there are a number of independent considerations which require finite and infinitival embedded questions to be of the same syntactic category. In the context of the Montague framework this in turn requires them to be assigned extensions of the same semantic type. The theory of imperatives that I am proposing will permit such an assignment and thus offers a way to extend Karttunen's theory to infinitival questions with only minimal modifications. For the sake of exposition, I will assume that Karttunen's theory is broadly correct as an account of finite embedded questions (and I will assume familiarity with it). The fact that the minimal difference in meaning between declaratives and imperatives provided by the theory offered here can serve also to account for the semantic difference between finite and infinitival questions will then serve to corroborate the latter theory. This will not be too compelling an argument for those who reject Karttunen's analysis, but I submit that any analysis of questions, finite and infinitival, must incorporate an account of what constitutes an answer to a question, even if it does not analyse a question in terms of its answers in the way that Karttunen's analysis does, and that my account of the declarative/imperative distinction offers at least a suitable way of differentiating between the answers to the two types of question.

I claim that finite and infinitival embedded questions need to be treated as being of the same syntactic category. This might appear quite unpromising in view of the fact that infinitival embedded questions have no simple direct question counterparts. Where the question in

(56a)   John has decided who he will invite to the party.

has as its main clause form

(60)   Who will John invite to the party?,

the corresponding main clause form for the question in

(56b)   John has decided who to invite to the party.

namely,

(61)   Who to invite to the party?

is not a well-formed question by itself. Infinitival forms like this (but without the question mark?) can appear alone as titles or as list-headings, but as such are arguably not sentential. To get main clauses which are semantically close (but, as argued earlier, not equivalent) to the infinitival forms one needs to include a modal auxiliary, cf.

(62)   Who should John invite to the party?

(63)   Who is John to invite to the party?

This might suggest that the infinitival questions are phrasal, not clausal like the finite forms, and would be in line with the treatment of non-interrogative infinitival complements as IV-phrases and not as sentences.

However, main clause questions paradigmatically require subject-auxiliary inversion except where it is the subject being questioned, and neither such inversion nor questioning of the subject is possible in infinitival clauses, where there is no overt subject (and, on my account, no full auxiliary either). Consequently, it is hardly surprising that there are no main clause infinitival interrogatives. And while one might grant that infinitival interrogative forms can be phrasal (as, e.g., list-headings), the same might equally be said of the finite interrogative forms. Both, for example, are possible antecedents for pronominal *that* and, as such, characterizable as questions; cf.

(64)(a)   Who will John invite to the party?:⎱
     (b)   Who to invite to the party: ⎰ that is the question.

(65)(a)   Is Mary going to the party or not?:⎱
     (b)   To go to the party or not: ⎰ that is the question.

In fact, a number of considerations suggest that the two types of question be treated as being of the same category despite the lack of main clause parallelism between them.

(a) Each distinct kind of finite embedded question has an infinitival counterpart. There are alternative questions, yes-no questions and wh-questions of both varieties (cf. (54)–(56)). (The only exception is that the infinitival forms do not permit *if* as an alternative to *whether*, cf.

(66)   John is wondering ⎰ whether⎱ to invite Sue.
                            ⎱ *if   ⎰

(b) With few exceptions each verb that takes finite interrogative complements also takes infinitival interrogative complements. (The exceptions are verbs like *predict*, cf.

(67)   John has predicted $\begin{cases} \text{(a)} & \text{who he will invite to the party.} \\ \text{(b)} & \text{*who to invite to the party.} \end{cases}$

and I think these can be explained ultimately in semantic terms.) I know of no exceptions to the converse claim that wherever an infinitival interrogative can be the complement of a verb so also can a finite interrogative.

(c) Karttunen points out that verbs like *depend on* and *determine* can take interrogative clauses as both subject and object complements and argues for a same category treatment of the different kind of finite interrogatives on the grounds that they are all independently possible with these verbs in both subject and object position (1977, p. 6). Similar considerations suggest a same category treatment of the finite and infinitival interrogatives; cf.

(68)   Who to invite to the party depends on who will be around at the time.

(69)   Whether or not we want the party to turn into an orgy will determine who to invite.

(d) The fact that the two types of clause can be conjoined (cf. (70) and (71)) also points to the same conclusion given the assumption that conjunction requires the conjoined items to be of the same category.

(70)   John doesn't know who to invite to the party or who will be around at the time.

(71)   John is wondering whether he will be invited to the party and who to take with him if he is.

