

THE SPECIFICITY OF UNITS WITH SPECIALIZED MEANING: POLYSEMY AS EXPLANATORY FACTOR*

(A Especificidade das Unidades com Sentido Especializado:
a Polissemia como Fator Explanatório)

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ABSTRACT: *In linguistics and terminology, few are the works that describe, in an integrated manner, terminological units and words. Neither are there models explicitly including, in their lexical representation, specialized meanings. We start from the hypothesis which states that the lexical unit (LU) is not per se either word or term, but a lexical form associated to all information relative to the different modules of the grammar in which it participates (Cabré 1999d, 2000). According to the communicational situation in which it is used, it either activates or not a specialized value. These values maintain a polysemic relationship with each other. The goals of this paper are to establish some elements that allow for an empirical foundation for the stated hypothesis on the LU, and to describe the kinds of features that compose semantic information and the configurations activated in specialized meanings.*

KEY WORDS: *Lexical unit; Terminological unit; Polysemy; Lexical representation.*

RESUMO: *Nas áreas de lingüística e terminologia, poucos são os trabalhos que descrevem, de uma maneira integrada, unidades terminológicas e palavras. Também não há modelos que incluam explicitamente, na representação lexical, os sentidos especializados. Partimos da hipótese de que a unidade lexical (UL) não é intrinsecamente nem palavra nem termo, mas uma forma lexical associada a toda informação relativa aos diferentes*

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módulos da gramática na qual ela ocorre (Cabré, 1999d, 2000). Em função da situação comunicacional na qual ela é usada, a unidade lexical ativa ou não um valor especializado. Esses valores mantêm uma relação polissêmica entre si. Os objetivos deste artigo são definir alguns elementos que forneçam um fundamento empírico para a hipótese citada e descrever os tipos de traços que compõem a informação semântica e as configurações ativadas pelos sentidos especializados.

PALAVRAS-CHAVE: *Unidade lexical; Unidade terminológica; Polissemia; Representação lexical.*

0. Introduction

Terminology, devoted to the units of specialized meaning, i.e. terminological units (TU), has been historically defined as an autonomous discipline, different from linguistics and/or lexicology (Wüster, 1979; Felber, 1984; Picht, 1996).

Those who consider that linguistics cannot either describe or explain the units of specialized knowledge argue that linguistics must address natural language, whereas terminology theory must deal with specialized concepts, sometimes expressed through linguistic units and sometimes materialized through non-linguistic units. They also state that terminology is an autonomous discipline that studies knowledge, taking elements from other disciplines but constituting a specific field of its own. They add that the basic attitude of terminology *vis à vis* languages is determined by prescription and by voluntary consensus, in order to attain a specialized communication with no interpretative fissures. Consequently, they make a distinction between *term* or *TU* (object of terminology) and *word* (object of linguistics).

Currently, nevertheless, the interest of lexicologists, lexicographers, linguists and translators regarding units and specialized texts (Rey, 1998/1999; Cabré, 1999, 2000a, 2000b; Lara, 1998/1999, 1999; Sager, 1998/1999, 2000) evidences that, from a linguistic perspective of the terminological object, such a stand is inadequate. The specificity of the units of specialized meaning would not require a theory of terminology, but rather a theory about terms (Lara, 1998/1999; Cabré, 2000b).

The subject of this paper, is, therefore, the specificity of TUs, explained from a polysemic perspective of the lexical units of natural language.

The goals are, on one hand, to present and empirically prove a hypothesis about the organization of the semantic information of the lexical unit that may account for specialized meanings and, on the other hand, to demonstrate the operativity of a polysemy model to distinguish the specialized senses from the non-specialized ones.

We will note the characterization generally attributed to terms by opposition to words (§ 1). Then we will present the hypotheses and theoretical assumptions we started from (§ 2), the analysis of the Spanish LU *cabeza* [head] (§ 3 and § 4)¹ and the characteristics of the specialized senses (§ 5). Finally, we will state brief conclusions about the consequent model of polysemy (§ 6).

1. Term and word

The characterization of the terminological unit is a problem of linguistic nature, as the terminology unit (either the terminological work unit, or the unit that is the object of theoretical description and explanation) overlaps with the lexicology unit. This is why, traditionally, attempts have been made to separate and distinguish “term” from “word”.

In previous papers (Adelstein & Cabré, 2000; Adelstein, 2001) we have noted that, in linguistics literature, few are the works that describe, in an integrated manner, TUs and words. We have also verified that neither are there models explicitly including, in their lexical representation, specialized meanings.

In fact, until recent years, insofar as the term’s properties were enunciated by opposition to those of the word, the “reasons” alleged to exclude terms from the study field of lexicology and to consider them the study object of a “new discipline” were the same.

The distinctive features of the TU noted both by lexicology and by terminology are: (i) monosemy and mononymy; (ii) nominal character; (iii)

¹ This paper is based on Adelstein (2001), and presents part of its results.

non-interdependence between meaning and form; and (iv) appurtenance to a single specialty thematic field.

