

On the Interaction of Meanings in Natural Languages: Compositional Rules, Context Dependence and Coercion

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ABSTRACT

We intend to concentrate on processes of interaction of lexical meanings within text and context. Based on the notion of semantic coercion, we propose to consider different types of semantic interaction of lexical meanings as a value of the compositional and/or decompositional function from text, context, and prototypical meanings of the given expression. Some formal rules for its description are suggested.

Keywords

polysemy, lexical meanings, compositional semantics, semantic coercion, context dependence

1. The issues of various types polysemy and contextual dependencies are crucial for the all of the theories and practices of NLP. We intend to concentrate on, maybe, the most interesting and ambitious aspect of the problem: how new meanings can be generated as a result of composing of the so-called ordinary meanings. For us, the theories of semantic coercion seems to be the most developed in this field. Based on this notion, we suggest to consider different types of semantic interaction of lexical meanings as a flexible process depended on various factors. The meaning of lexical item (expression) is regarded as only partially defined in vocabulary, but rather as a value of the compositional and/or decompositional function from text, context, and prototypical meanings of the given expression.

2. The semantic coercion usually is understood as a regular or irregular type-shifting in order to accommodate standard lexical meanings of some linguistic expression with its contextual environment. This concept was implemented for the semantics of formal languages and then demonstrates its efficiency for the description of semantic interactions in natural languages, esp., in the Generative Lexicon theory (Pustejovsky 1991, 1995), and Type Composition Logic (Asher 2011 (2007), 2015). Naturally, some restrictive presumptions on the nature of lexical items initially were inherited from this domain. In spite of further more flexible and inclusive developments, a room for the broader understanding of different types of the “coercion” still have been remaining.

We intend to consider the same phenomena, but from the opposite point of view – coming from poetic semantics (cf: Jakobson 1981 (1961). This provides another perspective: we shall not be obliged to postulate the existence of some

definite “well-defined” lexical meaning and then observe how it can or cannot be “felicitously” transformed; instead we presume that any lexical expression can express a potentially infinite set (as it is possible to add any new element) of different meanings.

From this point of view, coercion is not an important, but, however, marginal mechanism of accommodation of lexical entities to intentions of speakers or contextual requirements, but a general faculty to produce and understand (or suggest a spectrum of different possible interpretations or/and explanations of his/her non-understanding) new meanings through routine lexical and grammatical rules and mechanisms. There is no and cannot be such a thing, as a “correct” or “true” interpretation of the sentence “*he sang his didn't he danced his did*” (E.E.Cummings), but it can be used as an evidence of the multiplicity of the possible ways of its semantization. This verse can be considered as a “coercion in operation” – its different descriptions can reveal the possible different types of coercion. However, this will require excluding such presumptions, as a) the existence of fixed lexical meanings of the given words; b) the directions of the possible coercion processes are bilateral – not only from Head to NP2 but also from subordinate NP to VP.

3. *‘When I use a word,’ Humpty Dumpty said,... ‘ it means just what I choose it to mean — neither more nor less. ‘ The question is,’ said Alice, ‘whether you can make words mean so many different things.*

These opposing statements from “Alice...” can be basics of the suggested approach: we shall try to reveal the conditions and limits of possible variations of lexical meanings: whether and how *can words mean so many different things.*

It is possible to consider all meanings as contextual sensitive, as it was suggested by L. Hjelmslev: “*The so-called lexical meanings of certain signs are nothing more than artificially isolated contextual meanings, or artificial paraphrases of such. No sign has any meaning if isolated; every sign-meaning arises in a context*”. (Hjelmslev, 1961(1943): 41). However, some of the possible meanings are “more equal” – they require the minimal contextual support for their actualization. Some analogies with the distributive semantics can be drawn (cf: Pustejovsky & Jezek 2008): any lexical item can express any meaning, but with the differing probabilities: from close to 1 (practically – always), to close to 0 (practically – never). As usual, most of the lexical items have a few prototypical contextual

dependencies (it is used to be considered as a polisemy), and sometimes context does not sort out only the one (“an ambiguity”). Therefore, even for non-prototypical cases, it would be preferable to speak not about changes or shiftings, but rather of taking some values from the domain of interpretation of the given expression.

For example, there is no such action, which is denoted by the verb “to clean” – cleaning of potatoes or streets are rather different. The meaning of this verb is not some term from the different options (“different meanings”), as it is represented in vocabularies, but a single function dependent on its two arguments: actor (major, vacuum-cleaner, scavenger, police, detergent, editor, etc....) and object (street, ghetto, fish, carpet, stomach, content, etc.). - cf. with the notion of soft coercion in (Audring & Booij 2016).

