Context Dependence and Metaphor*

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0. Introduction

The folk theory of metaphor tells us that metaphor is something special, out of the ordinary, and that literal meaning is more basic. At first sight it is perhaps surprising that linguists, too, have subscribed to such views. But the idea becomes more plausible when we remind ourselves that most current semantic theory seems to work fairly well with respect to some areas of literal discourse, but encounters great difficulties with metaphor.

The illusion that any such theory could be fundamentally correct may well have its origin in the fact that natural language has mainly been studied, certainly in recent theory, as a static system. A sharp line is drawn between the ‘ordinary’ use of language on the one hand and processes of linguistic change on the other. No continuity is recognized between the mechanisms a speaker employs in acquiring linguistic skills, making use of these skills in new environments, adjusting these skills to other speakers, and the mechanisms of ‘global’ change of a language in history.

But the task of this paper is not to speculate about origins of mistakes. Nor to engage otherwise in a historical study or the study of theories that are only of historic interest. The task of this paper is constructive. The general thesis to be defended is that the mechanisms involved in the interpretation of metaphors are nothing over and above the mechanisms needed in the interpretation of ‘literal’ discourse. If at the same time we do not want to give up the distinction between literal and metaphorical use altogether, new ways of drawing this distinction must be found.

The chief aim of this paper, then, is to provide for the conceptual possibilities of integrating the study of metaphor into a theory of natural Language semantics. This paper is not, however, in any direct sense a contribution to the study of metaphor. It contains some new ideas about the modelling of linguistic communication but it provides no new insights about metaphor itself.

1. Creativity and context dependence

Natural languages, it seems, can be used to talk about anything and everything. This infinite use of finite means has been called ‘linguistic creativity’. It can, in part, be explained algorithmically as a matter of combining smaller expressions to form larger ones. Such explications have been studied under the heading of ‘compositionality of meaning’. I shall have nothing to say on this topic but want to turn to a more primitive aspect of semantic creativity: how is it that speakers of a natural language come to agree about the infinite, or at

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least not obviously limited, range of applications for *non-composite* linguistic expressions? At any point in time, a speaker has experienced the use of a particular expression only in application to a finite number of objects or events in a finite number of situations. How can the speaker, on the basis of this background, confidently apply and interpret the same expression1 in new situations and to new objects and events? Of course, this is not a question of approximating some abstract a priori standard but, in the first place, a question of achieving communication with other speakers. And this need not mean that each of them would use the same expression for the same object in the same situation, or attach the same interpretation to the same expression in the same situation. It is sufficient if the mechanisms for the selection of expressions and the construction of interpretations are sufficiently similar in different speakers so that one can reconstruct what the other is doing. It is such mechanisms of interpretation I want to look at in the following sections.

First of all, however, I want to give some support to one of the notions fundamental to the present approach, the notion that linguistic communication is more a matter of finding one’s way in a context than of exchanging messages in some abstract code which is determined a priori and independently of contexts. Such a code would require a context independent notion of identity in order to bring about the necessary categorizations. But of course, two objects are never fully *identical*. If they were, they would be one and the same object. Two objects may well be *indistinguishable* under particular circumstances, which, however, does not justify the conclusion that they are identical. Another context may provide the means for distinguishing them. Consider for example some strips cut out of a colour continuum as in Fig. 1. If the strips are sufficiently narrow compared to the width of the continuum, any two neighbouring strips, say A and B, are indistinguishable in colour. They may become distinguishable, however, when we add a third strip, C, which is again a neighbouring strip of one of the first two. Although C is again indistinguishable from B, it may well be distinguishable from A. The first two strips, A and B, thus become distinguishable via the different similarity relations they bear to the third one, C. Note that C does not, of course, fulfil the role here of some absolute standard – it would be useless for the differentiation of just about all other strips in the continuum. The situation is better conceived of as a situation of neighbourhood support. In a context consisting just of A and B, both are indistinguishable. In a context consisting merely of Band C, those two are equally indistinguishable. But in a context with A, B, and C all three are distinguishable.

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1 The determination of the identity of an expression from one occurrence to the other is of course no less of a problem than the determination of an expression’s reference. Still, in this paper I take identity of expressions for granted.
If discriminability is context dependent we should not expect that similarity and similarity based classifications—which of course presuppose discriminability—are independent of context. But perhaps this is also clear independently, because similarity is an inherently comparative notion: two things $O_1$ and $O_2$ are not similar *tout court*, but, upon proper analysis, they are more similar to each other than either of them is to an explicitly given or implicitly assumed third object $O_3$ or to any object from a set of objects that is assumed as a standard of comparison. Thus if in different contexts different objects are present, or implicitly invoked, as objects of comparison, this may drastically affect the perception of similarities.

To sum up: if two things appear similar, or are even indistinguishable in one context, they may not only be easily distinguishable but even quite dissimilar in another context. And conversely, if two things are dissimilar or at least distinguishable in one context, there may be another context in which they are quite similar or even indistinguishable.

