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ANALYSING COMPOUND TERMS FROM THE STANDPOINT OF FRAME SEMANTICS: A MODEL OF INTER-FRAME INTERACTION

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Specialised texts are characterised by a heavy concentration of compound forms. The cognitive concepts which underlie them are specific to an area of business, science or technology. They are structured by frames containing the roles and relations that form the background of a conceptual category. The focus on the attribute-value sets within the frames of individual concepts makes it possible to establish the aspects of a category which are particularly salient in a specific area. A model of inter-frame interaction has been suggested for the analysis of compound terms on the basis of the contiguity relations between the frame elements associated with their components.

Key words: compound terms, attribute-value sets, inter-frame interaction

I. Introduction

The specific language units characterising scientific and technical texts are frequently represented by compound forms. Compounding is among the most productive and active word formation processes in English due to the analytical structure of the language and the role of word order in the formation of lexical and grammatical relations (Pencheva 2004: 195). This is also evident in specialised discourse where compounding produces language units with domain-specific meaning, or terms, accessible to the users of the respective area of language. Compounds attract significant amount of linguistic research owing to the fact that they combine two or more parts in a semantic whole without a grammatical indication as to the nature of their relation or the manner in which it has emerged. According to Bagasheva, they “perform an important naming function motivated by a cognitive need for a name to a unified complex experience” (Bagasheva 2012: 20).

The most frequently analysed English compounds are of the “noun (N) + noun (N)” ($[N + N]_N$) type and the “adjective (A) + noun (N)” ($[A + N]_N$) type (e.g. Ryder 1994, Benczes 2006, Swetser 1999, Coulson 2001,

etc.). Other units are formed through compounding of the type "verb (V) + verb (V)" and "verb (V) + noun (N)". In her thorough analysis of verbal compounds, A. Bagasheva avoids the problem of attributing the compound components to certain word classes by suggesting an acategorial approach and regarding compounds as naming units constituting construction idioms with emergent semantics (Bagasheva 2012: 11–12).

When the first element is a phrase, the resultant unit is a phrasal compound (e.g. Scalise, Bisseto 2011: 37, Plag 2003). Phrasal compounds illustrate the postulate of Construction Grammar that there is no strict division between lexis and syntax since lexical and syntactic constructions only differ in their internal complexity and the degree of specification of the phonological form (Goldberg 1995: 23). This makes it possible for syntactic phrases to generate word-, respectively term-formation processes. Unlike sentences, however, compounds function as naming units, hence they activate certain categories in their user's experience. The head noun usually refers to the general category that the compound belongs to, and the choice of a modifier depends on the salience of the shared elements in the structures underlying the two components.

II. Theoretical Background

1. Frame Semantics

Frame Semantics (Fillmore 1982, 1985) provides both the theoretical basis and the methodological instruments for the analysis of compound terms. One of the main ideas is that words always activate frames, whether they refer to actual or hypothetic referents (Coulson 2001: 20). The understanding of one concept in a frame presupposes understanding of the whole structure to which it belongs (Fillmore 1982: 111). Frames are motivated by human experience, social institutions and cultural practices. The frames that underlie terms are available to narrower specialist groups.

Frames as schematic relational structures contain the roles and relations constituting the background of a semantic or conceptual category. Semantic categories refer to the purely linguistic information that is conventionally associated with lexical forms which provide "access sites to conceptual structure" (Evans 2009: 62). Barsalou (1992) distinguishes between three main frame components: attribute-value sets, structural invariants and constraints. The core of a frame is composed of a number of coexisting attributes, or concepts describing certain aspects of at least some category members. The aspect of a category that may become an attribute depends on the ontological domain. For instance, the most likely attributes for physical objects will be colour, weight and shape, and for events,

location, time and purpose. Often attributes are parts of the whole but they could also involve evaluation, quantity, use, etc. Every attribute within a frame may be related to its own frame and have its own attributes. Values are more specific concepts subordinate to attributes which inherit information from them and complement it.

Structural invariants are the relations that ensure a relatively invariant structure between attributes. They include different relational concepts: temporal, spatial, causal, or intentional. Constraints are also relations, though of a different kind: attributes and their values are not independent from but restraining one another (after Barsalou 1992: 30–39).

