

## Lexical Meaning Contextualized

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### 1.

Suppose somebody had just made the announcement:

(1) There will be coffee in the lounge at 10.30.

This would give all of us an additional good reason to look forward to the end of this lecture because we could expect a coffee break right afterwards. However, such an expectation is not warranted by the truth conditions of sentence (1). The sentence would be true also in a variety of other circumstances. There might, for instance, be a bag of coffee beans on one of the tables in the lounge. Or there may be some coffee powder spilled on the carpet. Or there may indeed be a cup of coffee on display on a pedestal, decorated with a sign that reads "This is the coffee that was supposed to be in the lounge at 10.30". In all these cases sentence (1) would be true, even though the announcement may be said to have been misleading.

The situation is not unusual, odd as it may seem. Our understanding of utterances in ordinary circumstances is almost always more specific than the truth conditions of the sentences uttered. But this means that we cannot, as Wittgenstein had suggested in the *Tractatus* and as it has become common sense for many, equate the truth conditions of sentences with what people understand when they hear the sentences used.

I am reluctant though to give up truth conditions. But perhaps truth conditions can be saved if they are attached not to sentences but to something more specific: to *contextual interpretations of sentences*. Such contextual interpretations then would have to be sufficiently specific to distinguish, in the above case, the intended interpretation from the unintended ones. But what would be the upper limit on their specificity? In abstract, there is no such limit and one could go on for ever adding increasingly more and increasingly irrelevant further specifications. When we speak of the chairman of this session for instance and someone says:

(2) The chairman entered the hall at 9 a.m.

it would be quite irrelevant how he entered the hall. He may have walked in on his hands, or on his feet, or he may have come in on a pogo stick. Not only do these differences not affect the truth conditions of the sentence, they don't seem to affect our understanding of the sentence either. *Nothing is said* about *how* the chairman entered the hall. The possibilities I mentioned would all count as different *ways of entering the hall*. The various ways I suggested in which sentence (1) could be true would, however, *not* count as just so many different *ways of there being coffee in the lounge*. In the latter case, we may say, these various ways in which the sentence could be true are not *conceptually unified*, whereas the chairman's

various ways of entering the hall are conceptually unified, or fall under one and the same concept<sup>1</sup>.

Concepts in this sense are context specific functions into the truth values. They form the core of what I called above 'contextual interpretations'.

Concepts and conceptual unity are manifested in natural languages in several ways. One of them is countability. We may ask *how often* the chairman entered the hall yesterday, and in the answer one may indeed say that he entered the hall three times, even if once he walked on his hands, once on his feet, and once he came jumping in on a pogo stick. But if we answer the question of how often there was coffee in the lounge yesterday, we could not normally add up such different occasions as I mentioned.

Another way in which conceptual unity is manifested in language is verb phrase anaphora (Bosch, 1983, par. 3.3.1). In English we may look in particular at constructions like *S+ and ...too*. One could, for instance, truthfully say "*Fred entered the hall, and Julius did too*", even if one walked on his hands and the other on his feet. But if we say "*There was coffee in the lounge at 10.30, and at 3.30 too*", and on one occasion there is the usual coffee break whereas on the other there is just some coffee powder spilled on the floor, then the sentence is not true.

We have now an idea of *how to detect* conceptual unity or identity of concepts. But what *are* concepts? How do they relate to what others call 'meaning'? With respect to constructions of verb phrase anaphora it is usually assumed that sense or meaning is indeed the crucial factor. The hypothetical transformation that was once assumed to substitute the anaphor for the second occurrence of the antecedent in Deep Structure was said to apply under the condition of identity of form and meaning between the two Deep Structure occurrences (e. g. Lakoff, 1970). And the counting criterion was seen as a test for ambiguity (Seuren, 1975).

