UNDERSTANDING MISUNDERSTANDING: A PROPOSAL FOR AN EXPLANATION OF READING CHOICES *

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This paper argues that the analysis of the phenomenon of misunderstanding presents a fruitful contribution to the development of a theory of linguistic understanding. It tries first to clarify the central notion and proposes a rather detailed classification of different types of misunderstanding. Then it develops, with the aid of decision analysis, a general frame for explaining those choices in the process of interpretation which are left open by the grammar. A sample misunderstanding is presented, informally discussed, and a proposal is made of how to supplement the grammar of speech acts in order to to represent the data adequately. Finally, an explanation of the sample case is given in terms of decision analysis, and possible ways of generalizing the suggested explanatory scheme are outlined.

0. Interest of the subject

The phenomenon of linguistic misunderstanding has been given very little attention in linguistics thus far. [1] This is hard to understand, since in all sciences having to do with systems it is a well-known fact that if one wants to get insight into how a system works, it is more revealing to regard instances of small misfunctions than examples of perfect functioning. So it is the hypothesis of this paper that it is often useful for a linguist analyzing the meaning of a certain expression of some natural language to ask the following questions:

— What are the ways in which an utterance of that expression may be misunderstood?

[1] There is a certain amount of literature concerning speech errors (Meringer and Maier 1895; Meringer 1908; Bierwisch 1970; Fromkin 1973 and some of the works cited there), but little attention has been paid to perception errors (Meringer and Maier 1895: 157—159; Meringer 1908: 142—143; Bond 1973), and I did not find a single paper dealing with decoding errors that are not perception errors (i.e. do not mis-reconstruct the sound-pattern in question).

— What are the conditions a person interpreting such an utterance must meet in order to understand it correctly or to misunderstand it?

Thus the sample analysis I shall give below is meant to shed some light, among other things, on the serious/unserious-distinction in speech act theory.

Since the title of this paper sounds rather ambitious, it may be useful to explain it a little before going on. I do not intend to give an exhaustive answer to the question of how to understand any kind of misunderstanding, but rather point out a way towards such an answer. Furthermore, I shall restrict myself to the analysis of misunderstanding arising between people who speak the same language, i.e. having internalized the same grammar. [2] In order to account for misunderstanding within the frame of one language, we have first to specify the grammar in such a way that it may assign a given utterance several possible readings, and then to indicate which one is chosen by the interpreter on a given occasion and why. Under the supposition that this reading is not the correct one, we have an instance of a misunderstanding. Therefore, abstracting from the case of conflicting grammars, the task of understanding misunderstanding amounts to the problem of explaining the choices that are made between possible readings.

In section 1, I shall give an explication of the thematic notion first, and unfold the various types of misunderstanding that occur. Then I shall outline the main characteristics of a theory of linguistic understanding that may serve as a frame for the explanation of misunderstanding (section 2). Furthermore I will take an example of one of the types presented in section 1, analyze it, and reflect on a possible explanation (section 3). In section 4, the scheme developed in the second section will be used to give a precise explanation of the sample case. Finally, the requirements for a corroboration of the basic assumptions are discussed and possible applications are envisaged.

1. The notion of linguistic misunderstanding

1.1. Explication of the notion

In the heading of this section, the adjective 'linguistic' is added to our central notion because I believe that it is important, in view of a possible cooperation of linguistics with other disciplines, to bear in mind that the phenomenon of misunderstanding is not restricted to linguistic action alone. [3] Having said this, I feel

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[2] The explanation of misunderstandings due to different grammars is trivial: It consists just in this difference, and the only point to be explained is why this difference is not noticed by the audience.

[3] A good example of non-linguistic misunderstanding is described in the following passage from Peter Handke's 'Die Angst des Tormanns beim Elfmeter' ['The fear of the goal-keeper at the penalty']: "She was about to sit down at a place where there was no chair and Block

nevertheless entitled to neglect the qualifier for the rest of the paper and to talk simply of misunderstanding (MU). MU shares with correct understanding (CU) the feature that an attempt of understanding has reached some result, in contrast to mere nonunderstanding (NU), but it shares with the latter the feature that something goes wrong with communication. Let me first specify the sense in which I shall take the notion of correct understanding:

A person I (the interpreter) has a *correct understanding* (with respect to language L) of some sound event SE in context C if and only if there is some state of affairs SA (where SA is not the occurrence of SE) such that

(1) SE has occurred,
(2) C holds,
(3) SA holds because SE counts in C as bringing about SA (according to L), and
(4) I believes that (1), (2), and (3).

In case SA is the state of affairs in which some person S (the speaker) has performed an illocutionary act [4] towards a person A (the addressee), we shall speak of a *full understanding* (FU) of the SE under consideration. Where this is not the case, e.g. the speaker or the addressee is unknown, or the propositional content is known, but not the illocutionary force [5] or vice versa, we shall speak of *partial understanding* (PU).