One way of analysing compound terms may be by examining the aspects of a category which have turned into attributes with the presumption that the activation or highlighting of specific values of these attributes gives rise to the respective terminological units. The existing terms may be used as an indication of the salience of individual attributes in the specific domain studied.

2. Relations vs Things

W. Croft contends that words can symbolise two main types of concepts: relations and things. Relational concepts are further divided into atemporal relations (i.e. interpreted as static) and processes (interpreted as evolving through time). These concepts are usually symbolised through verbs, adjectives, adverbs and prepositions. Things concepts are symbolised through nouns (Croft 2003: 189-193). The semantic prototype of the noun category is the physical object (Langacker 2008: 34) composed of material substance and positioned in space where it has a definite location and boundaries. It has no specific location in time and is conceptually autonomous, i.e. it may be conceptualised regardless of its participation in an event (Langacker 2008: 104).

The semantic prototype of the verb category is the concept of participants in energetic interaction in "a force dynamic event" (ibid., 103). This interaction consists in the change and transfer of energy. The event is positioned in time and has its own temporal location while its location in space is more diffuse and dependent on the locations of the participants. The event cannot be conceptualised without conceptualisation of the participants constituting it through their interaction (ibid., 104).

Owing to the great structural diversity of compounds, their semantics may include features of the things concepts, of the relational concepts, or of both.

III. Material

The material analysed consists of compound terms collected from written sources in the field of food science, including specialised dictionaries, encyclopaedias, and learning materials. The methodological and theoretical framework built up of the main ideas of Frame Semantics was applied to their analysis.

IV. Inter-frame interaction

A main factor in the construction of the semantics of compound terms is the interaction between the frames of their components. The type of interaction can be classified according to two different criteria: the situation of the frames and the general frame type.

The graphic presentation of the elements and relations in the frames shown in the figures below follows the models of Barsalou (1992) and Evans and Green (2006): the attributes are presented as ellipses with solid lines, and their values as ellipses with dashed lines. This is a conditional division since, as pointed out by Evans and Green, every attribute could turn into a value and every value into an attribute (Evans, Green 2006: 224). The value-attribute relations are illustrated with arrows.

1. Situation of the frames

a) Uni-level interaction

The two interacting frames, though similar in structure, are independent of each other and are situated on one level in a hierarchy. They organise parallel concepts that are usually values of the same attribute of a superordinate concept. The interaction between the two frames produces coordinate compounds with equal semantic contribution of the two components: *husker-shredder*, *filler-sealer* (Fig. 1).

This type of interaction can result in the so-called semantically exocentric compounds. In the compound *stir-fry*, for instance, both components highlight values of the ((Preparation)) attribute and provide metonymic access to the main concept (FOOD).

