On the Use of Linguistic Quantifying Operators in the

Logico-Semantic Structure Representation of Utterances

Irena Bellert

Warsaw University

1. Introduction

By now it has become clear to most linguists that surface
structures of utterances in natural language are not a suf-
ficient basis for the semantic interpretation, and that an
abstract deep structure representation has to be assumed in
a linguistic description,which is supposed to correlate the
surface structure hierarchical representation of each utter-
ance with its meaning (or meanings in case of homonimity).
Since the problem of what should be understood as the meaning
of an utterance is not clear, the question of how deep struc-
tures should be represented remains open for linguists, even
for those who have been known as adherents of the transforma-
tional generative grammar, where deep structures are deter-
mined in terms of generalized phrase markers (or some other
similar concepts which get modified in the course of work).

The questions which arise in postulating deep structure
representations are often due to the lack of a possible guide
line concerning the division between the knowledge of language
and knowledge of the world, and thus between the information
which should be included in a full description of a language
and that which should or need not. The classical distinction
between syntax, which concerns relations between language

signs, and semantics, which concerns relations between lan-
guage signs and extralinguistic "objects" (or extralinguist-
ic relations), has also become blurred up by the fact of in-
troducing into the linguistic description abstract struc-
tures which are only indirectly related to the surface signs
representing the elements that actually occur in utterances.
However, even if we reckon the abstract deep structure des-
criptions as pertaining to syntactical relations - in spite
of certain attempts to the contrary[1]- we will still be left
with difficulties in trying to establish the scope of semant-
ic relations, that is, the relations between linguistic signs
which occur in deep structure representations and extralin-
guistic "objects" or relations.

The difficulties which arise in establishing the scope of
semantics are before all due to the fact that the overhelming
majority of utterances contain signs which are used in refer-
ence to the addresser, addressee, the time, place and situa-
tion in which a given utterance is produced[2]. Therefore, if
we wanted to take seriously the requirement that semantic re-
lations should consist in relating signs with extralinguistic
"objects", such a task would simply be unfeasible for a lin-
guist or semanticist, for it is clear that any two identical
utterances used at a different time, place, or produced by a
different speaker, should be interpreted differently if they
contain "token-reflexive" signs, as obviously they are relat-
ed to two different extralinguistic situations.

It is certainly much more reasonable to follow a view held
by some philosophers, logicians and linguists, which can be
briefly recalled by means of a quotation from Roman Jakobson:
"the meaning of any linguistic sign is its translation into
some further, alternative sign, especially a sign "in which
it is more fully developed" as Peirce, the deepest inquirer
into the essence of signs, insistently stated"[3]. The gener-
al idea is certainly right, but such an approach leaves much
freedom with respect to various possible ways of presenting
"the alternative signs". We will not discuss here the differ-
ent proposals connected with such an approach to semantics,
their assets and drawbacks, but - accepting in principle
the thesis that a semantic model for natural language can on-
ly be established by means of "alternative signs" - we will
suggest one of the possible ways of describing the semantic
interpretation of utterances.

Following a concept which has already a certain tradition
in philosophy, semantics and logic[4], but has never been taken
seriously by linguists, I will accept the view that the sem-
antic interpretation of an utterance is the set of consequen-
ces which can be derived from that utterance (or more strict-
ly, from its deep structure description) on the basis of
certain implicational rules that can be established for the
given language. Accordingly, I attempt to search for such
a description of deep structures for which it will be pos-
sible to formulate the rules which I call quasi implica-
tions[5]. In order to avoid confusion in using the term "deep

structures" (which by now is employed in different senses, but
should be reserved for transformational deep structures, for
which it has been clearly defined), I will refer to the logi-
co-semantic structure (LS structure) of utterances[6].