Obviously this has consequences for the linguistic description, which are easy to observe when we consider what descriptions people prefer in order to refer to one and the same thing in different environments. Olson (1970) and Osgood (1971) report corresponding experiments, and the following illustration is based on Olson (1970). In Table 1, each row is taken to represent one situation by simply giving the objects present in that situation. On the right, next to each set of situational objects, we find a description that would seem to be a natural description for the leftmost object in the respective situation. That object is the same in all situations.

<table>
<thead>
<tr>
<th>situation</th>
<th>objects</th>
<th>natural description for the leftmost object</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td><img src="image" alt="A" /></td>
<td>‘the triangle’</td>
</tr>
<tr>
<td>B</td>
<td><img src="image" alt="B" /></td>
<td>‘the small one’</td>
</tr>
<tr>
<td>C</td>
<td><img src="image" alt="C" /></td>
<td>‘the large one’</td>
</tr>
<tr>
<td>D</td>
<td><img src="image" alt="D" /></td>
<td>‘the equilateral one’</td>
</tr>
<tr>
<td>E</td>
<td><img src="image" alt="E" /></td>
<td>‘the white one’</td>
</tr>
</tbody>
</table>

Table 1

Clearly, the natural description for the leftmost object differs depending on what other objects there are, thus on what objects the target object must be distinguished from. Each set of contrasting objects, it might seem, makes us focus on particular aspects or properties of the
object. But we must not infer that there is something like a stable complete set of properties the object has and one of which is picked out, as it were, in each situation depending on properties of the contrasting objects. Already the fact that our object is once described as “the small one” and once as “the large one” might be seen as contradicting such an interpretation. But then small and large are well known as relative adjectives, hence as context dependent in their interpretation, and the case would thus not be a very strong one. So let us take a pair of adjectives that are not suspect of such relativity: black and white. And now compare Situations E and F in Table 2. The same triangle that is described as “the white one” in Situation E is naturally described as “the black one” in Situation F – we only have to imagine that the second triangle in Situation F is printed with red lines rather than dotted black ones.

<table>
<thead>
<tr>
<th>situation</th>
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<th>natural description for the leftmost object</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>![triangle]</td>
<td>‘the white one’</td>
</tr>
<tr>
<td>F</td>
<td>![triangle]</td>
<td>‘the black one’</td>
</tr>
</tbody>
</table>

Table 2

That we can describe one thing in many different ways is no new insight. Perhaps it is more surprising that different descriptions are not always compatible, at least not superficially, and that context must be taken into account in order to render them compatible. What the above cases are meant to show however is not that things can be described differently in different contexts but that they are actually described differently and that this is a requirement for the naturalness of a description and for its functionality. Consequently, if we do not take the mechanisms into account that match descriptions and contexts, communication becomes a mystery. If the same description can refer to different things and the same thing can be referred to by different descriptions, then we either have to investigate the mechanisms governing the preferences or admit that communication is only for telepaths and language learning is a matter for the cryptanalyst.

2. Learning from examples

Let us consider a language learning situation, not in its full concreteness but rather with some of the theoretically possible but practically avoidable difficulties removed, and with a special focus on the role of context.

Suppose you want to teach a child, or an adult from an imaginary a-geometrical culture, the use of the word square\(^2\). Then it will ordinarily not do to just draw a square and say: right, that’s a square. Learning will be much easier if you draw several squares, perhaps with some variation in size, colour, or accuracy of drawing. Perhaps also on different kinds of background and with other variations you can think of. It will also be useful to draw some non-squares for contrast. Ideally not non-squares that differ wildly from squares, but rather cases of a ‘near miss’\(^3\): They should not differ too much from squares with respect to their

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\(^2\) The notion of a square that is at issue here is not the abstract notion of geometry but its everyday variant, as it were.

\(^3\) For the role of ‘near miss’ cases in computer learning cf. Winston.
complexity (as would be the case with aeroplanes, coffee cups, or dinosaurs), but should be of similar complexity and should come as close as possible to being squares without actually being squares or being difficult to distinguish from squares. So, perhaps ellipses, circles, triangles, parallelograms, or non-square rectangles are good contrasting cases, as long as we steer clear of borderline cases. Figure 2 gives an example of such sets of positive exemplifications (I+) and contrasting cases (I-).

![Figure 2](image)

We must be careful, however, with our assumptions as to what is actually learnt in any such learning situation. Strictly speaking, the learner can build up no more than what I call a Contextual Notion of a square. Such Contextual Notions (CNs) are the basis for further use of the expression “square”, but how useful they are depends greatly on how well the exemplifying and contrasting cases were chosen. Thus a CN derived from a learning situation with carefully chosen illustrations will naturally be more useful than a CN built on one random occasion of the use of the expression.

The CN can be represented in the form of a triple, consisting of a set of positive exemplifications, I+, a set of contrasting cases, I-, and a set L of linguistic labels. In many cases L will contain only one label, the label “square” in the case at hand. I+ and I- must be disjoint, but are of course not complement sets of each other.