Whatever 'meaning' or 'sense' may be, what I call 'concepts' is something more concrete and context dependent. Note in particular that both countability and verb phrase anaphora depend on identity of reference. When we have a sentence like "*Fred saw her leave and Julius did too*", both must have seen the same person leave. And in order to truthfully say "*Fred saw her leave twice*", Fred must have seen the same person leave twice. The reference of the pronoun *her* must be kept constant. Now if those constructions were to depend solely on identity of meaning, then meaning would have to depend upon reference. But such a notion of meaning should be undesirable. A referential expression that can have potentially infinitely many different referents would then also have potentially infinitely many different meanings. It would be potentially infinitely ambiguous. Also, we could then no longer say, following Frege, that the meaning of an expression is what everyone understands who knows the language, and that it is the meaning of an expression that helps us to find its referent. So whatever 'meaning' may eventually turn out to be, if it satisfies reasonable requirements like those just mentioned, then it is not meaning that is relevant for countability or verb phrase anaphora, but something more concrete: context specific concepts.

I shall assume then that there is a unique level of specificity of the interpretation of linguistic expressions that is usually more specific than truth conditions for sentences would be. This is the level at which conceptual unity is achieved, the level of concepts. It is at this level that truth conditions may be equated with context specific interpretations of sentences.

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<sup>1</sup> The reason for speaking of concepts here is that we are in fact concerned with precisely the Fregean notion of a concept ("Beg riff"): a linguistic (predicate) expression is said to refer to a concept and a concept is a function from things into the truth values. Cf. Frege (1892).

It must be emphasized that concepts, and also their conditions of identity, are context dependent. Accordingly, the concepts required in the Interpretation of one expression may be more specific in some contexts than in others. For instance, what counts as several conceptually unified ways of entering the hall In the context assumed above may fall apart into different concepts in another context. Suppose that, on a particular occasion, the chairman's entering the hall marks the beginning of a formal meeting. In such a context he will probably not be counted as "having entered the hall" in the appropriate sense, if he has come bumping in on a pogo stick. – On the other hand, the context may also relax the specificity we found in the coffee example. Conceptual unity of all the various circumstances mentioned as instances of "there being coffee in the lounge" would have naturally been established for the Nineteenth Century Prussian taxman whose delightful task it was to literally sniff round in the country (also here in Cleves) in order to control the possession or consumption of however minute quantities of untaxed coffee that had been imported illegally.

## 2.

We have seen what sort of things we need as the result of understanding linguistic expressions if we want to preserve the connection between understanding and truth conditions. It has become clear that these things, concepts, must be constructed anew for each new context (where contexts are, of course, unique events, and not context classes or context types). Obviously then, we cannot have concepts lying ready on the shelf or, for that matter, in the lexicon. But what do we have in the lexicon, and how do we construct the context specific concepts from it that we need? In order to answer these questions, I first have to introduce some of the features of the model of linguistic comprehension that I use.

To understand an utterance is to know what is the case when the utterance is true or, what comes to the same, to be able to construct a model of the sort of situation in which it is true. I have called such models *Context Models* (CMs) (cf. Bosch, 1983). A CM is no more nor less specific a description of the sort of situations where the utterance is true than can be constructed on the basis of the available information. In general, a CM just represents the information a person has about his or her environment, or the particular remote or fictional environment under discussion. It changes, accordingly, as the information about the environment changes. In the course of listening to a story or discourse, the CM would typically change with each sentence. CMs thus interact with the environment and are not, like the models or worlds of the model theoretician, substitutes for the environment.

A simple format for a CM is provided by the following triple:

$$(3) \quad CM = \langle I, I^*, R \rangle$$

where  $I$  is the set of individuals present in the context, and  $I^*$  is the corresponding set of characterizations (or more briefly: characters) of these individuals. An element  $i_i^*$  of  $I^*$ , i.e. the character of the individual  $i_i$  from the set  $I$ , is further specified in the CM as follows:

$$(4) \quad i_i^* = \langle P_{i_i}, L_{i_i} \rangle$$

Here,  $P$  is the set of properties that we know our individual has, and  $L$  is the set of labels, or linguistic expressions, that have been used in the discourse to refer to the individual  $i_i$ .