The identification of the semantic interpretation of an
utterance with the set of consequences or conclusions which
can be drawn on the grounds of that utterance is very close
to our intuitive understanding of how we interpret utterances.
To say that the addressee understands an utterance, only if he
is able to draw all the conclusions implied by the given ut-
terance, seems to be compatible with the ordinary thinking and
the estimation of a fully adequate understanding of an utter-
ance. The fact that certain conclusions are based on prem-
isses corresponding to the addressee's beliefs which belong
to his knowledge of the world precisely reflects what has
been mentioned earlier about the lack of a clearcut division
between the knowledge of language and knowledge of the world.
In fact such a division can only be arbitrarily established
for a given description of language. For instance, in des-
cribing a lexicon (or the rules of the lexicon in a theory
of language), we have to make a decision as to whether cer-
tain information concerning a lexical item should be includ-
ed in the lexicon, or treated as encyclopaedic information,
which pertains to such or other domain of science, speciali-
zation, etc. The arbitrariness of this division concerns,
however, usually the boundary problems with respect to
which such questions arise, but it does not affect the fact

that in the majority of problems there is a general agreem-
ent of linguists as to what syntactical and lexical inform-
ation should be included in the linguistic description in
some or other way. Once such a decision is made, and the in-
formation is included in a linguistic description, we should
be able to define clearly what consequences can be drawn on
the basis of a given utterance and linguistic quasi implica-
tions, and what ones require additional premisses which be-
long to the knowledge of the world.

To give an example, we may say that a speaker or author
uses appropriately [7] the utterance :

(1) Nixon has left the United States
only if his purported belief [8] is that :

(1a) there is one and only "object" which is being referred
     to by him as "Nixon"
(1b) there is one and only "object" which is being referred
     to by him as "the United States"
(1c) Nixon was in the United States before
and if his purported claim is that :
(1d) Nixon is not in the United States at that time.
The propositions (1a, 1b, 1c and 1d) can be derived formal-
ly from (1) on the basis of certain linguistic quasi impli-
cations[9], and they belong, among others, to the set of con-
sequences which constitutes the interpretation of (1). On the
other hand, the proposition
(1e) The President of the United States has left the United
     States
is a conclusion based on the premiss :"Nixon is the President
of the United States", which may belong to the speaker's and
hearer's knowledge of the world, but if not included in the

description of the lexicon, it will not be derived formal-
ly as a consequence.

It is worth noting that the propositions (1a, 1b, 1c)
concern the speaker's purported beliefs, whereas the pro-
position (1d) concerns the speaker's purported claim or
assertion. The difference is significant, for if we con-
vert (1) into a question, negation, wish, command, etc
(Has Nixom left the United States? Nixon has not left the
United States, I want Nixon to leave the United States, etc)
then the consequences pertaining to the speaker's beliefs
will remain the same, and it is only the consequence (1d)
pertaining to the speaker's assertion that will become
correspondingly different. In general all the consequen-
ces derived from an utterance can be accepted only as a
set of propositions which correspond to the purported at-
titude of the speaker, not as a set of propositions which
hold true. The question of whether such propositions are
true or not is not a linguistic question, similarly as the
problem of whether the "object" being referred to exists
in reality or is to be assumed in the context of a novel[10].
In terms of the approach suggested here,ontological consid-
erations have no bearing on the LS structure description
of utterances, from which the same consequences can be
drawn,independently of whether the speaker is saying the
truth or lying, whether he is relating his dream, telling
a story or reporting facts.

In this paper we will discuss only those aspects of the
LS structure representation which concern certain linguist-

ic quantifying operators. As in general we assume that the
LS structure could be represented in a language somehow an-
alogous to that of a modified predicate calculus, our aim
in the present discussion is to suggest a certain way of def-
ining the use of linguistic quantifying operators which
would be in agreement with the interpretation of utterances
in natural language ; the present paper is concerned with
English utterances only.[11]

The problem of defining the use of linguistic quantifying
operators in the LS structure description seems to be one
of great significance for the semantic interpretation of
the surface syntactic relations, for it appears that it is
hardly possible to assign an adequate semantic interpreta-
tion[12] to an utterance, if its LS structure is not conceived
of in terms of at least one predicate and its argument (or
arguments) prefixed by some linguistic quantifying operator.
Anything we talk about, that is, any subject (or subjects)
of predication, is either a particular "object", a particul-
ar relation between "objects" of some sort, a particular si-
tuation, event, etc, or else it may be a certain number[13] of
"objects", situations, etc which are such and such, or final-
ly the subject of predication may be each "object", situation,
etc, which is such and such. Generally speaking, an utterance
is analogous to a logical sentence or proposition, rather
than to a propositional function with free variables, and
thus the LS structure of an utterance may be best conceived
of as a formula in which we make use of some sort of linguist-
ic quantifying operators.