(1) \( \text{CN} = <I+, I-, L> \)

In order to avoid the issue of how a CN is represented in memory, let us pretend for present purposes that what the learner acquires in our learning situation are simply the two charts in Figure 2 plus the label “square”. The question now is how the learner would use this CN in order to apply the label in a new situation. How would he tell squares from non-squares? Note that this cannot be simply a matter of looking for a perfect match between objects of the new situation and objects in I+. Usually there will be no perfect match. And even if there is one, this is still no guarantee that in that situation the matching object would be called a “square”. The situational similarities and contrasts may make one decide otherwise. Suppose the new situation is as in Figure 3.
The only object in that situation that would naturally be called a square is probably Object 4. Yet, Object 4 has no match in I⁺ of Figure 2, whereas Object 2 has. But 2, however naturally it integrates into the similarity class of squares in Figure 2, would not naturally be called a square in the situation represented in Figure 3. There it would rather be referred to as a circuit or a coil.

The use of a CN from an earlier situation in order to determine the application of its label in a new situation thus does not only involve comparing the new objects to both I⁺ and I⁻, but also requires the consideration of similarities and contrasts among the objects in the new situation.

One further factor in applying CNs from the past to new situations must at least be mentioned, although I cannot illustrate it here: in normal situations of language use we are not often faced with the question whether one particular label is applicable to any of the objects of a new situation. The more ordinary task is to choose one label from a large repertoire of CNs for the description of a particular object or set of objects in the new situation. And then the question of fit is also posed the other direction: which CN from our repertoire is the most suitable one to bring out the relevant similarities and contrasts in the situation at hand. We thus have to consider similarities and contrasts not only within the new situation but consider them with respect to similarities and contrasts between the available CNs.

In this section and in Section 1, I have tried to give some initial plausibility to the idea that the creativity we find in the use of natural language may be viewed as a matter of comparing past experience to new experience or, more concretely, of operating on contextual similarities and contrasts. This view is very modest with respect to the assumption of any notions that would be valid across contexts, independently of contexts, or even a priori. The reason for my reservations with respect to such notions is of two kinds: on the one hand, I am very uncertain that I understand any notions independently of the context to which they apply, or, what is the same, with respect to all possible contexts. On the other hand, there are very good reasons to think, as I have tried to show in Section 1, that a clear understanding independently of context is impossible in principle.

In the following I shall propose a model for linguistic communication, including learning and change, that is based on contextual understanding.
3. Context models

To understand an utterance is, so I assume⁴, — slightly varying a view of the early Wittgenstein —, to know what is the case if the utterance is true. In other words, I assume that when we understand what someone says, we know, to a certain extent, what the things he is talking about are like, and we can build a (mental) model in which things are as he says they are. This model will be as specific or as unspecific as the information we get from the utterance. In fact, we will usually have to supplement a certain amount of information from our ‘general’ knowledge in order to build a coherent model. But to this we can attend later. For the moment I want to concentrate on the simplest possible case.

Since I am not concerned with any material properties of such mental models or with their specific medium of representation, I shall now present what should be more properly seen as an attempt to model mental models in a simple structure. These models of mental models I call Context Models (for short: CMs). A CM represents the knowledge a person has about his or her environment or a particular fictional environment at one particular moment. It changes as the environment changes or as the knowledge of the environment changes. Typically, in the course of listening to a story, or reading a text, the corresponding CM of the listener or reader would change with each sentence.

A simple format for a CM would be the following triple:

\[(2) \text{CM} = \langle I, I^*, R \rangle\]

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

\[(3) \quad i^* = \langle P_i, L_i \rangle\]

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 \(i\).

Finally, \(R\) (in (2) 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 (4):

\[(4) \quad p_i = \langle I_p, I_p \rangle\]

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.⁵ Apart from individuals, we have properties (defined in terms of individuals and labels – which are also individuals of course, though not in the set \(I\)) and we have characters of individuals (defined in terms of properties and labels).

To make things more concrete, consider the CM given under (5), 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

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⁴ The model of linguistic communication that is briefly presented in this section is explained more fully in Bosch 1983.

⁵ In the definition of a property, the individuals exemplifying the property are what Nelson Goodman (1949) called the ‘primary extension’ and the labels designating the property are approximately what he called the ‘secondary extension’. 
the grammatical information required for the parsing of the utterance (which however we shall not consider in this paper).

(5) \[ \text{CM}_i = \langle I_i, I_i^*, R_i \rangle \]

\[ I_i = \{\text{CAT}\} \]

\[ I_i^* = \{\text{CAT}^*\} \]

\[ \text{CAT}^* = \langle\{\text{ASLEEP, CAT}\}, \{\text{“a cat”}\}\rangle \]

\[ R_i = \langle K_i^1, K_i^2, K_i^3 \rangle \]

\[ K_i^1 = \{\text{ASLEEP, CAT}\} \]

\[ \text{ASLEEP} = \langle\{\text{CAT}\}, \{\text{“to be asleep”}\}\rangle \]

\[ \text{CAT} = \langle\{\text{CAT}\}, \{\text{“to be a cat”}\}\rangle \]

\[ K_i^2 = \emptyset \]

\[ K_i^3 = \emptyset \]

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, 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 must be information that comes with the linguistic labels (at least to the extent that it is not information derived from previous discourse or, non-linguistically, from the context itself). Any information linked to a label – we may here think again of something like our earlier Contextual Notions (CNs) – must of course be based on previous linguistic experience. We have already considered a specific learning situation for one particular label relating to visually presented objects. Now I want to look at what may be dubbed, though in a rather abstract sense, ‘blind learning’: here a CN is built up exclusively on the basis of information given in linguistic discourse, that is, on the basis of information as it is found in a CM as under (5).