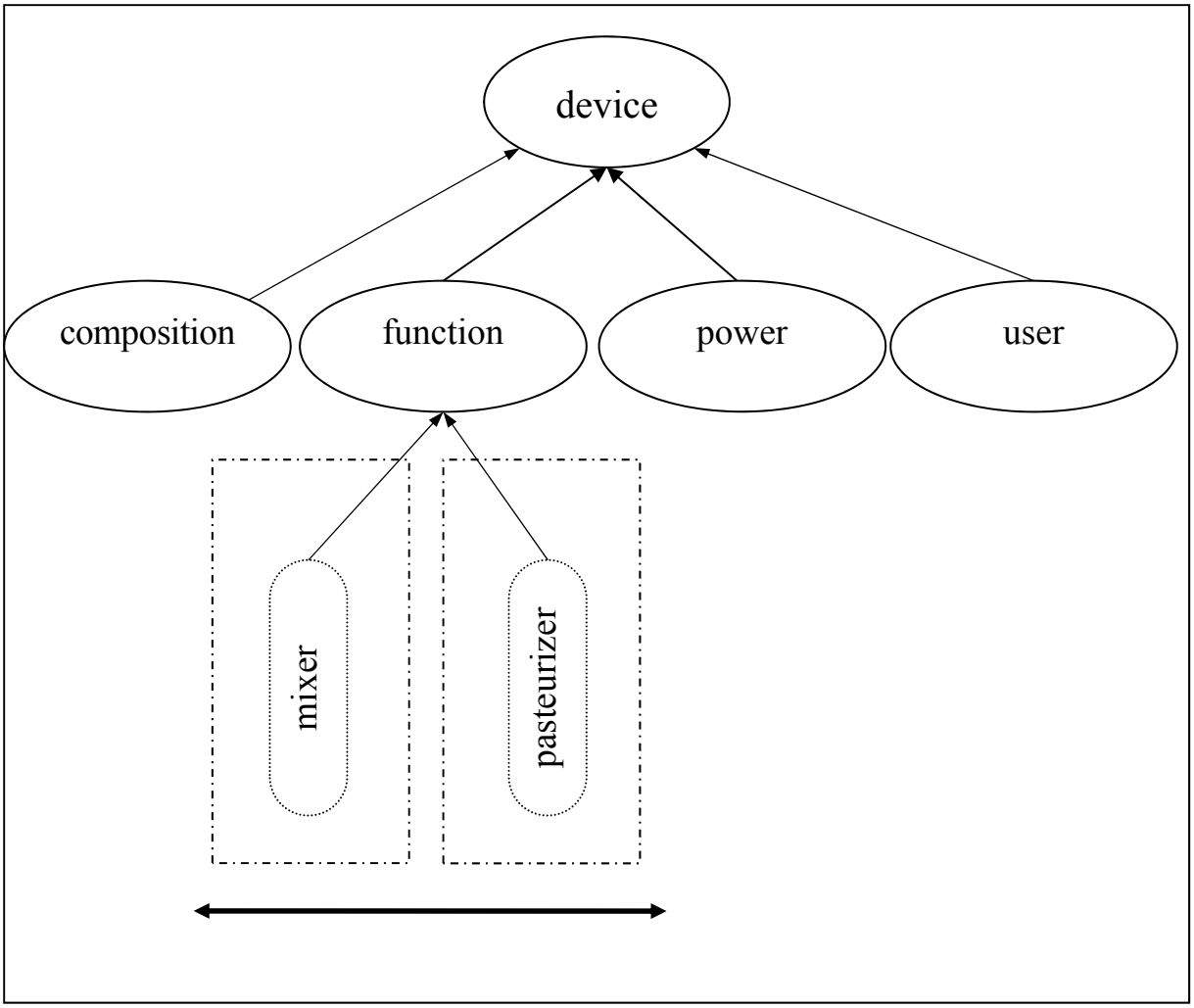

Figure 1: *Uni-level interaction within the frame of the (DEVICE) concept*

b) Bi-level interaction

When the compound components are in a subordinate relation, the frames structuring them are situated on two different levels in a hierarchy. The head noun activates the higher-level primary frame of the main concept, e.g. (JUICE), which interacts with the lower-level secondary frame of one of its attributes, e.g. ((Source)) that contains its specified value expressed through the modifier, e.g. (((apple))). The resultant structure includes the elements of both frames in a subordinate relation (Fig. 2).

