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## THE PRAGMATIC INTERPRETATION OF UTTERANCES

**Abstract.** The aim of this paper is to analyze the differences and similarities between the linguistic and the logical meaning of a sentence and propose a uniform point of view on the notion of the meaning of utterances. The proposed notion differs from the notion of the logical meaning as well as from the linguistic one. It may be considered to be a kind of composition of both of them.

### 1. Meaning: semantics versus pragmatics

In 1938 Charles Morris published *Foundation of the Theory of Signs*. He distinguished there three areas of logical investigation: syntax, semantics and pragmatics. This book is commonly recognized as the starting point of investigation into the area of pragmatics. As a matter of fact, Morris' book did not make any contribution to pragmatics but rather described problems of the understanding language which cannot be handled by semantic methods. He also explicitly indicated the need to solve them in another way. Concrete research began in the fifties. Levinson (1983) contains a review of the linguistic approach to pragmatics; however, an adequate monograph presenting the logical contributions to the area is still lacking. Since then the main results in the area have been achieved mainly by linguistically-oriented logicians and logically-oriented linguists. This stresses the fact that pragmatics lies on the borderline between logic and linguistics.

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It is not our aim to present the history of pragmatics. We shall simply state that the seminal logical contributions related to the subject of this paper are: Yehoshua Bar-Hillel (1971), Richard Montague (1970), David Kaplan (1979), Dana Scott (1970), David Lewis (1970), Max J. Cresswell (1973) and Robert Stalnaker (1970).

The principal aim of this paper is to give a concept of logical meaning which captures the pragmatic phenomena of occasionality as well as the phenomena which arise from the difference between the literal and the conveyed meaning of a sentence (see Levinson [83] for an extensive discussion of this subject). This concept is intended to mirror the way from a given utterance of a sentence (in our everyday language) to its logical value – its meaning in the logical sense.

According to the typical linguistic approach, the most general definition of semantics is that it is “the study of linguistic meaning”, or “the study of the meaning of words and sentences”. We may find it easier though to think of words as relating to “things” in the world, semanticists point out that many words do not in fact refer to the external world at all. So the focus of the modern subject of semantics is on the way people relate words to each other within the framework of their language.

In discussing semantics, linguists normally use the term *lexeme* (as opposed to *word*), so that word can be retained for the inflected variants. Thus one can say that the words *walk*, *walks*, *walked*, and *walking* are different forms of the same *lexeme*. The typical relations among *lexemes* are: *synonymy* - a relation of “sameness”; *hyponymy* - a relation of “inclusion”; *antonymy* - a relation of “oppositeness”.

Semantics is also of great importance to logic. Logicians consider semantics differently from linguists. The distinction between syntax and semantics is crucial for contemporary logic. It has its roots in Tarski’s seminal definition of truth and is based on the distinction between language and world.

The distinction between syntax and semantic is as follows: Syntax tell us how to play with symbols. Here, only symbols are supposed to exist. Symbols and the syntactic rules which instruct us how to create well-formed formulae are independent of the external world. The syntax of a given formal language, for example syntax of the language of classical sentential logic, allows us to distinguish well-formed formulae from other sequences of symbols of the language. The syntax of a given formal logical system consists of formal rules defining the relation of derivability, usually by means of recursion. This relation is independent of the external world and also of any possible interpretation of the formulae of the language. The relation of derivability is usually defined as follows: A is derivable from B means that

if we accept B we also have to accept A independently of any interpretation of both formulae.

The logical approach to semantics differs essentially from the linguistic approach. The notion of an interpretation seems to be crucial for a logical approach. A given sentence considered as a syntactic entity has to be interpreted. This interpretation links it with a world external to the language. The main notions of logical semantics are those of model, satisfaction, truth and falsity. A given sentence considered as an entity of formal language is neither true nor false until we interpret it. Thus we have to build up a model for a given language and then interpret a given sentence to find its logical value - the meaning of the sentence in the model.

In this paper we combine the linguistic and logical approaches to semantics to describe the way in which sentences are interpreted. The theory of sentence interpretation presented in this paper takes into account logical as well as pragmatic phenomena of language.