Thus, in general, neither lexicology nor semantics have accounted for specialized units. We may nevertheless mention different attitudes regarding the issue:

- a) specialized units have been ignored in the description and explanation of lexical meanings (among others, Lyons, 1981; Mounin, 1972; Leech, 1981);
- b) they have been explicitly discarded as study object (Cosériu, 1977);
- c) they have been considered as object of a specialized lexicology or in relation to neological processes (e.g., Guilbert, 1975).

On the other hand, terminology distinguishes the notions of term and word, for epistemological reasons:

- a) an epistemological need of an unit of analysis of its own;
- b) postulates oriented towards terminological work and/or towards linguistic planning²;
- c) a theoretical perspective more directed towards knowledge representation than towards a description of the linguistic nature of knowledge units.

In terminology, there are more linguistic answers to the issue of which is the semiotic statute of the TU³, although few authors hypothesize that it is, in fact, one unit.⁴

² Terminology was originally devoted to delimitate guidelines for terminological work, and to set the requirements for an ideal terminological unit for efficient and univocal functioning of scientific and technical communication. Theoretical analysis was directed at terminological practice itself. Thus, on occasion, proposals of methodological postulates were considered theoretical principles. Therefore, a confusion obtained between the work unit and the real specialized unit (which is a natural language unit); so, the real terminological unit was characterized as from the ideal unit ideal.

³ Bejoint & Thoiron (2000b); Bouveret (1998); Condamines (1994, 1995); Condamines & Rebeyrolles (1997); Lara (1998/1999, 1999); Meyer, Mackintosh (2000); Meyer, Mackintosh, Varantola (1997); Sager (1998/1999, 2000); Slozidian (1995, 2000); Temermann (1997, 1998, 1998/1999).

⁴ Nevertheless, papers have been published that analyze specialized and non-specialized meaning of a single lexical form, from a polysemic perspective, among which Candel (1984), Meyer et al. (1997), Condamines, Rebeyrolles (1997) and Meyer et al (2000). Among those following a homonymic perspective, Ahmanova (1974, apud Rondeau, 1984).

From the elements provided by these authors we conclude that:

- the term is conceived as a meaning acquired by a lexical unit in a context of specialized communication;
- the term must be studied within its context;
- the specificity of the term resides in one of the following features:
 - (i) the communicational situation where it is employed;
 - (ii) the specialization of its semantic features;
 - (iii) the knowledge it represents;
 - (iv) the type of signification.

2. LU hypothesis and theoretical assumptions

For us, term and word are not different units: we start from the CTT (Communicative Theory of Terminology) (Cabr  1999, 2000; Cabr  & Adelstein 2001; Adelstein & Cabr , 2000a), which states that the lexical unit (LU) is not *per se* either word or term, but rather a lexical form associated to all information relative to the different modules of the grammar of which it participates. According to the communicational situation in which it is used, it either activates or not a specialized value. These values maintain a polysemic relationship with each other.

The semantic information of the LU is organized in features and feature modules that are activated in different ways according to each situation, and thus give way to one of the possible senses of the LU.⁵

This hypothesis calls for the adoption of a series of theoretical assumptions regarding:

- 1) the signification process and the determination of sense;
- 2) the multiplicity of senses of a single form and the concept of polysemy;
- 3) the notions of meaning and sense.

⁵ A similar approach may be found in Rastier (1987).

1) As regards the signification process, the concept of *activation* manifests the cognitive approach of this theory. That is, it presupposes that the semantic information pertaining to each sense is selected by a cognitive process. Therefore, *sense* and *activation* designate the same linguistic phenomenon. *Activation* refers to the cognitive process through which the semantic elements corresponding to a determinate use of the LU are actualized. *Sense* designates the “product” of such process: the activated semantic information.

From this perspective, and following Récanati (1997), the two main currents regarding the determination of sense are:

- a) “fixism”: lexical meanings are fixed in the language, and therefore the determination of sense would consist in a selection;
- b) “sense generation”: sense is not fixed but constructed; thus, the determination of sense depends from the verbal or situational context. In this tendency, Récanati includes, on the one hand, works that state that sense generation follows the interaction of the elements of the phrase in which the polysemic word is employed (the “segregationism” of Pustejovsky and Victorri). Then, on the other hand, there are those who think that the sense does not “exist” in the language but that it is created by usage, and he calls this tendency “contextualism”.

Our own stand would be similar to “segregationism”.

2) As regards the multiplicity of senses of a single form, the explanation that lexical semantic information is organized in “activable” features would allow, first, to account for the distinction between specialized and non-specialized meanings, as well as for every *semantic variation*⁶ relative to a lexical form.