The analogy with the language of predicate calculus is not very precise though, and - as we shall try to show - the linguistic quantifying operators must be defined differently than those defined in logic. In the first place, there is a greater number of linguistic devices which function as quantifiers of some sort, and in the second place, even those devices which show an analogy with the operators used in logic have a slightly different semantic function and cannot be defined for our use in the same way as those defined in logic. In the present paper we shall discuss only two linguistic quantifying operators [14], one being analogous to the iota operator defined for the predicate calculus, the other one being analogous to the general quantifier.

2. The linguistic iota operator

The iota operator, as defined in logic [15], can be used in the expression $(\eta x)\varphi(x)$, only if the propositional function φ is a unit function, that is, if it satisfies two conditions, one concerning the existence, the other the uniqueness of the "object" which is φ. Such conditions may be expressed formally as

(a) $(\exists x)\varphi(x)$

(b) $(\forall x,y)\left[\varphi(x) \wedge \varphi(y)\right] \longrightarrow (x = y)$

The expression $(\eta x)\varphi(x)$ has the category of an argument (not of a statement), and may be interpreted as the English expression of the category of a nominal phrase, namely, :"that one and only object which is φ ".

Now when comparing the expressions in English which have

a similar semantic function as the unit function, namely, linguistic indices[16], it is immediately obvious that we are not in a position to prove that they satisfy the conditions of existence and uniqueness, on the contrary, it would be hard if not impossible to find a single linguistic index which, as such, would satisfy such conditions. Nevertheless, it is an empirical fact quite evident that whenever an addresser uses an utterance containing an index Ψ in the normal process of communication, it is always in accordance with his purported belief that there is one and only "object" which is being referred to as Ψ.

In contradistinction to a formal system for which we have to define the rules and conditions of correct use, the linguist works in the opposite direction. For we already have a given system which we all use successfully for the purpose of intercommunication, and the linguist's or the semanticist's job is to detect the rules that make possible the achievement of mutual understanding among the competent users of the given language system. Thus in the first place we can analyse utterances only with the assumption that they are used appropriately - otherwise no consistent analysis would have been possible. The appropriate use of language, as defined for our purposes, is nothing more than a use which is consistent with the rules of language and with the speaker's purported propositional attitudes. It would be thus unreasonable to reject such an obvious assumption.

We may try, then, to establish quasi implications which will hold true[17] and thus yield the corresponding consequences for all cases of linguistic use in the process of communication. Accordingly, we will show that what is defined as a condition of correct use in a formal system, will be derivable in our case as a consequence of a given utterance.

In the second place, we take into account the fact that utterances of natural language are never, so to speak, hung in the air, but are always interpretable in terms of what we call the propositional attitude [18] or modal frame[19] when referring to its explicit representation. For no utterance used in the process of communication can be fully interpreted without our understanding it as a proposition which expresses, among other things, the speaker's or author's propositional attitudes, which may be beliefs, assertions, doubts, requests (for oral or other responses) or any other attitudes.

According to such an argumentation, the propositions which correspond to the two conditions for the correct use of a unit function, (a) and (b), will be accepted in our case as consequences which belong to the interpretation of any utterance which containing a linguistic index . Such propositions cannot, however, be represented as occurring in an assertoric modal frame, but in the modal frame :"The speaker believes that ... " (where the term "believe" is used in the sense of purported belief). The quasi implicational scheme on which such consequences are drawn is roughly speaking as follows: For any linguistic index φ , the speaker uses appropriately φ, only if he believes that there is an "object" which

is φ , and that the "object" being referred to as φ is unique.

Since the consequent of this statement can be assumed to express one of the necessary conditions for the antecedent[20], we may consider the whole statement as a quasi implication. Thus in the case of any utterance which contains a linguistic index, we may ~~accept~~ accept a statement corresponding to the antecedent as holding true - by virtue of our general assumption of appropriate use - and therefore we can always infer the corresponding consequent as a consequence.