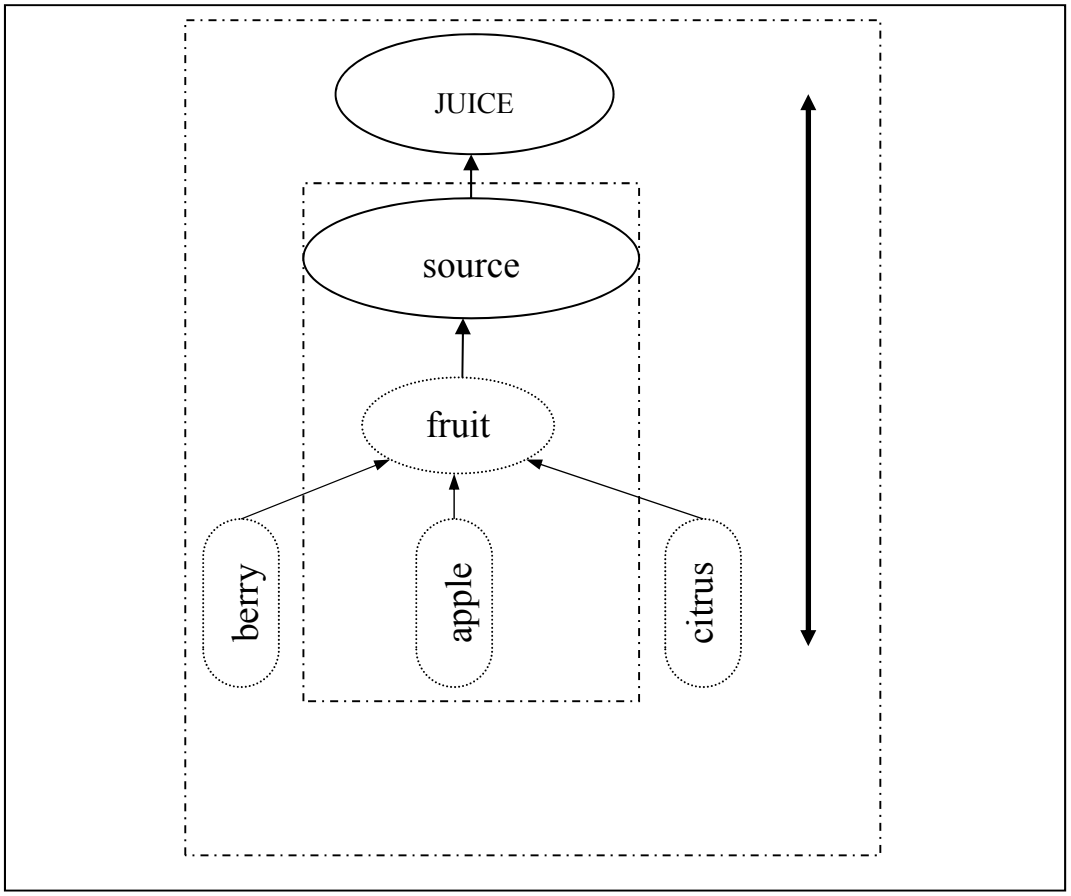

Figure 2: *Bi-level interaction within the (JUICE) concept*

This type of interaction can also give rise to the so-called semantically exocentric compounds. The main concept from the superordinate frame is not explicit on a lexical level in the compound, and metonymic access to it is provided by the compound formed as a result of inter-frame interaction. In the compound *flathead*, for instance, the first component highlights the value (((shape))) of the attribute ((Head)), and the second component the attribute itself, which provides access to the (FISH) concept (Fig. 3).

