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H. Parret, M. Sbisà, J. Verschueren (eds.)

Possibilities and Limitations of Pragmatics

POSSIBILITIES AND LIMITATIONS OF PRAGMATICS

Proceedings of the Conference on Pragmatics, Urbino, July 8-14, 1979

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H.P, M.S. and J.V.
February 1980

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ON A FORMAL TREATMENT OF ILLOCUTIONARY FORCE INDICATORS

Dietmar Zaefferer

0. Introduction

What I am going to present here on the topic of a formal treatment of illocutionary force indicators are not so much results but rather a proposal for a framework in which a program of research should be carried out. The general aim of this program of research is to expand existing formal semantics for natural languages like the ones presented for instance by Richard Montague,[1] David Lewis[2] or Max Cresswell[3] in order to encompass not only locutionary indicators, i.e. truthvalue-relevant components of linguistic expressions, but also illocutionary indicators, i.e. those features of linguistic expressions which point rather to how they are to be taken. One of the most important illocutionary indicators is of course sentence mood and so I will illustrate my proposal with a fragment of German including declarative, interrogative as well as jussive sentences. A further type of illocutionary indicators, namely particles, will also be considered in order to show the interaction of different kinds of illocutionary indicators. But before presenting the relevant data, let me first say a few words about how I see the connection between a formal theory of illocutionary meaning and a theory of language use.

1. The framework of a theory of language use

I assume that normal use of language or, as I shall say equivalently, normal linguistic behaviour is part of rational behaviour, and that therefore the central aim of a theory of language use is to answer the following question:

> What are the conditions under which it is rational for a possible speaker to use a certain linguistic expression?

It is widely agreed that language has two basic kinds of uses: a dialogical and a monological one or, as Gilbert Harman (1977) puts it, a communicative and a calculative one. I do not object to Harman's claim that "language surely has both uses, and the second is as important as the first",[4] but I do not believe that the theories for both uses should be developed independently nor that a theory of the dialogical use should be based on a theory of the monological one. One argument for following the opposite strategy comes from the ontogenesis of language: no child will calculate linguistically before having learned a language, and he learns language through its communicative use, even if what he learns first is to a large extent a special kind of monologuing. But I do not want to dwell further on the difficult topic of how to explain the monological or calculative use of language, and I will restrict my attention in what follows to the dialogical one. Then a first preliminary answer to our central question can be given as follows:

> It is rational for a possible speaker to use a certain linguistic expression E if he wishes to entitle a possible interpreter to draw certain inferences from his behaviour and if he believes that the use of E is a good means to that end.

Among the inferences a possible interpreter is entitled to draw from a given occurrence of linguistic behaviour are certainly those which constitute what is called a correct understanding of the given occurrence. Thus, like E. von Savigny,[5] I propose to explain linguistic behaviour in terms of a correct understanding of this behaviour. But what are the inferences which constitute a correct understanding? Ob-

viously not all those which are possible. If I hear someone pronounce distinctly "What can I do for you?", I can infere that he has a tongue, but this does not belong to the inferences we have in mind when we are thinking of correct understanding. Why? Because the basis for this inference, the fact that to have a tongue is a necessary condition for behaving as described, is a law of physiology, and not an instance of my knowledge of English. What we are after are inferences of a special subclass of those which intuitively are valid with respect to a given occurrence of behaviour. As a first approximation I propose to define the subclass in question as containing exactly those inferences which depend on the assumption that the speaker knows the language he uses, i.e. that he knows what the correct inferences are which a possible interpreter is entitled to draw.

Some technical considerations are in order before we can proceed. The normal logical means for representing a class of inferences is a sentence: Given a logical system which defines a notion of sentence as well as a notion of inference, a class of inferences with respect to a given sentence S can be identified with the set of those sentences which logically follow from S. Thus if we wish to identify correct understanding with a class of inferences, we can characterize it by a sentence together with a suitable notion of inference. But what is the sentence which determines the correct understanding of a given linguistic utterance? Is it the expression which is uttered? Not every utterance has the form of a sentence, not even an elliptical one (what would e.g. "Wow!" be an ellipsis of?), and those which have are not completely understood if only the expression is understood, but not what the speaker is doing in uttering it. Therefore, I propose to take a description of the linguistic act at the illocutionary level as the kind of sentence we are looking for. And, knowing well the intricacies of the semantics of natural illocution-describing predicates, I propose further to use artificial terms for the formulation of the illocutionary description. If we use a system with indirect interpretation like the one defined in Montague's PTQ,[6] we have no problem in doing this

since the intensional logic into which natural expressions are translated provides infinitely many constants of each type besides those which have natural counterparts. Of course, we will have to define those abstract constants, because the class of inferences we are after will depend on them. But then we will be in a position to check the adequacy of our theory in terms of what U. Blau (1978) calls intuitive correctness and intuitive completeness. Our theory will be intuitively correct, if no inference turns out to be formally valid although intuitively it is not. It will be intuitively complete if all inferences which are intuitively valid are valid in their formal reconstruction as well. Accordingly, to refine a theory is to achieve an increasing degree of completeness while trying to keep inside the field of correctness. But first we have to define a notion of entailment on the illocutionary level or, for short, or Il-entailment. And then we can reformulate our answer to the central question in the following decision-theoretic way:

