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# Perzeptive Linguistik: Phonetik, Semantik, Varietäten



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# SEMANTICS AND PERCEPTION

A round-up of key areas of interest  
and a plea against the separation of linguistic meaning from  
encyclopedic knowledge

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## 1. INTRODUCTION

The idea that linguistic meanings can, to put it as generally as possible, be related to perception and to basic perceptual principles has been a cornerstone of cognitive-linguistic approaches to language. According to such approaches, the processing of linguistic meanings is considered as a form of perspectival conceptualization (JOHNSON 1987, LAKOFF 1987, GEERAERTS / CUYCKENS 2007a: 5) which closely interacts with the basic abilities of perception and attention allocation as well as higher-order cognitive abilities such as categorization and reasoning. A corollary of this position is that it is impossible to separate linguistic meaning proper from conceptual encyclopedic knowledge about the world. In contrast, linguists who keep up the autonomy postulate and consider language as an abstract symbolic system which stands apart from other modules of cognition will advocate a non-encyclopedic view of linguistic meaning and favour a clear separation of linguistic meaning, on the one hand, and conceptualization including perception, on the other (cf. e. g. LÖBNER 2002: 201–205). I do not pretend to be an impartial observer in this debate, as I am on record as a supporter of the cognitive-linguistic position (cf. UNGERER / SCHMID 2006: 34–43 *et passim*).

This paper will first survey selected linguistic areas in which it promises to be fruitful to regard lexical and grammatical meanings as being related to, motivated by or even actually based on perception and attention. The arrangement of these areas proceeds from domains where an influence of perception seems very plausible, for example spatial expressions (see GÜNTHER, this volume), and leads to linguistic levels that are more controversial in this respect, including syntactic categories and structures. At the end of this paper, the issues discussed will be related to the long-standing controversy over whether or not linguistic meaning can and must be separated from perception-based encyclopedic knowledge.

The relation between semantics and perception will be investigated from only one perspective here: the potential motivations and foundations of linguistic meaning in perception. The complementary perspective highlighting the „Whorfian“ question of whether linguistic structures and meanings guide and determine the way we perceive the world will not be dealt with. A final introductory note on

terminology: from a processing point of view, perception, as a lower-level, unconscious and modality-specific pre-cognitive process, can be distinguished from conceptualization, a higher-level conscious cognitive ability. From a phenomenological perspective, however, this separation essentially does not play a role, especially in light of recent experimental evidence which suggests that conceptual knowledge may already play a role in the early, unconscious stages of visual perception (POTTER 2012, cf. also CAHEN / TAZZA 2013). Therefore, following the practice of TALMY (2000/I: 139–144), I will not draw a neat line between perception and conceptualization in this paper.

## 2. SPATIAL EXPRESSIONS, PREPOSITIONS AND IMAGE-SCHEMAS

In online language use, speakers use deictic expressions to instruct hearers to search for targets of reference in a real or imagined four-dimensional space-time configuration. The encoding and decoding processes involved in this depend, admittedly in a rather trivial way, on the participants' perception of the given speech situation. Deictic items such as *this*, *that*, *here*, *there*, *on the left of X* or *above X* can count as uncontroversial examples of expressions whose communicative impact depends on sensory perceptual information garnered from the *Zeigfeld*.

What is less trivial is the question of the extent to which the context-independent, i. e. semantic rather than pragmatic, meaning components of spatial expressions can be claimed to be motivated by perceptual principles and processes. The cognitive-linguistic literature assigns a central role to the notion of *image-schema* in answering this question (e. g. JOHNSON 1987, HAMPE / GRADY 2005, OAKLEY 2007). According to JOHNSON, image schemas are recurrent patterns based on „our actions, perceptions, and conceptions“, which „emerge as meaningful structures for us chiefly at the level of our bodily movements through space, our manipulation of objects, and our perceptual interactions“ (JOHNSON 1987: 29). They thus „behave as ‘distillers’ of spatial and temporal experiences“ (OAKLEY 2007: 215). From the observation of myriads of situations where objects are in, under, over or next to other objects, and of situations where objects move into, under, over, out of or next to other objects, humans extract schematic representations of spatial and orientational configurations of objects. These configurations are usually described in terms of a variant of the fundamental figure-ground principle of perception (RUBIN 1921, see Section 7 below for more details), i. e. as a relation between a *figure* or *trajectory* and a *ground* or *landmark* (UNGERER / SCHMID 2006: 163–174). The basic spatial meanings of the corresponding spatial prepositions, particles and prefixes, e. g. *in*, *under*, *over*, *into*, *out of*, *next to*, are considered to be motivated by this rich perceptual experience. Indeed, recent experimental research by ROTH / FRANCONERI (2012) indicates that the figure-ground asymmetry typically found in spatial language is also present in perceptual representations.

