

Leocadio Martín

LEXICAL FIELDS AND STEPWISE LEXICAL DECOMPOSITION

IN A CONTRASTIVE ENGLISH-SPANISH VERB VALENCY DICTIONARY

Introduction

In line with the recent trend to bridge the gap between theoretical and applied linguistics, one of the most urgent and challenging tasks in the domain of lexicography is the elaboration of contrastive dictionaries and lexica, organized both on a semasiological and on an onomasiological basis. And in keeping with this trend, the decision to supply lexical items with different types of grammatical information relevant for their use in syntactic constructions can be regarded as another improvement over the traditional bilingual dictionary. Moreover, segmental or specialized lexica of different types are becoming increasingly necessary as complements of dictionaries covering the general vocabulary of individual languages. Among these, one type which is felt to be urgently needed seems to be the monolingual and the contrastive verb valency dictionary. As the verb seems to constitute the central and most prominent element in a predication, its complete description requires a grammatical apparatus which is much more complex than that of the other parts of speech. It is perhaps mainly for this reason that so much research has been done in this field since Tesnière's pioneering work, especially during the past decade in Germany (cf. WORTERBUCH ZUR VALENZ UND DISTRIBUTION DEUTSCHER VERBEN, KLEINES VALENZLEXIKON DEUTSCHER VERBEN, DICCIONARIO DE VALENCIAS VERBALES ALEMÁN-ESPAÑOL, FRANZÖSISCHES VERBLEXIKON, Gerling and Orthen 1979, Emons 1974, Schepping 1982, Projektgruppe Verbvalenz 1981, etc.).

For these reasons it seems a more practical method to start a contrastive dictionary with the verb. Furthermore, the possibilities of elaboration of these types of dictionaries with a scientific basis are beginning to be a reality thanks to recent advances in lexical semantics, particularly in the so-called lexical field theory, on the one hand, and in the methods of contrastive linguistics, on the other. However, it would be as well to add here that any project along these lines must, of necessity, be of a provisional and rather experimental nature (cf. Hartmann 1980).

In this paper an attempt will be made to expound in a schematic way a model of a contrastive verb valency dictionary, based on onomasiological principles currently under elaboration in the Section on Contrastive Linguistics of the English Philology Department of the University of Granada.

As this model is not so much an attempt at elaborating a verb valency contrastive dictionary per se, but rather at laying the foundations of such a lexicon, the research procedures will be expounded together with the organization of the model.

As regards the organization of the lexicon, ideally a model of a verb valency dictionary would have to deal at least with the following points:

(1) Organization of lexical fields. This procedure would entail:

(a) A search for methods of selection and delimitation of the lexical fields of each language involved, together with methods for the establishment of semantic hierarchy relations, taking into account the establishment of 'dimensions', as defined by Geckeler (1973:24); the problem of 'points de vue' (cf. Germain 1979); and inter-field relations.

(b) A system of definitions of lexical items based on hierarchical semantic relations, which entails the utilization of hyperonymic terms as defining terms in the definition of their hyponyms.

(c) Definitions of archilexemes, with factorization of components taken from dictionary definitions as a possible practical method.

(d) Arrangements of lexical fields into 'constellations', in order to account for different types of sense relations such as synonymy, antonymy, hyponymy, etc., together with 'Aktionsarten' (i.e. inception, duration, cessation, iteration, etc.) and relations involving causation in each subsystem.

(2) Organization of different types of grammatical information in lexical units.

(3) Methods of representation of fields, dimensions and lexemes. This entails the problem of finding a formula that would capture both the semantic definitions and grammatical information of lexical items.

(4) Establishment of contrastive relations

(a) at intra- and interlingual level;

(b) at field level, dimension level and lexical unit level.

In order to illustrate how these notions and assumptions would work in practice, our project has been organized along the lines described below.

Organization of the verbal lexicon

With regard to one of the most widely debated issues, viz. the organization of the verbal lexicon into lexical fields, we have tried to find a compromise solution between theory and practice in the following way:

We have restricted our research to the general vocabularies of English and Spanish. Hence our results and conclusions can only be tentatively valid for these languages, because, as a working hypothesis, we start from the assumption that semantic universals can only be arrived at from the analysis of the vocabularies of particular languages. In addition, in our analysis the contrast is made on a bilateral basis.