Secondly, it would make room for the explanation of the types of semantic variation traditionally attributed to specialized meanings: according to thematic fields (horizontal variation), according to specialization

⁶ By *variation* or *semantic diversity* we wish to denote, in a general way, the different types of polysemy and conceptual or meaning variants of a single linguistic form. Other authors call this phenomenon *sense-spectra* (Cruse, 1986: 71-74), *semantic space* (Victorri, 1996), *semasiologic variation* (Geeraerts, Grondelaers, Bakema, 1994), or *lexical variation* (Temmerman, 1995).

levels (vertical variation), according to modulation (author, school, perspective), and according to point of view (way to broach the subject). It would also allow for the integration, in lexical description, of diverse polysemy processes in specialized domains, that is, the phenomena studied by the Meyer team under interdomain polysemy⁷, intradomain polysemy⁸, terminologization and determinologization⁹, as well as the phenomena of metaphorization, demetaphorization and revitalization analyzed by Temmerman (1995, 1998), and the six types of polysemy noted by Bouveret (1998).

In any case, insofar as our own perspective is linguistic, and as we do not consider the difference between meaning and concept to be useful, we believe that all typologies may be reduced to the following general types:

- regular polysemy: variation in which there is no change in denotation, occurring regularly in the LUs of a same semantic class;
- asystematic polysemy: variation in which there is change in denotation, often occurring irregularly;
- conceptualization: variation in the way of conceiving the referent, which does not imply a change in denotation.

Regarding the explanations received by the polysemy phenomenon, we may generalize and state that they consist in maintaining that they are¹⁰

- a) fixed meanings, listed in the lexical entry as definitions of a lexicographical entry (Martin, Katz, *apud* Victorri & Fuchs, 1996).
- b) a meaning core or a basic sense, shared by all meanings (Geeraerts, 1990, 1995; Lakoff, 1986, 1987, 1997; Kleiber, 1999; Fillmore & Atkins (2000); Fodor y Cadiot, *apud* Victorri & Fuchs, 1996; Moura, 2001).

⁷ That is, the senses a term acquires in other domains. Contrary to horizontal variation, it implies that the meaning it has in one domain was generated from the one in the other domain. Horizontal variation does not necessarily imply this origin relationship.

⁸ Meyer; Mackintosh (2000) use the expression *intradomain polysemy* when a determinologized word “goes back” or “reinfilters” the original specialty domain.

⁹ These processes would establish polysemy relationships between specialized and non-specialized uses.

¹⁰ For a state of the art of polysemy, see Victorri & Fuchs (1996), Kleiber (1999) and Ravin & Leacock (2000).

- c) a first meaning from which all the others derive (Picoche, *apud* Victorri & Fuchs, 1996 and the relational models).
- d) a series of elements activated or focused according to each sense, many of which (not always the same ones) are shared by groups of senses (Apresjan, 1974; Rastier, 1987; Pustejovsky, 1995).

For us, polysemy and/or semantic variation must be explained according to (d).

3) As to the notions of meaning and sense, in general it is considered that the variants of asystematic polysemy are *meanings*; and that variants corresponding to other types of polysemy and of conceptual variation are *senses* or *uses* of the same meaning. We think meaning and variant should not be distinguished *a priori*. We will talk about *sense*, defined as any activated semantic configuration of a LU, motivated by certain parameters, e.g. syntactic, textual, pragmatic, referential, situational, etc.

In synthesis, given the starting LU hypothesis we are trying to false, our assumptions are:

- 1) there is no specialized lexicon, i.e. discriminated from the general lexicon; it is the same lexical competence: specialized and non-specialized are different activations of the same lexical semantic information. Sense is dynamically determined;
- 2) the activation process of semantic elements allows for the explanation of all kinds of semantic variation or polysemy;
- 3) no *a priori* discrimination must be made between *denotative senses* and *connotative* or *argumentative senses*, between *meaning*, *sense* and *use*. They may all be explained through the same activation mechanism.

3. Observation: corpus, methodology and description of data

This section attempts to present partial results of the exploratory observation developed in Adelstein (2001) in order to establish some elements that may constitute an empirical foundation for the lexical unit hypothesis, particularly as regards semantic information.

Said research selected four simple non-constructed nouns: *madre* [mother], *cabeza* [head], *familia* [family] and *vaso* [glass, vessel]. We will here use *cabeza* as example.

To extract semantic information we considered entries in 4 Spanish language dictionaries, 3 science dictionaries, 3 botany dictionaries, 3 chemistry dictionaries, 4 medicine dictionaries and 4 biology dictionaries.¹¹

Methodology consisted in fragmenting *ad maximum* the semantic information of the LU, in order to extract its constitutive elements and thus observe both activation possibilities and the relations between specialized and non-specialized senses. Procedures were basically two:

- (i) to group and organize information from the various dictionaries, so as to formulate an exhaustive proposal of the senses of the LU;
- (ii) to observe represented information, and propose a list of the constitutive semantic elements as per the contrasting of delimited senses.

Following are the results of data description for the example *cabeza*.

The contrasting of lexicographical information allowed us to identify 35 senses for *cabeza*. For their integral organization, generalizing basic notions were considered: “extreme part”, “round part” and “extreme and round part”.

In the grouping “extreme and round part” we considered ten senses (c1-c10) for the part of the animal body, as per human or non-human referent, specialization level and point of view (see Annex II, table 1). As regards the points of view, both for animal and for human referents, we noted: container and content, the container in its cranial and facial parts, and the cranial part.