The basic senses of perception-based spatial particles also serve as sources for metaphorical and metonymic extensions to structure nonphysical, nontactile, and

nonvisual experiences (JOHNSON 1987, ROHRER 2007: 35). We fall *in* love, for example, can be *under* someone's spell, run *into* problems, try to *overcome* them and generally wish to stay *out of* trouble.

### 3. BASIC-LEVEL NOUNS

Like image schemas, basic-level concepts have been claimed to be „directly meaningful because they reflect the structure of our perceptual-motor experience and our capacity to form rich mental images“ (LAKOFF 1987: 372). How can this claim be justified?

Basic-level categories are encoded by basic-level terms, typically basic-level nouns, such as *table*, *dog* or *car*. These terms are special in a number of ways (cf. SCHMID 2007: 123–124 for a survey and further sources): they are acquired by children earlier than either superordinate terms (*furniture*, *animal*, *vehicle*) or subordinate terms (*kitchen table*, *poodle*, *convertible*); they are typically short, simple, monomorphemic rather than complex learned words. From a conceptual point of view, basic-level categories stand out because they strike an ideal balance between specificity and variety of conceptual content by carving up perceived reality at a level of abstraction which keeps a perfect balance between intra-categorical similarity and inter-categorical difference (SCHMID 2007: 123–124). As shown by ROSCH et al. (1976: 393–405), all these characteristics of basic-level categories are likely to have a perceptual basis. In two of the experiments reported by ROSCH and her colleagues, it was demonstrated that the members of basic-level categories share a common overall shape which contributes to the potential for Gestalt perception. While different types of tables, dogs and cars can still be recognized holistically on the basis of their shared overall appearance, this is impossible for different types of furniture, animals and vehicles. The results of a third experiment indicated that test participants were able to associate basic-level categories with a wide range of typical motor movements. For example, for the category CHAIR, movements such as „bend your knees and waist“, „turn your head and body“, „reach out with your arms“, „lower your weight“ and others were identified by the test participants. For superordinate categories, hardly any common motor movements were suggested, and most of the movements listed for subordinate categories were identical to those rendered for basic-level categories.

These three experiments strongly suggest that the distribution of visual, haptic and kinaesthetic perceptual properties plays a role in delimiting the „size“ of basic-level categories and the semantic specificity and generality of basic-level nouns. Basic-level terms seem to both reflect and provide a privileged form of experiential access to „reality“. It is in this sense that they can be said to be „directly meaningful“ (LAKOFF 1987: 372). Arguably, the special perceptual grounding of basic-level categories is a key reason why basic-level terms provide the major raw material for extensions of lexical resources by means of word-formation, metaphor and metonymy (SCHMID 1996, see also Section 5 below).

#### 4. CONCRETE ACTION VERBS AND ABSTRACT EXTENSIONS

Entities that are frequently encoded by nouns are typically marked by a perceived spatio-temporal stability. Processes, activities and events, in contrast, are ephemeral one-off happenings lacking spatio-temporal permanence. It is not unlikely that this fundamental perceptual difference has far-reaching implications with regard to the experiential grounding of lexemes denoting actions, processes and events rather than objects and organisms. While it seems intuitively plausible that we have stored an imagistic prototypical representation of dogs, tables and cars, whether or not similar perception-based representations are available for scenes of, say, eating, kicking and running, and whether these representation influence the storage and processing of related lexemes is presumably more controversial.