Pragmatics is often defined as the theory of the way we use language. Theories of pragmatics then link the language and its user while semantics links the syntactical entities of language with their meanings. One may think that a semantics for a language is a sufficient basis for the capacity to use that language. Through having knowledge of an appropriate semantics a competent would user know the meanings of words and sentences and this should be enough to use the language properly. The reality appears to be much more complicated. Very often, especially where common-sense language is concerned, we utter sentences in a way which seems to have no relation to their meaning. Let us consider the following typical example. On the street somebody directs the following utterance to us:

- (1) Would you be so kind to tell me what time is it?

A logically educated person will recognize that it is a yes-no question. S/he has at hand an appropriate theory of questions of this kind and knows that the speaker expects from him one of the answers: “yes” or “no”. He will also recognize at once that the question has a presupposition: that the hearer knows the present time. A logical analysis of this question, even if proper in the logical sense, would give us no chance to answer the question in the proper and commonly-known way. We all know that the speaker is not expecting an answer of the form “yes” or “no”. Thus the problem arising in the situation described above consists in the difference between the literal meaning of (1) and the meaning conveyed by the speaker. The conveyed meaning of (1) is simply “Tell me what time is it”.

A similar problem arises in the study presented in Rips [1994]. The following example seems to belong to the common experience of all those teaching logic. The rules of introduction of AND and OR are obviously logically valid. Nevertheless students, especially those not very interested in mathematics, accept without problem the former yet rarely accept the latter. An psychological experiment performed by Rips in MIT gave the results that the former rule is commonly accepted while the later is accepted only by 17% of respondents.

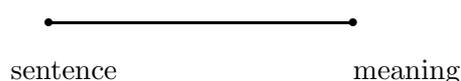
AND Introduction    1.00 P Q <hr style="width: 80%; margin: 5px auto;"/> P AND Q	Or Introduction    0.17 P  <hr style="width: 80%; margin: 5px auto;"/> P OR Q
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What is the reason for this difference? It seems to be clear that the respondents don't understand the second rule in the logical way. More precisely: its logical interpretation is statistically mixed up with the following pragmatic interpretation: Anyone who say  $P$  would also say  $P$  OR  $Q$ . The AND rule is commonly accepted because both its logical and pragmatic interpretations are valid. The pragmatic interpretation of OR rule is obviously not valid. If someone says "I will come to you tomorrow" s/he would not equally say "I will come to you tomorrow or in next month". Paradoxes of this kind find up an illuminating solution in Grice's ((1967), (1989)) theory of conversational implicature which is presented later in this paper.

## 2. Interpreting a sentence.

A great part of the achievements made in contemporary logic comes from the investigations of the language of mathematics and has the result of work by mathematicians or, more precisely, mathematically-educated logicians. As a consequence the first-order predicate language is often considered as a good first approximation of natural language. Moreover, the properties of this formal language are, in a sense, projected on natural language causing the illusion that some typical natural language phenomena are paradoxical. We will mention below two apparent influential paradoxes (in fact typical natural language phenomena): intentionality and indexicality. Their recognition and explanation were milestones along the hard path from classical logic to natural language.

According to the contemporary paradigm of logic, the meaning of a sentence is its truth value. Thus to get the meaning of a sentence it suffices to interpret the symbols occurring in the sentence. The way is then clear and direct:



Where a first-order predicate language is concerned, no problems occur. Until the late sixties most of logicians seemed to be unaware of how narrow a part of natural language could be covered by the language of predicate logic.

Classical logic satisfies the principle of extensionality. Thus, the truth value of compound sentences depends only on truth values of its components. In natural language the principle of extensionality is very seldom satisfied. Lets consider a typical example:

(2) Kepler knew that more than 6 planets go around the sun.

is false, while

(3) Kepler knew that  $6 > 9$ .

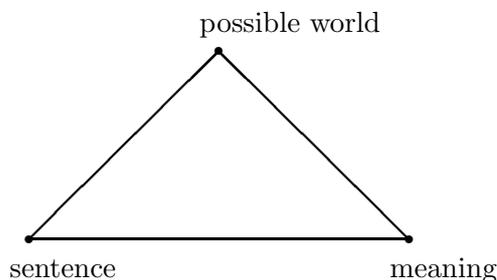
is true. As a consequence sentences built up with the operator:

(4) Kepler knew that ... .

don't satisfy the extensionality principle. The components of (2), and (3) – sentences “ $6 > 9$ ” and “More than 6 planet goes around the sun.” are both true, and so according to the principle of extensionality both (2) and (3) should have the same truth value.