We also distinguished a subgroup “extreme and round part of something” where we delimited nine senses (c11-c18) as per type of reference, thematic field and specialization level. Senses of non-specific or very general referents were also noted (e.g. elongated objects), as registered in the general dictionaries (see Annex II, table 2).

¹¹ For references and dictionaries codification, see Annex I.

Under the grouping “extreme part”, the perspective of location was considered: the ten senses (c19-c28) were delimited as per the location of the part in the whole (superior, proximal, anterior o non-specified), type of reference, thematic field and specialization level (see Annex II, table 3).

Finally, under “round part” we distinguished seven senses (c31-c35) as per type of reference, specialization level and thematic field (see Annex II, table 4).

4. Observation: analysis and theoretical proposals

In the analysis of data we tried to answer the following questions:

- a) which elements conform the semantic information of the LU;
- b) how such elements are activated;
- c) which is the specificity of specialized activations.

a) Elements:

As a first generalization of observed data, the following hypothesis was formulated: the LU would seem to present a basic semantic structure, of the predicative type, constituted by at least three components (two arguments and a predicate), which is specified in various ways (as regards both predicate and arguments), according to each of its senses. In the case of *cabeza*, $\{[[_x \text{ BE PART OF } _v]_z \text{ y } _z \text{ CONTAIN } _w]\}$.

Nevertheless, contrasting among senses allowed us to verify that they do not constitute different specifications of said structure. In spite of it, the notion of basic semantic structure permitted us to maintain that the LU's two essential types of semantic elements or features are either predicates (relations, processes, states, attributes, etc.), or semantic arguments (participants in such predicates). Therefore, the LU has no basic semantic structure inherited or specified according to each sense, but rather its senses are activations of at least one predicate, to which at least one argument is linked.

We therefore reformulated the hypothesis thus: the LU's semantic information consists in a relevant quantity of predicates and of semantic

arguments, whose possible combinations conform each one of the unit's senses.¹²

Thus, from this perspective, the LU is not a form linked to various listed (and somehow related) meanings, but to what could be called a “macro” meaning. In other terms, the meanings of a LU are not “senses” that “repeat” information also contained in other senses (or in some of them), but possible updatings of combinations of the features (predicates and semantic arguments) of said “macro” meaning. A metaphor for this semantic organization is that of a network allowing for diverse courses or paths and different destinations.

By predicate we understand one of the kinds of elements that make up the semantic information of a LU; they are processes, states and attributions, and are set in small capitals. Every predicate has one or more argumental *loci*, set as subindexes. For instance, some of the predicates of *madre* are ${}_x$ PRODUCE ${}_y$; ${}_x$ CRYSTALLIZE; ${}_x$ EVAPORATE. In *familia*, some of the predicates activated in several senses are ${}_x$ DESCEND ${}_y$; ${}_x$ BE UNIT or ${}_x, {}_y$ SHARE ${}_z$. As regards *cabeza*, we may mention ${}_x$ CONTAIN ${}_y$; ${}_x$ BE PART OF ${}_y$ and ${}_x$ BE HEMISPHERICAL.

The other kind of semantic elements corresponds to the information that “fills” the argumental *loci* of predicates. We will therefore talk about *argumental locus* to refer to the elements selected by a predicate (i.e. logical arguments) and about *semantic argument* to refer to the semantic information that fills an argumental locus. Thus, a semantic argument is not associated to any particular predicate. We will represent the semantic arguments in brackets and argumental loci, as mentioned above, in subindexes.

Thus, the semantic elements of *cabeza* derived by sense contrasting are:¹³:

¹² The underlying idea of this hypothesis is that a sense or meaning is a series of predications (set of activated predicates and arguments). Our use of *predicate*, *argument*, *attribution*, *process* or *state* must not be interpreted according to a particular model, but rather in their more general linguistic sense. Nevertheless, our hypothesis is related to certain elements proposed by Leech (1981).

¹³ In Adelstein (2001: 174-180) we offer a typology of predicates according to the quantity of argumental *loci*, type of predication and internal structure.

• Predicates

[_x CONTAIN_y / BE CONTAINED BY_y]; [_x PRODUCE_y]; [_{x(z)} REPRODUCE_y]; [_{x(z)} PRODUCE **sexually**]_y;
 [_x PRODUCE **asexually**]_y; [_x PRODUCE BY GENERATION_y]; [_x SURROUND/BE SURROUNDED_y];
 [_x POSSESS/LACK_y]; [_x RAMIFY_y]; [_x BE PART OF/BE THE WHOLE_y]; [_x BE ROUND]; [_x BE ELONGATED];
 [_x BE FUSIFORM]; [_x BE DENSE]; [_x BE HEMISPHERICAL]; [_x BE CONICAL]; [_x BE SUPERIOR/INFERIOR_y];
 [_x BE ANTERIOR/POSTERIOR_y]; [_x BE ANTERIOR/SUPERIOR_y]; [_x BE PROXIMAL/DISTAL_y];
 [_x BE EXTREME/CENTRAL_y]

• Semantic arguments

• simple:

{encephalon}, {sensory organs}, {nervous centers}, {brain}, {muscle} {organ} {bone}
 {anatomical structure}, {object}, {thing}, {body}, {animal body}, {pedunculus}, {root},
 {geometrical base}, {modified leaves}, {green algae}, {spore}, {cell}

• complex (simplified):

{conidium}, {sterigm}, {basidium}, {cephalo-bracchial chromosome}, {inflorescence},
 {group of flowers}, {involucre}, {primary root}, {antheridium}, {gametangium}

b) Activation of elements

The questions that arise in this part of the analysis are: what elements (i.e. which predicates and which arguments) activate? how (order and relations) do they activate?, and why (factors of activation) do they activate?