Selected studies may help to shed some light on this issue. GLENBERG / KASCHAK (2002) investigated effects of the understanding of sentences describing motion on actual motor movements. They asked test participants to judge the sensibility of sentences such as „close the drawer“ and „put the finger under your nose“. The target items were constructed in such a way that they expressed either motion away from the body („close the drawer“) or toward the body („open the drawer“). The researchers systematically manipulated the buttons that had to be pressed as response options. In one condition, the movement of the hand which was required to either confirm or deny the sensibility of a given sentence coincided with the movement expressed in the sentence, so that for „open the drawer“, the button to be pressed was closer to the test participant than the prescribed resting position, and for „close the drawer“ it was more distant. In the other condition, there was a clash between the movement described by the sentence and the real movement required to mark it as sensible. The dependent variable was the reading times of the sentences, operationalized as the time elapsed between the presentation of the stimulus and the moving away of the hand from the resting position. The results showed that there was a significant interaction between the response direction and the implied sentence direction: clashes between the two directions delayed reactions times compared to coinciding directions. GLENBERG / KASCHAK (2002: 558) argue that these results „support an embodied theory of meaning that relates the meaning of sentences to human action“ and „perceptual systems“.

If it is true that the semantic processing of action-denoting sentences interferes with the performing of concrete actions, what could be the neurological basis of this interference? Using the brain-imaging technique of event-related functional magnetic resonance imaging (fMRI), HAUK, JOHNSRUDE and PULVERMÜLLER (2004) collected evidence to the effect that during the semantic processing of verbs such as *kick*, *lick* or *pick*, which imply actions of specific body parts (feet, tongue and arm respectively), brain regions close to those which are responsible for the motor control of these body parts were selectively co-activated with regions typically involved in language decoding. PULVERMÜLLER (2005: 580) summarizes these findings as follows:

These results show that action words activate the cortical system for action processing in a somatotopic fashion and that this somatotopy reflects referential word meaning. However, they do not imply that all aspects of the meaning of a word are necessarily reflected in the brain activation pattern that it elicits. It seems that such cortical–semantic correspondence can be postulated for words that refer to concrete entities related to action or perception patterns. It remains to be determined whether it might be possible to read aspects of the meaning of other words, such as abstract items, from the cortex in a similar manner.

GLENBERG et al. (2008) followed up on GLENBERG / KASCHAK (2002) and addressed the question, hinted at in the final part of this quotation, of whether aspects of the meanings of abstract lexical items also have a bodily and perceptual neurological grounding. They were able to produce evidence indicating that the motor system is affected during the comprehension of both concrete meanings (*give someone a book*) and, excitingly, abstract meanings (*give someone responsibility*) of verbs.

These three studies converge to suggest that aspects of the meanings of basic concrete and, at least to some extent, also action verbs used with abstract metaphorical meanings can be brought together with aspects of our perceptual and motor control systems in our brains. In doing so, they provide strong evidence for the embodiment hypothesis, whose broadest version claims that „*human physical, cognitive, and social embodiment ground our conceptual and linguistic systems*“ (ROHRER 2007: 27, original emphasis).<sup>1</sup> A narrower earlier version of this hypothesis can be found in LAKOFF / JOHNSON’S (1980) seminal *Metaphors we live by*, where its main function is to explain the uni-directionality of metaphorical mappings from more basic, more bodily grounded source domains to more abstract target domains. It is not too surprising, therefore, that the field of metaphor and metonymy provides a further domain that promises insights into the perceptual foundations of semantics.

## 5. METAPHOR AND METONYMY: NAMING, POLYSEMY, AND LEXICAL CHANGE

To begin with, consider the field of metaphorical and metonymic compounds naming plants and artefacts. The English flower term *buttercup* is a simple but instructive example: it is an exocentric compound whose first constituent, *butter*, stands metonymically for the colour of the flower, and whose second constituent, *cup*, is a shape-based metaphor („the flower is shaped like a cup“) serving as a source for the metonymy SHAPE STANDS FOR OBJECT. Both metonymies, as well as the metaphor, are obviously based on perceptual features such as shape or size

- 1 According to BARSALOU et al. (2003: 57), the major effects of social embodiment are: „perceived social stimuli produce bodily states; (2) perceiving bodily states in others produces bodily mimicry in the self; (3) bodily states in the self produce affective states; and (4) the compatibility of bodily and cognitive states modulates performance effectiveness.“



rather than abstract semantic features such as [CAUSATIVE] or [COUNTABLE].<sup>2</sup> A wide range of flower names also illustrate this perceptual basis: *angel's trumpet* (metaphorical and metonymic: 'shrub whose blossoms are shaped like trumpets'), *bellflower* (metaphorical: 'flower shaped like a bell'), *lady's slipper* (metaphorical and metonymic: 'orchid whose blossoms are shaped like a small slipper'). Obscured perception-based figurative compounds include *dandelion* (Fr. *dent de lion* < Lat. *dens leonis*; metaphorical and metonymic: 'flower whose leaves are shaped like the tooth of a lion') and *daisy* (< Old. E. *dægesege* 'day's eye'; metaphorical and metonymic: 'flower resembling the eye in that it is open during the day and closed at night'). Perception-based figurative terms can also be found in a wide range of other domains including animals and insects (e. g. *bombardier beetle*: LIPKA 2002: 142), tools (e. g. *crowbar*), clothes (e. g. *bell skirt*) and abstract domains (e. g. *family tree*, *tree diagram*).

