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1. Introduction

By now it has become clear to most linguists that surface structures of utterances in natural language are not a sufficient 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 utterance with its meaning (or meanings in case of homonymity). Since the problem of what should be understood as the meaning of an utterance is not clear, the question of how deep structures should be represented remains open for linguists, even for those who have been known as adherents of the transformational generative grammar, where deep structures are determined 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 guideline 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 language signs and extralinguistic "objects" (or extralinguistic relations), has also become blurred up by the fact of introducing into the linguistic description abstract structures 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 descriptions as pertaining to syntactical relations - in spite of certain attempts to the contrary¹ - we will still be left with difficulties in trying to establish the scope of semantic relations, that is, the relations between linguistic signs which occur in deep structure representations and extralinguistic "objects" or relations.

The difficulties which arise in establishing the scope of semantics are before all due to the fact that the overwhelming majority of utterances contain signs which are used in reference to the addresser, addressee, the time, place and situation in which a given utterance is produced². Therefore, if we wanted to take seriously the requirement that semantic relations should consist in relating signs with extralinguistic "objects", such a task would simply be unfeasible for a linguist 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} ~~the~~ obviously they are related 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 general 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 different 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 only 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 logic⁴, but has never been taken seriously by linguists, I will accept the view that the semantic interpretation of an utterance is the set of consequences which can be derived from that utterance (or more strictly, 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 possible to formulate the rules which I call quasi implications⁵. 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 logico-semantic structure (LS structure) of utterances⁶.

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 utterance, seems to be compatible with the ordinary thinking and the estimation of a fully adequate understanding of an utterance. The fact that certain conclusions are based on premises 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 describing a lexicon (or the rules of the lexicon in a theory of language), we have to make a decision as to whether certain information concerning a lexical item should be included in the lexicon, or treated as encyclopaedic information, which pertains to such or other domain of science, specialization, 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 agreement of linguists as to what syntactical and lexical information should be included in the linguistic description in some or other way. Once such a decision is made, and the information 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 implications, and what ones require additional premisses which belong 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 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 formally from (1) on the basis of certain linguistic quasi implications⁹, and they belong, among others, to the set of consequences 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 formally as a consequence.

It is worth noting that the propositions (1a, 1b, 1c) concern the speaker's purported beliefs, whereas the proposition (1d) concerns the speaker's purported claim or assertion. The difference is significant, for if we convert (1) into a question, negation, wish, command, etc (Has Nixon left the United States?² 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 consequences derived from an utterance can be accepted only as a set of propositions which correspond to the purported attitude 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 novel¹⁰. In terms of the approach suggested here, ontological considerations 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 analogous to that of a modified predicate calculus, our aim in the present discussion is to suggest a certain way of defining 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 interpretation¹² 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 particular relation between "objects" of some sort, a particular situation, event, etc, or else it may be a certain number¹³ of "objects", situations, etc which are such and such, or finally 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 linguistic 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 $(\imath x) \varphi(x)$, 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) $(\forall x, y) [\varphi(x) \wedge \varphi(y)] \rightarrow (x = y)$

The expression $(\imath x) \varphi(x)$ 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 indices¹⁶, 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 φ in the normal ~~xxx~~ 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 φ .

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 true¹⁷ 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 attitude¹⁸, or modal frame¹⁹ 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 antecedent²⁰, we may consider the whole statement as a quasi implication. Thus in the case of any utterance which contains a linguist-accept ic index, we may ~~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 ^{refers} ~~is referring~~ 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 linguistic expressions - it may either be pointed to by means of a name used as an index, or described in terms of the lexical items contained in the definite description used as an index.²¹ A linguist solves thus the problem of how an "object" is described or pointed to in order to be identified, and he ~~must~~^{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-operator, 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 argument will be referred to as an argument of type 1. Its explicit 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 explicit 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 second French man", "each time", etc). Let us now discuss the following examples by means of which we will show the analogy between arguments of type 1 and those of type 2.

- (2) John has awoken
- (3) My father has awoken
- (4) My parents have awoken
- (5) All the members of my family have awoken
- (6) All the inhabitants of this house have awoken
- (7) All the inhabitants of the moon have awoken

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 description, 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 awoken". 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 indicate 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 speaker believes that there is a boy standing in the doorway (for 8) and that there is more than one boy standing in the doorway (for 9). Consequently by virtue of our general assumption of appropriate use, it is possible to infer such pseudo-existential propositions in the modal frame "The speaker believes that"

One might object to this interpretation of all-statements and try, by analogy to logical statements with a general quantifier, to interpret them as implicational statements: For any x , if x is ϕ , then x is ψ . Under such an interpretation 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.¹ 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 provided 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 implicational 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 corresponding all-statements (and this is the basis of the logical equivalence), yet they cannot be represented by the same

LS structure, for obviously the latter convey additional semantic information, that is, additional consequences can be inferred from them.