Blind learning is not something unrealistic though. It is through this form of learning that we have come to be acquainted with Count Dracula, Pegasus, unicorns, Little Red Ridinghood, and Homer’s heroes. And without it we would not know what a bachelor is or a lawyer or an interest rate. This is not to say that blind learning would be independent of learning in ‘real’ contexts. It can probably not even get started without at least a very good basis in sensually and senso-motorically supported learning in ‘real-world’ situations. But this does not mean that we could not investigate processes of blind learning independently.

4. Learning from Context Models

The Contextual Notions we have discussed earlier, as they are constructed in learning situations, are really nothing else than Context Models organized in one particular fashion. A CN focusses on one particular set of labels, and in a proper learning situation all individuals are selected and sorted so as to positively or negatively exemplify the use of those labels. CMs are not thus restricted to one set of labels (i.e. one notion). They represent any label used
with respect to an arbitrary situation together with its exemplifying individuals and any individual together with its labels. – Although their purposes are different, CMs and CNs are, in a sense, just notational variants.

When we now look at the processes of blind learning, we are interested, in particular, in how a CM can be translated into the CN format. For what we want to develop on the basis of CMs are CNs. In most cases, however, CNs derived from just a single CM will be rather poor compared to CNs derived from a learning situation. – We shall attend to the question of how they can be enriched in a moment. But let us first look at an example.

From the CM under (5) above we could extract the following three CNs: one for a cat, one for the property of being asleep, and one for the property of being a cat. These CNs are, in fact, already present in CM$_1$ in the form of the definitions of the constants CAT*, ASLEEP, and CAT. In each case we find a set of positive instantiations of the notions and a set of labels. The set of negative instantiations, I, which we had in our earlier CNs, must here be seen as supplied by the remaining individuals of the CM. In the case at hand, CM$_1$, however, CAT is the only individual, and since CAT exemplifies both properties, I in the CNs for these properties must be the empty set:

$\text{(6)} \quad \text{CN}_11 = \langle \{\text{CAT}\}, \emptyset, \{\\text{“to be asleep”}\}\rangle$

$\text{(7)} \quad \text{CN}_12 = \langle \{\text{CAT}\}, \emptyset, \{\\text{“to be a cat”}\}\rangle$

This representation is not very helpful though, because of the presence of the uninformative constant CAT. We can change this by availing ourselves of the information on the individual CAT that is present in CM$_1$. This information is given under CAT’s character, i.e. CAT*, and accordingly we swap CAT in (6) and (7) for CAT* and subsequently substitute for CAT* the corresponding definition from CM$_1$. Proceeding analogously with the uninformative constants we get in that step, and eliminating some redundancy, we eventually arrive at the following CNs for the labels “to be asleep” and “to be a cat” respectively:

$\text{(6')} \quad \text{CN}'_11 = \langle \langle \{\text{“to be a cat”}\}, \{\text{“a cat”}\}\rangle, \emptyset, \{\text{“to be asleep”}\}\rangle$

$\text{(7')} \quad \text{CN}'_12 = \langle \langle \{\text{“to be asleep”}\}, \{\text{“a cat”}\}\rangle, \emptyset, \{\text{“to be a cat”}\}\rangle$

The information we get then in these CNs is that, for instance in (7’), a property referred to by the label “to be a cat” is instantiated by an individual that is referred to by the label “a cat” and has a property referred to by the label “to be asleep”. And this is already a small piece of interesting information about the use of these labels with respect to each other. – Procedures almost entirely analogous to those sketched for the two property labels give us the following CN for the notion of a cat:

$\text{(8)} \quad \text{CN}_13 = \langle \{\text{“to be asleep”}\}, \{\text{“to be a cat”}\}, \emptyset, \{\text{“a cat”}\}\rangle$

In words: an individual referred to by the expression “a cat” has two properties, one of which is referred to by the expression “to be asleep” and the other by the expression “to be a cat”.

CNs derived from more complex CMs will of course look a little more complicated than those we have just seen, but they will also be more informative and show us more correlations between different labels. Still, also these far richer CNs usually are not a sufficient basis for the further use of an expression in new situations. And if CNs are just extracted from arbitrary CMs in arbitrary contexts, we could not expect any more. Of course, not every arbitrary situation provides the basic information about the use of an expression that is needed even for a minimal understanding.

Learning situations of the kind mentioned are of course ideal in this respect. But the child and the foreign learner will often also exploit other situations in which the new expression occurs
semantically redundantly. Many anaphoric uses are of this type. A third starting point is of course provided by verbal definition, as it may be provided (in whatever loose sense of definition or paraphrase) by any native speaker upon request. A fourth way of acquiring the basis for further use of an expression is perhaps not of great relevance for natural learning because it puts heavy requirements on memory, but it is of theoretical interest and of interest for the simulation of learning when memory capacity is no problem. Here the learner just memorizes all CNs connected to a particular expression in a large number of random contexts and constructs an amalgamated CN on this basis, which is then put to the test in further use, just like the other basic CNs of the various origins I have mentioned. The amalgamation process consists merely of what might be called ‘garbage clearance’: all positively or negatively co-occurring expressions that are only parochially relevant in the particular CM from which a CN has been extracted, are deleted. The criterion to be used is double occurrence: if a particular label occurs both in the set of positively and in the set of negatively correlated labels of the amalgamated CN it is to be deleted from both sets.