> It is rational for a possible speaker to use expression E in situation S if it is optimal for him with respect to his assumptions and preferences to entitle a possible interpreter to draw those inferences from his behaviour which are characterized by the illocutionary meaning of E in S and the notion of Il-entailment.

2. *Exemplification*

In the first part of this chapter, some data from German are presented which, as far as I can see, can only be handled in an adequate way if not only syntax and semantics proceed hand in hand, as Montague claims they should,[7] but syntax, semantics, and pragmatics in one of its senses or, in my terms, syntax, locutionary, and illocutionary semantics. Then the data are treated formally in the suggested way, i.e. with the help of an intensional model-theory and via the notion of illocutionary entailment.

2.1 *The data*

The data are chosen from German with the intention to show (a) the intuitive relations which hold between illocutions of different type, but with related content, (b) the interaction between ambiguities on the locutionary as well as the illocutionary level, and (c) the interaction between illocutionary indicators of different types. The following four German sentences will constitute our material:

(1) *Wen kennt jeder?*
'Whom does everybody know?'

(2) *Ich frage dich, wen jeder kennt.*
'I ask you whom everybody knows.'

(3) *Sag mir, wen jeder kennt!*
'Tell me whom everybody knows!'

(4) *Niemanden kennt jeder.*
'Nobody is known by anybody/everybody.'

Locutionary ambiguities

On the locutionary level, all four sentences are ambiguous with respect to the scope of *jeder*. (This is why (4) has two English translations.) The wide scope reading of (1) can be paraphrased as (1'), the narrow scope reading as (1"):

(1') For every person x: whom does x know?
(1") For which person(s) x: everybody knows x?

In spoken German (1) is normally disambiguated by stressing *kennt* in the former and *jeder* in the latter case. Note that in its wide scope reading, (1) is equivalent on the locutionary level (L-equivalent) with the so-called multiple question (5):

(5) *Wer kennt wen?*
'Who knows whom?'

It follows that (5) can also be paraphrased by (1'), and this means that *wer* as well as *jeder* can be rendered by the universal quantifier. If

we apply the same procedure to *wen*, we get (1'"),

(1'") For every person x and every person y: does x know y?

which is also a good paraphrase of the relevant L-reading of (1) and where no interrogative pronoun occurs at all. This is one of the facts on which my treatment of WH-questions will be based.

Exactly the same scope ambiguity arises with respect to the indirect question clauses *wen jeder kennt* in (2) and (3), and (4) is ambiguous in an analogous way: its wide scope reading can be paraphrased as (4') and its narrow scope reading as (4"):

(4') For every person x: x knows nobody.

(4") For no person x: everybody knows x.

Illocutionary ambiguities

On the illocutionary level we shall focus on two uses of interrogative sentences, namely the erotetic and the assertive ones.[8] The erotetic Il-reading of (1) aims at an answer regarding either those persons who are known by everybody or those pairs of persons <x,y> such that x knows y, according to which L-reading is chosen. The assertive Il-reading of (1), on the other hand, is a more stylish way of expressing the belief that nobody (or almost nobody)[9] is known by everybody or, much stronger, by anybody, again according to the L-reading under consideration. In German WH-interrogatives, this Il-ambiguity is often removed by introducing the particle *schon* (not to be confused with the adverb *schon* 'already') if the assertive reading is meant. At the same time, the L-ambiguity is removed as well since, at least according to my intuitions, (6) has only the wide scope and (7) only the narrow scope reading.[10]

(6) *Wen kennt jeder schon?*

(7) *Wen kennt schon jeder?*

This fits in with our observation that in spoken German the main stress is on *kennt* for the wide scope reading and on *jeder* in the narrow scope case since, as Krivonosov (1965) has pointed out, only unstressed ele-

ments can occur between the main verb and a modal particle.

Sentences (2) and (4) are declarative sentences. In general, declarative sentences have at least two Il-readings, an assertive and a declarational one. The assertive use of a sentence S commits the speaker in some way to the belief that S is true while the declarational use of S makes S true. According to a proposal made by I. Heim (1977), which I shall adopt here, Austin's (1962) so-called explicit performative utterances are a special case of declarations. So the interesting Il-reading of (2) is the explicit performative or the declarational one. On the other hand, with respect to (4) only the assertive reading will be considered. (It seems hard indeed to imagine a situation where (4) can be interpreted as a declaration.)