(4) is a typical example of an intensional operator. To find the meaning of a sentence like (2) or (3) it is not enough to examine the meanings of its components. We have to proceed in more complicated way than the picture above shows. The meaning of (2) depends not only on how things are but also on Kepler's knowledge. The possible-world semantics approach invented by Saul Kripke presents a powerful theoretic tool for both logical and pragmatic investigations.

The major success of Kripke's semantics for modal logic has been a big step forward in the direction of logical pragmatics. Kripkean semantics has solved the problem of meaning for intentional expressions.



Another aspect of the structure of interpreting sentences has come from the study of the phenomenon of indexicality. The sentence:

(5) Now I am here

cannot be uttered without being true. Although we wouldn't say that it is a tautology, we must admit that (5) is always true. Hence the rule of necessitation makes us accept the sentence:

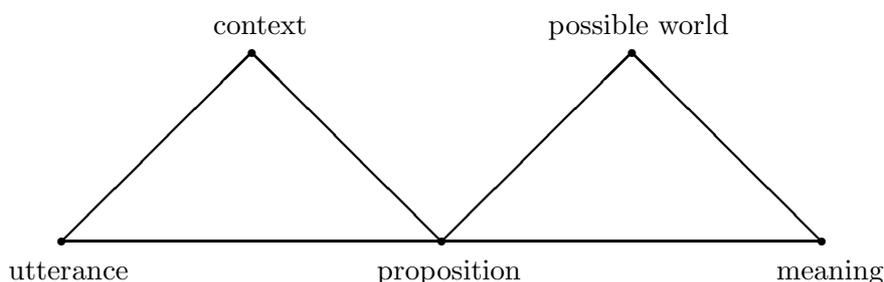
(6) It is necessary that now I am here.

However (6) seems to be impossible to accept. It is purely accidental whether I am here or elsewhere.

Because of the problems arising from interpreting such sentences logicians invented the notion of an eternal sentence. Thus an eternal sentence is a sentence whose meaning doesn't depend on who utters it (or where/when it was uttered, etc.). The default assumption was that any sentence is fully equivalent to an eternal sentence. As a consequence, there would be no need to use sentences like (5) and no need to investigate sentences like them. Although some logicians, including those as influential as Quine, have argued against this assumption, it is nevertheless still considered to be valid, especially when we teach logic to students, where we analyse examples coming from our everyday language. From the pragmatic point of view it is a secondary question if or to what extent this assumption is true. The point is that occasional sentences like (5) are common from the point of view of language-use. We cannot then pretend that they don't exist nor consider them as special, informal, or improper. It seems to be necessary that there be a logic of natural language to cope with them directly.

Since early seventies many logical solutions of the problem of occasionally has been proposed. David Kaplan (1978), Stalnaker (1970), Max. J. Cresswell (1973) have constructed logical systems which step by step have come closer and closer to common language use. We shall skip the details here. Roughly speaking, the result was that we have to distinguish between the sentence and what is exactly said - (between utterance and proposition).

The route from the former to latter goes via the context. All the occasional utterances are context-sensitive. Nevertheless, as far as the author knows, nobody has yet given a satisfactory definition of context. Bar Hillel has argued that a satisfactory definition of context is unlikely to be given. Anyway, we can agree that the context of an utterance is determined by the circumstances of utterance. By knowing them we know the context. All this leads us to the procedure depicted in the following diagram:



Suppose we have heard an utterance of a sentence. To find out what exactly is said (a proposition) we first need a context and then, by looking eventually at the appropriate possible worlds, we are able to establish the meaning of the given sentence.

One important step is missing here. A competent language user utters a sentence. We necessarily have to distinguish between a sentence as an abstract language entity and an utterance – a concrete case of using a given sentence. All this leads us to the diagram above.

Let us quickly recall the process of interpreting a given utterance: An utterance is made. Using the context, we can come to know what exactly is said. We recognise a proposition. Then we interpret it using (finally) the possible worlds to get its meaning – logical value.