We can now turn to our central notion:

A person I has misunderstood or has an *incorrect understanding* (with respect to language L) of some sound event SE in context C if and only if there are states of

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exclaimed: 'Beware!', but she had only crouched and picked up a coin that had fallen under the table when she was counting the money." (P. 96 of the 1972 paperback edition (Frankfurt/M: Suhrkamp), translation by D.Z.) Obviously Block misunderstands the women's lowering of her trunk by bending her knees and hips as her being about to sit down, whereas it was 'meant as' getting ready to crouch. It would be an interesting task for psychologists to investigate whether there is a systematic relation between misunderstanding action (i.e. incorrectly inferring from an observed behavior the intention governing it) and misperforming an intended action (i.e. erroneously doing something different from what one intends to do). Meringer (1908) treats the latter under the title 'Verhandeln' and exemplifies it by the case of a man who in order to see what the temperature is looks at his watch. The same holds for the relation between linguistic misunderstanding and linguistic misperforming (the latter term being used here as a cover term for speech errors and other kinds of mis-encoding).

[4] For a characterization of this notion cf. Austin 1962 — Austin coined the term — or Searle 1969. Note however that my notion of 'illocutionary act' differs from Austin's in that its performance does not involve the securing of uptake. Austin's argument that I did not warn my audience unless meaning and force of my locution are understood, as convincing as it may be, seems to be valid only for cases like warning, but not e.g. for asking a question. I believe that it is more useful to generalize on the basis of the latter paradigm (asking) than on that of the former (warning).

[5] As usual, I take an illocutionary act to be a function of its propositional content (if there is any) and its illocutionary force (cf. Searle 1969).

affairs SA, SA', C' such that

(1) SE has occurred,
(2) C holds,
(3) SA holds because SE counts in C as bringing about SA (according to L),
(4) Ī believes (i)   that (1),
                (ii) that C' holds,
                (iii) that SA' holds because SE counts in C' as bringing about SA'
                      (according to L), and
(5) SA is not the same as SA'.

The critical clause here is, of course, the last one. It presupposes the possibility for a speech act to be performed without being correctly understood (in contrast to Austin's concept of the illocutionary act, cf. footnote 4). Again we may distinguish between full and partial understanding: If I have only a partial understanding of an utterance, it may be an incorrect one in addition.

According to our definition Ī need not be different from S: it is quite possible for a person to misunderstand his own utterance. This may be due either to wrong beliefs about the language he is using (if he knows only little Italian, he may think, having just uttered "Fa caldo!" that he has stated that it is cold, whereas in fact he has stated that it is hot), or to his not noticing a misperformance on his side. Note by the way that this kind of MU connected with misperformance may happen to the addressee as well, so that he understands the speaker without correctly understanding his utterance. Bierwisch (1970: 399f.) has pointed out that such 'good' MU's, as we may call them, occur rather frequently.

Leaving aside wrong beliefs of Ī about L, it follows from our definition that MU's arising within one language are due to a difference between C' and C, i.e. a wrong assessment of the context by Ī. Supposedly this wrong assessment of C has often the form of inadequate expectancies concerning the speaker.

1.2. Four levels of understanding and a first classification

Following the usual distinctions, we may split up the process leading to a full understanding into four steps. (I should perhaps emphasize here that these steps belong to a theoretical and therefore idealizing reconstruction of this process. Psychological reality is surely far more complicated: There is evidence for forward as well as backward influencing between the four levels — cf. Fry 1970.) The first step on this way to a final reading assigned to some sound event SE is the identification of the expression E of L, which SE is an utterance of. Since the components of E are essentially phonemes, I shall call the first level we reach in the interpretation process the *phonological level*. If the first step fails, we have no reading at all, i.e. sheer nonunderstanding.

The next step towards full understanding is an identification of the meaningful

elements the phonological reading is composed of and a specification of the relations that hold between them, i.e. the building up of a syntactic structure which together with the phonological reading yields a syntactical reading, thus leading to the *syntactical level*. In the third step, each of the lexical elements of the syntactical reading is assigned a lexical entry or word meaning. Its result is the semantical reading which is situated on the *semantical level*. It specifies the context-independent portions both of the propositional content and of the illocutionary force. In the fourth step, the elements of the semantical reading are related to the actual situation or context C and a final or pragmatical reading belonging to the *situational level* is built up. The pragmatical reading specifies agent, addressee, illocutionary force and propositional content of the illocutionary act-token in question.

Equipped with this four-fold distinction, we are able to introduce a first classification of MU's according to the level on which they bear. I shall call errors on the first level *misperceptions*, contrasting them with the other cases where the first step is made correctly, but at least one of the others is not. The latter I will call *misinterpretations*.

1.3. Three times eight types of misunderstanding

The framework outlined so far permits us to make two more distinctions. First, we may distinguish according to whether a mistake in one step is connected with another mistake in a subsequent step, and if so, in which one(s). For the sake of illustration, let us imagine a restaurant with an aquarium as environment for an utterance which is correctly perceived as "Do you see the man eating fish over there?" Suppose in addition that the correct reading amounts to something like 'A asked B whether he sees the shark in the aquarium' and an incorrect one to 'A asked B whether he sees the bald man at the next table'. Here we have a mistaken syntactical analysis ('man' modified by 'eating fish' instead of 'fish' modified by 'man eating'), which induces a mistaken semantical reading, which in turn has consequences for the situational reference, as the given readings show. (They assume that the only man in the indicated direction who eats fish is the bald man at the next table and the only anthropophagous fish in the indicated direction is the shark in the aquarium.)