Evidently, according to the activation, predicates are related in sense at different levels. To use a metaphor, each sense is a path, among many possible ones, in the “territory” of the LU’s semantic information. For instance, the predicate _x BE PART OF_y appears as initial predicate in most of the senses of *cabeza*, but in c6 it activates recurrently, combined with other attributive predicates and with different semantic arguments.

c6 = _x BE SUPERIOR PART {organism}_y; {cranium}_y BE SUPERIOR POSTERIOR PART_x; {face}_k
 BE ANTERIOR PART_x

Activations (i.e. the senses activated in discourse) seem not to always start by the same predication: they would not be “paths” always beginning from the same “starting point”. That is, in the LU predicates would not occupy a place nearer to or farther from a core (as in a radial structure),

but rather we must note, for each sense, the predicate that gives way to activation.¹⁴

Thus, this implies that not all the activations of *madre* start, as we might believe, by x PRODUCE y ; by x BE PART OF y , those of *cabeza*; or by x CONTAIN y , those of *vaso*. In any case, the fact that these predicates are those most shared by the senses of each LU does not mean that they all start by them, but rather that they are the most activated by said senses. This would demonstrate the core character of said predicate in the given LUs.

We are not denying the existence of the basic or generalizing notion of *madre* as origin, or of *cabeza* as part; we say that such notions are not themselves the semantic core of the LU, but that the predicates and arguments involved in said notions are shared by almost all of its senses. Each of the senses of these same predicates is not, or may not be, in the same position of the course.

Now then, the activation of semantic elements would be determined by different linguistic and context-situational factors. As linguistic factors we may note:

- a) grammatical: lexical combinatory and syntax;
- b) textual: textual type and genre.

The study of LUs in textual *corpora* would allow to prove the hypothetical character of observations and, moreover, to observe the activation factors.

5. Specificity of specialized senses

The third question arising from analysis referred to the specificity of specialized senses. According to the CTT, what renders a sense specialized are aspects of the communicational situation that activate certain features of the LU (Cabré, 1999); its cognitive conditions (Cabré; Feliu; Tebé, 2000), and its mode of signifying (Cabré & Estopà, 2000).

¹⁴ This would lead to understand a representation of the sematic module of the LU as satelital, as proposed by Nuopponen (1997) for textual contents.

The specificity of specialized senses is also related to (i) the semantic configuration of the activation and (ii) to the activated elements themselves.

- Semantic configuration:

a) embedding of predications: by “embedding of predications” we understand the phenomenon through which any predication may fill an argumental *locus* in another predicative relation. Specialized senses would present a high level of embedding. For instance, sense c13 of *cabeza* as part of the sporiferous reproductive apparatus of certain fungi. The information lexicographically expressed by *basidium*, *sterigm* and *conidium* is the following:

basidium = $\{ \{ [b, \text{BE PART OF } [\text{reproductive apparatus}]_a]_t, \text{BE PART OF } [\text{fungus}]_h \}; \}$
 $\{ \text{BE ELONGATED, FUSIFORM, DENSE; } \}_j \text{BE THE WHOLE } \{ [\text{sterigm}]_t \} \Downarrow \{ \text{PRODUCE } [\text{conidium}]_c \}; \}$
 $\{ \text{BE PART OF } [\text{fungus}]_h \}_j$

conidium = $\{ [\text{spore}]_s \text{ PRODUCED } \textit{by generation} \text{ } [\text{sterigm}]_t \}_c$

sterigm = $\{ \{ [\text{small branches}]_i \text{ BE ELONGATED} \}_m \text{ PRODUCED BY } [\text{basidium}]_j \}_c \Downarrow \{ \text{BE EXTREME PART OF } [\text{basidium}]_j \}_t$

Levels of embedding are multiple, and would allow for different levels of simplification of the representation:

c13 = $\{ [\text{conidium}]_c \text{ BE UNITED } \{ [\text{sterigms}]_t \}_x \text{ BE ROUND, BE TIGHT} \}$

(synthetic formula)

c13 = $\{ \{ [\text{spore}]_s \text{ PRODUCED } \textit{by generation} \text{ } \}_t \}_c \text{ BE UNITED } \{ \{ [\text{small branches}]_i \text{ BE ELONGATED} \}_m \text{ PRODUCED BY } [\text{basidium}]_j \}_c \Downarrow \{ \text{BE EXTREME PART } [\text{basidium}]_j \}_t \}_x$
 $\text{BE ROUND, BE TIGHT}$