Let us look at (5) in a given situation. In this situation we have:

(7) Bin Laden is in Torun on April 30, 2002, at 2 pm.

This is true if Bin Laden says at the appropriate time and in the appropriate place (or false if he doesn't) but by no means is it a tautology. Nevertheless (6) is false because, as the diagram above shows, the necessitation operator doesn't act on utterances like (5). It acts on propositions like (7) and of (7) we would never would say that it is true.

The main problems of how to interpret a given sentence centre upon the properties of a context and the ways in which a context influences what is conveyed by a given utterance. The central problem here is to describe the

mechanism we use to use the context to find out the proposition intended by the speaker.

As argues above, we have to distinguish two types of meanings: that of the utterance (sentences in context) and that of proposition. The later is just the logical meaning – thus according to Fregean paradigm of logic it is just the logical value of a given proposition, while the former has purely pragmatic roots. It can be identified with Gricean notion of *nn*-meaning. The remaining two sections of this paper are devoted to a discussion of pragmatic meaning in the following sense:

Grice proposed the following definition (see Levinson (1983) p. 16) of *nn* meaning: a speaker *S* *means-nn* *z* by uttering *U* the a hearer *H* if and only if

- (i) *S* intended *U* to cause some effect *z* in recipient *H*.
- (ii) *S* intended (i) to be achieved simply by *H* recognizing that intention (i).

The analysis presented below as well as some of examples a based on Grice (1989), Levinson (1983), Leech (1983).

### 3. Gricean Conversational Maxims.

The work of H.P. Grice is a milestone of pragmatics. Grice was a student of conversation, and he enunciated the basic principle that, outside of the theater of the absurd, most conversationalists seem to hold to: the Cooperative Principle. It has four sub-parts or maxims, that conversationalists are enjoined to respect.

- (A) The maxim of quality. Speakers' contributions ought to be true.
- (B) The maxim of quantity. Speakers' contributions should be as informative as required; not saying either too little or too much.
- (C) The maxim of relevance. Contributions should relate to the purposes of the exchange.
- (D) The maxim of manner. Contributions should be orderly and brief, avoiding obscurity and ambiguity.

The maxims works in two modes: the speaker mode and the hearer mode. The speaker mode has a normative sense: Formulate an utterance in such a way as to keep to all the maxims. The hearer mode is more sophisticated: When interpreting an utterance remember that an speaker kept to all the

maxims. So when you find out that an speaker has flouted some maxims you have to interpret the utterance anew. Let us consider two examples:

S: Where is Bill?

H: There is a yellow Porsche outside Sue's house.

S: Can you tell me the time?

H: Well, the mail has just come.

In both examples the simplest hearer interpretation of what H has said is that he did break the communication. So, according to the hearer mode of exploiting the maxims of relevance S should interpret the utterance anew appealing to their common knowledge that Bill is a friend of Sue and has a yellow Porsche and that postman comes always at 11 am.

Grice was using observations of the difference between "what is said" and "what is meant" to show that people actually do follow these maxims in conversation. We can see how this works in considering the maxim of quantity at work in the following made-up exchange between parent and child:

Parent: "Did you finish your homework?" Child: "I finished my algebra".

Parent: "Well, get busy and finish your English, too!"

Further proof is that when people "violate" or "flout" these maxims, particular meanings are conveyed. It is certainly possible that the child could come back and (typically in a teasing tone) say that he had also finished all his other subjects. After all, he did not say he had not finished the rest of his homework. If you were to hear someone described as having "one good leg", you would be justified in assuming the person's other leg was bad, even though nothing particular had been said about it. Conversationalists are justified in making the inferences they typically do, because they as well as Grice have understood the difference between "what is said" and "what is meant".

The maxim of manner is crucial for understanding the difference between the following two utterances:

Miss Singer produced a series of sounds corresponding closely to the score of an aria from *Rigoletto*.

Miss Singer sang an aria from *Rigoletto*.

The content of both the sentences is more or less the same. The latter utterance expresses it direct way. While interpreting the former utterance, the hearer must ask herself why the speaker expresses so simple a matter in such a complicated way. The hearer mode of maxim of manner suggests

that there must be some reasons for such an utterance. The speaker wants to avoid of using the word sing, stressing singing isn't what Miss Singer is doing. This means Miss Singer is a bad singer.