Second, it is probably useful to distinguish between

(a) MU's affecting the illocutionary force alone,
(b) MU's affecting the propositional content alone, and
(c) MU's affecting both.

The example was obviously of the second kind.

Using the distinctions developed thus far, we get a classification comprising 3 × 8 theoretically possible types of MU: see table 1.

According to this scheme, our restaurant example is a MU of type 4a. Note that

Table 1

Possible types of linguistic misunderstanding.

Type of MU: Level of interpretation:	misinterpretations				misperceptions			
	1 abc	2 abc	3 abc	4 abc	5 abc	6 abc	7 abc	8 abc
Phonological					XXX / XX	XXX / XX	XXX / XX	XXX / XX
Syntactical		XXX / XX	XXX / XX	XXX / XX				
Semantical								
Situational: (i) Propositional content	XX							
(ii) Illocutionary force								

these types are developed only by combining the distinctive features presented thus far. Whether all of them may actually occur depends partly on the way the used notions are made precise. This is an issue leading into the center of recent discussions concerning formal grammar and speech act theory, and on which I do not intend to take a stand in this paper. Let me just say that supplementing a Montague-type grammar [6] with a theory of contexts (aspects of situations relevant for communication) and a grammar of the illocutionary force-functional meaningful elements seems to me the most promising strategy towards an explicit theory of linguistic communication.

2. Outline of a theory of linguistic understanding

The theoretical framework I shall present in this section makes no claim to completeness, and even less to being definitive. It is developed in order to account for the data of the example presented in the following section and also for as many related phenomena as possible. Furthermore, it should be compatible with the recent developments of linguistic theory, amenable to the means of investigation of empirical psychology, and to a reasonable degree formal and explicit.

In section 1.1., I have explicated the notion of understanding some sound-event SE in terms of knowing who did what to whom when producing SE in the situation C. But where does this knowledge come from? How does one know? I think it is the search for an answer to this question that a theory of linguistic understanding should be concerned with.

Let us return to our person $\bar{I}$, who is confronted with the data of the situation C and some sound event SE likely to be an utterance of a language L. In order to account for what happens then, the following factors seem to be required:

− $\bar{I}$'s knowledge of L (his internalized grammar),
− $\bar{I}$'s beliefs regarding C, and
− $\bar{I}$'s wants.

There is a quite precise discipline concerned with processes which are determined by wants and beliefs, namely decision analysis, [7] and therefore I propose to reconstruct the process leading to an understanding in terms of a decision procedure determined by the factors listed above. This may seem a little surprising, since reading choices are normally made spontaneously and not after conscious deliberations. But decision analysis applies to spontaneous choices as well, if we interpret its assertions as follows: If I had reflected on his wants and beliefs concerning possible results and events, he would have made just that choice he actually made with-

[6] Cf. Montague 1974: chapters 6−8.
[7] For a good introduction see Raiffa 1968.

out reflecting. (I should perhaps point out that the if-clause presupposes full consciousness of I regarding his actual wants and beliefs, a condition which is not always met in spontaneous behavior.) Thus the empirical assumption of my proposal is that linguistic understanding is only partly determined by I's grammar, and that the rest of his interpretation is determined by his actual (not necessarily conscious) preferences and suppositions.
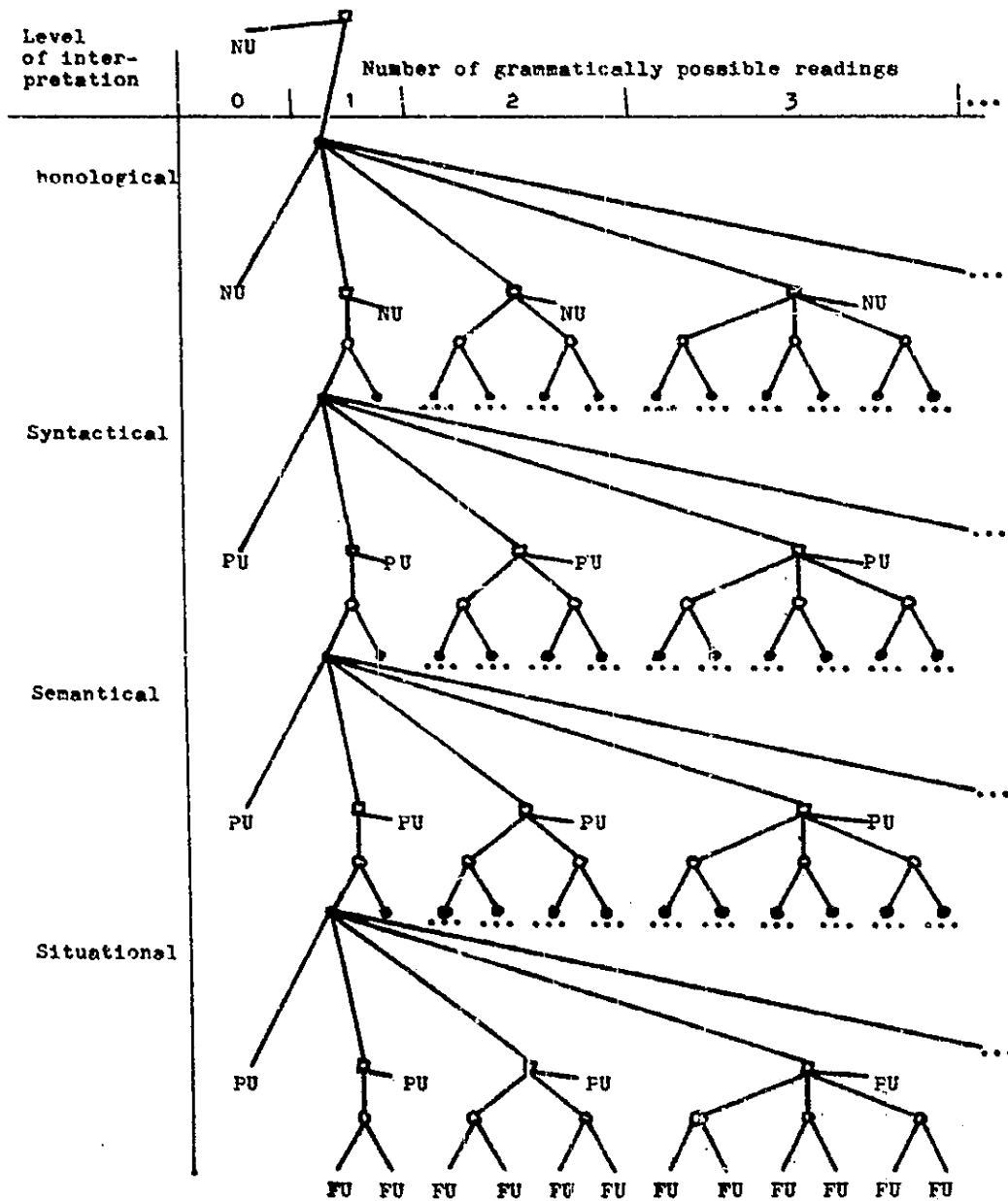