Again, a compromise solution has been devised for the problem of how to set up criteria for the delimitation of lexical fields in the following areas:

(a) Concerning the practical problem of establishing lexical fields, we have had to rely both on intuitive knowledge (cf. Müller

1979) as well as on existing and well-established systems of organization of lexical fields, ranging from those set up on an extralinguistic conceptual basis to those organized on purely linguistic principles. (Well-known systems of classification based on extralinguistic reality are Hallig and Wartburg 1963, the *DICCIONARIO IDEOLOGICO* by Casares, Roget's *THESAURUS*, the *LONGMAN LEXICON OF CONTEMPORARY ENGLISH*, etc. Cf. also the monographs by De Zordi 1972, Karcher 1979, Nellessen 1982, Schepping 1982, Schneeberger 1964, Stadler 1969, and Snell-Hornby 1983.)

(b) As regards the theoretical level, we have relied upon the methodology of distinctive feature analysis and functional oppositions, as developed by structural semantics, fundamentally as found in 'lexematics' (cf. Coseriu 1977, 1978 and Geckeler 1981, 1973, 1971).

Specifically, our application of these structural principles starts first with the analysis in distinctive features of small groups of lexemes, taking into account exclusively features which yield functional oppositions, and proceeds on a bottom-to-top basis to arrive at the archilexeme covering the entire field.

The fact that some archilexemes have no lexemic realization is not a problem for dictionary-making, but it certainly is a moot point for semantic theory.

Then, as regards the organization of definitions into hierarchical systems, in principle we can follow either a top-to-bottom procedure or, alternatively, a bottom-to-top procedure; however, it seems to us that, from a practical point of view, the latter procedure is more amenable to practical solutions.

This procedure consists basically of extracting the underlying hyperonymic defining verb of the lexical units under consideration, by 'factorization'. And the process is repeated for the factorized predicate until we arrive at the highest superordinate term. The lower predicates are defined by means of the term immediately superordinate to them, plus a specification (generally expressed by means of an adverbial phrase).

Having first dealt with the definitions of the lexemes in terms of their superordinate predicates and specifying adverbial phrases, we can now turn to the definition of archilexemes of fields and of constellations. The definitions of these archilexemes would be best captured by designational systems of relations. Since they cannot be defined in terms of other lexemes, they have to be defined in terms of noological structure and extralinguistic information. For this type of definitions the models devised by the techniques of componential analysis (cf. Nida 1975), Katz and Fodor and, particularly, Miller and Johnson-Laird (1976) and Miller (1978) are best suited.

For the task of devising a method for the elaboration of definition systems in a dictionary we have started from the definitions given in the most widely used dictionaries for each language. This procedure can be justified on the following grounds:

- (1) standard dictionaries contain the body of knowledge gathered by lexicographic tradition;
- (2) their definitions of lexemes have the status of referential authority for users of the languages involved;
- (3) generally speaking, their definitions provide a basis for extracting the stocks of more generic terms, which are intuitively felt by most speakers to be close to the status of archilexemes.

Although it is well-known that standard dictionaries, with few exceptions, do not apply a consistent method of definitions, these definitions contain nevertheless the information necessary for the procedure of factorization of the semantic components of lexemes.

One step further is the grouping of lexical fields into what has been termed 'constellations'. Constellations are organized in the following way: they have at their core a (super-) archilexematic verb which in most cases is the lexemic representation of a conceptual notion. The (super-) archilexematic verb must enter, as a superordinate term, in the definitions of other lexemes of the constellation, either directly or indirectly, i.e. by means of lexemes which occupy a lower position in the hierarchy of semantic relations. Around the core predicate is a network of verbal lexemes expressing different phases of a process, indicating, on the one hand, the states, actions, etc. associated with it, and on the other, their possible Aktionsarten (inception, duration, cessation, etc.). (Ballmer and Brennenstuhl's (1981) verb-models are organized on a basis partially similar to constellations, but the organization of some verb-models seems to have been arrived at through a rather sophisticated mixture of linguistic and extralinguistic criteria.)