(semi-synthetic formula)

c13 = $\{ \{ [\text{spore}]_s \text{ PRODUCED } \textit{by generation} \text{ } \}_t \}_c \text{ BE UNITED } \{ \{ [\text{small branches}]_i \text{ BE ELONGATED} \}_m \text{ PRODUCED BY } \{ \{ [b, \text{BE PART OF } [\text{reproductive apparatus}]_a]_t, \text{BE PART OF } [\text{fungus}]_h \}; \}_j \text{BE ELONGATED, FUSIFORM, DENSE; } \}_j \text{BE THE WHOLE } \{ \}_t \text{ produce } \}_c \}_j \text{BE PART OF } [\text{fungus}]_h \}_c \Downarrow \{ \text{BE EXTREME PART OF } \}_t \}_x \text{ BE ROUND, BE TIGHT}$

(complete formula)

b) relation between predications (in specialized senses, there seems that more relations of implication than of juxtaposition are activated, in opposition to what would occur in the corresponding non-specialized senses).

- Activation of semantic elements:
 - a) change of predicate (for instance, in the senses of “apophysis” of *cabeza*, the non-specialized sense (c16) changes the attributive predicate $\text{_x BE HEMISPHERICAL TO _x BE ROUND}$);
 - b) change in the focalization of the faces of complex predicates;
 - c) change of semantic argument (i.e. change in denotation);
 - d) changes in the extension of the reference of semantic arguments;
 - e) changes in the intension of the semantic arguments.

Now then, these parameters do not seem to have the same incidence in the distinction (both theoretical and practical) of what is specialized. As an example, we observed the frequency of these parameters in the distinction between specialized and non-specialized variants of the analyzed units. Results would allow us to maintain that the **three semantic parameters** that characterize the specialized/non-specialized distinction are:

- a) the situational factor, given the quantity of variants that do not show any change in semantic information;
- b) the embedding of predications;
- c) the change of semantic arguments.

In short, the kind of semantic information of the specialized sense does not differ from that of the non-specialized sense: they are distinguished only by their configuration. On the other hand, both types of senses share elements and, therefore, they maintain a polysemy relation: the main distinction seems to be the change of reference of semantic arguments.

6. Conclusions

We would like to briefly note that the observations undertaken allow us to demonstrate that polysemy is one of the explanatory factors of the nature of TUs.

In fact, the LU model emerging from our analysis is also an explanation of lexical polysemy. In this sense, a polysemy model such as the one herein, presents the following explanatory advantages:

- it clarifies the nature of specialized senses, without recourse to an exclusive TU model;
- it accounts for other types of semantic variation and different subtypes of polysemy, described for the general language or for specialized uses;
- it constitutes a sustainable model even when specialized senses are not relevant, i.e. the proposal may be transcendent both for terminology and for general language studies.

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ANNEX I. DICTIONARIES

Spanish language dictionaries

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- [GDLE] *Gran diccionario Larousse de la lengua española*. Barcelona: Larousse Planeta, 1996.
- [DEA] SECO, Manuel; ANDRÉS, Olimpia; RAMOS, Gabino (1999) *Diccionario del español actual*. Madrid: Aguilar.