Secondly, perception-based basic-level as well as subordinate terms are a rich source of metaphorical and metonymic extensions of existing meanings. A stock example is the semantic extension of the lexeme *mouse* to the sense „computer device“. In many cases metaphorical extensions are based on the perception (or imagination) of whole scenes involving an entity rather than just the outer appearance of the entity itself. Consider the example of the subordinate term *crane* 'machine' < 'bird', which according to LEISI (1985: 188–189) and LIPKA (2002: 8, 142) transfers the perception of a prototypical situation „with regard to the bird's long neck and beak, joined at a particular point“ and with regard to „moving busily to-and-fro, picking up things from the ground“ (LIPKA 2002: 8). Cases of obscured polysemic extensions resulting in lexical change, all taken from BLANK (1997), include the metaphorical It. *calzone* 'folded pizza' < 'pants' and Fr. *tête* 'head' < Lat. *testa* 'pot', and the metonymic It. *bocca* 'mouth' < Lat. *bucca* 'cheek' and Fr. *cuisse* 'thigh' < Lat. *coxa* 'hip'. In all these examples, the transfer is based on perceptual properties of the denotata rather than abstract semantic features of the lexemes (see also Section 8 below).

Thirdly, the perceptual experience with our own bodies and their orientation in space is an extremely rich and productive source of metaphorical meanings. So-called orientational metaphors (LAKOFF / JOHNSON 1980: 14–21) relying on image schemas (see Section 2) are prime examples of this type: HAPPY IS UP (*I feel lifted up, he is in high spirits*), SADNESS IS DOWN (*she was feeling depressed*) CONTROL IS UP (*I have him under control*), RIGHT IS GOOD (*we are on the right track*). The container schema and metaphorical extensions based on it (*be in love, wake out of sleep*) are also likely to rely on perceptual experience of our bodies.

Fourthly, as HEINE / KUTEVA (2002), among many others, have shown, names of major body parts have been a productive source for metaphors, metonymies and other types of diachronic changes in the languages of the world. Note, however, that the possible perceptual foundations of these metaphors and metonymies can be superseded by cultural knowledge. For example, as already noticed by

2 As will be argued for in Section 8, less abstract semantic features such as [±HUMAN] or [±MALE] are ultimately based on perception and encyclopedic knowledge, too.

MALINOWSKY (1922: 428–429) and later confirmed by SENFT (1998: 88), for the Trobriand Islanders the belly is the seat of knowledge and secrets, as is reflected in idioms such as *ininaki lopogu* ‘I keep it quiet, I keep it to myself’, literally ‘it keeps something for itself, my belly’ and in the Trobriand magicians’ habit of striking their bellies when talking about their knowledge and experience.

Fifthly, verbs and adjectives denoting processes and products of perceptual sensation are among the most prominent basic experiences serving as source domains for abstract concepts. Adjectives denoting size (*big, small* etc.), temperature (*warm, hot, cold*), shape (*round*), texture (*rough, solid*), loudness (*loud, soft*), luminosity (*light, dark*), taste and smell (*sweet, bitter*) can muster large numbers of metaphorical senses and uses, as is indicated by the following collocations garnered from the British National Corpus: *warm welcome/ smile/ reception; big business/ difference/ deal/ mistake; hot pursuit/ spot/ favourite/ stuff; dark side/ matter/ secret; sweet dreams/ smile/ revenge/ heaven; soft spot/ touch/ option*.<sup>3</sup>