Associated with each phase of the process there is a causative relation, which is expressed either by a lexeme or by a periphrastic construction. Among these we must single out, for its special relevance in the organization of constellations, a type of construction intermediate between syntactic constructions and lexicalized complex lexical units, namely the so-called functional verb construct ('Funktionsverbgefüge') (cf. Nickel 1968, Engelen 1968, Herrlitz 1973, Fink 1977, Björkman 1978, Martín 1983). Their function is in most cases to serve as fillers for lexical gaps in the lexemic expression of modes of action.

A typical example of a constellation would be the system of lexemes with /MOVE-1/ as centre or core:

1. Centre: /MOVE-1/ - /MOVERSE/
Causative action: /MOVE-2/ - /MOVER/
2. Inchoative phase: /GET INTO MOTION/ - /PONERSE EN MOVIMIENTO/
Causative action: /SET INTO MOTION/ - /PONER EN MOVIMIENTO/
3. Durative phase: /BE IN MOTION/ - /ESTAR EN MOVIMIENTO/
Causative action: /SET INTO MOTION/ - /PONER EN MOVIMIENTO/
(/PONER EN/ = /CAUSAR ESTAR EN/)

4. Cessative process: /STOP-1/ - /PARAR(SE)/
Causative action: /STOP-2/ - /PARAR/

The organization of grammatical information in verbal lexemes

After having established lexical fields, constellations and definition systems, the next step consists of supplying the lexical units with different types of grammatical information. All lexical units must be supplied with morphophonological, syntactic, pragmatic and, as far as possible, stylistic information. However, we will presently deal only with syntactic information, since it is the most relevant piece of information in a verb valency dictionary. The syntactic information can be broken down into the following specifications:

(1) quantitative valency: number of obligatory and facultative arguments required by the logico-semantic structure of the predicate (cf. Emons 1978, Dik 1978a);

(2) qualitative valency: it refers to the type of arguments from the point of view of their semantic function (cf. Dik 1978a, 1979) and of the syntactic constructions realizing them, what is called in German 'Satzbauplan' (cf. Emons 1978, Engelen 1975);

(3) relevant syntactic-semantic constraints on the arguments, expressed by a hierarchy of classemes, or even semes, when necessary.

Besides, specifications of the following types would also be necessary for a complete description and understanding of verbal lexemes:

(4) pragmatic analysis of lexical fields, with a meta-language for meaning explanations (cf. Jessen 1979);

(5) specifications concerning register, style, etc. (cf. Hartmann 1983);

(6) specification of possibilities of passivization and word-formation.

However, at the present state of the art, a great deal of research would be necessary to incorporate these specifications in a systematic way in dictionaries. For the time being it is only in some monographs where this type of research can be found.

Representation formulae of verbal lexemes

The goal of previous sections has been to delineate the semantic and syntactic information apparatus which we feel is required for every verbal lexical unit.

In this section we want to propose a notational device to capture, by means of an integrated formula, all the information associated with verbal lexemes, organized in a hierarchical manner (cf. Dik 1978a, 1978b, 1979, 1980), adapting in particular Dik's two key notions of the 'predicate frame' and the system of 'stepwise lexical decomposition'.

Functional Grammar, like other linguistic theories, distinguishes between a lexicon and different sets of rules. The lexicon consists of basic predicate frames (verbal as well as non-verbal) and basic terms, referential expressions for entities in some world. Predicate frames are "schemata specifying a predicate together with a skeleton of the structure in which it can appear" (Dik 1979:5). The lexicon includes basic terms and basic predicates; special rules form derived predicates and terms through predicate and term formation rules. Besides, Functional Grammar operates with lexical items already existing in individual languages and, therefore, no abstract lexical decomposition is allowed.

Each predicate frame specifies the following semantic and syntactic properties of the predicate it contains (Dik 1978a): (a) its lexical form; (b) the (sub-) category to which it belongs; (c) its number of arguments; (d) the semantic function of these arguments; (e) the selection restrictions imposed on these arguments. At the same time, each predicate frame designates a state of affairs (Actions, Positions, Processes and States, defined by the parameters 'Dynamism' and 'Control'; cf. Dik 1978a). Thus, the predicate frame of eat would be:

eat_V (x₁: animate(x₁))_{Ag} (x₂: solid food(x₂))_{Goal}

This predicate frame indicates that eat is a two-place predicate of the syntactic category V(erb) with an animate term fulfilling the semantic function 'Agent' and a term indicating some type of food fulfilling the semantic function 'Goal' as arguments.

