



level is based on matching the type (M-concept) onto a corresponding token (I-concept<sub>loc</sub>) - as indicated by the dotted line.

The internal matching is based on the three levels of (i) the analyzed surface (syntax), (ii) the meaning<sub>1</sub> (semantics), and (iii) the context. These form a functional (2+1) level structure. The two top levels of syntax and semantics are joined as the '2' in the (2+1) schema, because the mechanism of natural language communication requires a fixed connection between analyzed surfaces and their meaning<sub>1</sub>. The internal matching of natural language pragmatics, on the other hand, is a flexible matching procedure between the level of semantics (ii) and the level of context (iii), whereby the context is represented by the '1' of the (2+1) schema.

In a robot, the fixed connections between the analyzed surfaces and their meaning<sub>1</sub> are established by the designer using a programming language. In humans the analogous connections are established by means of *conventions*, which each speaker-hearer has to learn (in accordance with de Saussure's first law).

The speaker-hearer may use (the tokens of) the same sign to refer to ever new objects in ever varying situations. Assume that two people land on Mars for the first time and both see a rock shaped like a mushroom. If one says *Look, a Mars mushroom!*, the other will understand.

This situation provides no occasion to establish - prior to the utterance - an external relation of reference between the spontaneous ad hoc expression *Mars mushroom* and the intended referent. Thus, any attempt to explain successful reference in terms of an external relation between the signs and the referential objects is unrealistic.

The successful reference of the expression *Mars mushroom* is based instead on the analyzed word forms *Mars* and *mushroom*, available to the speaker and the hearer as predefined, internal linguistic entities consisting of a surface, a category, and a minimal meaning<sub>1</sub> (analogous to analysis of the word form *square* in 2.1). Furthermore, their context must (i) indicate where they presently are, and (ii) represent the same characteristic rock formation in their respective fields of vision.

### 3 Literal and nonliteral use

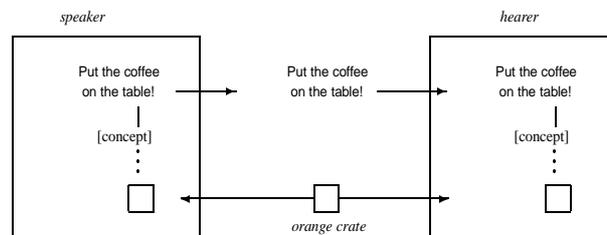
The analogy between an external tool, like a screw driver, and a cognitive tool, like the word *table*, also shows up in the possibility of their respective literal and nonliteral uses. While the 'literal use' of a screw driver consists in the fastening and unfastening of screws, there is also an open multitude of 'nonliteral uses,' such as punching holes into juice cans, use as a door stop, as a letter weight, etc. Because these nonliteral uses depend on the momentary purpose of the user and the properties of the current context of use, it is impossible to provide a

valid enumeration<sup>2</sup> of all the possible uses (i.e., all the different possible instances of the *speaker meaning*<sub>2</sub> of a screw driver.

Instead, the user infers the most effective application of the tool in each new context of use and for each new purpose via general principles of pragmatics. These refer to (i) the structure of the tool with its known shape and properties of material (constituting the screwdriver's *literal meaning*<sub>1</sub>, and (ii) the current properties of the object to be worked on (constituting the 'context of use').

It is similar with a word like *table*, which may be used not only to refer to prototypical tables. Assume that B is in a room never seen before, in the middle of which there is an orange crate. If A says to B *Put the coffee on the table!*, B will understand that *table* refers to the orange crate. Given this limited context of use, the minimal meaning<sub>1</sub> of the word *table* best fits the structure of the orange crate (*best match*).

### 3.1 NONLITERAL USE OF THE WORD table



However, if a prototypical table were placed next to the orange crate, B would interpret the sentence differently, putting the coffee not on the orange crate, but on the table.

This is not caused by a change in the meaning<sub>1</sub> of the word *table*, but by the fact that the context of use has changed, providing an additional candidate for best match. This example shows that the respective properties of the current context of use contribute in a major way to the success of reference by means of the meaning<sub>1</sub> of a sign.

## 4 Finding the correct subcontext of interpretation

The subcontext can only be put into effect if it is properly delimited. This is because the principle of best match can only work if the selection of possible candidates is restricted. This leads to a central question of linguistic pragmatics.

