RESLA 19 (2006), 41-66

DERIVATIONAL MORPHOLOGY IN ROLE AND REFERENCE GRAMMAR: A NEW PROPOSAL[1]

FRANCISCO JOSÉ CORTÉS RODRÍGUEZ
Universidad de La Laguna

ABSTRACT. *This paper provides an analysis of word formation processes from the perspective of the Lexical Grammar Model in its more recent versions. In doing so, it proposes a model of derivational morphology to be integrated in Role and Reference Grammar. Such a model deals with word formation processes from two perspectives, as a grammaticalization of the lexicon and as a lexicalization of predication structures. The first view is essentially lexicological in nature, whereas the second one is essentially syntactic. The analyses carried out in this paper will concentrate on the lexicological aspect of the model; specifically, a new proposal for the semantic representation of word formation processes is devised. Such a system of lexical representation involves designing Lexical Templates for both free and bound lexical morphemes and making use of Semantic Redundancy Rules to account for the different semantic values that a derivational pattern may have.*

KEYWORDS. *Word-formation, lexicology, lexical template, redundancy rules*

RESUMEN. *Este artículo ofrece un análisis de varios procesos de formación de palabras en el marco del Modelo de Gramáticas Léxicas en su versión más reciente. Dicho análisis conlleva una propuesta de un modelo de formación de palabras que formaría parte del diseño de la Gramática del Papel y la Referencia. Este modelo aborda los procesos de creación léxica desde dos puntos de vista, como una gramaticalización del léxico y como una lexicalización de estructuras predicacionales. La primera perspectiva es esencialmente lexicológica mientras que la segunda es de naturaleza sintáctica. Los diversos análisis de este trabajo abordan los aspectos lexicológicos del modelo; en concreto, se propone un nuevo sistema de representación semántica de los procesos derivativos, denominado Plantilla Léxica, la cual será de utilidad para la representación de los morfemas léxicos libres y trabados. Además, se postula el uso de unas Reglas de Redundancia que permiten dar cuenta de los diversos valores semánticos que pueden concurrir en un patrón derivativo concreto.*

PALABRAS CLAVE. *Formación de palabras, lexicología, plantilla léxica, reglas de redundancia*

1. The context: Lexical representation and lexical rules in Role and Reference Grammar

From its inception the Lexical Grammar Model (LGM henceforth)[2] is an enriched version of the original Role and Reference Grammar's (RRG, henceforth) lexical component (Van Valin and La Polla 1997; Van Valin 2005). As regards the primary lexicon, its most important contribution to this grammatical model has been the development of a semantic component which once added to RRG's Logical Structures constitutes the core of semantic representations. The most recent contributions in the LGM (Mairal Usón and Faber 2005; Mairal Usón and Guest 2005) propose the integration of Mel'cuk's Lexical Functions (Mel'cuk 1988, 1989; Mel'cuk and Wanner 1996) and Wierzbicka's Natural Semantic Metalanguage Primitives (Wierzbicka 1987, 1996; Goddard and Wierzbicka 2002) together with RRG's Logical Structures to design Lexical Templates for the semantic decomposition of predicates.

Even though it can be considered a natural extension of RRG's primary lexicon, the proposal for the analysis of word-formation in the LGM varies substantially from RRG's conception. The remainder of this section will provide a description of the standard treatment of word-formation in this grammatical model. The following section shows sketchily the LGM approach to derivational processes, and the way it fits within the latest proposal of a U(niversal) L(exical) M(etalanguage) by Mairal and Guest (2005, 2006).

RRG explains word formation phenomena by means of general lexical rules of the following type:

> (1) *verb* + *-er* → [$_{N}$ *verb* + *-er*] 'x$_{i}$ which *verbs'* ([$_{LS}$...(x$_{i}$,....)...]), where 'x' is the actor argument in the logical structure (Van Valin and LaPolla 1997: 188-189)
>
> (2) **do'**(x, ∅) CAUSE [BECOME **destroyed'** (y)] → *destruction* (x,y) (Van Valin and LaPolla 1997: 186)

Rule (1) accounts for agent nominalizations, and Rule (2) is the lexical redundancy rule that expresses the relationship between the base verb and its corresponding derived action nominal.