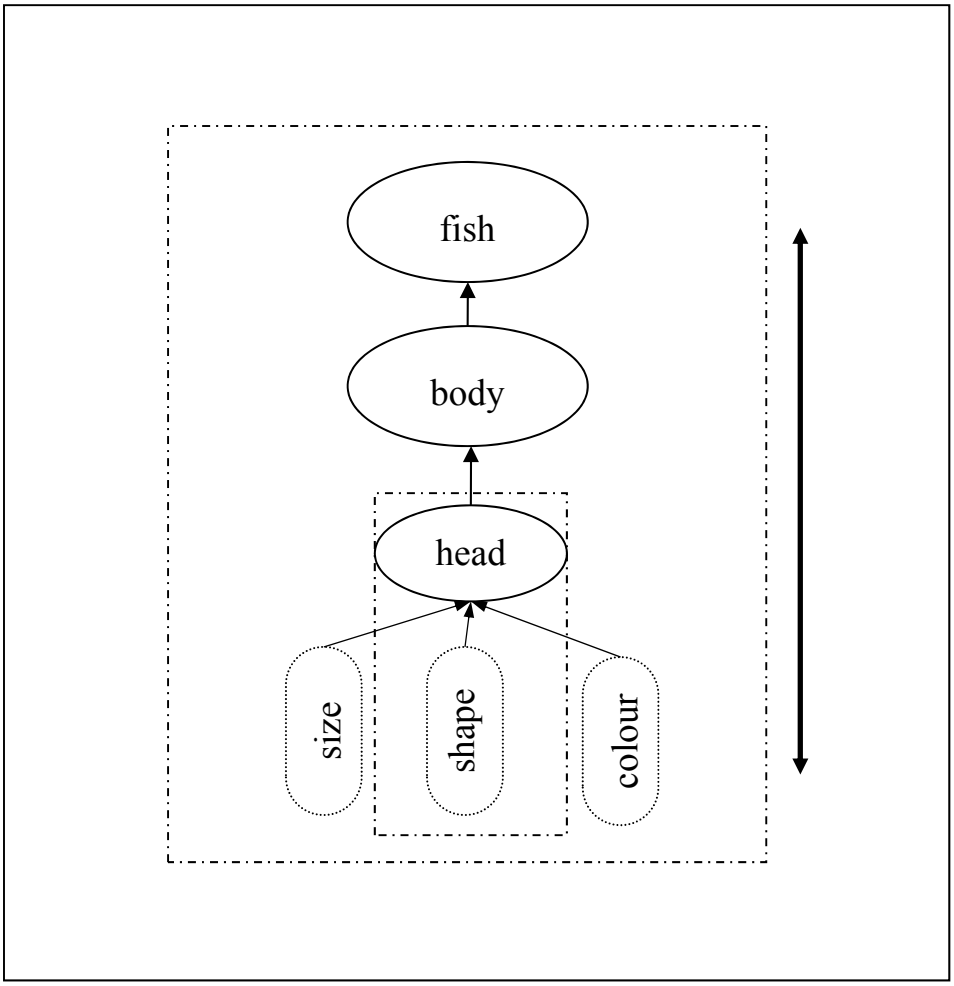

Figure 3: *Bi-level interaction within the frame of the (FISH) concept*

c) Multi-level interaction

Compounds like *just-add-water pancakes* may activate a whole scenario, including an Action, an implicit Agent, an Object of the Action, Time sequence through the meaning of "add", which implies the occurrence of previous Actions and Objects, and Result expressed with the head noun.

An interesting example of an exocentric compound in this group is *best before*, which highlights the product quality and time of consumption, and indirectly accesses the PRODUCT concept and a value of the ((Time)) attribute.

2. General frame type

a) Peer frame interaction

THING – THING interaction: when the head noun and the modifier are simplex nouns (e.g. *tea bag*, *dough ball*), they only symbolize a THING

concept and their frames contain the attributes typical of things, i.e. ((Composition)), ((Location)), ((Colour)), ((Shape)), ((Material)), or ((Function)).

RELATION – RELATION interaction: if the two components provide access to relational concepts, the attributes in their interacting frames will be characteristic of that conceptual type, for example, ((Action)), ((Agent)), ((Instrument)), ((Object)), ((Result)), ((Manner)), ((Time)), ((Purpose)), ((Place)), ((Direction)). As has been mentioned above, relational concepts may surface as verbs, adjectives, adverbs, or prepositions, hence the structural patterns of the resulting compounds will vary greatly: $[A + V]_N$ (*red cooking*), $[V + V]_N$ (*mixing condenser*), $[Prep + V]_N$ (*downcomer*), $([Vphrase + V]_N$ (*walk-in freezer*), etc.

b) Polar frame interaction

The head noun and the modifier provide access to the two main concepts, THING and RELATION, thereby forming a conceptual unit defined as a conceptual core (Radden, Dirven 2007: 43–46). In these combinations, one component is a simplex noun, and the other is verb-, adjective-, adverb-, or preposition-based: *catch basin*, *drum drier*, *whipping cream*, *aftertaste*. This type of frame interaction highlights the relation between the entity foregrounded by the THING component and another entity or entities which remain in the background.

V. Conclusion

It has been demonstrated that from a structural perspective, the different types of frame interaction are related to the symmetrical or asymmetrical positions of the compound components in a hierarchy. From the point of view of the two fundamental categories of thought, THINGS and RELATIONS, compound terms demonstrate the asymmetry between conceptual and linguistic structure: although only two basic conceptual units are involved, a large variety of linguistic categories combine in many different ways to express them. There are relations and entities in the conceptual structure which do not surface on the linguistic level. Since conceptual and linguistic structures do not overlap, the existing specialised language units are indicative of the salience of certain conceptual elements or relations for a scientific or technical community.

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