Procedures like those sketched will yield what I have called a basic CN, that is a CN that is sufficient for at least some future interpretations in new CMs. This characterization is vague, but it is meant to correspond to a level of knowledge of an expression’s use that is in fact not precisely fixed. There are expressions in every adult’s vocabulary he would try to avoid in active use or use only hesitantly, and with respect to whose interpretation or paraphrase he would often be uncertain. Frequently a dictionary will not provide the right sort of information to improve this situation. What is missing is a good amount of experience with the established use of the expression in the language community. Note however that if there is no basic CN, further exposure to usage does not have the same effect. There must be something like this basic CN as a crystallization point to which further information can be attached or which can be modified by further usage. A typical case of the intended level of word knowledge is one where a child has heard, in different contexts, that various people were referred to as “a nit” and has perhaps understood that the expression is employed to refer to persons in a derogatory or jocular way, but has no idea as to the ‘meaning’ of the expression. The child has not yet experienced enough of the usage of the expression to be sure about the really important correlations between this label and others. This is one of the sources for the ‘funny things’ children (or foreigners) sometimes say. They often have no more knowledge about an expression than what is given in a basic CN.

It is at this level of basic CNs that we should assume a strict separation between CNs for different labels, because it is here that CNs gain independence from the CM in which they originate and are put to use in other CMs. Although strict synonymy is an ordinary relation inside one CM, it becomes rare across CMs (cf. Bosch, 1979). Hence a CN that contains, rather than a single element, several elements in its set L would be of very limited use across CMs. The general format of basic CNs is the following (for property CNs and individual CNs respectively):

\[\text{CN}_p = \langle \langle \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \{l_i^+, \ldots, l_i^-\} \rangle, \ldots \rangle, \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \ldots \rangle, \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \ldots \rangle, \ldots \rangle, l_{p_1}\rangle\]

\[\text{CN}_i = \langle \langle \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \{l_i^+\} \rangle, \ldots \rangle, \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \ldots \rangle, \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \ldots \rangle, \ldots \rangle, \{l_{p_1}, \ldots, \}, \{l_{p_n}, \ldots, \}, \ldots \rangle, \ldots \rangle, \ldots \rangle, l_{p_1}\rangle\]

In CN, the first set of sets contains sets of labels, each set for one of the properties one individual in \(I'\) (in (9)) has. The following set gives labels designating that same individual. There is one such pair of a set of sets of labels and a set of labels for each individual in \(I'\). The set of such pairs is followed by an analogously structured
As mentioned earlier, individuals are here replaced by their characterizations for greater informativeness.

Basic CNs fall short, as already indicated, of being representations of what one would call lexical knowledge, at least in the case of a fluent speaker. They not only lack the required richness of information though, but their various sets of labels are also entirely unstructured. All labels are treated equally. It is however characteristic of lexical knowledge that some correlations between expressions are more generally relevant and also more resistant to modification than others. Most properties are more loosely attached to cats than the property of being animals, and about a nit it is more important to know that he is stupid or acts thoughtlessly than that the expression may be employed derogatorily or jocularly. Such weighting of correlations can however not yet be present on the level of basic CNs. It requires wider experience with the use of an expression. I shall not discuss these processes of weighting in this paper (an excellent proposal is made in Rieger 1981) and will only, in order to be able to refer to the distinction, introduce a term for richer CNs whose sets of labels are structured according to their degrees of correlation. I call them stereotypes.

Stereotypes then can be regarded as representations of ordinary lexical knowledge of a fluent speaker. Thus, if someone knows what a particular property expression ‘means’, he will be able to give descriptions of typical individuals that exemplify this property and of individuals that form good contrasting cases. By the same token, he will be able to list properties he would usually expect to co-occur with the property in question (i.e. typical properties of individuals typically exemplifying it) and properties that would not ordinarily co-occur, as well as paraphrases.8

An important fact to emphasize about stereotypes, just as about CNs on earlier levels, is that they are induction products. Hence any or all of the expectations they provide may on particular occasions turn out false. They are no more than default specifications. That is, they tell us what to expect only for situations where no better, that is no more direct, source of information is available. Ordinarily we would expect, by default, that cats are four-legged. But if we actually encounter a cat with three legs or five, we are not likely to stubbornly insist on the correlation between “cat” and “has four legs” and conclude that this cannot be a cat. Rather we would ‘overwrite’ our default specification for the CM at hand by what we actually perceive and still expect the next cat to have four legs. Only if defaults are frequently overwritten or are overwritten often in the same way, then a revision of the default specification may result.9 Thus stereotypes are not clusters of necessary and sufficient

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8 Note that this is exactly the sort of information that is already present in a basic CN, except that no distinction is made there between the more or less typical.