From the point of view of a lexicological model like the LGM such an approach to the processes of lexical creation is insufficient in many respects. In Mairal Usón and Cortés Rodríguez (2000-01: 273-274) there is a detailed explanation of the weaknesses of this kind of rules, among which the following are of fundamental importance: they are rules that maximize regularity and sacrifice descriptive power both from a semantic and a morphological perspective. Neither all agent formations are deverbal nor do they show a coherent unified type of meaning. Furthermore, RRG assumes, following Nunes (1993) that the representation of derived action nominals is the same as the one of their corresponding bases, which is again an overgeneralization. A close scrutiny of both

types of nominals reveals that there is much more to explain: the combination of a base (be it verbal or not) and a nominalizing (or of any other kind) affix does not involve a mere conversion of the grammatical function of one word. Word formation involves complex processes with two fundamental features:

(i) As a lexicological phenomenon, it is concerned with the semantic relations that hold between the components of a complex lexeme (the view proposed in the Lexematic School of Semantics, Coseriu 1978). It is important to consider here that the meaning of a complex lexical unit consists of: (a) the sum of the meanings of its components, which is predictable by the application of the word formation rules (their signification), plus (b) the relation of the linguistic signs with the referents (their designation).

(ii) As a grammatical phenomenon, derived lexical units are the morphosyntactic expression of a (group of) grammatical relation(s). From this perspective, word-formation is usually understood as the result of a reduction from analytical underlying structures similar to the ones that represent clauses or phrases. This does not involve that word-formation processes are identical to syntactic processes: the lexicalist tradition (initiated in Chomsky 1970 and continued in Aronoff 1979, Roeper and Siegel 1978, Scalise 1987, among many others) proved the insufficiencies of adapting derivational morphology to the syntactic apparatus of a grammar, as the productivity and predictability of word formation rules makes them very different to the much more regular and consistent rules of syntax.

The conjunction of these two perspectives offers a view of word formation as a systematic process of lexicalization of analytical (predicational) structures subject to a set of particular conditions, which pertain to all the levels of a grammatical model: phonology, morphology, syntax, semantics and pragmatics. This process of lexicalization serves the purposes of creating labels for new conceptual categories, taking as ingredients already existing lexical material (lexemes and affixes), which is the essentially lexicological side of this phenomenon. For reasons of space, this paper will focus on the lexicological approach of the LGM[3]. Its main aim will be to devise a coherent system of semantic representation for both the bases and the affixes involved in a derivational process, and also for the semantic variation that may occur during the fusion between the components of a complex lexeme. In doing so, our proposal will introduce two important notions with respect to what RRG has said so far: (i) a new conception of the lexicon that considers derivational affixes as lexical units; as such, they will be clustered in lexical classes and semantically represented by Lexical Templates, much alike the rest of predicates; (ii) a reconsideration of semantic redundancy rules as first formulated in Van Valin and Wilkins (1993). As shall be shown below, the function of these rules is to account for the relationships between the lexical representation of the affix and the lexical representation of the base.

2. An alternative model for lexical morphology

In relation to the first issue, in our proposal the lexicon includes lexical morphemes of two types, free lexical morphemes –or words– and bound lexical morphemes –derivational affixes–; both free and bound morphemes will be semantically represented by means of their corresponding lexical template. Both are also grouped in lexical classes defined by their similarity of meaning. The difference between both types of morphemes lies only in their distributional behaviour. The conception of word-formation morphemes as lexical predicates stems from the proposal put forward originally by Martín Mingorance (cf. Marín Rubiales 1998: 62-81), in which the affixal lexicon constitutes the base component for the generation of morphologically complex words. This means that the lexicon in RRG should also host the inventory of affixal units. In this regard, the lexicon would now have the following format:

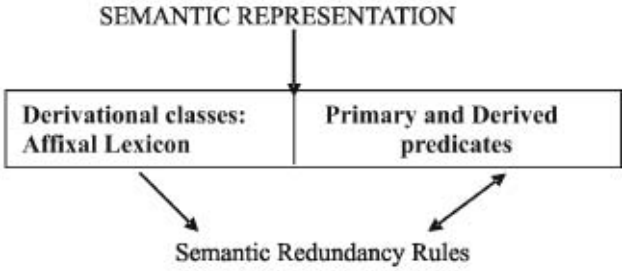

Figure 1. *The Lexical Component in the LGM*

LGM semantic representations have the format of lexical templates (LTs) whose design is a compromise between the *Aktionsart* characterization of lexical units as proposed in RRG and to a lesser degree in Rappaport and Levin (1998) on the one hand, and the richer semantic description as postulated in the Functional Lexematic Model (Faber and Mairal 1999). With regard to the first aspect, RRG uses a system to represent the semantic structure and argument structure of verbs and other predicates (their logical structure, LS). It is based on the *Aktionsart* distinctions proposed in Vendler (1967), and the decompositional system is a variant of the one proposed in Dowty (1979); there is also one non-Vendlerian class, namely semelfactives (Smith 1997). Lexical classes are divided into states, activities, achievements, semelfactives and accomplishments together with their corresponding causatives. States and activities are primitives (these are marked in boldface plus a prime), whereas accomplishments and achievements consist of either a state or activity predicate plus a BECOME and an INGR operator respectively; the non-telic variants of achievements are introduced by the operator SEML. There are a number of tests which determine which class the verb in a clause is to be assigned (see Van Valin and LaPolla 1997: 90-128).

The inventory of logical structures formulated within the RRG framework is the following (Van Valin and LaPolla 1997: 109; Van Valin 2005: 45):

Verb Class	Logical Structure
State	**predicate'** (x) or (x,y)
Activity	**do'** (x, [**predicate'** (x) or (x,y)]
Achievement	INGR **predicate'** (x) or (x,y), *or* INGR **do'** (x, [**predicate'** (x) or (x,y)]
Semelfactive	SEML **predicate'** (x) or (x,y), *or* SEML **do'** (x, [**predicate'** (x) or (x,y)]
Accomplishment	BECOME **predicate'** (x) or (x,y), *or* BECOME **do'** (x, [**predicate'** (x) or (x,y)]
Active accomplishment	**do'** (x, [**predicate$_1$'** (x, (y))] and BECOME **predicate$_2$'** (z,x) or (y)
Causative	α CAUSES ß where α, ß are LS of any type

Figure 2. *Logical Structures in RRG*

However, the LGM proposes an enrichment of these logical structures by adding a semantic characterization, which will permit firstly to organize the lexicon in semantically coherent classes and hierarchies, and secondly –once it has been assumed (Mairal Usón and Faber 2005) that semantic characterization is done by means of a restricted semantic metalanguage –a close set of undefinables or primitives– the cross-linguistic validity of the approach is guaranteed. Such a semantic metalanguage is a combination of Wierzbicka's Natural Semantic Metalanguage (Wierzbicka 1987, 1996; Goddard and Wierzbicka 2002), Mel'cuk's Text-Meaning Theory (Mel'cuk 1988, 1989; Mel'cuk and Wanner 1996) and the set of nuclear terms or superordinates of the lexical classes as analyzed in Faber and Mairal (1999: 279-293). Lexical templates have the following format:

[semantic representation] + logical structure = predicate

Figure 3. *Structure of Lexical Templates*

The first part of the template includes the semantic parameters that differentiate one predicate form others within the same domain; the second part codifies its event structure and the set of grammatically salient properties.

The first component is encoded by means of semantic primitives and lexical functions that are essentially paradigmatic, while the representation of the second component is the

same as RRG logical structures. With regard to the notational conventions, the LGM makes use of internal and external variables. Internal variables are marked with numerical subscripts, while external variables are represented by Roman characters.

Thus, according to Mairal Usón and Faber (2005) in the lexical class of Cognition verbs in English, the lexical units are defined on the basis of *know*, which is the superordinate term in the whole verbal domain. The various hyponyms of *know* are generated by applying Mel'cuk's Lexical Functions to them; for example, the representation of the verb *learn* would be the following:

(3) **learn**: [INCEP$_{1,2}$] **know'** (x, y)

The entry in (3) is composed of: (i) the semantic component in brackets; (ii) the representation of the logical structure. This predicate is given in the form of a state logical structure which takes **know'** as a primitive and has two arguments. Furthermore, this logical structure is in turn modified by a lexical function (or operator) INCEP, since l*earn* is defined as inceptive *know* ('to come to know something'). As shown in (3), lexical inheritance allows the packaging of enriched lexical information into one unified format since the hyponyms inherit the properties of their superordinate terms.

Turning back to the semantics of complex lexemes, the generation of a derived word is the result of a fusion process between (the semantic representation of) an affix and (that of) a predicate (word); this process is mediated by a (set of) Semantic Redundancy Rule(s), and the final output is the (Semantic Representation of) a new lexical unit.