We thus preserve the uniqueness of the purported "object" by means of inserting into the common (and thus intersubjective) semantic interpretation of indices a parameter which is "token-reflexive" and which serves its purpose (any time an utterance is actually used) in relating signs to extralinguistic "objects" or relations, through the identification of the speaker, the time, place and situation in which the given utterance is used. Accordingly, the value of the argument - which in the case under discussion is a linguistic index - is understood in any particular case, without being possibly indicated in a general linguistic description. In other words, the fact that the speaker ~~is referring~~ refers to one and only "object", each time he is using an index, belongs to the semantic interpretation, and is reflected in the proposed LS structure representation and the corresponding consequences which are derivable from it, but the question of what "object" may actually be identified by means of such an expression does not belong to the domain of linguistics.

Any such "object" may only be described in terms of linguist-
ic expressions - it may either be pointed to by means of
a name used as an index, or described in terms of the lex-
ical items contained in the definite description used as an
index.[21] A linguist solves thus the problem of how an "ob-
ject" is described or pointed to in order to be identified,
and he need not be concerned with what it is.

It thus appears that the linguistic iota operator is a
close analog to the iota operator as defined in logic, the
differences lying in our treating the conditions of correct
use defined in logic as the consequences of the ever-assumed
appropriate use of utterances, and in our introducing the
propositional attitudes into the LS structure description.
As it will be argued below, the next linguistic quantifying
operator to be discussed in this paper, namely, the all-op-
erator, will also be defined partly by analogy to the iota
operator, for the reasons based on linguistic evidence.

The all-operator

In the preceding section we have discussed a certain type
of argument prefixed by the iota operator. Such an argum-
ent will be referred to as an argument of type 1. Its ex-
plicit exponent on the surface can only be a linguistic
index, and its role is to indicate one and only "object"
to which a given predicate applies. At present we will

discuss another type of argument - which will be referred
to as an argument of type 2 - whose role is to indicate all
the "objects" to which a given predicate applies. The ex-
plicit exponents on the surface of English utterances are
usually nominal phrases preceded by "all", "every", "each".

However, it is not always the case that such nominal phrases
are to be interpreted as arguments of type 2 (consider
phrases such as, for instance, "all the country", every sec-
ond French man", "each time", etc). Let us now discuss the
following examples by means of which we will show the anal-
ogy between arguments of type 1 and those of type 2.

(2) John has awaken

(3) My father has awaken

(4) My parents have awaken

(5) All the members of my family have awaken

(6) All the inhabitants of this house have awaken

(7) All the inhabitants of the moon have awaken

Independently of other problems connected with the proper
LS structure representation of utterances in which a predicate
applies to each individual of a set determined by a given des-
cription,[22] we have to admit that all the nominal phrases in
our examples have a similar function ; they serve to identify
either a single individual (utterances 2 and 3), or a certain
number of individuals (utterances 4,5, 6 and 7), and thus
serve to indicate the values of the argument used with the
predicate "has awaken". Thus if we compare :

(8) The boy standing in the doorway is tall

with

(9) All the boys standing in the doorway are tall

it seems clear that the difference between the two lies in
that the nominal phrase in (8) serves to indicate or identify
one individual, whereas the nominal phrase in (9) serves to in-
dicate or identify a certain number of individuals, both nom-

inal phrases being used as "instructions" for identification,
and as such correspond to the argument of the predicate "tall".
Such "instructions " are used appropriately, only if the speak-
er believes that there is a boy standing in the doorway (for
8) and that there is more than one boy standing in the door-
way (for 9). Consequently by virtue of our general assump-
tion of appropriate use, it is possible to infer such pseudo-
existential propositions in the modal frame "The speaker be-
lieves that ...."