Finally,  $R$  (in (3) above) is an  $n$ -tuple of sets of relations, probably just a triple of a set of one-place relations (properties), a set of two-place relations, and a set of three-place relations,  $K^1$ ,  $K^2$ , and  $K^3$  respectively. The properties for instance, i.e. the elements of  $K^1$ , are each specified as in (5):

$$(5) \quad p_i = \langle I_{p_i}, L_{p_i} \rangle$$

I is the set of individuals that have the property in question, and L is the set of linguistic expressions that have been used to refer to this property. – Plainly, CMs thus formulated are fully extensional<sup>2</sup>.

Apart from individuals we have characters of individuals. They are defined in terms of properties and labels. Properties are defined in terms of individuals and labels. And labels are of course also individuals, even though not in the set I<sup>3</sup>.

To make things more concrete, consider the CM given under (6), which would be the result of a *minimal interpretation* of an utterance like “*The cat is asleep*”. By a minimal interpretation I mean one that adds absolutely no information not strictly given by the utterance itself, except the grammatical information required for the parsing of the utterance (which however we shall not consider in this paper).

$$\begin{aligned}
 (6) \quad CM_1 &= \langle I_1, I_1^*, R_1 \rangle \\
 I_1 &= \{CAT\} \\
 I_1^* &= \{CAT^*\} \\
 CAT^* &= \langle \{ASLEEP, CAT\}, \{“a cat”\} \rangle \\
 R_1 &= \langle K_1^1, K_1^2, K_1^3 \rangle \\
 K_1^1 &= \{ASLEEP, CAT\} \\
 ASLEEP &= \langle \{CAT\}, \{“to be asleep”\} \rangle \\
 CAT &= \langle \{CAT\}, \{“to be a cat”\} \rangle \\
 K_1^2 &= \emptyset \\
 K_1^3 &= \emptyset
 \end{aligned}$$

Note that all expressions in capitals are meaningless constants (relation constants are italicized, individual constants are not) and could, except for their mnemonic convenience, just as well be replaced by arbitrary letters or figures. So all the information CM<sub>1</sub> contains is that some individual or other which is referred to as “a cat” has two properties. And about these properties we only know that one is referred to by the label “to be asleep” and the other by the label “to be a cat”, and that the aforementioned individual exemplifies both properties. Thus the CM contains next to no information as to ‘meaning’ of any of the linguistic expressions.

Of course, when we understand an utterance, we usually understand more than what is given in a *minimal CM* as above. Whatever more we understand is either based on direct sense perception coming in from the actual context, on previous knowledge of the context, or – and this is what we are interested in now – on lexical information that is linked to the linguistic expressions used in the utterance. All this taken together makes up the concrete concept that is associated with the linguistic expression in the particular CM. For greater clarity, and in order

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<sup>2</sup> The crucial device for achieving extensional CMs is Goodman’s idea (1949) of identifying ‘meaning’ (in our case: context specific interpretation) on the basis of both primary and secondary extensions (i.e. what is ordinarily called extensions plus the representations, here the expressions, for these extensions).

<sup>3</sup> Actually, labels should be similarity classes of physical events or physical objects, much in the spirit of Goodman (1976). The construction of these similarity classes is no less problematic than the notion of conceptual unity. But I cannot attend to these problems here and thus I have allowed myself the oversimplification of treating labels as individuals.

to emphasize their context- relativity, I shall from now on speak of '*contextual notions*' (CNs) rather than of concepts.

Before we can come to the procedures that lead to adequate CNs in a particular CM, I shall have to say what the input for these procedures is, i.e. what I think *context independent* 'lexical meaning' is and how it is represented.

If someone knows what an expression of a particular language 'means', say a particular predicate expression, we may assume that he would be able to point out some objects that may normally be regarded as exemplifying the corresponding property. He would also be able to give some examples of objects which do not exemplify the property in question but may be helpful for contrast. It is this knowledge we find represented in what I call a *lexical stereotype*. Lexical stereotypes have the following format for property stereotypes and individual stereotypes respectively:

$$(7) \quad S_p = \langle I^{*+}, I^{*-}, I \rangle$$

$$(8) \quad S_i^* = \langle P^+, P^-, I \rangle$$

The sets  $I^*$  and  $P$  do of course not just contain the relevant constants but their definitions (as they are found in (6) as well). The third element of the triples is the lexical expression, or label, whose stereotype we are concerned with.