How does the speaker code the delimitations of the subcontext into the sign, and how can the hearer correctly infer these delimitations?

2. This is a problem for the speech act theory of Austin, Grice, and Searle.

Because the internal database of a speaker-hearer comprises all the information accumulated in the course of a life time, each interpretation of language requires correctly finding a small, delimited subcontext of use in a huge database.

The hearer's selection of the correct context of use will now be demonstrated with the example of a postcard -- a complex language sign where the places of origin and of interpretation are usually far apart in time and space. The postcard is read by the 'hearer' Heather on a beach in New Zealand on a hot day in February 1999. It shows the statue of liberty on one side, and the following text on the other:

#### 4.1 POSTCARD EXAMPLE

New York, December 1, 1998

Dear Heather,  
 Your dog is doing fine. The weather is very cold. In the morning he played in the snow. Then he ate a bone. Right now I am sitting in the kitchen. Fido is here, too. The fuzzleball hissed at him again. We miss you.

Love,  
 Spencer

Like all human artifacts, the postcard (as a hand-written sign) has a point of origin. In signs, this point is defined by the following parameters:

#### 4.2 PARAMETERS OF ORIGIN OF SIGNS (STAR-POINT)

1. S = the **S**patial place of origin
2. T = the **T**emporal moment of origin
3. A = the **A**uthor
4. R = the intended **R**ecipient.

The parameters S, T, A, and R have their values defined automatically during production and constitute the STAR-point of a sign. All meaningful utterances have their unique STAR-point,<sup>3</sup> which is a necessary property of sign *tokens*.

Apart from of origin of a sign, there are the parameters of its interpretation. The latter are called ST-points, because they consist of (1) a spatial location S and (2) a moment of time T. Just as the STAR-point is fixed automatically by the origin, an ST-point is defined whenever a sign is interpreted.

While the STAR-point is unique for any given sign (token) and defined once and for all, the number of its possible ST-points is open. For example, a postcard

3. The word 'point' in STAR-point may be interpreted rather loosely. Even in spoken language, the temporal origin is strictly speaking an interval rather than a point. In writing, this interval may be considerable length.

which is lost in the mail may not have any ST-point at all, whereas a letter published in the *New York Times* will have many ST-points.

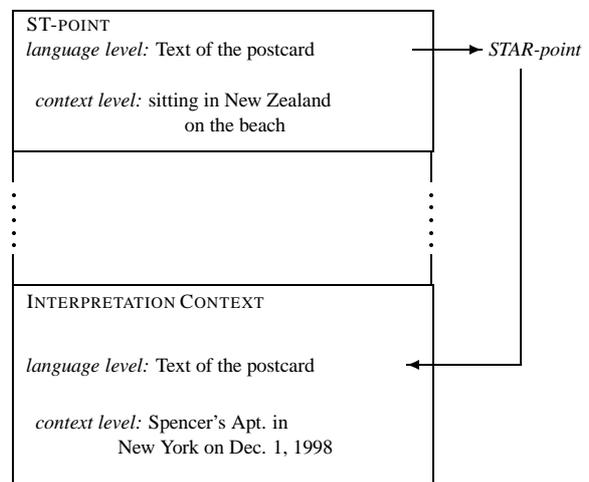
The ST-point is known to each single hearer/reader: it equals his or her current circumstances. Yet the correct interpretation of a sign depends mostly on the knowledge of its STAR-point, which may be difficult to infer. Consider a clay tablet found in an archaeological dig in Mesopotamia. The ST-points of the various interpretation attempts by various scientists make no difference as to what the tablet really means. What is crucial are the place of origin (S), the correct dynasty (T), the writer (A), and the addressee (R) of the clay tablet.<sup>4</sup>

Only face-to-face communication provides the hearer with the STAR-point directly. For this reason, the pragmatic interpretation of natural language is especially easy there. In all other cases, the STAR-point must be inferred from the sign and the circumstances of its (token-) appearance. Signs not intended for face-to-face communication must ensure their correct contextual positioning by an explicit or implicit specification of their STAR-point.

The need for primary positioning is especially obvious in the case of mediated reference. This is illustrated in 4.3, which schematically depicts Heather's interpretation of Spencer's postcard.