As for the semantic definition of predicates, the method of stepwise lexical decomposition defines predicates in a hierarchical order, from more specific to more generic superordinate terms, i.e. each predicate frame is defined in terms of the configurations of other lexical items of the same language. In other words, it is roughly tantamount to the previously discussed bottom-to-top procedure (see below for a sample fragment of a field).

Contrastive analysis: sample fragment of a field

The contrast constitutes the ultimate stage in the elaboration of a dictionary. The contrast should be a two-level one: the contrast of lexical units and that of field. With regard to lexical units, we can conceive of two distinct and separate types of contrast:

(a) intralingual, i.e. contrasting each lexical unit with the other units of its group, specifying the differentiation features;

(b) interlingual: relations of equivalence with lexemes of the other language, specifying also the differentiation features and indicating the units which express the equivalence in the other language.

With regard to contrast at the lexical-field level, only the relations of symmetry and isomorphy in the presence or absence of lexemes of the other language should be indicated.

Below is given an illustration of the model using a sample fragment of the field of 'verbs of luminosity':

1. Organization of the field in terms of dimensions, with the archilexemes of the lower-level dimensions:

1.1. Appearance of light

1.1.1. Reference to period of day: /DAWN-1/ - /AMANECER/

1.1.2. Reference to atmospheric phenomena: /CLEAR-1/ - /CLAREAR/

1.1.3. Reference to transparency: /CLEAR-2/ - /TRANSPARENTARSE/

1.1.4. Reference to light with emission of heat: /BURN-1/ - /ARDER/

1.2. Intensity of light

1.2.1. Reference to degree of intensity:

1.2.1.1. higher: /FLASH/ - /DESTELLAR/

1.2.1.2. lower: /FLICKER/ - /CENTELLEAR/

1.2.2. Reference to brightness: /SHINE/ - /BRILLAR/

1.2.3. Reference to light with emission of heat: /BEAM/ - /IRRADIAR/

1.3. Cessation of light

1.3.1. Reference to period of day: /DARKEN/ - /OSCURECER/

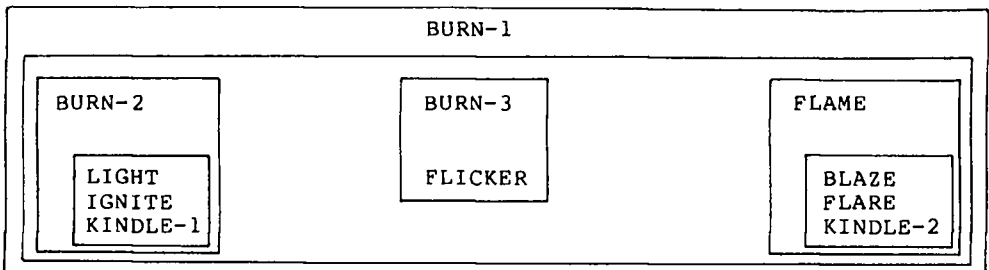
1.3.2. Reference to atmospheric phenomena: /CLOUD-1/ - /NUBLARSE/

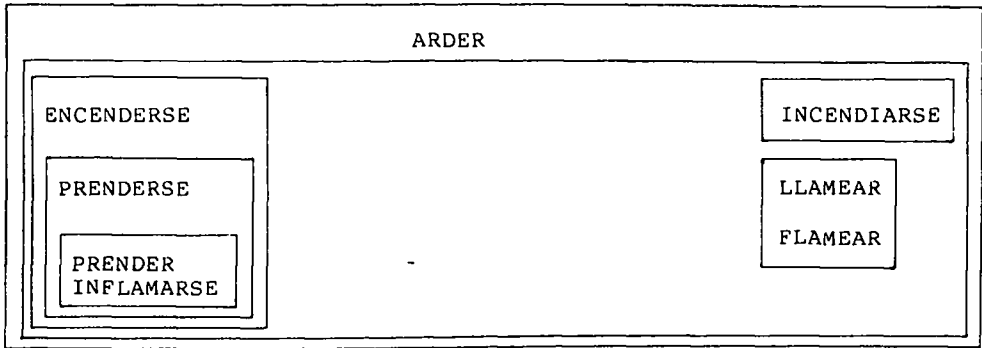
1.3.3. Reference to opacity: /CLOUD-2/ - /ENSOMBRECERSE/