Accordingly, instead of making use of a general quantifier, we will introduce a quantifying operator which we call all-operator. 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 propositional 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 ^{role} ~~category~~ as the iota operator, which is used to make an expression of the category of an argument²³.

We assume here that the all-operator belongs to a specific class of modifiers which we call ~~quant~~ linguistic quantifying 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:

$$(15) \quad \forall \varphi(x) \psi(x)$$

is an abbreviation for the implicational statement

$$(16) \quad (\forall x) [\varphi(x) \rightarrow \psi(x)]$$

We will, however, use a different expression, provisionally denoted by $(\text{All } x) \varphi(x)$, 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 $\psi[(\text{All } x) \varphi(x)]$

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 propositional 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 "object" 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 representing the speaker's belief, and a proposition corresponding 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 attitude with respect to (a) and (b) is analogous when we convert an all-statement into a corresponding negation, question,

request, doubt, etc, for it will appear that the proposition corresponding to (a) in the ^{same} modal frame "The speaker believes that ..." can be derived as a consequence, whereas the proposition corresponding to (b), although also derivable as a consequence, 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?²

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 general quasi implicational scheme concerning all-statements converted into this type of questions.

In conclusion it may be worth emphasizing that by introducing propositional attitudes into the linguistic description, and by defining quasi implications in terms of propositional 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 inference ~~xxxxx~~ is much wider than the scope of such rules in logic. Accordingly the identification of the semantic interpretation of an utterance with the set of its consequences 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 conceived 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 Jakobson).
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 influence of J.S. Mill's ^{and G. Frege's} ~~WORKS~~. See also R. Carnap, *Empiricism, 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 sentence may be identified with the meaning of that sentence. Such an idea was also professed by H. Hiz 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 Interpretation of Subject-Predicate Relations in Sentences of Particular Reference, to appear in Progress in Linguistics, 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., Dordrecht-Holland.
6. The term logico-semantic structure was used in my former 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 beliefs (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, ~~the~~ 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 structures. In our example, the consequences (1a) and (1b) are based on a quasi implication concerning the use of linguistic indices (see Section 2, below), whereas 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 novel. But such ~~xx~~ considerations have no bearing on our present discussion.
11. In general, it seems that the concepts we are discussing concern other languages as well. If in a given language there are no explicit exponents on the surface 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 concepts, for it is hard to imagine how people could manage to communicate without making use of this rather general concept and others discussed here.

12. By an adequate semantic interpretation I mean such an interpretation which is compatible with the linguistic intuitions of competent speakers, and testable against the practice of linguistic communication. Examples 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 Semantic Interpretation ..., op. cit. Roughly, a linguistic index is a personal pronoun, a proper name or a definite 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 Referring*, *Mind*, 1950; O. Ducrot, *Les présupposés, conditions d'emploi ou éléments de contenu*, paper delivered at the International Symposium on Semiotics, Warsaw, 1968 ; A. Wierzbicka, *O spójności semantycznej tekstu wielozdaniowego*, paper delivered at the Conference on Semiotics, IBL, Warsaw, 1968 ; C.J. Fillmore, *Types of Lexical Information*, *Working Papers in Linguistics*, No 2, The Ohio State University, November 1968). In the present approach, presuppositions 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 believes 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 required conditions of use, or as propositions which are presupposed to be known by the hearer, etc. The difference between the two approaches (which have been developed independently of each other) consists thus in my attempt to

account for this element of the meaning of a given utterance by means of deriving such propositions as consequences 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 utterance 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 predicate". He identifies the presuppositions of a sentence as those conditions which must be satisfied before 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 interpretation cannot be dependent on whether the above mentioned conditions are, or are not, satisfied. Suppose 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 interpretation 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 Bertrand Russell, *Inquiry into Meaning and Truth* (Penguin 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 representation (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 appears that they are cases of linguistic misuse, and thus they do not falsify ~~any~~ the quasi implication, in such cases the antecedent is false. We are concerned, of course, only with the normal use of utterances in the process of communication, not with cases in which utterances are used as examples, when indices 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 φ in a given utterance.

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 "instruction" 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 between utterances such as (4) and, for instance, "My parents bought a house", where the description "my parents" should be represented as a linguistic index (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 (3), where it applies to each individual referred to by the description "my parents".
23. The expression $(\exists x) \varphi(x)$ is interpreted as "that one and only object which is φ ", and not as "there is one and only object which is φ ".
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 ,

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