Lexical stereotypes must be seen as arising from the linguistic experience of a speaker, and they remain subject to continuous revision in the course of language use. I have described these processes elsewhere (Bosch, 1984). What is important at the moment is that stereotypes are products of experience and that, accordingly, all the connections between labels or expressions they specify are *default specifications* only. That is, these correlations may, on the basis of past experience, reasonably be expected to hold also for future linguistic experience, unless special circumstances arise. In practice this means that any specification given by a lexical stereotype will be overwritten if it is in contradiction with more direct, and thus more reliable, information specific to the context at hand, i.e. information contained in the relevant CM.

Different from approaches that are in some respects similar to the one I am proposing here (e.g. Minsky, 1975), I assume that all specifications in a stereotype are default specifications. There are none that have the status of analytic truths, not even the best confirmed ones that may be regarded to form the core of a stereotype.

### 3.

Let us now see what role stereotypical information can play in bridging the gap between what we called above a minimal interpretation of an utterance and what one might call a full understanding.

Suppose we have already a CM,  $CM_{11}$ , that has been built in response to reading the following passage:

- (9) Jane and Fred had lived together for several months. But things were not going too well. One morning eventually, while Jane was out to work, Fred decided that she simply was not the right person for him to live with.

It is now with respect to this  $CM_{11}$  that the next following sentence, which continues the passage given under (9), is to be interpreted:

- (10) Fred left.

Clearly, the occurrence of “Fred” in (10) is now interpreted anaphorically (cf. Bosch, 1983, par. 3.3.2) with respect to the representation of Fred that is already in  $CM_{11}$ . What must be added to this CM is a representation of the property attributed to Fred in (10), and also a representation of the fact that this is a property of Fred’s and that Fred instantiates this property.

All we know about this property initially is that it is one or the other contextual variant of the stereotype that is linked to the label “to leave”. This stereotype contains two sets of characterizations of individuals, one for individuals instantiating the property ( $I^+$ ) and another for individuals not instantiating it ( $I^-$ ). These characterizations consist of a pair of sets of labels for each individual: one set of labels of properties of the individual and the other containing just one label designating the individual in question. All properties of the exemplifying individuals thus are properties that co- occur with the property instantiated: here the property of leaving. An interpretation of the expression “left” in (10) could thus consist in adding all those properties (i.e. the corresponding labels) to the characterization of Fred in the CM.

But such a procedure would be too simple to be right. Because among the individuals exemplifying “to leave” there may be, for instance, a train. And some of the properties that co-occur in this particular case may be those with labels like “to puff”, “to whistle”, “to let steam off”, which we would not ordinarily want to associate with Fred even though also he instantiates the property of leaving. Nor would we be too interested, in the case at hand, in the properties associated with birds leaving for the South in autumn or with the hotel guest leaving his hotel in the morning or the woman who leaves her job. If we were to take up those properties we should develop rather odd expectations with respect to Fred. For instance that he will be back in spring to build a nest, that he only stayed for the few nights typical for a stay in a hotel, or that he left because he found a better job elsewhere. But such expectations would only be natural in the case of the birds, the hotel guest, or the woman who quitted her job. It is however exactly this kind of interconnection between labels that we need in order to supplement the understanding of the label “to leave” in the case of sentence (10). But how do we find the right labels?