(3) is a jussive sentence, and here only the directive use will be considered.

Illocutionary relations between (1) - (4)

When confronted with sentences (1) - (4), every native speaker of German will feel that there are strong intuitive relations holding between them. These relations, however, are not locutionary or semantical in nature (as D. Lewis (1970: 205-212) falsely claims),[11] but they are illocutionary relations, since they vary according to the Il-reading under consideration. My claim is that the relations which hold between (1) - (4), and which constitute data to be accounted for, are the following:

> The L-readings of the erotetic reading of (1) are Il-entailed by the corresponding L-readings of the declarational reading of (2) and by the corresponding L- readings of (3). The L-readings of the assertive reading of (1), on the other hand, are Il-equivalent with the corresponding readings of (the assertive reading of) (4).

2.2 *A formal treatment of the data*

2.2.0 *Outline*

My proposal for a treatment of the above-mentioned data rests on

the assumptions put forward in Montague (1974b), namely that a formal grammar (in the sense of syntax *and* semantics) of some language L has to define not only the notion of a sentence of L, but also a corresponding disambiguated language L' which provides a syntactic counterpart for each reading of a L-sentence. Here, certain abstract elements like parentheses and indices are introduced which do not occur in L. Furthermore, it has to assign each L'-sentence its meaning (intension) with respect to an interpretation and its denotation (extension) with respect to a model, i.e. an interpretation together with a point of reference. For the sake of perspicuity, Montague uses in PTQ a second artificial language L" into which L' - expressions have to be translated before the meaning-assignment can apply. In the following, I shall adopt this procedure as well as the intensional logic which plays in PTQ the role of L".

2.2.1 *Syntax*

I will first characterize the disambiguated language DG (disambiguated German) in which the above-mentioned readings of (1) - (4) will be represented.

Categories of DG

Cat is to be the smallest set such that
(i) $e, t^n, f^n \in Cat$ $(n \in \mathbb{N})$,[12]
(ii) if $A, B \in Cat$, then $A/_n B \in Cat$ $(n \in \mathbb{N})$.
If n = 0, it will usually be omitted. e is to be understood as the category of entity expressions, t^n as the categories of truth-value-denoting expressions or sentence radicals and f^n as the categories of force carrying expressions or sentences. As indicated above, the distinction between the locutionary and the illocutionary level is reflected in the syntax, the formal means being the distinction between the categories t^n and f^n.

Categories of some basic expressions of DG

Abbreviation: IV := (e/t)

$\{ich, du, jeder, niemand, er_0, er_1, \ldots\} \subseteq B_T := B_{t/IV}$

$\{wer\} \subseteq B_{QT} := B_{t/_1IV}$

$\emptyset = B_{PQT} := B_{t/_2IV}$

$\{kenn\} \subseteq B_{IV/_4T}$

$\{sag_{ob}\} \subseteq B_{(IV/_1t)/_3T}$

$\{frag\} \subseteq B_{(IV/_1t)/_4T}$

If A is a category, then $B_A \subseteq P_A$, where B_A is the set of basic expressions of category A, and P_A the set of phrases of this category. For mnemonic reasons, I will use the following abbreviations: P_{Dec}: P_f1 are the declarational, $P_{Ass} := P_f2$ the assertive, $P_{Ero} := P_f3$ the erotetic, and $P_{Dir} := P_f4$ the directive DG-sentences.

The language of intensional logic IL

As target language of the translation procedure to be specified below, I take the typed intensional tense logic defined in Montague (1974c: 256f.), with its definitions of types and of meaningful expressions of each type. I also adopt the notational convention of designating those IL-constants which are target expressions of the translation procedure by primed variants of the corresponding DG-expressions, and of marking the extensional counterparts of IL-predicates by a substar.

Translations of the relevant basic DG-expressions[13]

ich	translates	into	sp*
du	"	"	ad*
jeder	"	"	$\hat{P}\wedge x[Pers(x) \rightarrow P\{x\}]$
niemand	"	"	$\hat{P}\neg\vee x[Pers(x) \wedge P\{x\}]$
er_n	"	"	$\hat{P}\ P\{x_n\}$
wer	"	"	$\hat{P}\wedge x[Pers(x) \rightarrow P\{x\}]$
$kenn^0$	"	"	*kenn'*
sag^0_{ob}	"	"	sag_{ob}'
$frag^0$	"	"	*frag'*