9 Such revision will not normally require special processes of decision but will take place automatically. Stereotypes have no exceptional status of stability as compared to other CNs. They are subject to the same processes of change which basic CNs undergo each time they are employed: the addition of new and the discarding of old labels and the change of the relative weighting of the various labels, i.e. those processes that lead from basic CNs to stereotypes.
conditions. They just tell us what we may reasonably expect partially specified situations or things to be like, on the basis of previous experience with similar things or situations.

5. Using stereotypes

The CM we looked at above, CM₁ (as given under (5)), is a minimal CM. It contains no stereotypical lexical information but only information that could be extracted from the utterance by purely grammatical means. Since meanwhile we know a little more about stereotypical lexical information and its form of representation, we can now take a closer look at how stereotypes function in interpretation processes.

Suppose an utterance of

(10) Fred left.

is interpreted with respect to a CM preceding the utterance that contains already an individual labelled “Fred”. What must be added to this CM then is the information we get from the label “to leave”. In our first example we added just a minimal representation, consisting of the label itself and the individual that exemplifies the corresponding property. But now we can add our stereotypical representation attached to the label “to leave”.

However, we face the same difficulties as before with the CN of a square: the stereotype describes the property by means of default specifications derived from previous experience with the use of the label. Hence there is no assurance that these specifications will also fit, without modification, the particular CM with respect to which (10) is being interpreted. In fact, in all likelihood the stereotype will not fit, just as the notion of a square that was developed on the basis of the examples in Figure 2 did not immediately fit the situation given by Figure 3. And also now we have to fall back on the same principles of similarity and contrast in order to fit the stereotype to the CM at hand.

Suppose the context of application is specified in the CM preceding the utterance of (10) roughly as follows (we give the specification here just verbally to avoid unnecessary formalism. The reader knows from the earlier explanations and examples how this verbal specification can, in principle, be translated into the CM format, and nothing is gained by repeating this exercise each time we speak of a particular CM):

For several months Jane and Fred have lived together, and for several months there has been trouble. Fred threatened repeatedly to move out and break up the relationship. Then, one morning, without any immediate reason, he decided that Jane just was not the right person for him to live with. Fred left.

Apart from this CM, or rather a CM built on the basis of this text, we also have a stereotype with the label “to leave”, which contains two sets of characterizations of individuals, one for individuals instantiating the stereotype, and one for individuals not exemplifying that property. These characterizations consist of a pair of sets of labels for each such individual: one set giving labels of properties of the individual and the other a label designating the individual. All properties of the exemplifying individuals thus are properties that usually co-occur with the property exemplified: here the property of leaving. An interpretation of the expression “left” in (10) would thus consist in adding all those properties, that is the corresponding labels, to the characterization of Fred in the CM. But, as I have indicated, such a simple procedure would be too rough. For instance, among the individuals exemplifying “to leave” there may be a train, and some of the co-occurring labels in this case may be “to whistle”,” to

10 This is a simplification. As already indicated, we are not concerned with sets but with hierarchically structured sets.
“to puff”, “to let steam off”, etc., which we surely would not want to associate with Fred. Nor would we be too interested in properties associated with birds leaving for the South in autumn, the hotel guest leaving his hotel, or the woman who leaves her job. If we were to take up all the properties of these individuals indiscriminately, 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 had only stayed for the few nights typical of a stay in a hotel, or that he left because he found a better job and now works somewhere else. And such expectations would only be natural in the respective cases of the birds, the hotel guest, or the woman who quitted her job. But it is exactly this kind of interconnection between labels that we need in order to supplement the understanding of “to leave” in the case of Fred. Only, 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 that individual exemplifying “to leave” in the stereotype whose characterization shows the greatest overlap with the characterization of Fred we have already got. This overlap can be measured, although this may require access to other stereotypes again. Once a best fitting individual has been found, its properties can, in principle, be assumed to be properties also of Fred, except, of course, for properties that are counterindicated by explicit entries that are already in the CM. Suppose the stereotypical partner leavers in our experience, and thus in our stereotype, leave in the course of or immediately after a row. Now, this piece of information cannot be added to our CM as information about Fred, because we already have an entry that contradicts it. – Also the discovery of such contradictions may be an intricate process and may involve access to other stereotypes.

The resulting addition of labels from the stereotype to the CM characterization of “to leave” and of Fred then yields, together with what is already represented in the CM, the complete contextual interpretation of the utterance “Fred left”.

Note that there is no one identifiable part of the CM that could now be called the ‘meaning’ or interpretation of that utterance. We could not even say that the interpretation of the utterance is identical to the difference between the CM before and after the processing of the utterance. Fred was already represented before the utterance was processed and thus would not occur in the difference between the two CMs, and one would probably want to hold that Fred, in one form or the other, should form part of the interpretation of the utterance of (10). What I propose is in fact that we should give up the notion of the meaning or interpretation of a sentence or utterance as an identifiable unit or thing. We are concerned with a number of processes regarding CMs, stereotypes, and utterances that may lead to very different results for one and the same utterance, and no part of a resulting CM can be specifically attributed to the influence of the utterance rather than a particular stereotype or a preceding CM. ‘Meaning’ in our model then is not only procedural but also ‘holistic’. It is holistic, as it were, to the extent of self-sacrifice: ‘meaning’ as such disappears entirely and, as it would seem, without loss.