This is represented in the above diagram by the double-headed arrow that binds the SRRs and the repository of predicates: lexical units act both as input for the generation of derived words and are also the result of this process. Suffice the following to illustrate the fusion process between an affix and a base:

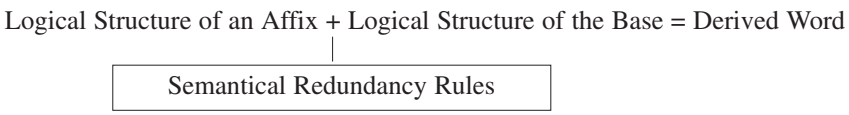

Figure 4. *Fusion processes in word-formation*

Redundancy rules were originally proposed by Jackendoff (1975) for morphological processes, and their more relevant feature was their static character: they showed the lexical relation that existed between a derivative form and its corresponding base. Nevertheless, Jackendoff also admits the possibility of them being truly generative, as they can be used for the generation of novel, non-lexicalized formations. In a similar vein, Bybee (1998) proposed that lexical rules in morphology are abstract schemas that capture a generalization; i.e. express a relationship present in several derivational products. Our use of SRRs will yield in between a static and a dynamic process: they do

reveal lexicalization patterns present in a number of morphologically complex structures which are formed by a certain (class of) affix(es). But given the nature of morphogenesis (Hagège 1993) using these fixed patterns for the creation of novel forms (i.e. they show the paradox of using old material for creating a new one) SRRs are potentially dynamic schemas subject to more or less constant activation by language users. The frequency of activation of a given SRR will reveal the degree of productivity it has.

The format of SRRs is basically the one proposed in Van Valin and Wilkins (1993: 517) and retaken in Mairal Usón and Faber (2005) for the representation of the semantic structure of complements and their corresponding morphosyntactic forms:

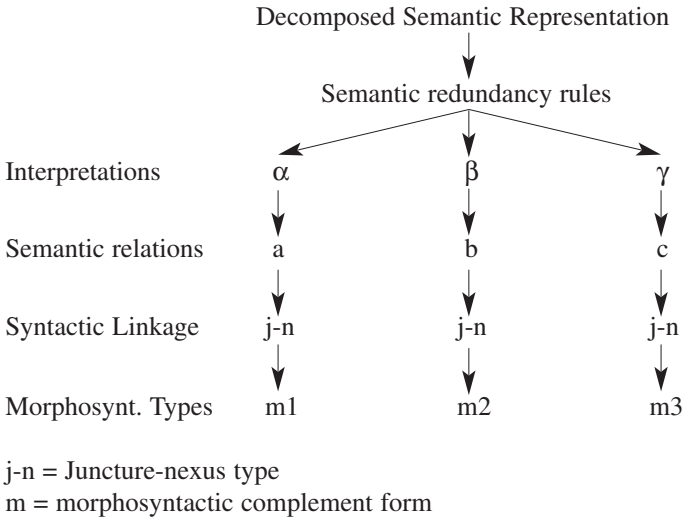

Figure 5. *SRRs in RRG*

The following examples are a simplified description of the generation of two verbal units by means of the causative suffix *–iz–*. As can be seen, the semantic information of the bases is crucial for the activation of different redundancy rules, which in the end would account for the semantic compatibility between the base and the affix and determine to a great extent the final meaning of the new word.

(4) Spanish *legalizar* ('legalise')

-izar: **do'**(x, ∅) CAUSE [LT] + legal: **be'** (y, [**legal'**])

SRR: [LT] → BECOME **pred'** (φ_{BASE})

(5) Spanish *entronizar* ('enthrone')

en-X-izar: **do'**(x, ∅) CAUSE [LT] + trono: **trono'** (y <{....Q_t: **BE-LOC'** (y,z)}>)

SRR: [LT] → BE-LOC (φ_{BASE},y).