The relevant rules of syntax and translation

The form of a syntactical rule is the following: let A, B, C be any categories. If $\alpha \in P_A$ and $\beta \in P_B$, then $\gamma \in P_C$, where γ is the value of some operation F for the arguments α and β. β can be zero. The form of the corresponding translation rule is as follows: Let A, B, C be as above. If $\alpha \in P_A$, α translates into α', $\beta \in P_B$, and β translates into β', then γ ($\gamma \in P_C$, $\gamma = F(\alpha,\beta)$) translates into γ', where γ' is the value of some operation F' for the arguments α' and β'. I will combine both forms into the following rule scheme:

$$\frac{\alpha \in P_A \quad \beta \in P_B}{\gamma \in P_C} \qquad \frac{\alpha' \quad \beta'}{\gamma'}$$

The types of the target expressions are determined by the following rule: every DG-phrase of category A translates into a meaningful IL-expression of type k(A) where k, the category-to-type mapping, is that function from *Cat* into the set of types such that (i) $k(e) = e$, $k(t^n) = k(f^n) = t$ for all $n \in \mathbf{N}$, and (ii) $k(A/_n B) = \langle\langle s,k(B)\rangle, k(A)\rangle$ for all $n \in \mathbf{N}$.

R 1 *Object embedding*

For any $A \in Cat$, $n \in \{3, 4\}$

$$\frac{\alpha \in P_T \quad \beta \in P_{A/_n T}}{\alpha^n\, \beta \in P_A} \qquad \frac{\alpha' \quad \beta'}{\beta'(\hat{}\alpha')}$$

R 2 *Indirect question clause embedding*

$$\frac{\alpha \in P_{IV/_1 t} \quad \beta \in P_t}{\alpha, ob\ \beta^+ \in P_{IV}} \qquad \frac{\alpha' \quad \beta'}{\alpha'(\hat{}\beta')}$$

where β^+ comes from β by replacing all occurrences of (i) γ^{on} by the n^{th} person indicative present tense of γ, (ii) δ^3 by the third case of δ, and (iii) η^4 by the fourth case of η.[14]

R 3 *Subject inserting*

$\alpha \quad \varepsilon \quad P_T$	α'
$\beta \quad \varepsilon \quad P_{IV}$	β'
$\alpha\ \beta^+ \quad \varepsilon \quad P_t$	$\alpha'(\hat{}\beta')$

where β^+ comes from β by replacing all upper indices o in β by o1 if α = *ich*, o2 if α = *du*, and o3 otherwise.

R 4/R 5 *Declarative sentences with assertive and declarational force, respectively*

$\alpha\ \beta^4\ \gamma^3\ \delta^{on}\ \eta \quad \varepsilon \quad P_t$ where $\eta \quad \varepsilon \quad \{1,2,3\}$ and β^4, γ^3, η may be empty	α'
$(\alpha\ on_\delta\ 3_\gamma\ 4_\beta\ \eta.)_\omega$ $(3_\gamma\ on_\delta\ \alpha\ 4_\beta\ \eta.)_\omega$ $(4_\beta\ on_\delta\ \alpha\ 3_\gamma\ \eta.)_\omega$ $(\eta\ on_\delta\ \alpha\ 3_\gamma\ 4_\beta.)_\omega$ $\varepsilon\ P_\omega$, where $\omega \varepsilon \{Ass, Dec\}$, on_δ is the n^{th} person indicative present tense of δ, and 3_γ, 4_β are the third and fourth case of γ and β, respectively.	Ass(^sp,^ad*,^α') if ω = Ass, α' if ω = Dec.

R 6 *Interrogative sentences with erotetic force*

$\alpha\ \beta^4\ \gamma^3\ \delta^{on}\ \eta \quad \varepsilon \quad P_t$ (conditions as above)	α'
$(on_\delta\ \alpha\ 3_\gamma\ 4_\beta\ \eta?)_{Ero} \varepsilon P_{Ero}$ (Notation as above)	Ero(^sp,^ad*,^α')

R 7 *Interrogative sentences with assertive force*

$\alpha\ \beta^{on}\ \gamma \quad \varepsilon\ P_t 1$; α'

where $n \quad \varepsilon \{1.2.3\}$

$(\alpha\ on_\beta\ \gamma+?)_{Ass} \varepsilon P_{Ass}$; $Ass(\hat{}sp,\hat{}ad^*,\hat{}\alpha')$

where on_β is the n^{th} person indicative present tense of β and γ^+ comes from γ by replacing all items with upper indices 3 or 4 in γ by their third or fourth case, respectively.

R 8 *Jussive sentences*

$\alpha\ \beta^4\ \gamma^3\ \delta^{o2}\ \eta\ \varepsilon\ P_t$; α'

(conditions as above)

$(Imp_\delta\ 3_\gamma\ 4_\beta\ \eta!)_{Dir} \varepsilon P_{Dir}$; $Dir(\hat{}sp,\hat{}ad^*,\hat{}\alpha')$

where Imp_δ is the imperative form of δ and 3_γ, 4_β are as above.