## 6. GRAMMATICAL CATEGORIES

An ideal starting point for talking about the relevance of perception for grammatical meaning is LANGACKER’S (1987a) well-known conception of the major word class categories. Two notions borrowed from perception lie at the heart of this proposal: different modes of *scanning* and different ways of *profiling*. The notion of scanning refers to the way in which events and scenes can be perceived and conceptualized. Two modes are distinguished by LANGACKER. In sequential scanning, the stages or phases of an event „are sequentially accessed through processing time“, which amounts to „mentally tracking an event as it unfolds through time“ (LANGACKER 2008: 111). This involves a constant comparison of changes in the observed situation, for example of the location of objects vis-à-vis a reference point or frame, from one moment in time to the next. This kind of conceptualization lends itself to a construal of an event in terms of a PROCESS. In contrast, summary scanning results in the construal of an event as a THING or REGION because the temporal stages of an event, to the extent that they differ from each other in the first place, are „mentally superimposed“ in such a way that they „form a single gestalt comparable to a multiple-exposure photograph“ (LANGACKER 2008: 111).

- 3 On a different level of description, the process of perception itself of course serves as a source for metaphors such as KNOWING IS SEEING (*I see, do you see the problem*), KNOWING IS HEARING (*have you heard about it*) and UNDERSTANDING IS GRASPING (*I don’t get it, I can’t grasp the problem*). These are not only extremely productive but also have a long-standing impact, as SWEETSER (1990) showed in her seminal diachronic study on KNOWING IS SEEING. According to her, the Present-day English words *idea, wise, wit* and *witness* can be traced back to the Indo-European root \**weid* ‘see’ through the Greek *eidon* ‘to see’ and its perfective form *oida* ‘sight, know’. Cognates in other languages include Lat. *video* ‘I see’ and *ifios* ‘knowledge’.

Importantly, any given scene can be construed and conceptualized either way, in the sequential scanning or the summary scanning mode, and this is where the notion of profiling and the definition of the major word classes come into play. Let us take a scene in which a car starts skidding on a slippery road and crashes into another car. This scene could be described equally felicitously by means of the utterances a) *There was a terrible crash involving two cars* and b) *One car crashed into another one*. The difference is that in a) the key element of the event is expressed by a noun, and in b) by a verb. According to LANGACKER, these choices of word classes profile imagined scenes in different ways. Sentence a) reflects summary scanning profiling the event as one THING-like gestalt, while sentence b) portrays it in a PROCESS-like construal as sub-events that we can imagine unfolding before our mind's eye like a movie. The sequential construal could be made even more forceful by bringing in the progressive aspect: *one car was crashing into another one*.

While LANGACKER'S accounts of Cognitive Grammar are replete with many more terms which invoke a relationship between perception and attention, on the one hand, and linguistic structure, on the other, e. g. *prominence, salience, focus, perspective* and *viewing arrangement*, the precise nature of this relationship is not quite clear. My general impression is that the status of the frequent recourse to perception and attention oscillates between two poles: a real commitment to the psychological plausibility of what is suggested (e. g. LANGACKER 2008: 14) and a less strong version which sees the analogy as a convenient descriptive tool (e. g. LANGACKER 1987b: 130).<sup>4</sup>

## 7. SYNTACTIC STRUCTURES

Notions such as *salience, prominence* and *profiling*, combined with the gestalt-psychological principle of figure-ground segregation, have also provided the raw material for attempts to link syntactic structures and their meanings to perception and attention. Such endeavours start out from sentences describing spatial configurations of objects by means of the spatial prepositions discussed in Section 2. The argument proceeds from the observation of shared tendencies in perception and linguistic structure (cf. ROTH / FRANCONERI 2012). For example, when confronted with a scene in which a bottle stands on a table in a room, it will naturally be the bottle rather than the table, let alone the floor, the walls or the ceiling of the room, that will eventually grab the viewers' attention. This means that in visual perception, the bottle will function as Figure, while the table will be perceived as a reference object or Ground and the room as background. In linguistic descriptions of this scene, the noun phrase encoding the perceptual Figure is very likely to fill a prominent role in the sentence. Typical utterances would be *there is a bottle on the table* or *the bottle is on the table*. Other equally true utterances such as

4 To the best of my knowledge, experimental evidence supporting LANGACKER'S view of word classes has not yet been produced.

*there is a table under the bottle* are certainly much less conventional in canonical contexts or seem to convey additional meanings due to the marked perspective they invoke. The perceptual principle of figure-ground segregation can thus be claimed to have a counterpart in the arrangement of syntactic structures. Linguistic material referring to salient entities that are typically perceived as Figures seems more likely to be realized syntactically in the „salient“ positions of subject and object, while less salient entities will be encoded as circumstantial participants, i. e. adverbials or modifiers.