1.3.4. Reference to light with emission of heat: /EXTINGUISH/ - /APAGARSE/

2. Diagrammatic exemplification of the lower-level dimension

1.1.4.: light with emission of heat in both languages:





3. Definitions of the lexemes of the subgroup /FLAME/ by means of predicate frames in accordance with the system of stepwise lexical decomposition (with simplified notation):

FLAME_V (x₁: NP <-Anim, (Phys. Obj.)> (x₁))_{Aff}

=df

[BURN-1_V (x₁: NP <...> (x₁))_{Aff}] Process
(y₁: AdvP <brightly> (y₁))_{Manner}

FLARE_V (x₁: NP <...> (x₁))_{Aff}

=df

[FLAME_V (x₁: NP <...> (x₁))_{Aff}] Process
(y₁: AdvP <unsteadily> (y₁))_{Manner}

BLAZE_V (x₁: NP <...> (x₁))_{Aff}

=df

[FLAME_V (x₁: NP <...> (x₁))_{Aff}] Process
(y₁: AdvP <thoroughly and with more intensity>
(y₁))_{Manner} (y₂: AdvP <for a short time>
(y₂))_{Time}

KINDLE-2_V (x₁: NP <...> (x₁))_{Aff}

=df

[FLAME_V (x₁: NP <...> (x₁))_{Aff}] Process
(y₁: AdvP <with flame : red colour : intense>
(y₁))_{Manner}

4. Contrastive analysis

4.1. At field level: cf. diagram above for a lower-level dimension.

4.2. At lexical unit level

4.2.1. Intralingual: e.g.: /FLAME/ opposes /KINDLE-2/ in the feature 'with flame', further specified by two restrictors: 'red colour' and 'intense'; /FLAME/ opposes /BLAZE/ in 'degree of intensity', etc.

4.2.2. Interlingual: in this group, except for its archilexeme, the English lexemes have to be rendered into Spanish by means of periphrastic constructions: e.g.: /BLAZE/:/ARDER CON LLAMA INTENSA;/ /FLARE/: /ARDER CON LLAMA INCONSTANTE/, etc.

Conclusion

The character of this paper has been clearly programmatic; hence many important details of the model have been left out. Our goal has been to give an overview of the model itself, laying the stress on the importance and usefulness of lexical field theory on the one hand and of the notions of predicate frame and stepwise lexical decomposition (which we have borrowed from Dik's Functional Grammar), on the other; while lexical field theory enables us to articulate the structure of the lexicon, the method of representation by means of the system of stepwise lexical decomposition enables us to capture in an economic way both the hierarchy of lexical relations and the different types of grammatical information required by verbal lexemes for their correct usage in syntactic constructions.

Note

¹ I should like to thank my colleague Dr. J.M. Martín whose comments on an earlier version helped me make this paper more readable. I am also indebted to my student Mr. O. Ranea for allowing me to take from his Memoria de Licenciatura (in preparation) the illustrations of the sample field described in the penultimate section. All errors are, of course, my own.

References

- Ballmer, Th. and Brennenstuhl, W. (1981) "Lexical analysis and language theory" in Words, Worlds and Contexts ed. by H.-J. Eikmeyer and H. Rieser. Berlin: W. de Gruyter
- Björkman, S. (1978) Le type 'avoir besoin'. Etude sur la coalescence verbo-nominale en français. Uppsala: Almqvist & Wiksell
- Coseriu, E. (1977) Principios de semántica estructural. Madrid: Gredos
- Coseriu, E. (1978) Gramática, semántica, universales. Madrid: Gredos
- De Zordi, G. (1972) Die Wörter des Gesichtsausdrucks im heutigen Englisch. Ph.D. dissertation, Zürich University
- Dik, S.C. (1978a) Functional Grammar. Amsterdam: North-Holland
- Dik, S.C. (1978b) Stepwise Lexical Decomposition. Lisse: P. de Ridder