One might object to this interpretation of all-statements
and try, by analogy to logical statements with a general quan-
tifier, to interpret them as implicational statements :For any
x, if x is φ , then x is ψ . Under such an interpreta-
tion the utterance (9) would be a paraphrase of :

(10) If anything is a boy standing in the doorway it is tall

If anybody is a boy standing in the doorway he is tall

, Anybody who is a boy standing in the doorway is tall

Even if we ignore the awkwardness of utterances such as (10),
we cannot accept such utterances as paraphrases of (9) for two
reasons. First, (10) could, then, equally well be taken as a
paraphrase of (9) as that of (8), as there is no mention with
respect to the plurality of the individuals being referred to.
Thus (10) could be accepted as one of the consequences from
(9), (and this will be shown below to be the case), but not as
an equivalent proposition. Second, the speaker implies by (9)
his purported belief that there are individuals who are boys
standing in the doorway, whereas no such implication holds
for (10). To give a clearer example, if someone says

(11) All the inhabitants of the moon must feel cold

the hearer's reaction might be expressed by :"What are you

talking about� There are no inhabitants on the moon." On the
other hand, no such reaction would follow if someone says :

(12) If anything is an inhabitant of the moon it must feel cold

The response might then be : "Right you are, but fortunately
there are no inhabitants on the moon".

Another argument supporting this interpretation may be provid-
ed by the following test. If we consider the utterance:

(13) I doubt whether there are inhabitants on the moon, but

all inhabitants of the moon must feel cold

it leaves the impression of a certain awkwardness, which is a
result of the inconsistency between the expressed doubt and
the implied belief concerning the same proposition. On the
other hand, the utterance :

(14) I doubt whether there are inhabitants on the moon, but if

anything is an inhabitant of the moon it must feel cold

does not seem awkward, since according to our argumentation
implicational statements do not imply any belief or assumption
concerning existence. Evidently there are different implica-
tional rules concerning the if...then-statements, and they
depend on the tense used in the if-clause. If we denote the
if-clause by S, the hearer may infer, for instance, that the
speaker believes that S, or believes that it is not the case
that S, or believes that it is probable that S, etc.

In any case, it seems clear for the reasons given above
that (10) is not a paraphrase of (9), nor (12) is a paraphrase
of (11). In spite of the fact that implicational statements
can be considered as truthfunctionally equivalent to the cor-
responding all-statements (and this is the basis of the logic-
al equivalence), yet they cannot be represented by the same

LS structure, for obviously the latter convey additional sem-
antic information, that is, additional consequences can be in-
ferred from them.

Accordingly, instead of making use of a general quantifier,
we will introduce a quantifying operator which we call all-op-
erator. The all-operator is assumed to be an argument-forming
operator, not a statement-forming operator, as in the case of
a general quantifier in logic. In other words, it is not an
operator which makes a statement when prefixed to a proposi-
tional form, but one which makes an argument when prefixed
to a function representing a nominal phrase in the plural
form. It thus has the same ~~meaning~~ role as the iota operator, which
is used to make an expression of the category of an argument[23].

We assume here that the all-operator belongs to a specif-
ic class of modifiers which we call ~~purely~~ linguistic quanti-
fying operators. Such operators will occur in the LS structure
representation, always being prefixed to a variable x.
A logical statement which is prefixed by a general quantifier
with limited range :

(15) $\forall_{\varphi(x)} \psi(x)$

is an abbreviation for the implicational statement

(16) $(\forall x) \left[\varphi(x) \longrightarrow \psi(x) \right]$

We will, however, use a different expression, provisionally
denoted by (All x) $\varphi(x)$, which will not be interpreted as
a statement equivalent to an implicational statement, but
- by analogy to the expression bound by the iota operator -
it will be interpreted as an expression of the argument
type : all the "objects" which are φ. According to our
interpretation, the corresponding implicational statement

will be accepted as one of the consequences which follow
from all-statements.

By analogy to the case of the iota operator, we can
here also establish a quasi implication concerning the
use of the all-operator, on the basis of the empirically
given conditions of appropriate use of all-statements
which may be schematized by $\Psi\left[(\text{All } x)\, \varphi(x)\right]$
Consider the following propositional schemes:

(a) There is more than one "object" which is φ

(b) For any "object", if it is φ , it is Ψ .