This raises the question as to what makes an entity salient in perception, and in language. The most comprehensive and yet succinct answer to this question has been given by TALMY (2000/I: 311–344), whose whole approach is largely motivated by the aim to ground linguistic meaning in the general cognitive abilities of perception and, especially, attention. According to TALMY (2000: 315–316), entities likely to be perceived as Figures are more movable, smaller and geometrically simpler than entities perceived as Ground. While Ground entities are more immediately perceivable than Figure entities, the former are backgrounded once the latter are noticed and become more salient. Figure entities are stronger in current awareness than Ground entities and are of greater relevance and concern to the human processor. These properties explain why the sentence *the table is under the bottle* is felt to be a very marked description of a spatial configuration.

The idea that the salience of perceived entities is reflected in the structures of sentences expressing stative spatial relations can easily be transferred to sentences describing concrete scenes in which a salient AGENT uses a slightly less salient INSTRUMENT in an activity that affects another person (e. g. in the role of PATIENT, RECIPIENT or BENEFACTIVE) or an object (OBJECTIVE or THEME). In this way, FILLMORE'S (1968) deep cases are supplied with a quite natural perceptual basis, which would also provide a cognitive explanation for the apparently universal applicability of semantic roles in the syntactic description of languages. In addition, the plausibility of a perceptual basis of semantic roles and the semantic structure of clauses is driven home by the basic „case hierarchy“ (FILLMORE 1968), which regulates the mapping of semantic deep cases onto syntactic surface constituents. The fact that FILLMORE (1977: 78) later replaced his earlier term with „salience hierarchy“ shows his commitment to a perception/attention-based account of syntactic structures. As early as in 1968, FILLMORE had demonstrated his trust in the perceptual basis of linguistic meaning by his somewhat inconsistent definition of deep cases as a set of „universal, presumably innate, concepts, which identify certain types of judgements human beings are capable of making about the events that are going on around them“ (FILLMORE 1968: 24). For my part, at least, I find it difficult to reconcile the idea, presumably owed to Chomsky, that deep cases are „presumably innate“ with the claim that they „identify judgements [...] about events that are going on around“ us.

While the main concern of case grammar in the 1960s and its later reincarnations was the nucleus of clause structures, TALMY'S notion of „windowing of attention“ (2000/I: 257–309) also targets non-obligatory clause constituents. TALMY'S idea is that all clause constituents referring to portions of the path of a

Figure through space open up windows of attention on parts of a scene which would go unnoticed otherwise. For example, in the sentence *the girl was running through the garden across the orchard towards the approaching car*, the two adverbials *through the garden* and *across the orchard* direct the hearer's attention to the intermediate phases of the girl's path.

Plausible as all this may seem, it is probably true that due to the more abstract meanings of syntactic structures, the immediate effects of perception and attention are perhaps less noticeable and more difficult to prove than in the lexicon.

## 8. LINGUISTIC MEANING CANNOT BE SEPARATED FROM PERCEPTION-BASED ENCYCLOPEDIAIC KNOWLEDGE

The discussion so far has provided evidence suggesting that linguistic meaning is motivated by perception and explainable in terms of perceptual principles in a wide range of areas. To be sure, all the evidence collected here can still be interpreted as indicating nothing more than the existence of analogies between perceptual principles and descriptions of linguistic meaning on a very high level of abstraction. In fact, it can also be treated as not telling us anything about linguistic meaning at all, if one insists on claiming that linguistic meaning must be separated from both perception and conceptual knowledge (cf. e. g. LÖBNER 2002: 201–205).<sup>5</sup> However, I do not think that these interpretations are correct. The main reason is that despite all claims to the contrary there is no theoretically and methodologically sound way of separating „narrow semantic“ linguistic meaning from perception-based encyclopedic knowledge. In the remainder of this paper I would like to justify this contention.