Science dictionaries

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Botany dictionaries

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Chemistry dictionaries

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Medicine dictionaries

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ANNEX II. DELIMITATION AND GROUPING OF SENSES OF CABEZA

Senses of LU <i>cabeza</i>				Dictionary	Lexicographical representation	
extreme and round part	part of the animal body	<i>head of non-human animals</i> (superior or anterior part)	p. v. ctt +cta (p.v. face+cranium)	spec (bmsc)	c1 DRACC (1)	Parte anterior del cuerpo de un animal, que contiene el encéfalo, la boca y los órganos de los sentidos
				no spec	c2 GDLE (1) [parte]	ANATOMÍA Parte [...] superior o anterior del de muchos animales, donde residen los principales centros nerviosos y los órganos de los sentidos
			VOX (1) [parte]		Parte [...] superior o anterior del de muchos animales, donde residen los principales centros nerviosos y los órganos de los sentidos, esp., parte superior y posterior de ella	
			DRAE (1) [parte]		Parte [...] superior o anterior de muchos animales, en la que están situados algunos órganos de los sentidos. Contiene importantes centros nerviosos, como el encéfalo en los vertebrados.	
			DEA (1a) [parte]	Parte [...] superior, o anterior del de los animales, en la que se encuentran la boca, los principales órganos de los sentidos, y, en [...] algunos animales, el cerebro.		
		p. v. cta (p.v. cranium)	no spec	c3 DRAE (2) [parte]	En [...] algunos mamíferos parte superior y posterior de ella, que comprende desde la frente hasta el cuello, excluida la cara.	
				VOX (1) [parte]	Parte [...] superior o anterior del de muchos animales, [...] esp., parte superior y posterior de ella.	
				DEA (1b) [parte]	En [...] algunos mamíferos. Parte superior y posterior de la cabeza, desde la frente hasta el cuello, excluyendo la cara.	
				c4 MEDV (1)	Parte del organismo que comprende el cráneo y la cara, unida al cuerpo por el cuello. Contiene el encéfalo y los órganos de los sentidos.	
					MEDD (1) [2a parte]	Extremidad superior, anterior [...] especialmente la parte del organismo que contiene el encéfalo y los órganos de los sentidos especiales
	<i>human head</i> (superior part)	p. v. ctt +cta (p.v. face+cranium)	spec (bmsc)	MEDA (1)	Parte superior del cuerpo humano que contiene el encéfalo y los órganos principales de los sentidos.	
				MEDT (1)	Parte superior del organismo, conjunto de cráneo y cara, que contiene el encéfalo y los principales órganos de los sentidos.	
				DTCT (1)	[ANAT] Región del cuerpo compuesta por el cráneo, su contenido, y sus estructuras acompañantes.	
				BIOM (1)	[ANAT] Región del cuerpo compuesta por el cráneo, su contenido, y sus estructuras acompañantes	
				no spec	c5 GDLE (1) [parte]	Parte superior del cuerpo humano [...] donde residen los principales centros nerviosos y los órganos de los sentidos.
		VOX (1) [parte]	Parte superior del cuerpo del hombre, separada del tronco por el cuello [...] donde residen los principales centros nerviosos y los órganos de los sentidos, [...]			
		DRAE (1) [parte]	Parte superior del cuerpo del hombre [...] en la que están situados algunos órganos de los sentidos. Contiene importantes centros nerviosos, como el encéfalo en los vertebrados.			
		DEA (1a) [parte]	Parte superior del cuerpo humano, [...] en la que se encuentran la boca, los principales órganos de los sentidos, y, en el hombre [...], el cerebro.			
		p. v. cta (p.v. face+cranium)	spec (bmsc)		c6 MEDV (1)	Parte del organismo que comprende el cráneo y la cara, [...].
				MEDT (1)	Parte superior del organismo, conjunto de cráneo y cara, [...].	
p. v. ctt	no spec	c7 VOX (1) [parte]	Parte superior del cuerpo del hombre, [...] esp., parte superior [...]			
		c8	[No tenemos evidencia lexicográfica]			
p. v. cta (p.v. cranium)	spec (bmsc)	c9 MEDV (1)	Parte del organismo que comprende el cráneo [...].			
		MEDT (1)	Parte superior del organismo, conjunto de cráneo [...].			
	no spec	c10 GDLE (2)	ANATOMÍA Parte superior del cuerpo humano, desde la frente hasta el cuello, excluida la cara: <i>se dio un fuerte golpe en la cabeza y lo tuvieron en observación.</i>			
		VOX (1) [parte]	Parte superior del cuerpo del hombre, separada del tronco por el cuello [...] esp., parte superior y posterior de ella			
p. v. cta (p.v. cranium)	no spec	DRAE (2) [parte]	En el hombre [...] parte superior y posterior de ella, que comprende desde la frente hasta el cuello, excluida la cara.			
		DEA (1b) [parte]	En el hombre [...] Parte superior y posterior de la cabeza, desde la frente hasta el cuello, excluyendo la cara.			

Table 1. Delimitation and grouping of senses of *cabeza*: c1 a c10

Senses of LU <i>cabeza</i>				Dictionary	Lexicographical representation	
extreme and round part	of something	non-specific reference	spec (bmsc)	c11 MEDA (2)	Extremidad de una parte o estructura anatómica de forma ensanchada o redondeada.	
			no spec	c12 GDLE (4)	Órgano o parte en forma de cabeza.	
		specific reference	repr organ of fungus spec (bot)	c13 DCHC (1)	Grupo de esterigmas y conidios, apretados en densa masa, de perfil redondeado.	
			cell of algae reproducor apparatus spec (bot)	c14 BOTA (4)	En el anterióforo de los carófitos se llaman <i>cabezas</i> primarias, o sencillamente cabezas, las células que se implantan aisladamente en el extremo de cada manubrio, y que sostienen un número variable (3-8) de <i>cabezas</i> secundarias o <i>cabecilas</i> , a las que dan origen. – R. M.	
			chromosome spec (bot)	c15 BOTA (3)	Extremo muy pequeño de un cromosoma cefalobraquial.	
			Apo-physis no spec	semi spec (bmsc)	c16 DEA (2c) [sin def]	[...] Navarro <i>Biología</i> 81: Cuando las apófisis son hemisféricas se denominan cabezas.
				no spec	c17 DEA (2c) [sin ej]	(<i>Anat</i>) Apófisis redondeada [de un hueso] [...].
			elongated no spec	c18 DEA (2b)	Extremo abultado o ensanchado de un objeto de forma alargada. Matute <i>Memoria</i> 115: [...] con ciudades como cabezas de alfileres [...]	