3. Our approach can be considered as text-oriented – it does not deal with pre-established signs and an initial alphabet (vocabulary), but rather is concentrated on the generating interdependences between semantic constituents. “*The component structures should not be thought of as building blocks, but as stepping stones providing access to the composite conception*”. (Langacker 2009, 233) A text and context will be the basic initial concepts and signs and their meanings will be considered as context-dependent variables and, simultaneously, context-forming operators. In accordance with the principles of dynamic semantics, it should be assumed that the semantics of constituent units not only depends on a context but in turn changes it.

The meaning of a lexical item is considered as a value of the compositional or decompositional function from the text, context, and expression. Due to the fact that the comprehensive knowledge of the all possible contexts and, consequently, of all the possible meanings is unachievable, thus the ability to recognize lexical meaning can be identified with the faculty to calculate what the meaning is expressed within the particular context (in accordance with: “*Man possesses the capacity of constructing languages, in which every sense can be expressed, without having an idea how and what each word means—just as one speaks without knowing how the single sounds are produced*” (Wittgenstein, Tractatus, 4.002, see also the above-mentioned Humpty-Dumpty’s principle).

With this approach, the literal and non-literal (metaphorical, occasional, idiomatic, deviant, etc.) meanings can be considered not as principally heterogeneous or different phenomena, but rather as different manifestations of contextual sensitiveness of various degree – 1) from neutral to strongly coercive; 2) from consistent and stable up to random and indefinite. An attempt is made to combine the principles which are previously considered as non-compatible: the Frege’s principle of compositionality, according to which the meaning of the whole is a function of its components, and the principle of contextuality, according to which the semantics can be identified only in the holistic context. The meanings of lexical items are described as operators, which reciprocally convert primary meanings into a composition. Vice versa, the meaning of the primary item will be considered as a value of the de-compositional function. □

4. If the resulting compositional meaning is considered as derived only from the completely definite constituents, it would be impossible to deal with new, esp., the emergent semantic characteristics which are not associated with the initial constituents (cf.: Wilson, Carston 2006). □ Let us concentrated on examples which are similar to the given in (Asher 2011, 2015), where the sentences *The number two is red. The number two is soft* were given as instances of “*categorical mistakes*”, “*unless one of the terms is redefined or acquires a very idiosyncratic meaning in context*”, “*context enables us to understand this in some metaphorical or indirect way*”.

However, one can doubt: whether is it the logical or lexical semantic incompatibility. For example: the incompatibility between triangles and squares can be overcome in: *My friend spent all his life for constricting of square triangles* – this allows double interpretation – the *square triangles* are understood metaphorically in respect to actual world (my romantic friend always was involved in non-practical or even impossible affairs), but also on literal way referring to imaginary world – to the state of mind of some irrational person who actually tried to construct the square triangles.

Nevertheless, the literal understanding of this expression not always is a symptom of insanity. In mathematics there exist triangle numbers (*The n th triangular number is the number of dots composing a triangle with n dots on a side, and is equal to the sum of the n natural numbers from 1 to n*). Moreover: there are infinitely many triangular numbers that are also square numbers; e.g., 1, 36, 1225... As one can see, there is no contradiction between existence and reference, all of three words do not deviate from their prototypical meaning: 36 is a number, and can be represented as 36 dots composing both a triangle, as well as a square. Nevertheless, the new concept of number is introduced (number as a sum of some sequences), the new *Sinn* (sense) for the same *Bedeutung* (denotational meaning). This does *not change any previous* interpretation of this expression but creates the new one, based on the other meaning postulates (Carnap 1952). Coercion, in this case, is not a type shifting operator or operation, but rather an accomplishment of the emerging semantic postulates to the existing linguistic expressions and newly creating pragmasemantic context.

5. As the formal apparatus of such description, we suggest to use a simplified version of Montague grammar (as it was given in Lewis 1983: 251): “For any two categories X and Y, we have a third category X/Y of expressions which can combine with expressions of category Y to form compound expressions of category X”. This conception is based on the assumption, that there is a congruency between 1) syntactic categories, 2) expressions, 3) their meanings and 4) the newly introduced notion: the semantic classifier of meaning. The latest can be considered as such semantic feature that in a certain context can be related to a certain class of meanings and be a component of any of the members of this typical or occasional class (the context-sensitive analog of the asymmetric classification relation “is-a” - cf.: Hudson

2010:12). The semantic classifier can be also expressed as a single lexical item (meta-name) belonging to the same syntactic category as the given class of meanings. In different contexts, the same lexical expressions and their composition may be characterized by different sets of meanings and classifiers. We will describe the technique of attributing classifiers to meanings and revealing the lines of the semantic agreement within a composition, as well as calculating the degree of its thematic homogeneity and consistency – for this the notion of the semantic stability of the resulting composition is introduced for the first time. □

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