2.1. *Word –formation in the ULM: The grammar of the lexicon*

As mentioned above, this paper aims to propose a model of lexical morphology that fits in the proposal put forward by Mairal Usón and Guest (2005, 2006) of lexical representation in the LGM based on an U(niversal) L(exical) M(etalanguage) whose more immediate application is the development of computational software for automatic translation. The ULM feeds upon different crucial notions for lexical representation, such as:

(a) Primes and lexical functions, as described in Mairal Usón and Faber (2005). According to them the semantic structure of a lexical unit should consist of two parts: a representation of its logical structure (a predicate's Aktionsart characterization as developed in RRG) and a semantic description in terms of Wierzbicka's Natural Semantic Metalanguage and Mel'cuk's Text-Meaning Theory

(b) The mathematical notion of interval

(c) Fuzzy set theory

The development of ontologies is based on fuzzy logic for knowledge representation. Specifically Mairal and Guest (2006) propose the development of two ontologies to represent respectively the properties of predicates and objects (or arguments for predicates) and there must be a third ontology to capture the ways the two previous ones interact. Both predicates and objects are defined in terms of a metalanguage using the elements of (a) –universal primitives and functions– that can be modified by interval operators.

The following figure shows the architecture of the ULM:

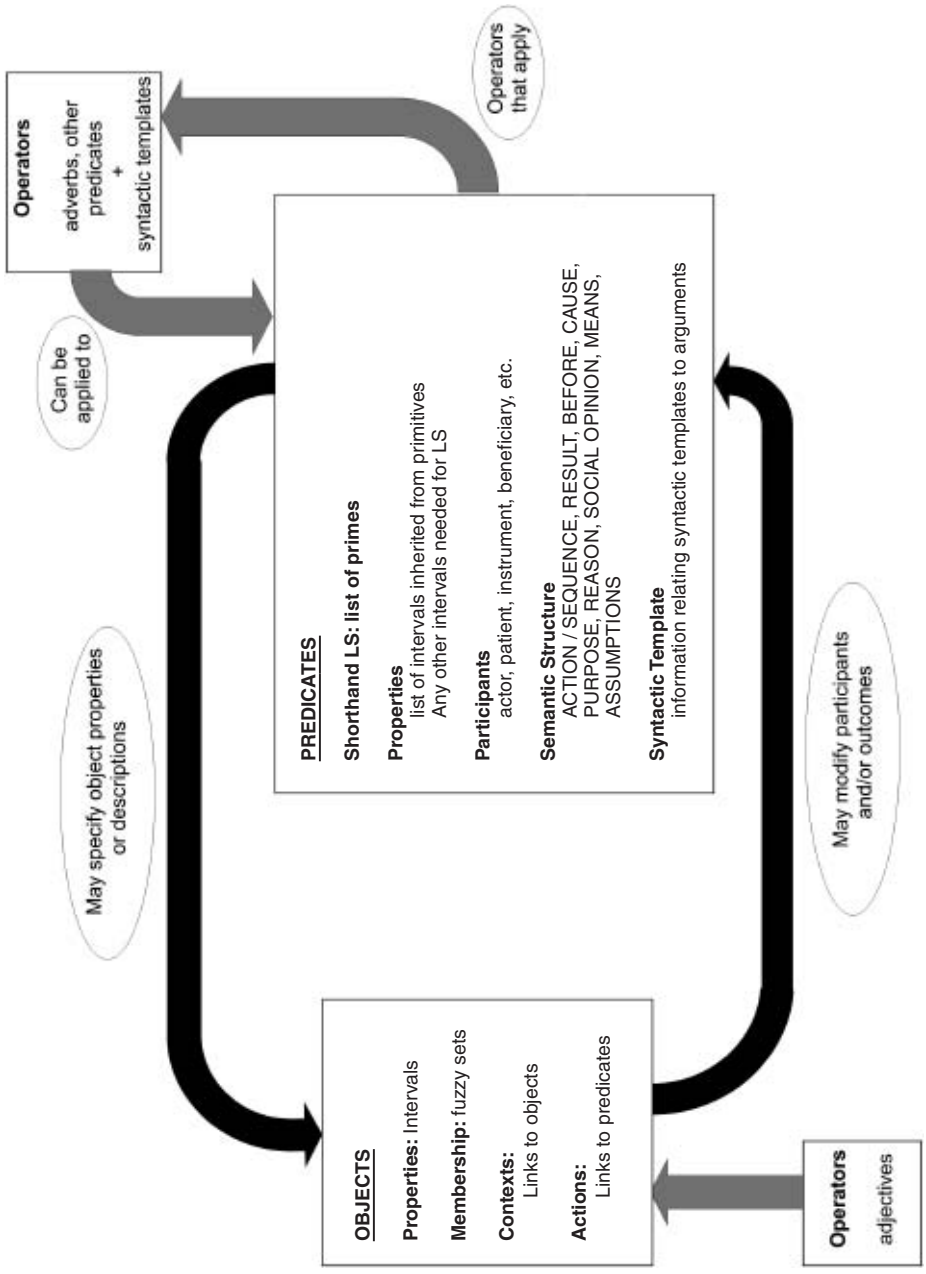

Figure 6. *Overview of the architecture of ULM*

One of the roles of the word-formation component in the ULM is to account for the development of new ontological entities with a lexical configuration in the ontologies out of already existing members of the modules of any of the ontologies. Thus some of the central tasks of the word-formation component –insofar as it is considered a grammar of lexical structures at or below word level-would be the following: one fundamental group of morphological processes would seek to produce units with a predicational function (verbs); other processes would produce referential structures (objects –prototypically nominal morphemes)[4], and others would add a modification to the original structures (operator –adjectival and adverbial– formations). This is not just stating that word formation processes create different types of word-forms, but they are the set of mechanisms that allow expanding ontologies. From this perspective, word formation must be considered as the grammaticalization of the lexical component[5], as was originally envisaged in the Functional Lexematic Model (Martín Mingorance 1998, Cortés Rodríguez 1997), the immediate predecessor of the ULM. This will provide a framework for the analyses of some of the major classes of affixal predicates in Spanish and English: Verbal affixal classes (section 3), affixal negation (section 4) and actor nominalizations (section 5).

3. Towards an inventory of affixal templates