R 9,n *Quantifying in*

For any $A \varepsilon \{f^m,t^m\}$, $m \varepsilon \mathbf{N}$

$\alpha \quad \varepsilon P_T$; α'

$\beta \quad \varepsilon P_A$; β'

$\beta[\gamma_n/\alpha_n^+] \varepsilon P_A$; $\alpha'(\hat{x}_n\beta')$

where $\beta[\gamma_n/\alpha_n^+]$ comes from β by replacing the first occurrence of an item with lower index n by the corresponding case of α with lower index n.

R 10,n *Term questions*

$\alpha \quad \varepsilon P_{QT}$; α'

$\beta \quad \varepsilon P_f m$; β'

$\beta^+ \varepsilon P_f m$, where either ; $\alpha'(\hat{x}_n\beta')$

(a) there is an occurrence of *ob* in β and β^+ comes from β by deleting the first item with lower index n in β and by replacing *ob* by the corresponding case of α, or (b) there is an occurrence of an element of P_{QT} in β and $\beta^+ = \beta[\gamma_n/\alpha_n^+]$, the latter being de-

fined as in R 9,n, or (c) there is no occurrence of *ob* or an element of P_{QT} in β and β^+ comes from β by deleting the first item with lower index n in β and by prefixing β with the corresponding case of α.

R 11 *Pseudo-question-terms*

$$\frac{\alpha \ \epsilon \ P_{QT}}{\alpha \ \epsilon \ P_{PQT}} \qquad \frac{\alpha'}{\hat{Q}\ \alpha'(\hat{y}\neg Q\{y\})}$$

R 12,n *Pseudo-term-questions*

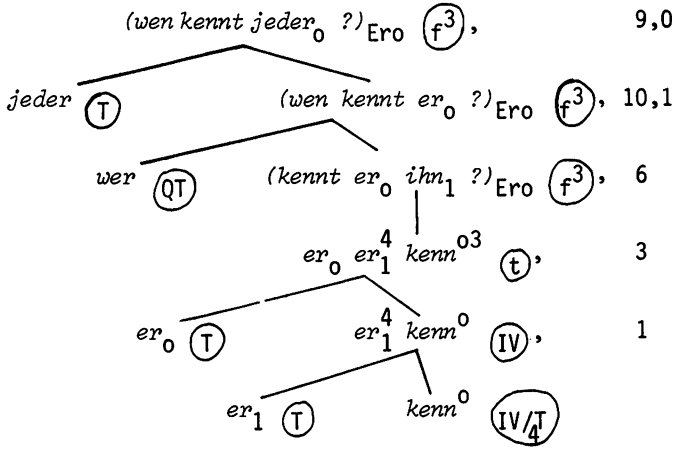
$$\frac{\begin{array}{l}\alpha \ \epsilon \ P_{PQT} \\ \beta\ \gamma^{om}\ \delta \ \epsilon \ P_t \\ \text{where m } \epsilon \ \{1,2,3\}\text{, and } \delta \text{ may be empty}\end{array}}{\alpha^+\ \gamma^{om}\ \beta^+\ \delta \ \epsilon \ P_t 1} \qquad \frac{\begin{array}{l}\alpha' \\ \beta'\end{array}}{\alpha'(\hat{x}_n\beta')}$$

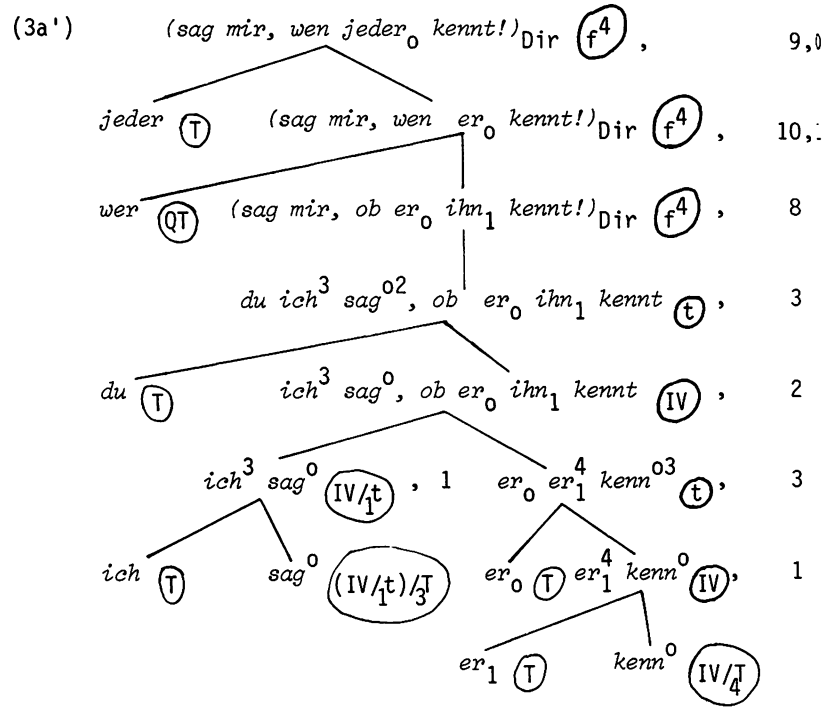
where β^+ comes from β by deleting the first occurrence of an item with lower index n in β and α^+ is the corresponding case of α.