What comes closest to traditional notions of meaning in the present model, though only on the level of non-composite expressions, are stereotypes on the one hand and CNs on the other. We can always extract the specific interpretation a particular label receives in a CM by extracting its CN from the CM. We could, after the interpretation of (10), compose a CN for the label “to leave”. This CN would however be highly parochial; it would include all of the specific situational features and a full characterization of Fred as the exemplifying individual. Since holism knows of no privacy restrictions, this CN of “to leave” will also contain information on Fred’s hat-size, his complete medical record, and the sum in his bank account, if such information is present in the CM. Clearly then, CNs are a far cry from what one would expect of word meaning. And still, together with the stereotypes that are constructed on their
basis, they do everything for us we could ever expect of word meanings. Stereotypes, this much will be clear from earlier remarks, are of course equally far removed from traditional conceptions of word meaning. They only provide us with default specifications.

The fact that communication by linguistic means is possible, without ‘meanings’ and without deterministic sets of rules, is now clearly seen as depending on the exposure of speakers to a reasonably uniform background of linguistic experience plus a reasonably uniform judgement on similarity relations. Both conditions are naturally fulfilled within a linguistic community on grounds of a tight network of social and cooperative relations among individuals and groups of individuals and not merely on grounds of communication relations.\textsuperscript{11}

6. Metaphor

Consider the following example of a metaphorical utterance:

\begin{enumerate}
\item[(11)] Fred is an old woman.
\end{enumerate}

and compare it to the earlier case of Fred left. It would seem that there is no difference in principle with respect to either the procedures of interpretation or the material they employ. If also (11) is interpreted with respect to a CM that already contains a representation of Fred, then, in a first step of interpreting (11), the stereotype for the expression “to be an old woman” would be called up and would be scanned for the instantiating individual that has the greatest overlap in specifications with Fred. As far as they are not counter indicated, the properties of that individual would then be added to the CM representation of Fred. Since Fred is already represented in the CM as male, any property of being female is counterindicated; if he is represented as young, the property of being old would also be counterindicated. What remains will presumably be stereotypical properties of old women, which may be further modified, depending on other specifications of Fred we already have in the CM, so that it looks as though something like the intended reading of (11) may result. Obviously, this interpretation is achieved more easily if the stereotype of the property of being an old woman already contains cases of earlier metaphorical use of the label, and in that case also the central ones of the intended properties will be singled out more sharply. Dead metaphors are more determinate than young ones. But there is no need for any preceding metaphorical use of the label. In any case, the procedures of interpretation are the same as we saw in the case of the label “to leave”.

If, then, there is indeed no difference between the interpretation of literal and metaphorical discourse, at least as far as we can determine from the sketch we have given, it looks as though we may be in trouble. But we can also turn the tables and say that it is the distinction between literalness and metaphor that is in trouble. Before we try to solve this difficulty, however, let us see what the distinction between the metaphorical and the literal is supposed to be.

First of all, there seems to be a reasonably clear intuition of native speakers as to which uses of an expression are literal and which are metaphorical. Surely there are borderline cases that are difficult to decide, particularly with regard to dead metaphors. But as long as there are clear cases we have at least something to investigate. With respect to those cases we can ask

\textsuperscript{11} In this paper I have kept out of the discussion all influences of social interaction on the processes of comprehension. At some points, this has been done by formulations that remain somewhat unspecific and at other points an actual extension of the proposed model of communication would be required. The basic form the extension takes is that of constructing the process of a person A understanding an utterance of a person B as the process of A reconstructing the CM of B as a part of A’s own current CM.
ourselves how that intuitively felt difference could be explicated. And this is what theories of metaphor have tried to do.

One common thread that runs through most theories of metaphor is the notion that, as Goodman put it, metaphor is a “calculated category mistake”: that it contradicts, when interpreted literally, some essential characteristic of the object of which the metaphorical predicate is asserted (if we concentrate on the case of metaphorical predicates). But what is ‘essential’? A straightforward traditional philosophical answer would be that those properties are essential properties of an object whose assertion yields analytic truths. In the case above, that the man Fred is not a woman. Or in the case of Goodman’s example “This painting is sad”, that paintings are not sentient beings. On the approach we have been suggesting, there is of course no straightforward explication of either the notion of essence or analyticity. What we could construct would be an approximation: we could say that a predication is the more metaphorical, the better the contradicted property is entrenched in the stereotype of the object of which the predication is made. And entrenchment may here be taken to mean that the property in question is one that never or hardly ever had to be overwritten in past experience of the application of the stereotype in question. But this is clearly a matter of degree and the resulting notion of metaphor would be a graded notion. One source of a strong entrenchment of a property in a stereotype is the contrast between different stereotypes. If a bachelor lacks the property of having never been married, why should one call him a ‘bachelor’ rather than simply a ‘man’? For most cases this is the property that would distinguish the various Contextual Notions under the labels “bachelor” and “man”. – But then, and here lies the raison d’être for metaphor, sometimes we want to point out a particular cluster of properties of a particular object, a cluster that has, as such, no label in our language but is present in a particular stereotype on some subordinate level whereas the top layer of properties in that stereotype, the well entrenched ones, are not applicable and even counterindicated for the object we are talking about. As long as it is clear which properties are the counterindicated ones, no confusion can arise and metaphor is the appropriate means. If we all know that Fred is married and I describe him as a “bachelor” rather than simply as a “man” the only possible reason for this can be that I want to point out a cluster of Fred’s properties that is most conveniently found in the bachelor stereotype. And if we all know that “Fred” is being used to refer to a young man, I may say “Fred is an old woman” and the ordinary mechanisms of interpretation will sort out the intended cluster of properties, leaving no doubt about the age and sex of the man. – However, a sharp distinction between the literal and the metaphorical is not forthcoming along these lines, at least not in any absolute sense. It may turn out from empirical investigation though, once we are able to model the relevant processes of interpretation and stereotype formation on a large scale, that a clear distinction between a top layer of well entrenched properties and subordinate levels of more loosely attached properties within a stereotype is possible. Perhaps this will also be a matter of an elaborate hierarchy. But for the moment, and from a theoretical point of view, no such distinction can be drawn. This is where even the best methods of speculation leave off and large scale empirical investigation must take over.