- Dik, S.C. (1979) "Seventeen sentences: basic principles and applications of Functional Grammar" in Current Approaches to Syntax ed. by E. Moravcsik and J. Wirth. New York: Academic Press
- Dik, S.C. ed. (1980) Studies in Functional Grammar. London-New York: Academic Press
- Emons, R. (1974) Valenzen englischer Prädikatsverben. Tübingen: Niemeyer
- Emons, R. (1978) Valenzgrammatik für das Englische. Tübingen: Niemeyer
- Engelen, B. (1968) "Zum System der Funktionsverbgefüge" Wirkendes Wort 5: 289-303
- Engelen, B. (1975) Untersuchungen zu Satzbauplan und Wortfeld in der geschriebenen deutschen Sprache der Gegenwart. München: Hueber
- Fink, S. (1977) "Analytical trends in contemporary German: a semantic description of 'functional verbs' expressing 'modes of events'" in The Third LACUS Forum. Columbus, South Carolina: Hornbeam Press
- Geckeler, H. (1971) Strukturelle Semantik und Wortfeldtheorie. München: Fink
- Geckeler, H. (1973) Strukturelle Semantik des Französischen. Tübingen: Niemeyer
- Geckeler, H. (1981) "Structural semantics" in Words, Worlds and Contexts ed. by H.-J. Eikmeyer and H. Rieser. Berlin: W. de Gruyter
- Gerling, M. and Orthen, N. (1979) Deutsche Zustands- und Bewegungs- verben. Tübingen: Narr
- Germain, C. (1981) La sémantique fonctionnelle. Paris: P.U.F.
- Hallig, R. and Wartburg, W. von (1952/63) Begriffssystem als Grundlage für die Lexikographie. Berlin: Akademie
- Hartmann, R.R.K. (1980) Contrastive Textology. Heidelberg: Groos
- Hartmann, R.R.K. (1983) "On specifying context" in Lexicography: Principles and Practice ed. by R.R.K. Hartmann. London-New York: Academic Press
- Herrlitz, W. (1973) Funktionsverbgefüge vom Typ 'in Erfahrung bringen'. Tübingen: Niemeyer
- Jessen, H. (1979) Pragmatische Aspekte lexikalischer Semantik. Verben des Aufforderns im Französischen. Tübingen: Narr
- Karcher, G.L. (1979) Kontrastive Untersuchungen von Wortfeldern im Deutschen und Englischen. Frankfurt a.M.: Lang
- Martín, L. (1983) "Las unidades sintagmáticas verbales en inglés y en español. Metodología de análisis" in Actas del Ier Congreso Nacional de Lingüística Aplicada. Madrid: A.E.S.L.A. & S.G.E.L.
- Miller, G.A. (1978) "Semantic relations among words" in Linguistic Theory and Psychological Reality ed. by M. Halle et al. Cambridge, Mass.: M.I.T. Press
- Miller, G.A. and Johnson-Laird, Ph.N. (1976) Language and Perception. Cambridge, Mass.: M.I.T. Press
- Müller, R. (1979) "Psycholinguistische Argumente zugunsten der Wortfeldtheorie" in Linguistic Agency, Universität Trier
- Nellesen, H. (1982) Die Antonymie im Bereich des neufranzösischen Verbs. Tübingen: Narr
- Nickel, G. (1968) "Complex verbal structures in English" IRAL 6: 1-21
- Nida, E. (1975) Componential Analysis of Meaning. The Hague: Mouton
- Projektgruppe Verbvalenz (1981) Konzeption eines Wörterbuchs deutscher Verben. Tübingen: Narr
- Scheppling, M.T. (1982) Kontrastive semantische Analyse von Verben des Visuellen im Französischen und Deutschen. Tübingen: Narr

- Schneeberger, M. (1964) Das Wortfeld des Lachens und Lächelns im modernen Englisch. Ph.D. dissertation, Zürich University
- Snell-Hornby, M. (1983) Verb-descriptivity in German and English. A Contrastive Study in Semantic Fields. Heidelberg: Winter
- Stadler, R. (1969) Die Bezeichnung der Geräusche im Neuenglischen. Ph.D. dissertation, Zürich University
- Tesnière, L. (1959/66) Éléments de syntaxe structurale. Paris: Klincksieck