The two propositional schemes correspond to propositions
which may be considered only in terms of certain preposi-
tional attitudes of the speaker who is uttering an all-
statement. We may define a general quasi implicational
scheme which, roughly, will be as follows:

A speaker uses appropriately an all statement, only if his
purported belief is that there is more than one "object"
which is φ , and his purported claim is that any "ob-
ject" which is φ is Ψ .

Now by our general assumption that we are concerned only
with those utterances which are appropriately used, we can
always derive a proposition corresponding to (a) as repre-
senting the speaker's belief, and a proposition correspond-
ing to (b) as the speaker's claim or assertion, and both
belong to the set of consequences of an all-statement.

The difference between the speaker's propositional atti-
tude with respect to (a) and (b) is analogous when we con-
vert an all-statement into a corresponding negation, question,

request, doubt, etc, for it will appear that the proposition
corresponding to (a) in the modal frame "The speaker believes
that ..." can be derived as a consequence, whereas the propo-
sition corresponding to (b),although also derivable as a con-
sequence, will occur in each case in a different modal frame,
which will express correspondingly the various propositional
attitudes of the speaker (The speaker denies that ..., The
speaker wants to know if ..., etc)

For instance, for the utterance which is a question :

(17) Are all the inhabitants of this house sick?

we have a set of consequences to which belong, among other
propositions, the following two:

(18) The speaker believes that there is more than one "object"
     which is an inhabitant of this house

(19) The speaker wants to know if any "object" which is an
     inhabitant of this house is sick.

These consequences are obtained on the basis of a very gener-
al quasi implicational scheme concerning all-statements con-
verted into this type of questions.

In conclusion it may be worth emphasizing that by intro-
ducing propositional attitudes into the linguistic descrip-
tion,and by defining quasi implications in terms of proposi-
tional attitudes, we are able to derive the corresponding
consequences not only from declarative sentences, but from
all types of utterances. Thus the scope of our rules of in-
ference is much wider than the scope of such rules
in logic. Accordingly the identification of the semantic in-
terpretation of an utterance with the set of its consequen-
ces is possible for all types of utterances.[24]

Footnotes

1. See U. Weinreich, Exploration in Semantic Theory, in
   Current Trends in Linguistics, Vol. 3, ed. T.A. Sebeok,
   Mouton, The Hague, 1966, where the author argues in
   favor of an approach which makes no attempt "to fence
   off mutually exclusive domains for syntax and semantics"
   and thus he is against the assumption that semantics
   begins where syntax ends. Deep structures are con-
   ceived of by him in terms of both the syntactical and
   the semantic relations.

2. Such signs have been widely discussed by logicians and
   linguists. They are referred to as token reflexive
   signs (by Hans Reichenbach), as egocentric particulars
   (by Bertrand Russell), and as shifters (by Roman Jakob-
   son).

3. Roman Jakobson, On Linguistic Aspects of Translation, in
   On Translation, ed. R.A. Brower, Oxford University Press,
   New York, 1966, p. 232.

4. See C.J. Lewis, The Models of Meaning, Philosophy and
   Phenomenological Research, Vol. IV, No 2, 1943, for his
   concept of connotation or intention, which bears an in-
   fluence of J.S. Mill's works. See also R. Carnap, Em-
   piricism, semantics and ontology, in Revue Internationale
   de Philosophie, No 4, 1950, where the author accepts the
   view that the set of consequences following from a sen-
   tence may be identified with the meaning of that sen-
   tence. Such an idea was also professed by H. Hiż during
   his lectures on semantics (University of Pennsylvania,

. 1965).

5. The concept of quasi implications was introduced in my
   papers : On a Condition of the Coherence of Texts,
   paper delivered at the International Symposium on
   Semiotics, Warsaw, August, 1968 ; On the Semantic In-
   terpretation of Subject-Predicate Relations in Sentences
   of Particular Reference, to appear in Progress in Lin-
   guistics, eds. Bierwisch and Heidolph, Mouton et Co.,
   The Hague ; Arguments and Predicates in the Logico-
   Semantic Structure of Utterances, to appear in Studies
   in Syntax and Semantics, ed. F. Kiefer, Foundations of
   Language Supplementary Series, D. Reidel et Co., Dor-
   drecht-Holland.