A convenient starting point is LÖBNER'S (2002: 201–203) criticism of UNGERER / SCHMID'S (2006: 92–93) claim that the meaning of the compound *apple juice* includes encyclopedic attributes related to taste, colour and use. This claim was based on the results of so-called attribute listing tasks, in which test participants were confronted with a word and asked to write down attributes which are common to the things that can be referred to by this word (ROSCH / MERVIS 1975). Arguing that accidental perceptual properties such as taste or colour must not play a role in the description of meaning as such, LÖBNER (2002: 203) states emphatically: „The word *apple juice* means 'juice made of apples'. Period. If one knows that, one knows the meaning of the word“. While LÖBNER may well be right in this case,<sup>6</sup> his account leaves open the question of how the meanings of the con-

- 5 Recent discussions of this issue which review well-known approaches such as BIERWISCH'S two-level semantics and JACKENDOFF'S conceptual semantics include LANG / MAIENBORN (2011), BIERWISCH (2011: 340–342) and HOBBS (2011: 755–760).
- 6 For the more lexicalized compounds *newspaper* and *wheelchair* discussed by UNGERER / SCHMID (2006: 94–98), analogous simple paraphrases of the type 'paper that has news in it' and 'chair with wheels' would undoubtedly not do justice to the meanings of the compounds. It is in fact somewhat ironic that LÖBNER decided to take issue with precisely that case, viz.

stituent words *juice* and *apple*, which provide the semantic basis for the meaning of the compound, can be described. Taking *apple* as an example and applying the venerable structuralist comparative introspective method, one would presumably first come up with the feature [INANIMATE] to distinguish the meaning of *apple* from, say, *girl* or *poodle*, and with the feature [NATURAL KIND] to mark the difference to the meanings of, for example, *table* or *car*. The next likely feature, [FRUIT], is already somewhat problematic, as it simply converts a superordinate lexeme into a metalinguistic semantic component, which involves the risk of circularity. Next, we have to work out the specificities that demarcate the meaning of *apple* from that of its closest semantic neighbours, for example, *banana*, *pear* or *orange* – a notoriously difficult task (cf. ENGELBERG 2011: 129–130). The only features that could serve as distinctive features here are perceptual characteristics of apples which distinguish them from other types of fruit, such as their distinctive shape, size, taste, colour and texture, for instance [ROUND] or [RED/ GREEN/ YELLOW]. Semantic descriptions of the word *apple* will therefore either be too unspecific, if they do not go beyond the feature set [+INANIMATE, +NATURAL KIND, +FRUIT], or ultimately rely on perceptual properties of referents.

The same problem arises in all attempts to describe the meanings of concrete lexemes. Consider another natural-kind term: *gold*. Starting with the features [INANIMATE] and [NATURAL KIND] we immediately arrive at the first perception-based features, viz. [SUBSTANCE] and [METAL], which, however, do not even allow us to distinguish the meaning of *gold* from those of other metals. The area of artefact terms is not more amenable to semantic descriptions that do not take recourse to perceptual features and perception-based encyclopedic knowledge. How are we to distinguish the meanings of, for example, *car* and *bus*, *table* and *chair* or *knife* and *fork* if we are not allowed to use distinctive semantic features that rely on perceptual features and functional properties of the denotata distilled from experience? The scope of this problem is not restricted to cohyponyms in taxonomies (cf. ENGELBERG 2011: 129–130) but concerns large sections of concrete lexical items.

It is tempting to assume that abstract lexemes, which can, more or less by definition, not be based on perception, are less problematic. To the best of my knowledge, however, nobody has ever come up with a convincing narrow, i. e. non-encyclopedic semantic description of semantically complex abstract lexemes such as *boycott*, *news*, *economy*, *problem* or, for that matter, emotion terms like *love*, *happiness* or *jealousy*.<sup>7</sup> A good example that straddles the boundary between concrete artefacts and abstract ideas is the lexeme *school*, whose basic semantic meaning, or semantic form, is rendered as „SF(*school*) = λX [PURPOSE X W] with W = PROCESSES\_OF\_LEARNING\_AND\_TEACHING“ by LANG / MAIENBORN (2011:

*apple juice*, which was used by UNGERER / SCHMID to show that compositional compounds with little semantic and conceptual enrichment exist alongside more highly lexicalized ones.

- 7 Note that it is not claimed here that all abstract words are ultimately based on perception. Instead the point is that all attempts to come up with a principled distinction between linguistic semantics proper, on the one hand, and encyclopedic knowledge, on the other, are just as likely to fail for abstract words as they are for concrete ones.

718; following BIERWISCH 1983) – a clear case where a complex cultural description is converted into a semantic account of a conceptually more simple lexeme.