Fig. 1. General scheme for reading-choice diagrams.

The analytical tool of decision analysis is the decision flow diagram. Since we are concerned here with choices among readings, I shall speak of *reading choice diagrams*. A reading choice diagram is a tree which represents number and identity of possible readings (according to I's grammar) by the form the tree takes, I's beliefs regarding C by the subjective probability values he assumes for the correctness of each reading with respect to C, and I's wants by the different utility values he assigns each of the possible outcomes (NU, correct and incorrect PU and FU).

Before using such a diagram in order to explain the sample case of MU presented in the next section, I will indicate the form of possible reading choice diagrams by specifying a general scheme from which they can be derived. This scheme also takes the form of a tree: cf. fig. 1.

This tree contains four different kinds of nodes. The final nodes are marked NU, PU, FU, which means non-understanding, partial understanding, and full understanding respectively. The squares indicate action forks, representing choices to be made by the interpreter, whereas the circles mark so-called chance forks, representing choices that do not depend on the interpreter's wants. The white circle forks each stand for a pair of events: either the chosen reading turns out to be correct, or it turns out to be incorrect. The black circles stand for choices to be made by the grammar, or the linguistic competence of the interpreter. They indicate number and content of the possible readings.

If we now read the scheme tree from top to bottom, we meet first an action fork: I assume that it depends on .he wants of a person whether he chooses, when perceiving a certain sound event SE, to pay attention to this event or not. The latter choice, which may be labeled 'ignoring', is indicated by the left branch and leads to non-understanding. The other branch indicates the option for 'putting SE into one's grammar'. (The tree supposes that the interpreter understands just one language. If, however, he understands two or more, he would also have to choose among different grammars, and the tree would have to be modified accordingly.)

The leftmost branch of the following fork leads into the column marked by '0'. This stands for the event that SE has no phonological reading according to the grammar; i.e. SE cannot be interpreted as a realization of a possible sequence of phonemes. The result is also nonunderstanding. The next branch stands for the event that the phonological part of the grammar assigns SE just one phonological reading, and so on. The number of possible branches is left open here, but it is supposedly limited by the capacity of the human brain, which cannot differentiate the cases with more than a certain number of readings from the case that there is no reading at all.

The next line in the tree again shows action forks. Let us look first at the one in the column marked by a '2' at the top. Here the interpreter's grammar has assigned the sound event in question two phonologically possible readings; now it is up to the interpreter to choose among them. In the next line, there follow binary chance forks whose branches represent correctness or incorrectness, respectively, of the chosen reading. If for both readings the probability of incorrectness is too high, the

interpreter may decide to choose the third branch leading to NU. The choices in the other columns may now be understood analogically.

The chance forks in the next line lead again into different columns, in accordance with the number of readings that the syntactical part of the grammar assigns to each of the phonological readings from the phonological component. Note that for the sake of perspicuity the tree does not only neglect cases with more than 3 possible readings. In order to complete it, we would also have to hang on each of the black circle nodes above the syntactical level a subtree like the one under the leftmost node. The same holds for the following levels.