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13 Goodman would of course not speak of ‘essential’ characteristics. And also for the present approach, this is only a temporary shorthand expression that will be replaced by something more comprehensible.

14 Although this may be a reasonable way of reconstructing metaphor, it is not a way of reconstructing analyticity. A graded notion of analyticity would not be helpful for any of traditional tasks this notion has been assigned.
7. Holistic semantics

To conclude, let me point out some of the features of the above approach that are of importance and that may not have received sufficient attention.

My main contention is that metaphor is nothing out of the ordinary but that the mechanisms that help us produce and understand metaphors must already be there in ordinary communication. This claim is a natural result of an approach to linguistic communication which, like the present approach, makes a serious attempt to get by without powerful and poorly understood abstractions. We are then forced to consider seriously the concrete circumstances of linguistic communication, that is context. This means in the first instance not to eliminate context as is usually done in current semantic theory, where it is seen as a set of parameters that influence the determination of abstract values (propositions, contents, etc.) of equally abstract and equally poorly understood functions (intensions, characters, meanings, etc.). In the above approach, I have turned the tables: context is no longer a parameter that influences the interpretation of utterances, but utterances are one set of parameters that influence our understanding of contexts, that is, they contribute to a more general cognitive dynamics. On this view it becomes crucial to investigate the mechanisms that take us from one context to the other, as it were, among them those mechanisms that also underlie metaphor.

What is left in terms of not immediately context dependent machinery is a network of representations of features of past linguistic (and other) experience. Each linguistic expression is linked in this network to all other linguistic expressions, even though the links are very indirect ones in most cases. It is these links however that give the expression its significance or, if you wish, meaningfulness. They allow us to integrate what we hear, read, or otherwise perceive into a larger framework of cross connections, to relate it to other representations, to draw inferences, to have expectations. The implicit claim is that this network is changed, however minutely, by each new perception. What we are proposing then is a holistic account of meaning (and no reification of meaning, no objects called ‘meanings’).

One of the problems with holistic accounts often is that they cannot account for how the system can be entered by the child, or by any learner for that matter. In the present approach, basic CNs provide us with these facilities. An expression that is supported only by a basic CN has only very little ‘meaning’ and is tied entirely to its context of origin. But it can gather more meaning, can be linked up to other expressions, in the course of the development of the basis CN into a stereotype, that is in the ordinary processes of further use. Basic CNs are built in response to what Quine (1960) called ‘observation sentences’, sentences whose entire meaning is their ‘stimulus meaning’. – A holistic account of meaning without such entrance points is doomed to fall back into old mistakes and will eventually have to borrow meaning from heaven because there is no way of constructing it from earthly experience.

A point of worry is that my present account drives the dynamics of meaning to an extreme. There is no anchoring ground for the floating system of linguistic and factual knowledge except in sensual experience and social interaction. But since both depend themselves on the evolving network of the system, this is an anchor in drifting sand. Something more powerful seems to be needed in order to ensure that the systems of different individuals do not drift apart too far and thus make communication hard or impossible. Closely interwoven structures of social interaction and a corresponding largely shared social world may on their own be insufficient and quite possibly the ‘brute force’ of social norms must here be allocated a role. Bartsch (1982 and references there) has stressed this role of norms, and Putnam (1983) has taken a similar stand by attributing a social existence to those elements of meaning he calls...
stereotypes and which he had originally introduced (in Putnam, 1975) on the level of the individual. More work on this issue is still required. But we must be on our guard not to drift into a reification of these norms, not even in the form of stereotypes. If we did, we would give away all we gained by the dynamics on the individual level. What still needs to be understood is the special role of this super-individual level of norms as both resting on the dynamics of the individual level and as slowing down too rapid changes on that level.

**Bibliography**


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15 Putnam’s notion of stereotypes is not quite the same as mine. A Putnam stereotype may be regarded as the top level as it were, the best entrenched labels, of a stereotype in my sense.