The working of these rules can be demonstrated in a familiar way with the help of analysis trees. The number of the rule in operation is added to the right of the output expression, furthermore, the category of each expression is indicated inside a circle.

Two sample analysis trees:

(1a')





Representation of the relevant readings of (1)-(4) in DG:

The two sample analysis trees should have made clear how to derive the following ten sentences, which are the DG-representation of the readings mentioned under 2.1 above.

(1a) *(wen kennt jeder$_o$?)*$_{Ero}$
(1b) *(wen kennt jeder?)*$_{Ero}$
(1c) *(wen kennt jeder$_o$?)*$_{Ass}$
(1d) *(wen kennt jeder?)*$_{Ass}$
(2a) *(ich frage dich, wen jeder$_o$ kennt.)*$_{Dec}$
(2b) *(ich frage dich, wen jeder kennt.)*$_{Dec}$
(3a) *(sag mir, wen jeder$_o$ kennt!)*$_{Dir}$
(3b) *(sag mir, wen jeder kennt!)*$_{Dir}$
(4a) *(niemanden kennt jeder.)*$_{Ass}$
(4b) *(niemanden$_o$ kennt jeder.)*$_{Ass}$

The ambiguation relation AR:

AR is to be the smallest relation such that $\langle\alpha,\alpha'\rangle \in AR$ if and only if $\alpha \in P_f n$ for some $n \in \mathbb{N}$ and α' comes from α by capitalizing the first letter and deleting all parentheses and indices in α. The range of AR is called S or the set of G-sentences, where G is the ambiguous counterpart of DG. It is easy to see that (1)-(4) are elements of S according to this definition.

Representation in IL

The application of the translation part of our rules leads to expressions which are equivalent with the following IL-formulas (1a")-(4b").[15] Abbreviations: if α is a formula, then ERO($\hat{}\alpha$) := Ero($\hat{}$sp, $\hat{}$ad*,$\hat{}\alpha$), ASS($\hat{}\alpha$) := Ass($\hat{}$sp,$\hat{}$ad*,$\hat{}\alpha$), and DIR($\hat{}\alpha$) := Dir($\hat{}$sp,$\hat{}$ad*,$\hat{}\alpha$).

(1a") $\Lambda u[Pers_*(u) \rightarrow \Lambda v[Pers_*(v) \rightarrow ERO(\hat{}kenn_*^{\downarrow}(u,v))]]$

(1b") $\Lambda v[Pers_*(v) \rightarrow ERO(\hat{}\Lambda u[Pers_*(u) \rightarrow kenn_*^{\downarrow}(u,v)])]$

(1c") $ASS(\hat{}\Lambda u[Pers_*(u) \rightarrow \neg\forall v[Pers_*(v) \,\&\, kenn_*^{\downarrow}(u,v)]])$

(1d") $ASS(\hat{}\neg\forall v[Pers_*(v)\&\Lambda u[Pers_*(u) \rightarrow kenn_*^{\downarrow}(u,v)]])$

(2a") $\Lambda u[Pers_*(u) \rightarrow \Lambda v[Pers_*(v) \rightarrow frag'(\hat{}sp,\hat{}ad*,\hat{}kenn_*^{\downarrow}(u,v))]]$

(2b") $\Lambda v[Pers_*(v) \rightarrow frag'(\hat{}sp,\hat{}ad*,\hat{}\Lambda u[Pers_*(u) \rightarrow kenn_*^{\downarrow}(u,v)])]$

(3a") $\Lambda u[Pers_*(u) \rightarrow \Lambda v[Pers_*(v) \rightarrow DIR(\hat{}sag_{ob}'(\hat{}ad,\hat{}sp*,\hat{}kenn_*^{\downarrow}(u,v)))]]$

(3b") $\Lambda v[Pers_*(v) \rightarrow DIR(\hat{}sag_{ob}'(\hat{}ad,\hat{}sp*,\hat{}\Lambda u[Pers_*(u) \rightarrow kenn_*^{\downarrow}(u,v)]))]$

(4a") $ASS(\hat{}\Lambda u[Pers_*(u) \rightarrow \neg\forall v[Pers_*(v)\&kenn_*^{\downarrow}(u,v)]])$

(4b") $ASS(\hat{}\neg\forall v[Pers_*(v)\&\Lambda u[Pers_*(u) \rightarrow kenn_*^{\downarrow}(u,v)]])$