#### 4.3 PRIMARY POSITIONING IN TERMS OF THE STAR-POINT

Heather's cognitive representation:



4. The importance of the STAR-point is also shown by the question of whether the tablet is real or fake. While the glyphs remain unaffected by this question, the different hypotheses regarding authenticity lead to vastly different interpretations. Another example is an anonymous letter, whose threatening quality derives in large part from the fact that it specifies the recipient R without revealing the author A.

Heather's current situation is stored at the ST-point: sitting on the beach, she is looking at the postcard. The signs of the postcard, however, are not matched onto the subcontext of the ST-point, but rather onto a subcontext determined by the STAR-point.

Accordingly, Heather does not object to the statement the weather is very cold by pointing to the hot New Zealand summer. Based on the STAR-point, she knows that the words of the postcard refer to New York in winter.

Similarly, when the nosy landlady secretly reads Spencer's postcard, she is not surprised by *Your dog is doing fine*, even though she has no dog. Based on the STAR-point, she knows full well that the words of the postcard refer to Heather's dog.

The function of the STAR-point is twofold. On the one hand, it regulates the reference to data structures already present (as in the case of Heather). On the other hand, it is the basis for integrating new information so that it may be retrieved correctly on later occasions (as in the case of the landlady, but also in the case of Heather).

Thus, the landlady may smile knowingly when Heather later announces an impending visit from New York. This knowledge is based not only on the text of the postcard, but also in large part on the explicitly specified STAR-point, which allows the landlady to put the content into a correct general context.

Signs which do not provide their STAR-point explicitly and completely, as in an undated and unsigned letter, require at least a *hypothesis* of the likely STAR-point for their interpretation. This is necessary, because the STAR-point provides the primary positioning of the sign relative to the subcontext of interpretation.

## 5 Literal meaning, context, and speaker meaning

The SLIM theory of language distinguishes three mechanisms of reference, namely those of the sign types symbol, index, and name. Symbolic reference is based on

- minimal meaning<sub>1</sub> structure of symbols (M-concepts, cf. 2.1) and
- the limited selection of compatible referential objects available in the subcontext provided by the STAR-point.

Consider for example the word *table*. The multitude of different possible referents, e.g., dining room tables, kitchen tables, garden tables, writing tables, picnic tables, operating tables, drawing tables, etc., of various brands, sizes, colors, locations, etc., is not part of the meaning<sub>1</sub> of this word. The referents arise only at the level of the internal context, whereby, e.g., different kinds of tables are distributed over the subcontexts of the cognitive agent in accordance with previous and current experience as well as language-based information.

Yet a minimal meaning structure of the word *table* is sufficient to refer properly to any of these different kinds

of referents, provided that the subcontext is sufficiently limited. Furthermore, the speaker may differentiate the meaning structure of the referring expression to any degree deemed necessary by syntactico-semantically integrating more symbolic content into the sign, e.g. *the table, the garden table, the green garden table, the small green garden table, the round small green garden table, the round small green garden table near the pool*, etc.

Accordingly, reference with a symbol will not fully succeed, if the activated subcontext contains several similar candidates, e.g., several prototypical tables, and the speaker fails to provide additional symbolic characterization or a pointing gesture to single out the one intended. Conversely, if the activated subcontext is sufficiently delimited, a symbol may refer successfully even to a nonstandard referent, as in the metaphoric reference of the word *table* to an orange crate.

## 6 Non-literal uses

In the speakers' cognition, a subset of the M-concepts is attached to a finite number of words (symbols). Thus, some of the M-concepts serve two functions: (i) They serve in the construction of the internal context by deriving I-concepts from perception parameters, and (ii) they serve as the meaning<sub>1</sub> of a certain sign type. The speaker's problem of expressing her or his feelings, of describing observations, etc., consists in finding the right meanings<sub>1</sub> to accurately depict the subcontext to be described.

The speaker is like a craftsman with the task of depicting a subtle landscape in a mosaic consisting of equal-sized tiles with only five colors. While the colors on the tiles are a subset of the colors of the landscape, the M-concepts of the language symbols are abstract types for the concept-tokens of the context (cf. 2.1). The important property common to the tile colors and the meaning<sub>1</sub> of symbols is that

1. they are attached to small external objects (tiles, words) which can be easily manipulated and combined into complex structures, while the landscape and the subcontext are an immovable given, and
2. they impose a simplification on the most elementary level of representation by making available only a comparatively limited set of color or concept values.