This volume is well-bound and free of typographical errors.

This example flouts the maxim of quantity saying less than is normal for a book review, and probably the maxim of relevance as well, since binding and typographical errors are less significant to potential readers than the book's contents. What is implied is: "This volume stinks!".

Using maxim of quantity utterance "John has three cows" entails that John has exactly three cows.

#### 4. Conversational rules of kindness.

In 1983 G. Leech proposed a theory of conversational implicature based on rules of kindness. Without being kind we would, in principle, always speak the truth regardless of what kind of feelings it caused in the hearer. Everyday discourses are organised differently. We don't always tell the truth. We usually divide truths into those pleasant to the hearer and those unpleasant. We utter them then in a non-symmetric way. Roughly speaking, we say what is pleasant and try to avoid saying what is unpleasant.

Leech succeeds in arguing that all Grice's conversational maxims are governed by the following maxims of kindness. None of Grice's maxims tells us why we use (1) instead of the more direct:

(8) What time is it?

We usually don't like to be seen as an unkind person. Uttering (1) we want to stress that we are kind and that we know that s/he has his own matters to attend to but also, that if s/he would nevertheless tell us the time, we would appreciate it. Leech's maxims tell us about just such a way of thinking. The main idea of the maxims is that the speaker acts in such a way so as to mini-max point in the two dimensional plane of a scale appropriate to a given maxim. Three different although similar scales occur with the maxims. Perhaps it will be better to consider just one common scale of expenses and profits. Some misfits may occur, especially with regard to the agreement maxim, but on the other hand we will get a uniform point of view on the theory. All the maxims work in the following way: Let your utterance act in such a way as to achieve maximum profits for hearer even if this will incur maximum expenses for speaker.

A. Tact Maxim works for directive or commissive utterances. It works in the scale: expenses - profits: minimum expenses for hearer with maximum profits for him. So we will say:

(9) Help yourself once more.

rather than

(10) I will help myself once more.

B. Generosity Maxim works also for directive or commissive utterances and also works in the same scale of expenses and profits: minimum profits for me and maximum expenses for me. So we will say:

(11) Have you something against a cup of tea?

rather than

(12) I have nothing against a cup of tea.

C. Approbation Maxim works for expressive or assertive utterances in the scale of objections - praises: minimum criticising of hearer and maximum praising of hearer. So, we say:

(13) Oh, what a terrific dinner you have prepared.

and not

(14) Oh, how a dreadful dinner you have prepared.

D. Modesty Maxim works also for expressive or assertive utterances in the scale of objections and praises: minimum praising for speaker and maximum criticizing of speaker. We say:

(15) It was silly of me.

but not

(16) It was silly of you.

E. Agreement Maxim applies to assertive utterances in the scale of non-agreement - agreement: minimum of non-agreement between speaker and hearer and maximum of agreement between them. So we say:

(18) It is an interesting exhibition.

and not

(19) This exhibition wasn't interesting.

F. Sympathy Maxim applies also to assertive utterances in the scale reluctance - kindness: minimum of reluctance between speaker and hearer and maximum of kindness between them. We say:

(20) I am so sorry that your cat has died.

but not

(21) I am so glad that your cat has died.

No doubt logicians have objections against Grice's theory and even more objections against Leech's. Both of them are not only informal but seem hard to formalise. To be honest, one should even admit that they are unclear. It seems that the right thing to say is the following: All logical systems are charmingly precise but nevertheless are completely unable not only to properly explain but even to recognise a large number of typical language phenomena. Do we need a good reason to start considering those problems that appear to be hard to solve in a formal way? Perhaps the best strategy is to approach them in an approximate fashion. The first step is then informal and perhaps not quite clear. Nevertheless a study of both Grice's and Leech's theories give an impression that there is something very new and deep inside them.

To some extent, similar remarks can be applied to all the pragmatic subjects presented above. One should admit that no one of the problems presented above is solved satisfactorily. On the other hand, all these problems seem to be urgent and some steps towards solving them have been made here. This is why all the results gathered above together may be considered at the same time as satisfactory results of research and as research project which present just a "recognition by a fight" of an area quite unknown to logicians.

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