6. The term logico-semantic structure was used in my for-
   mer papers (see footnote 5).

7. In general I say that a speaker uses appropriately an
   expression or an utterance, if he uses it consistently
   with the rules of language and with his purported be-
   liefs (see footnote 8, for the term "purported belief").
   For a consistent semantic interpretation of utterances,
   we have to consider only those utterances which are
   used appropriately, as the appropriate use in this
   sense of the term is nothing more than the assumption
   that the speaker knows the language he is using and
   says only what he intends to say (he makes a correct
   use of an utterance according with what he wants to say).

8. From the point of view of the semantic interpretation,
   that it is irrelevant whether the speaker in fact believes

or only pretends to believe that such and such is the
case. I therefore use the term "purported belief",
and whenever I use here the expression "The speaker
believes that ..." it is only in this sense of the
term. The same holds true of any other propositional
attitudes.

9. Linguistic quasi implications can be defined for the
use of lexical items and for the use of certain struc-
tures. In our example, the consequences (1a) and (1b)
are based on a quasi implication concerning the use
of linguistic indices (see Section 2, below), where-
as the consequences (1c) and (1d) are based on a quasi
implication defined for the lexical item "to leave"
(For more details, see the section on implicative
terms in my paper On a Condition of the Coherence of
Texts, op. cit.)

10. The term "object" is used here also in the sense of
"purported object", that is, for anything namable.
Evidently the knowledge of the type of discourse
(everyday, scientific, literary, etc) may tell us
whether the speaker or author believes that a given
"object" exists in reality, or it is to be assumed
as in a hypothetical theory, or imagined as in a nov-
el. But such xx considerations have no bearing on
our present discussion.

11. In general, it seems that the concepts we are discus-
sing concern other languages as well. If in a given
language there are no explicit exponents on the sur-
face which would correspond to the interpretation
we are assuming, for instance, for linguistic in-

dices used in English, there are probably some way to
distinguish the utterances in terms of similar con-
cepts, for it is hard to imagine how people could
manage to communicate without making use of this rath-
er general concept and others discussed here.

12. By an adequate semantic interpretation I mean such
an interpretation which is compatible with the lin-
guistic intuitions of competent speakers, and testable
against the practice of linguistic communication. Ex-
amples of such semantic tests are given below (p.14,15).

13. The number may be exactly specified by a numeral, or
expressed in an indefinite way, for instance, by words
such as "many", "few", "the majority of", etc.

14. See my paper, Arguments and Predicates...", op. cit.
for a rough discussion of other quantifying operators.

15. The iota operator was first defined and used by Peano,
then by Russell, Reichenbach, Mostowski and several
other logicians.

16. A linguistic index was defined in my paper, On the Sem-
antic Interpretation ...:, op. cit. Roughly, a linguist-
ic index is a personal pronoun, a proper name or a def-
inite description (that is, a nominal phrase preceded
by a definite determiner, used in an identifying role)

17. In general the quasi implications which we define hold
true by virtue of the empirically given conditions.
The truth of the consequent in our quasi implications
always constitutes the necessary condition for the truth

of the antecedent, and thus we may consider the whole as
a valid conditional (material implication).

It may be interesting to compare the various approaches
to the concept of"presuppositions" (as referred to in the
literature), which we describe here as consequences. (See
G. Frege, Sinn und Bedeutung, Zeitschrift für Philosophie
und philosophische Kritik, 1892 ; P.F. Strawson, On Refer-
ring, Mind, 1950; O. Ducrot, Les présupposés, conditions
d'emploi ou éléments de contenu, paper delivered at the In-
ternational Symposium on Semiotics, Warsaw, 1968 ; A. Wierz-
bicka, O spójności semantycznej tekstu wielozdaniowego,
paper delivered at the Conference on Semiotics, IBL, War-
saw, 1968 ; C.J. Fillmore, Types of Lexical Information,
Working Papers in Linguistics, No 2, The Ohio State Univer-
sity, November 1968) . In the present approach, presuppo-
sitions are identified with those propositions which belong
to the set of consequences following from a given utterance
and are provided with the modal frame :"The speaker be-
lieves that...". Such propositions belong accordingly to the
semantic interpretation of a given utterance. This approach
is close to that of O. Ducrot (Les présupposés..., op.cit.),
who also treats such propositions as constituting part of
the meaning of a given utterance, rather than as the requ-
ired conditions of use, or as propositions which are pre-
supposed to be known by the hearer, etc. The difference
between the two approaches (which have been developed in-
dependently of each other) consists thus in my attempt to