In order to get a reading choice diagram from our general scheme, we have to do three things: First, we go to the topmost black circle fork, cut off all branches but one and cancel the node. Then we go down the chosen path to one of the following black circle forks, cut off all branches but one and do the same with all black circle forks hanging from the same square fork, paying attention that the remaining branches correspond to each other, e.g. that it is always the second-from-the-left branch that is not cut in case the grammar selects just one reading. Then we cancel again all these nodes and so on. (This step is justified by the assumption that the choices a grammar makes are deterministic in the sense that it assigns at each level one of its outcomes (indicating number and identity of possible readings) the probability value 1.) Second, we assign each branch of the remaining chance forks a probability value so that they add up to 1 for each fork. Third, we assign each final node a pay-off value.

The first step will depend on the grammar, the second one on the beliefs of the interpreter, the third one on his wants. But now let us look at a concrete example.

3. A sample analysis

Suppose we are given the following data:

B, a schoolboy, and A, his grandfather, whom B is visiting, are walking through the zoo. They see an ape and a hippopotamus nursing their young and B expresses his amazement about the diversity of mammals. This gives rise to the following dialogue:

A (1) There are even fishes that nurse their young.
B (2) You're kidding me!
A (3) No.
   (4) Why?
B (5) Fishes aren't mammals.
A (6) But of course, dolphins for instance. [8]

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[8] The example was inspired by a remark by Dieter Wunderlich (1971: 153) concerning the fact

The critical utterance is that of (1), made by A in the given situation. The following dialogue indicates that, and how it has been understood by B, as well as part of the reason that B understands it just this way. Let us suppose that A and B were both sincere when uttering (2), (3), (5), and (6) and that A didn't make an error when uttering (1), so that the correct reading of (1) coincides with what A meant when uttering (1).

Then we can state that the outcome of B's interpretation of A's utterance of (1) is a reading which implies that by uttering (1) A was kidding B, while the correct reading implies that A was not. Our definition of MU applies: B's understanding of the sound event representing the utterance under consideration was a misunderstanding. Before we can try to give an explanation of this event in terms of B's wants and beliefs, we have to investigate a little further.

The first question to be answered is: what exactly are the readings we are concerned with? A correct reading I shall call c-reading; an u-reading is the reading as it was actually understood. This entails another question: What is kidding? As a first step towards an answer, it seems acceptable to state that kidding is not the same as lying, but that like lying, it is a kind of deceiving. Since we have not discussed deceptive speech acts yet, let me point out that according to our notion of correct understanding, the c-reading says what a person really did. Therefore, whenever a person tries to deceive, the correct reading differs from the one he wishes his addressee to arrive at. The latter reading I shall call intended or i-reading. [9] Thus the difference between deceptive and non-deceptive speech acts may be characterized by the difference or identity, respectively, between c-reading and i-reading. According to our conceptual framework, the i-reading of a deceptive speech act is the outcome of an intended MU. [10] This will do as to the common denominator of kidding and lying.

The difference between the two can be explained in terms of the common denominator of kidding and joking, namely unseriousness. While an ordinary sincere assertion and a lie are both serious things, joking and kidding are not. But whereas the unseriousness of a joke is evident, the point of kidding lies in the chances that the addressee will not detect the unseriousness. If he detects it, he is

that the classification of sentences like (7):

(7) The whale is a mammal

as analytical, contradictory, or synthetical depends on the way the lexical entry for 'whale' is formulated.
[9] I am indebted to Wolfgang Gessner (Hamburg) for drawing my attention to the interesting implications a systematic analysis of deceptive speech acts has for the theory.
[10] The intended MU has to be distinguished from the intentional MU, where the interpreter did get the correct reading, but makes as if he got another possible one. Bar-Hillel's example of the schoolboy is such a case: The teacher tells him: "Either you shut up or you leave the classroom", and the pupil understands very well that this is an order to be quiet, but he replies: "Then I prefer to leave the classroom."

the winner of this small game; if not, that is, if he believes what the other said, then the gain for the speaker will be the higher, the better he can show that the addressee should have been able to detect the unseriousness. And in contrast to a lie, where an avowal of the deceptive intention is explainable only by some change of mind, it seems that it belongs to the very notion of kidding to undeceive the 'victim'. [11]

Now we have four subcategories of assertions. The serious ones, comprising the sincere und insincere assertions, and the unserious ones, comprising those that are overtly so (jokes etc.), and those that are covertly so (kidding). Our data tell us that the c-reading was not of the last kind; let us suppose in addition that it was of the first kind.

It remains to find out the point of origin of our sample MU. The utterances of (5) and (6) of our data indicate where to look for it: Let us assume that indeed the notion of 'fish' A had in mind when uttering (1) is different from the one involved in B', u-reading of that utterance, the former being characterized by 'finned animal living in the water' and the latter by 'cold-blooded gill-breathing vertebrate living in the water'. The latter notion is today the commonly accepted one, but the other, prescientific one is not entirely out of use yet.

Now we can sketch the idea for an explanation of our sample MU: B, more familiar with the modern use of 'fish' than with the older one, interprets the proposition expressed by A's utterance of (1) in a way which makes it contradict his belief that there are no cold-blooded gill-breathing animals that nurse their young. Since he believes that A shares this belief, he has to assume that A is either insincere or unserious. He chooses the second possibility and, excluding overt unseriousness, arrives at the u-reading given above. Let us see whether this sketch can be made precise in a reading-choice diagram, and whether additional data or assumptions will be required.