Table 2. Delimitation and grouping of the senses of *cabeza*: c11 a c18

Senses of LU <i>cabeza</i>				Dictionary	Lexicographical representation	
Extreme part	non-specific location	non-specific reference	spec (bmsc)	c19 MEDA (2) [par]	Extremidad de una parte [...].	
			no spec	c20 VOX (5) [1ª par] GDLE (3)	Principio o parte extrema de una cosa, [...]. Principio o parte extrema de una cosa.	
		of something elongated	no spec	c21 DEA (2a)	Extremo de un objeto de forma alargada.	
			p.v.	non-specific reference	no spec	c22 DEA (5a) VOX (5) [2ª parte]
		superior			structure, body	spec (bmsc)
			no spec	c24 DEA (5c) [par]		Extremidad superior, [...] de una estructura o cuerpo, [...] (<i>Anat</i>) Parte superior [...] de un músculo o de un órgano.
	p.v.	proximal	structure, body	spec (bmsc)	c25 MEDT (3) [parte] MEDD (1) [parte]	Parte [...] proximal de una estructura (músculo, etc.) Extremidad [...] proximal de una estructura o cuerpo, [...]
				no spec	c26 DEA (5c) [parte]	(<i>Anat</i>) Parte [...] proximal de un músculo o de un órgano.
	p.v.	anterior	non-specific reference	no spec	c27 DEA (6a)	Parte anterior de una cosa.
				structure, body	esp (bmsc)	c28 MEDD (1) [parte]

Table 3. Delimitation and grouping of the senses of *cabeza*: c19 a c28

Senses of LU <i>cabeza</i>			Dictionary	Lexicographical representation			
round part	non-specific reference		c29 spec (bmsc)	MEDA (2) [2ª parte]	[...] estructura anatómica de forma ensanchada o redondeada.		
	specific reference	inflorescence	spec (bot)	c30	DCHC (2)	Densa inflorescencia de pequeñas y apretadas flores, usualmente sésiles, rodeadas de un involucre.	
				BOTA (2) (cabezuel 1)	Cabezuela = cabezuela Término con que los romancistas españoles ([...]) tradujeron el vocablo <i>capitulum</i> , con que LINNÉ designó las "flores compuestas", y que todavía hoy se emplea como sin. de <i>capítulo</i> .		
			no spec (bot)	semi spec.	c31	DEA (cabezuel 1) [ejemplo]	<i>cabezuela</i> [...] Ybarra-Cabetas <i>Ciencias</i> 274: Son inflorescencias indefinidas de flores sentadas, el amento, constituido por un eje en que se asientan las flores que son unisexuales; la espiga, en que las flores son hermafroditas; cabezuela, si las flores están insertas en la terminación del pedúnculo, etc.
					DEA (capítulo 6) [ejemplo]	[...] Bustinza-Mascaró <i>Ciencias</i> 259: Hay muchos tipos [de inflorescencias], entre ellos, como más frecuentes: racimo ...; cabezuela o capítulo, reunión de flores sin pedúnculo colocadas paralelamente y apretadas sobre un involucre o ensanchamiento del pedúnculo de la inflorescencia.	
			no spec	no spec	c32	DRAE (capítulo 9)	capítulo <i>Bot.</i> cabezuela, inflorescencia.
						DRAE (cabezuel 6)	cabezuela <i>Bot.</i> Inflorescencia cuyas flores, que son sentadas o tienen un pedúnculo muy corto, están insertas en un receptáculo, comúnmente rodeado de brácteas.
					DEA (capítulo 6) [sin ej]	capítulo (<i>Bot</i>) Cabezuela (inflorescencia).	
					GDLE (cabezuel 1)	BOTÁNICA Inflorescencia sentada sobre un receptáculo común, rodeada de brácteas, propia de las plantas compuestas.	
			-- spec	no spec	c33	DEA (cabezuela 1) [sin ej]	cabezuela Inflorescencia cuyas flores, sin pedúnculo, surgen de un eje deprimido y ensanchado [...]
						VOX (3)	Cabezuela = Inflorescencia de flores sentadas sobre un receptáculo común, rodeada por un involucre de brácteas; es propia de la familia de las compuestas
	VOX (5)	capítulo = Inflorescencia densa de flores sésiles dispuestas sobre un pedúnculo aplanado.					
	receptacle of inflorescence	spec. (bot)	c34	BOTA (2) (cabezuela 2)	Cabezuela = cabezuela Para Gándara, Sist., p.174, receptáculo del capítulo.		
root	spec (bot)	c35	BOTA (1)	Término usual con que se designa la base de la raíz maestra o primaria.			

Table 4. Delimitation and grouping of the senses of *cabeza*: c29 a c35

These tables represent the integral senses delimitation of *cabeza*. Italics indicate a minimum definition, in order to identify a sense or group of senses. Numbers after dictionary codes indicate the definition number. The kinds of senses are distinguished according to: specialized character, thematic field or domain, and point of view. Abbreviations used are the following:

spec = specialized

semi spec = lower degree of specialization

no spec = not specialized

(bot) = botany

(bmsc) = biological and medical sciences

p.v. ctt+cta = content and container point of view

p.v. cta = container point of view

p.v. ctt = content point of view

p.v. face+ cranium = face and cranial point of view

p.v. cranium = cranial point of view