2.2.2 *Semantics*

An IL-interpretation is essentially an interpretation in the sense of Montague's PTQ-logic (loc. cit. p. 258), i.e. a quintuple $\langle E,W,T,\leqslant, F\rangle$, where E,W,T are nonempty sets (to be understood as the sets of entities, possible worlds and moments of time, respectively), $\leqslant$ is a linear ordering on T and for every $i \in I$, F(i) is a function which maps the constants of each type into the set of possible denotations of that

type; I, the set of indices, is defined as E x E x W x T. Therefore, for each i ε I, the first and second coordinate of i are individuals and may serve in every interpretation as the i-extensions of the special expressions 'sp' (for speaker) and 'ad' (for addressee). Of course, not all possible IL-interpretations will be interesting for the interpretation of German. With the help of some meaning postulates, I will therefore characterize a more restricted notion of IL-interpretation which I will call G-IL-interpretation (interpretation of intensional logic admissible for the analysis of German) and on which my central definitions of truth and entailment will be based.

Meaning postulates

It would be the task of an explicit theory of morphological meaning to define the abstract constant 'Pers', and of a theory of speech acts to define the abstract constants 'Ero', 'Ass', and 'Dir'. In this paper, however, two of them are only partially characterized, since for the present purposes, even the first two meaning postulates will do.

The Π, i, g-extensions of the following formulas are to be 1 for all G-IL-interpretations Π, all Π-indices i and all Π-assignments g:

MP 1 $\lambda x \lambda \mathbf{P} \lambda p[\mathrm{Ero}(x,\mathbf{P},p) \leftrightarrow \mathit{frag}'(x,\mathbf{P},p)]$

MP 2 $\lambda x \lambda y \lambda p[\mathrm{Dir}(x,\hat{\mathbf{P}}P\{y\},\hat{}\mathit{sag}_{\mathrm{Ob}}'(y,\hat{\mathbf{P}}P\{x\},p)) \rightarrow \mathrm{Ero}(x,\hat{\mathbf{P}}P\{y\},p)]$

MP 3 $\lambda x \lambda \mathbf{P} \lambda p[\delta(x,\mathbf{P},p) \rightarrow \mathrm{Ass}(x,\mathbf{P},p)]$, where $\delta \in \{\mathit{behaupt}', \mathit{mitteil}', \mathit{feststell}'\}$. ('assert', 'communicate', 'state')

MP 4 $\lambda x \lambda \mathbf{P} \lambda p[\delta(x,\mathbf{P},p) \rightarrow \mathrm{Dir}(x,\mathbf{P},p)]$, where $\delta \in \{\mathit{aufforder}', \mathit{bitt}', \mathit{befehl}'\}$. ('ask', 'request', 'order')

Truth, locutionary, and illocutionary entailment

Let α, β be elements of $P_f n$, for some $n \in \mathbb{N}$.

(1) *Truth-in-a-model.* Let Π be a G-IL-interpretation and i an Π-index. If there is an IL-formula α' such that α translates into α' or $\mathrm{Ass}(\hat{}sp,\hat{}ad^*,\hat{}\alpha')$, then α is *true in* Π *at* i if and only if $\alpha'^{\Pi,i,g} = 1$ for all Π-assignments g. (Thus, the notion of truth is only defined with respect to sentences with declarational or assertive force, but not with respect to erotetic or directive sentences.)

(2) α *L-entails* β if and only if for all G-IL-interpretations Π and all Π - indices i, α is true in Π at i only if β is true in Π at i. Notation: $\alpha \overset{L}{\Longrightarrow} \beta$.

(3) α *Il-entails* β if and only if for all G-IL-interpretations Π, all Π- indices i, and all Π- assignments g, $\alpha'^{\Pi, i, g} = 1$ only if $\beta'^{\Pi, i, g} = 1$, where α' and β' are the translations of α and β, respectively. Notation: $\alpha \overset{Il}{\Longrightarrow} \beta$.

2.3 *Results*

The results of our formal treatment of illocutionary force indicators in an illustrative fragment of German are a formal reconstruction of the facts stated at the end of chapter 2.1; the only difference, a mutual entailment in the first two cases instead of a simple one, is due to the rather uninteresting fact that our small fragment neither treats plural, nor indices with more than one speaker or addressee, nor the difference between *du* and *Sie*. Here are the results:

(2a) $\overset{Il}{\Longleftrightarrow}$ (1a)
(2b) $\overset{Il}{\Longleftrightarrow}$ (1b)
(3a) $\overset{Il}{\Longrightarrow}$ (1a)
(3b) $\overset{Il}{\Longrightarrow}$ (1b)

(1c) $\overset{Il}{\Longleftrightarrow}$ (4a)
(1d) $\overset{Il}{\Longleftrightarrow}$ (4b)

3. *Discussion*

In this third part of my paper, I will open the discussion myself and give some preliminary replies to several objections that might be raised against my proposal for a formal treatment of illocutionary force indicators.