4. Explaining the sample case

When proposing, in the beginning of section 2, decision analysis as an analytic tool for our purposes, I said that this discipline is concerned with processes determined by wants and beliefs. Before going on, I feel that I should explicate a little my conception of the way decision analysis may help us in our attempt to arrive at a linguistic understanding of misunderstanding. Since decision analysis is a theory of any individual behavior which is determined by wants and beliefs, it can be applied not only to the problem of answering the question 'What shall I do?', posed by some person who reflects about some decision to be made (though it has been developed to that purpose), but also to answering the question 'What will he do?'

[11] This holds for the two-person-game. There is a three-and-more-persons-variant of this game, where the direct addressee need not be undeceived, provided that the audience look through the game.

and 'Why did he do that?'. Given a person's wants and beliefs, decision analysis helps us to predict some of his future behavior and given some of his past behavior, wants and beliefs, it tells us whether the latter two are sufficient to explain the former one (he did X because he believed that p and wanted q). And if we can explain misunderstanding, I think we have an understanding of misunderstanding. We could do that in principle also without decision analysis, but its application forces us to make all assumptions explicit that enter into the analysis.

The informal analysis in the preceding section has shown our sample MU to be an instance of type 2c of the classification developed in section 1. We can now use the general scheme given in section 2 and draw a reading choice diagram for B's reading of A's utterance of (1): see fig. 2.

If you compare the general scheme given in section 2 and our instructions for deriving reading choice diagrams, you will see that in fig. 2 the subtrees hanging from the branches which indicate that the phonological and syntactical analysis, turn out to be incorrect (*id* and *ie*, respectively) are omitted. This will be justified below (see footnote 13). Further you can see that the following data of our analysis are reflected in the structure of the reading-choice diagram: B's grammar assigns the given sound event exactly one phonological and one syntactical reading, but it allows two different semantical readings and for each of them four different pragmatical interpretations. Reading *a* makes use of the prescientific notion of 'fish' while reading *b* comes from the modern notion. The interpretations *s*, *i*, *o*, and *c* (for sincere, insincere, overtly and covertly unserious) are those permitted by the grammar for propositions expressed in the declarative mood, provided they are not a special sort (e.g. involve some future behavior of the addressee).

Our data tell us that B actually chose *b* and *c*, i.e. that he interpreted the sound event produced by A as a covertly unserious assertion of A towards B, that there even exist certain cold-blooded gill-breathing vertebrates which nurse their young. How can we explain that? We can represent our information that B thought of the modern notion of 'fish' rather than of the prescientific one by saying that B believed in a very high probability for *a* to be the incorrect reading and for *b* to be the correct one. We therefore assign the branches *ia* and *cb* the value 0.9, and correspondingly 0.1 to *ca* and *ib*. But what about the pragmatical choices? Provided a normal relation between grandfather and grandson holds, we may assume that concerning a normal, declaratively expressed proposition B believes a rather high probability to hold for the sincere assertion case, against a rather low one for the other cases; let us say 0.7 for *s*, 0.1 for *i*, 0.2 for *o* and 0 for *c*. But this holds only in the absence of counterevidence, as in the *a*-case. In the *b*-case, there is some counter-evidence: The data suggest strongly that B assumes A to know that cold-blooded gill-breathing animals are not mammals and hence that there aren't any of them which nurse their young. But from the interpretation that A sincerely asserts the contrary, it would follow that A believes to be true what he knows to be false, and this is impossible. Therefore, in the *b*-case we can assign the probability 0 to the event that the *s*-interpretation is correct. Supposing that, according to our analysis
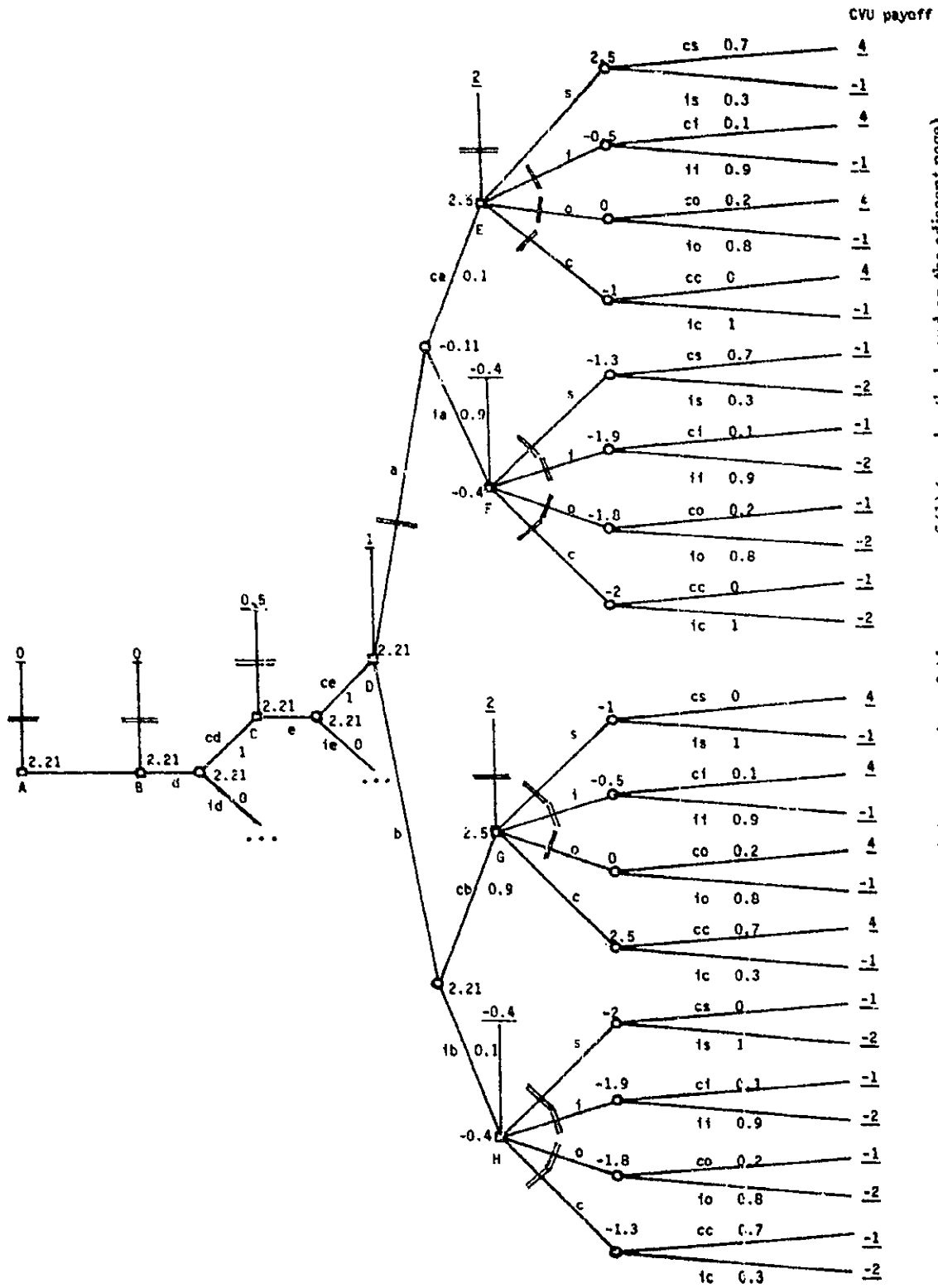
Fig. 2. Reading-choice diagram for B's interpretation of A's utterance of (1) (see also the legend on the adjacent page).