The craftsman and the speaker are alike in that they use objects given in advance and in a limited variety to encode highly differentiated internal structures (perception, subcontext) as best they can.

After laying out the general structure of the landscape, the craftsman can use his limited range of tiles in several basic ways. Given a particular spot in the mosaic, he can pick a tile with a color closest to the corresponding spot in the landscape. If the color of this tile and the spot in

the landscape are the same for all practical purposes, he uses the tile in a precise literal manner. If they correspond only roughly, he uses the tile in a vague literal manner.

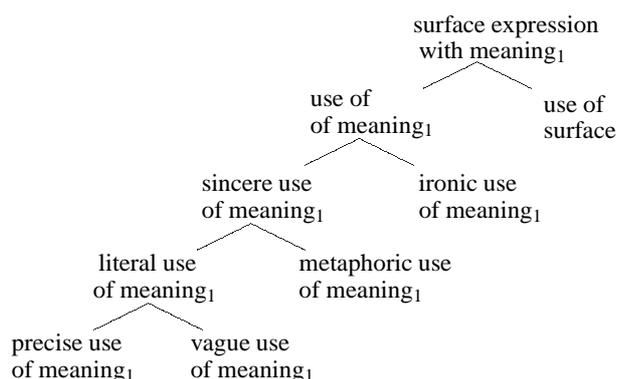
Given the inherent limitations in his set of tiles, the craftsman will not get far in the attempt to depict the whole landscape literally in his mosaic. There are just too many colors in the landscape for which there are no corresponding tiles. Thus, the craftsman has to use his tiles creatively. Given the dark green of the fir trees, for example, he might prefer to represent them with the blue tiles rather than the green ones. The reason is that the blue tiles have a particular hue (second-order property) present also in the color of the fir trees, but lacking in the green tiles. The choice of the blue tiles to represent the color of the fir trees would be an instance of metaphoric use. According to hierarchy of language uses 6.1 this would be a non-literal, but sincere use.

After a while, the craftsman may not find any of the tiles suitable for a spot in his mosaic, or he might be fed up with trying to find something fitting, or he might just think that the mosaic needs a bit of livening up. Being a good craftsman, he will not p

ick just a random tile, but choose one that establishes an obvious contrast to what one would expect at this particular point in the mosaic. This may be classified as an instance of ironic use.

In linguistic pragmatics there is an additional type of use, called “mentioning,” i.e., the use of the *surface* of a symbol rather than its meaning, as in ‘table’ has five letters. The different types of use in the pragmatics of language may be represented in the following hierarchy of uses.<sup>5</sup>

### 6.1 THE HIERARCHY OF LANGUAGE USES



The speaker’s non-literal use of symbols, including metaphoric use, fills a genuine need to overcome the inherent limitations of a finite set of word meanings for representing an unlimited variety of different referents.

5. See Hausser 1989, p. 284.

The hearer’s interpretation of these different types of use is based on the sign’s being anchored in a restricted subcontext via its STAR-point, which limits the number of potential referents.

Thus, metaphor is not only a rhetorical device---used as an ornament that could be replaced by equivalent literal terms if the speaker chose to do so (Aristotle’s substitution theory). Given that non-literal uses are a normal aspect of internal matching pragmatics based on the principle of best match, metaphoric uses serve both, rhetorical purposes, such as style, brevity, etc., and a profound need to expand the expressive power of the language. This position on metaphor is perhaps closest to Black’s (1979) “interaction theory.”<sup>6</sup>

### References

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Lakoff, G., and M. Johnson (1980) *Metaphors we Live by*, The University of Chicago Press, Chicago and London.

6. Lakoff and Johnson (1980) adopt a Gricean approach and fail to recognize the crucial role of literal meaning in the interpretation of metaphoric uses. On page 12, they present the example Please sit in the apple juice seat and continue: “In isolation this sentence has no meaning at all, since the expression ‘apple juice seat’ is not a conventional way of referring to any kind of object.” Yet without a meaning I there is no way to explain why the seat referred to happens to be the one with the apple juice setting.