account for this element of the meaning of a given ut-
terance by means of deriving such propositions as con-
sequences based on the corresponding quasi implications
defined for particular lexical items and particular
structures. Such a treatment is consistent with the
general proposal to identify the meaning of an utter-
ance with the set of its consequences.

Fillmore, on the other hand, distinguishes between
"the presuppositional aspect of the semantic structure
of a predicate and the "meaning" proper of the pred-
icate". He identifies the presuppositions of a sen-
tence as those conditions which must be satisfied be-
fore the sentence can be used in any of its functions.
Thus the sentence "Please open the door" according to
Fillmore (Types of Lexical Information, op. cit)"can
be used as a command only if the TL " (that is, the
addressee) "is in a position to know what door has
been mentioned and only if that door is not at TLA"
(that is, the time of producing the utterance) "open".
According to my approach, such an utterance will be
interpreted in any case as a command, for its inter-
pretation cannot be dependent on whether the above
mentioned conditions are,or are not,satisfied. Sup-
pose I hear somebody ringing the bell and I ask my
sister "Please open the door". It may happen that the
door is open at that time, but the state of the door
(its being open or closed) has no bearing on the in-
terpretation of this utterance - which in any case

is intended by the addresser, and interpreted by the
addressee, as a command. Thus, as it appears from the
evidence of language use, it is only the addresser's
purported belief :"The door is not open" which may
be safely assumed with respect to the given utterance.

18. The term "propositional attitude" is adopted from Ber-
trand Russell, Inquiry into Meaning and Truth (Pen-
guin Books, Baltimore-Maryland, 1962).

19. The term "modal frame" has been coined by A. Wierzbicka
(O spójności semantycznej..., op. cit. and her other
papers). I use the term "propositional attitude" when
referring to the content of an utterance, and the term
"modal frame", when referring to its explicit repres-
entation (which in the present paper is only rendered
in words).

20. This thesis is based on empirical evidence. If we
seem to find apparent counterexamples, it always ap-
pears that they are cases of linguistic misuse, and
thus they do not falsify ʀᴜʀ the quasi implication,
in such cases the antecedent is false. We are con-
cerned, of course, only with the normal use of utter-
ances in the process of communication, not with cases
in which utterances are used as examples, when in-
dices are not supposed to identify anything.
There remains one more remark to be made in connection
with our quasi implicational scheme. The copula "is"
which is used in the consequent should be interpreted
as, so to speak, tenseless, for its tense is dependent

the tense of the verb in the predicate which applies
to the "object" referred to by ψ in a given utter-
ance.

21. The definite description used as an index is best
conceived of as an "instruction" for identification.
The linguist is thus concerned with what the "instruc-
tion says, rather than with the problem of what a
given "object" is. The "object" in our sense of the
term may be conceived of as just the value of the
argument.

22. Notice incidentally that there is a difference bet-
ween utterances such as (4) and, for instance, "My
parents bought a house", where the description "my
parents" should be represented as a linguistic in-
dex (argument of type 1, which has a unique value)
by means of which we identify one and only "object"
(a couple of individuals as a whole) to which the
given predicate applies. The predicate is not used
here distributively as in the case of (4), where it
applies to each individual referred to by the des-
cription "my parents".

23. The expression $(\imath x) \psi(x)$ is interpreted as "that
one and only object which is ψ ", and not as "there
is one and only object which is ψ ".

24. Finally, I wish to excuse myself for a rather loose
way I am using certain terms which are well defined
in logic (for instance, argument, value). I hope ,

however, that the reader will get from my rough
presentation the underlying linguistic concepts
which I attempted to submit for discussion.