Fig. 2. Reading-choice diagram for B's interpretation of A's utterance of (1).
Legend:
A: Action fork of choosing between ignoring the sound event SE produced by A and paying attention to it.
B: Action fork of choosing between the only grammatically possible phonological reading *d* of SE and non-understanding.
C: Action fork of choosing between the only grammatically possible syntactical interpretation *e* of the phonological reading and PU.
D: Action fork of choosing between the two grammatically possible semantical interpretations *a* and *b* of the syntactical reading and partial understanding (PU).
E, F: Action forks of choosing between the four grammatically possible pragmatical interpretations *s, i, o, c* of the semantical reading *a* and PU.
G, H: Action forks of choosing between the four grammatically possible pragmatical interpretations *s, i, o, c* of the semantical reading *b* and PU.
d: Phonological interpretation of SE.
e: Syntactical interpretation of SE.
a, b: Semantical interpretation saying that the syntactical reading under consideration expresses in the declarative mood p_1 (in the *a*-case), p_2 (in the *b*-case), respectively, where p_1 is the proposition that there exist even some finned animals living in the water which nurse their young, and p_2 is the proposition that there exist even some cold-blooded gill-breathing vertebrates which nurse their young.
s, i, o, c: Pragmatical interpretations saying that the semantical reading in question constituted the illocutionary act that A asserted to B sincerely (*s*), insincerely (*i*), with overt unseriousness (*o*), with covert unseriousness (*c*), that p_1, respectively p_2, holds in the actual world.
$\ulcorner c\alpha \urcorner$ ($\alpha \epsilon \{d, e, a, b, s, i, o, c\}$): α turns out to be correct.
$\ulcorner i\alpha \urcorner$ ($\alpha \epsilon \{d, e, a, b, s, i, o, c\}$): α turns out to be incorrect.

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of kidding, the probability for the *c*-interpretation becomes rather high in that case, while the proportion between the other two cases remains constant, we get the probability values for *s, i, o, c* as the correct readings to be 0, 0.1, 0.2, 0.7, respectively.

But even given all this, we cannot get the result of our analysis yet, since we still lack some important data. Thus far, we have only considered B's grammar and B's beliefs, not his wants. Here we can assume that B actually wants to get an entirely correct and full understanding, and that he prefers this over an entirely correct partial understanding, and the latter in turn over non-understanding. Further it seems reasonable to assume that for B non-understanding is better than misunderstanding, and to reconstruct his preference-hierarchy for the latter case in approximately the following way: incorrect partial understanding [12] is better than partially incorrect full understanding, and the latter is preferred over a totally incorrect full understanding. These assumptions are rendered by the pay-off matrix in table 2.