In view of considerations such as these I will treat infinitival interrogatives as having the same syntactic category as finite interrogatives. This, however, will require them to be assigned semantic values of the same type. The question then becomes: how might this be done while capturing the semantic distinction between the two types of clause?

In terms of the proposal sketched earlier, this simply becomes the question of how to get interrogative counterparts of the t′-phrases and t″-phrases. My t′-phrases are Karttunen's t-phrases, from which he derives expressions in his category Q by the 'proto-question (PQ) rule' (1977, p. 13):

(PQ)   If $\emptyset \in P_t$, then $\ulcorner ?\emptyset \urcorner \in P_Q$.

My t′-phrases are the infinitivized versions of my t-phrases, both being semantically distinct from the declarative t″-phrases insofar as they lack the indexical reference to a world characteristic of the latter. Now, t′ and t″ are distinct syntactic categories, but expressions of these categories are assigned values of the same semantic type, namely, functions from indices to truth-values, even though these assignments are indexically relativised in the case of the latter. In view of this, I suggest that the interrogative counterparts of both classes of expression can be permitted to be of the same category, namely, the category Q, the syntactic part of the rule PQ being amended thus:

(PQ′)   If $\emptyset \in P_{t'} \cup P_{t''}$, then $\ulcorner ?\emptyset \urcorner \in P_Q$.

This will yield not only proto-questions like

(72)   [$_Q$?John can invite Sue to the party]

(73)   [$_Q$?he$_1$ was happy]

but also proto-questions like

(74)   [$_Q$?to$_1$ invite Sue to the party]

(75)   [$_Q$? to$_2$ hit him$_1$].

All of these proto-questions can be treated in a syntactically uniform way. In particular, Karttunen's various question formation rules (the alternative question rule, yes-no question rule, and Wh-quantification rule) can apply equally to both the finite and the infinitival proto-questions and all verbs categorized for interrogative complements will freely take both kinds.

This rule PQ′ does represent a complication of the theory insofar as it permits expressions of a given category to be derived from expressions of either of two distinct categories. Allowing such a complication invites the defender of an IV-analysis of infinitives to maintain that the co-categorial status of finite and infinitival questions could equally well be accounted for by having proto-questions derivable both from sentences (t-phrases) and from IV-phrases (the infinitivals). Such a derivation of the proto-questions, however, would necessitate considerable complication of the semantics. The translation rule corresponding to the proto-question rule would have to allow for the fact that the input to the rule could have values of either of two quite different types. In fact, the basic principle that expressions of the same category must have semantic values of the same type would have to be abandoned. The complication I have introduced,

however, is minimal just insofar as it does not of itself require any modification of the semantics at all. The translation rule associated with PQ′ will be exactly the same as that associated with PQ, namely:

If $\emptyset$ translates to $\emptyset'$, then $\ulcorner?\emptyset\urcorner$ translates to $\lambda p[\check{}p \, \& \, p = \hat{}\emptyset']$,

with the result that both types of question denote sets of propositions. Treating the infinitival expression from which the infinitival question is formed as sentential, although in a different sentential category from the expressions from which finite questions are formed, thus represents a simpler overall way of generating infinitival questions with the same category as finite questions than treating them as IV-phrases.

The result is that both kinds of interrogative are assigned values of the same semantic type, but they will also differ semantically in just the way that declaratives and imperatives do, since the finite interrogatives will inherit the indicative character of the declaratives from which they are formed with the infinitival interrogatives inheriting the non-indicative character of their infinitival source. Thus, what makes the infinitival questions semantically distinctive is that the propositions in the sets assigned to them as their extensions are not indexically tied to this world as the world at which they are to be evaluated for truth. Insofar as these propositions are the semantic values of sentences which constitute answers to the questions, these answers will share with imperatives the non-indicative character which makes attributions of truth-values inappropriate. Answers to the infinitival questions cannot be in the form of declarative sentences since the indicative mood of the latter requires the indexical provision of a world as a point of reference which is missing from the sentences out of which these interrogatives are constructed. Thus, the answers to the infinitival questions are most naturally imperatives.

6. CONCLUSION

I have argued that analysing the declarative/imperative distinction in terms of an indicative/non-indicative contrast which is characterized in indexical terms strikes the right balance between making declaratives and imperatives semantically so similar that the latters' lack of truth-values cannot be accounted for and making them too dissimilar to be able to account for the similar contributions their embedded counterparts make to the meanings of sentences containing them. I have further argued that additional support is forthcoming for this analysis in that it permits an account of infinitival interrogative clauses which makes them co-categorial but non-synonymous with finite interrogatives, thus showing that the indexical treatment I have sketched is not merely an ad hoc device for

dealing with the idiosyncrasies of imperatives. Further support will, I think, be forthcoming as this way of representing the indicative/non-indicative contrast is extended to other constructions.