First we must see what we have already got in the CM in terms of a characterization of Fred. Then we must look up the individual exemplifying “to leave” in the stereotype whose characterization shows the greatest overlap with the characterization of Fred in the CM that we already have. This overlap can be measured (although the measurement may require access to a number of further stereotypes and may not be a simple matter of just counting – I cannot in this paper deal with the technicalities needed and must restrict myself to the bare principles. But compare Burghard Rieger’s paper in this volume for suitable proposals of distance measures.) Once a best fitting individual has been found, or a set of equally well fitting individuals not superceded in their goodness of fit by any other individual, the corresponding co-occurring properties may be assumed to be properties also of Fred, except, of course, any properties that are counterindicated by the already existing characterization of Fred in the CM. Suppose, for instance, that the typical partner leavers in our experience, and hence in our stereotypes, leave in the course of or immediately after a row. Then this piece of stereotypical information would not be added to our characterization of Fred, because we already know from the text (9), which was the basis for  $CM_{11}$ , that Jane was not even at home when Fred left. That this is counterindicating information can naturally only be established via the consultation of further relevant stereotypes and further calculations of semantic distances.

The resulting addition of labels from the stereotype for “to leave” to the CM representation of the property attributed to Fred in (10), together with what is represented in the CM already, then yields the complete CN that represents our contextual understanding of the predicate “left” in (10).

Note, however, that there is no identifiable part in the new CM resulting from the interpretation of (10) that could now be called the ‘meaning’ or ‘interpretation’ of (10). We could not even claim that the difference between the two CMs before and after the processing of the sentence is the interpretation of (10). Fred was already represented in the preceding CM and thus would not form part of the difference. But surely, in one form or the other Fred should be part of the interpretation of (10). What I propose is that we should *give up the notion of the meaning or interpretation of a sentence or utterance as an identifiable unit or thing* altogether. We are in fact concerned with a number of processes regarding utterances, CMs, CNs, and stereotypes, and these processes may lead to very different results for one and the same sentence or utterance. No part of these results can be specifically attributed to the sentence or utterance rather than to the preceding CM or the stereotypes involved. ‘Meaning’ or ‘interpretation’ for sentences in our model then is not only procedural, it is *holistic*. It is holistic, as it were, to the extent of self-sacrifice. No identifiable unit corresponds to either notion in our model. Sentence meaning or sentence interpretations disappear completely, and, as it would seem, without loss.

Truth conditions can still be formulated. Not though for isolated sentences or their utterances, but either for utterances-with-respect-to-particular-CMs or, more properly, for complete CMs. The business of truth is one between CMs and whatever you choose to call ‘reality’. If our source of information about reality is sense experience, then indeed, as Quine (1961:41) has it, our sentences “face the tribunal of sense experience not individually but only as a corporate body”. This general implication remains valid, independently of whether we attach truth-conditions to CMs or to sentences-with-respect-to-particular-CMs. But even if we choose the latter, truth-conditions won’t reconstruct sentence ‘meaning’. The information entering from stereotypes as well as from CMs makes the notion illusory that there should be two distinguishable components to the verification of a sentence, a component of fact and one of ‘meaning’, where the latter is thought to be captured in the sentence’s truth-conditions. But still, as I indicated initially, ‘understanding a sentence’ may be taken to be the same as ‘knowing what is the case if the sentence is true’, as Wittgenstein had suggested. However, properly contextualized, this should be read as ‘knowing how to construct a CM of a situation with respect to which the sentence is true’. And the construction of CMs is a matter of adding to the web of belief and knowledge, of spinning it further, rather than a matter of odd and isolated sentences. – Oddly enough then, although I might have seemed to have initially taken a step backward, from sentences to concepts, I can conclude by finding even sentences too abstract as units of meaning. The reason of course is that already on the level of concepts the notion of meaning had disappeared. Stereotypes were too loose and too general to be serious candidates for word ‘meanings’, even though they must count eventually as the *substitutes* of lexical meaning. And CNs were too parochial. If we construct, for instance, after the interpretation of (10), the CN for “to leave”, it might contain information about Fred’s medical record, his hat size, and the sum in his bank account: holism knows of no privacy restrictions, and hence CNs are as far removed from what one might expect from word meanings as are stereotypes. Still, together CNs and stereotypes do roughly what word meanings were supposed to do. Word meanings, themselves, however, whatever they may be, have become redundant – Just like sentence meanings.

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