Now you can understand the numbers assigned to the final nodes of the tree in fig. 2, and now we have all the necessary data for getting an answer to the question

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[12] Here I am not quite sure about the ordering of the sub-cases.

Table 2
Assumed CVU payoff matrix for B.

U^a_b b = a =	0	1	2	3	4
0	0	—	—	—	—
1	0.5	−0.1	—	—	—
2	1	−0.2	−0.4	—	—
3	2	−0.4	−0.6	−0.8	—
4	4	−1	−2	−3	−4

Legend:

a: Level achieved in the interpretation process.

a = 1: Phonological level

a = 2: Syntactical level

a = 3: Semantical level

a ⁼ 4: Situational (final) level

b: Degree of incorrectness, i.e. number of levels on which incorrect interpretations are made.

U^4_b: Full understanding (FU)

U^4_0: Entirely correct full understanding

U^3_0: Entirely correct partial understanding on the semantical level (PU)

U^a_b (b ≠ 0): Misunderstanding (wider sense) ⎫
⎬ (MU)
U^a_b (b ≠ 0): Misunderstanding (narrower sense) ⎭

CV: Communication Value

CVU: Communication Value Unit

Example: $CV(U^2_0) = 1$ CVU, or: the communication value of an entirely correct partial understanding on the syntactical level is 1 Communication Value Unit.

which reading choices B will make under the given circumstances (we have to pretend for a moment that we still don't know his choices). The answer will be obtained by means of a so-called averaging-out-and-folding-back procedure, which runs as follows: We start from the right and compute for each chance fork its expected communication value (ECV), which is obtained by adding the products of the probability value and the pay-off value for each branch (averaging out). Then we take the maximum ECV, copy it on to the next action fork and 'block' all branches leading to chance forks with smaller ECV by double strokes (folding back). The procedure is repeated with the copied ECV's as input until the leftmost action fork is reached. [13] Those paths that are not blocked by double-strokes indicate the choices our agent makes. In our case he chooses *b* and *c*, just as indicated in the data. [14] We can say that the presumptive explaining data we have gathered

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[13] It is easy now to give the promised justification for our leaving out of two subtrees: since their ECV is multiplied with 0, the next ECV equals the one of the other action fork D and C, respectively.

[14] In case *b* turns out to be incorrect, the diagram predicts a PU-choice by B.

are sufficient for an explanation of the data to be accounted for, namely B's choice. Perhaps other data can do this as well, but I think that the assumptions made in this explanation have at least a fair degree of plausibility.

In order to go beyond mere plausibility, we would have to analyze quite a number of further sample cases, develop empirical tests for the probability assign - ments and the pay-off matrix, [15] and last but not least, develop grammar in a way that enables it to play its central role in our explanatory scheme. I hope my sub-classification of assertions has contributed a little to this purpose. But a lot of work remains to be done.

5. Conclusion

I have attempted to show, by giving an example, how trying to explain linguistic misunderstanding may be a useful viewpoint in analyzing linguistic phenomena, and how it may contribute to the development of a theory of linguistic understanding.

[15] I am indebted to Hartmut Haberland for reporting to me a real life example, where the data cannot be accounted for unless one changes the assumed pay-off matrix a little. The situation is in a tobacco shop, the dialogue is in German:

A (1) Ich hätt gern Pfeifenreiniger.
B (2) Möchten Sie diese konischen ...?
A (3) Ich will keine komischen, ich will ganz gewöhnliche.

The critical utterance is that of (2) with the c-reading 'B asks A whether he wants those conical pipe cleaners' and the u-reading 'B asks A whether he wants those strange ("komischen") pipe cleaners'. This is a misperception of the 7a-type. We know furthermore that the acoustic data for A are so that he assigns to each of the possible phonological readings of SE (containing /m/ or /n/, respectively) the subjective probability 0.5, and that the situation C' (the context as seen by A) is so that the c-reading is 'far away' (probability value: 0.1) and the u-reading is still un-expected (less than 0.5), but has a much higher probability, say 0.4. If we assume now for A the pay-off matrix given in table 2, the reading choice diagram predicts that A bases his subse-quent behavior on the assumption that he has only a partial understanding of SE. But this is ob-viously not the case, since with only partial understanding people normally check back. The correct prediction is made, if we assume that for A, correct partial understanding is of much smaller communicational value than supposed in table 2, and that his pay-off matrix looks e.g. as follows:

	CU	MU1	MU2	MU3	MU4 (degree of incorrectness)
NU	0	—	—	—	—
PU (phon.)	0.25	−0.1	—	—	—
PU (synt.)	0.5	−0.2	−0.4	—	—
PU (sem.)	0.75	−0.4	−0.6	−0.8	—
FU	4	−1	−2	−3	−4

This is an empirical hypothesis which might be corroborated or disconfirmed by appropriate tests.

The purpose of this paper will be fulfilled if one or another of my colleagues will feel stimulated to adopt this viewpoint in some work he/she is carrying out. Maybe this way linguistics — in cooperation with psychology and sociology — will be able to contribute someday in a reasonable and well-founded way to the eminently important practical task of analyzing and dissolving those communicational disturbances that are due to misunderstanding. I believe it is worthwhile to think about the problem of how misunderstanding can be understood.

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