For example, infinitival relatives, like infinitival questions, have a semantic character of their own. There is a difference in meaning between

(76)   This is a book to read on rainy days.

and

(77)   This is a book which $\begin{Bmatrix} \text{will be} \\ \text{is} \end{Bmatrix}$ read on rainy days.

which could conceivably be captured by analysing the former as involving a relativised t'-phrase and the latter a relativised t''-phrase. Another example is that of the much-discussed contrast between indicative and subjunctive (including the so-called 'counterfactual') conditionals. It is conceivable that the modal flavour of the latter might be attributable to their containing non-indicative if-clauses in contrast to the indicative if-clauses of the former, where this contrast is analysed along the lines I have discussed. This would be consistent with the fact that the counter-factual character of the subjunctive conditionals is context-dependent, and thus arguably a conversational implicature rather than a semantic commitment.

Besides these directions in which the analysis might be extended, there are other issues which need more work. The analysis of the auxiliary needs considerable development, as does the issue of the role of negation. The question of whether or not all infinitival constructions should be treated as sentential has been left unresolved. My analysis also leaves it as something of a mystery that while the t'-phrases can be turned into interrogatives (and, possibly, relative clauses) just like the t''-phrases, the t-phrases (non-finite that-clauses and main clause imperatives with subjects), which are semantically on a par with the t'-phrases, cannot. I know of no analyses which are better in this latter respect, but the lack of explanation is disturbing.

Finally, my task here has been to say something of interest about the semantics of imperatives, but much of the interest in the study of non-declarative sentences lies in the examination of the ways in which they are used to perform various speech acts. I have identified a minimal respect in which declaratives and imperatives differ semantically, but it remains to be seen if the particular proposal I have offered is compatible with an adequate pragmatic theory of the use in context of these different sentence types.

Notes

[1] I wish to thank Polly Jacobson, Aditi Lahiri and Carlota Smith for their help and encouragement at various stages in the writing of this paper. Anonymous referees also gave helpful suggestions. Earlier versions of parts of this paper were presented at the 1981 LSA Annual Meeting (New York) and the 1982 CLS Parasession on Non-declaratives (Huntley, 1982).

[2] Among others, C. I. Lewis (1946), Reichenbach (1947), Hare (1952, 1970, 1971) and Searle (1969). I discuss this view in more detail in Huntley (1980), where I also argue that, despite claims sometimes made to the contrary, it is rejected by Frege at least in his later works.

[3] Sweet (1891) contrasts the indicative as 'fact-mood' with the non-indicative as 'thought-mood'. But such attempts to distinguish semantically between the two have not gone unchallenged (cf. Jespersen, 1965).

[4] Hare (1970) also posits as a constituent of sentences a 'tropic' or mood sign, in addition to his 'neustic' or illocutionary force indicator. Lyons (1977) makes extensive use of this notion. But neither Hare nor Lyons attempt a semantic analysis of the type presented here either.

[5] Among her reasons is the fact that *do* in imperatives, but not elsewhere, is compatible with *be* (as in 'Do be careful!' and 'Do not be dismayed!') and this *do* (unlike *don't*) cannot co-occur with an expressed subject (cf. (44b) and (47)).

[6] Bolinger in fact argues that "there are better reasons for calling the imperative an infinitive than for calling it a *will* sentence" (1967, p. 359).

[7] Bach suggests that the relation between the finite *that*-complement and the *for* + s complement is analogous to that between a definite NP like *Fido* and an indefinite plural like *dogs*, the latter member of each pair denoting a kind of thing that the former names an instance of. In my view it is implausible to think of the *that*-complement as denoting something which is a member of the class or kind denoted by the *for* + s complement, but the account I will offer does suggest a different basis for the analogy in that it analyses the former as indexical in a way that the latter is not. The NPs can plausibly be similarly so analysed.

[8] Other auxiliaries (including *will* and *be to*) also suggest themselves in paraphrasing utterances of sentences containing infinitival questions, some being more appropriate in some contexts than others and some being more appropriate for certain of the verbs under which the question may be embedded than for others. This itself indicates that the sentences with the auxiliaries are not paraphrases of those containing infinitives although they may be contextual equivalents.

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