In sum, while it seems easy to claim that the information collected in attribute-listing task is perceptual, conceptual and cultural rather than „semantic“ – in a narrow sense – in nature, it is much more difficult, to my mind in fact simply impossible, to draw a clear line between semantic meaning and perception-based conceptual knowledge for the vast majority of simple lexemes. This implies that the idea of their being a non-conceptual, „purely“ linguistic form of lexical semantics, theoretically attractive as it may seem, must be rejected on empirical grounds. The stock examples found in the literature are either exceptional in the respect that semantic features work to some extent – as is arguably the case for [CAUSE, BECOME, NOT ALIVE] as a description of the meaning of *kill* – or they rely on perceptual and conceptual features which are transformed into distinctive semantic features (cf. [HUMAN, MALE, ADULT] for *man*). Note that this remains true no matter whether semantic features are seen as atomic semantic components actually making up the meanings of words or as theoretical constructs used as metalinguistic tools in analysis and description.

It is certainly true that many attributes that are listed by informants in attribute-listing tasks are far removed from what could be thought of as constituting meaning proper. For example, when the test stimulus *bus* was presented to participants living at the US west coast and to participants in London, „school“ and „yellow“ were among the top-ranking attributes listed by the US group, whereas „work“, „red“ and „doubledecker“ were named by the UK group. While it seems far-fetched and indeed foolhardy to interpret this as suggesting that the native speakers on the two sides of the Atlantic had different semantic representations of the lexeme *bus* stored in their mental lexicons, I do not see a way of exhaustively defining the meaning that they do share without relying on experiential conceptual knowledge of the type „used for public transport“ – an attribute which was named by the largest number of participants in both groups. This leaves us with a theoretical impasse which can only be resolved by abandoning the strict separation of meaning and concept.

Additional evidence for the role of the perceptual grounding of semantics comes from the examples of perception-based metaphors and metonymy collected in Section 5. Consider once more the case of It. *calzone* ‘folded pizza’. A narrow semantic description of the source meaning ‘pants’ would presumably consist of the widely accepted features [INANIMATE] and [ARTEFACT] and the more problematic [GARMENT], a superordinate, and [FOR LOWER PART OF THE BODY], a perception-based feature. Obviously, in the semantic transfer to the meaning ‘folded pizza’, none of these features plays a role. Instead the visual image of the folded legs of a pair of trousers gives rise to the extension of *calzone* ‘pants’ to *calzone* ‘folded pizza’.

## 9. CONCLUSION

What is the overall picture that has emerged from this selective survey? With regard to the lexicon, it has been argued that there are certain types of basic experiences which provide a particularly direct and privileged perceptual access to the world around us. These experiences motivate core components of the lexicon including spatial expressions based on image-schemas, basic-level terms denoting objects, organisms and concrete actions and events, as well as a wide range of lexical items that are based on diverse types of bodily experience. While this may not seem to be such a large section of the lexical resources of a language, it is nevertheless of unrivalled importance as these fields play a key role for figurative extensions which motivate a huge range of abstract meanings. In this way, basic perceptual experience is exploited in a second step, so to speak, in many additional fields: in orientational metaphors; in lexical extensions based on metaphor and metonymy, resulting in polysemy and lexical change; in primary and structural metaphors relying on bodily experience and orientation in space; in the meanings of emotion terms and other abstract lexemes, where the perceptual experience is combined with other types of encyclopedic knowledge. With regard to the nature of the perceptual basis of lexical semantics, general principles of perception and attention, mainly gestalt-perception, figure-ground segregation and perceptual salience seem to play a key role.

As far as syntax is concerned, it appears to be fruitful to attribute a perceptual motivation to the structures and meanings of basic argument structure configurations, especially to those that encode concrete events including agents, patients, objects and instruments, but also to more abstract types of, for example, metaphorical transfers, accomplishments or mental processes. However, the actual perceptual grounding of these areas is more controversial.

Finally, I have argued that it is impossible to draw a neat dividing line between a pure, i. e. non-perceptual and non-conceptual, linguistic semantics of lexemes *qua* parts of the linguistic system, on the one hand, and the conceptual knowledge about things, ideas and states of affairs out there in the world, which is garnered by means of perception, on the other. The few examples discussed strongly suggest that the theoretical construct of a linguistic semantics proper defies practical application and does not stand up to empirical scrutiny in the field of morphological simple lexical items, which constitute the basis for all other meaning-bearing operations in derivational morphology and syntax.

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