Objection 1: Isn't that another attempt to reduce pragmatics (in the sense of a theory of language use) to semantics?

Reply 1: Yes and no. Yes in the rather trivial sense that every occurrence of language use can be described, and the semantics of this description can be studied. But this is probably not what you mean. No in the sense that I do not identify the rule for the use of a linguistic expression with either the locutionary or the illocutionary meaning

of this expression, rather I regard the locutionary meaning as partly determining the illocutionary meaning and the latter as the central notion in the rule for the use of the expression under consideration.

Objection 2: You propose to distinguish between a rather small number of illocutionary types. Why not just three, corresponding to the three main sentence moods or, with Wittgenstein (1958: §23) infinitely many?

Reply 2: As for the first part of your counterproposal, I hope my examples have already shown that there is no one-to-one correspondence between sentence mood and illocutionary type, at least in German or English. I do not deny that possibly there are natural languages which have unambiguous syntactic devices for distinguishing between illocutionary types. As for the second part, I would say: "Illocutiones non sunt multiplicandae praeter necessitatem." - if we get by with the assumption of a rather small stock of illocutionary types, we should avoid an inflation of this stock. Of course you can think of a continuous transition between e.g. the erotetic and the assertive use of interrogative sentences, but the German language for instance draws a sharp line between them by permitting or forbidding the occurrence of the particle *schon*.

Objection 3: On the level of locutionary semantics we try to distinguish as sharply as possible between vagueness and ambiguity. Your proposal amounts to the claim that primary performative sentences are ambiguous on the illocutionary level. To me it seems more appealing to suppose that they are just vague.

Reply 3: You are right that I claim primary performative sentences to be Il-ambiguous; let me add that I do not exclude explicit performative formulas from that claim. Concerning your vagueness proposal, I have no real knock-down argument against it, but I think the following data constitute at least *some* evidence against the assumption that for instance German declarative sentences are just vague with respect to the declarational or assertive force they can have. I suppose you agree that the reference of indexicals can be vague as well as ambiguous, and

that e.g. 'he', used in a situation where the speaker is pointing at two persons, is rather ambiguous than vague. Now imagine the following situation: A, while saying (8), gives a letter to B.

(8) *Hiermit teile ich Ihnen mit, daß Ihr Goldfisch verstorben ist.*
'I hereby inform you of the death of your goldfish.'

hiermit ('hereby') contains an indexical element which, in the given situation, may refer either to the utterance or to the letter. I hope you concede also that in this case *hiermit* is rather ambiguous than vague. But now look at the illocutionary force of (8)! If *hiermit* is interpreted in the first way, then an utterance of (8) constitutes a declaration and the truth of (8) depends among other things on the question whether it is uttered or not. If it is uttered, as supposed, and if all happiness conditions obtain, then (8) is clearly true. If, however, *hiermit* is taken in the second way, then an utterance of (8) constitutes an assertion and the truth of (8) depends on what the letter says. If it says, for instance, that the addressee's goldfish is still alive, then (8) is clearly false. So we have two clear-cut cases: The declarational one with truth of (8), and the assertive one with falsity of (8), and there is no continuous transition between the two and hence nothing which supports the vagueness claim and everything which supports the ambiguity claim.

Objection 4 ... No, now it is your turn!

FOOTNOTES

1. Montague (1974a, b, c).

2. Lewis (1972).

3. Cresswell (1973).

4. Harman (1977: 418).

5. von Savigny (1974, ch. 7).

6. This is the commonly used abbreviation for Montague (1974c).

7. Montague (1974a:210).

8. The latter is also known as rhetorical question.

9. In ordinary language, expressions like 'everybody' are often used in a sloppy sense which can be paraphrased as 'almost everybody'.

10. I am not entirely sure whether (7) has not still both readings, which can be separated in spoken German by stressing either *kennt* or *jeder*.

11. For a critique of his position cf. Zaefferer (1981).

12. $\mathbb{N}$ is the usual notation for the set of natural numbers (including zero).

13. For the details of the IL-expressions such as variable-names, arc- and upstar-convention cf. Montague (1974c:260).

14. For those readers who are not familiar with German morphology, the relevant forms of our fragment are the following:

	ich	*du*	*jeder*	*niemand*	er_n	*wer*
third case	*mir*	*dir*	*jedem*	*niemandem*	ihm_n	*wem*
fourth case	*mich*	*dich*	*jeden*	*niemanden*	ihn_n	*wen*

15. For the equivalence proofs, it is profitable to use the PTQ-principles stated in Link (1979: 179ff., 220).