In a way similar to free lexical units, affixes are also clustered in affixal classes, and their behaviour as members of these classes is also parallel to the one exhibited by words in the primary lexicon. Some units are more central or higher in the structure whereas other affixes are peripheral and even some are located in between two lexical classes. Furthermore, the information encoded for affixal predicates is similar to the one proposed in Mairal Usón and Guest (2005, 2006) for predicates in the ontology.

In what follows we will give a brief description of some of the most relevant affixal classes in Spanish and English. The diagram below shows the existence of overlapping areas among different affixal classes, again a phenomenon that runs parallel to what can also been found in the structure of the primary lexicon (cf. Faber and Mairal 1999: 251-270 for a detailed description of the so-called semantic macronet in the English verbal lexicon). Thus, Spanish Actor affix *–ero* has a wide variety of semantic values for the formation of nominal units; these values stem from the more prototypical meaning of Agent in formations like *lechero, torero, obrero, picapedrero*, etc. to a locative meaning in derived forms like *abrevadero, aserradero, desfiladero*, which shows the existence of a transition zone between the Actor and the Locative Classes (Mairal Usón and Cortés Rodríguez, *forthcoming*). Another interesting case concerns the development of a pattern of suffixed actor formations in English from the prototypical attributive *–ian*, by a process of isolation of the actor meaning of some formations; the fixation of an actor suffix *–ician* is testified by the existence of formations like *cosmetician* or –even more transparent morphologically– *beautician* (cf. Cortés Rodríguez 1997: 213-219). We believe that the development of this suffix can be explained by a process of generalization (or 'rule

emergence', MacWhinney 1978; Peters 1983) from high frequency or stored rote forms –as would be the usual combination of truncated nouns ending in *–ic(s)* plus *–ian* morphs: *mathematician, physician, optician*, etc. Such a generalization will yield as a result a semantic pattern linked to a new morphological form *–ician*, which involves a redistribution of the morphohonological structure of the stored forms. This new semantic pattern will occupy an overlapping zone between attributives like *reptilian, mammalian, sesquipedalian, Italian* and the other types of actor nominalizations.

Other typical cases of semantic interrelation among (sub)classes in the affixal lexicon affect verbal formations; let us consider, by way of example, the closely intertwined connection between different subtypes of causative derivatives, or the alternation between inchoative (intransitive) and causative (transitive) values of affixes like *–en* (*widen, sadden, brighten, soften*) or Spanish *–ar, -ear, -izar*; or the highly interrelated nature of the Class of Reversative formations, which involves in most cases the joint performance of causative and negative patterns under the format of parasynthetic formations like Spanish *des(a)tornillar, desnivelar, descabezar, despiojar,* etc. (cf. Serrano-Dolader 1999).

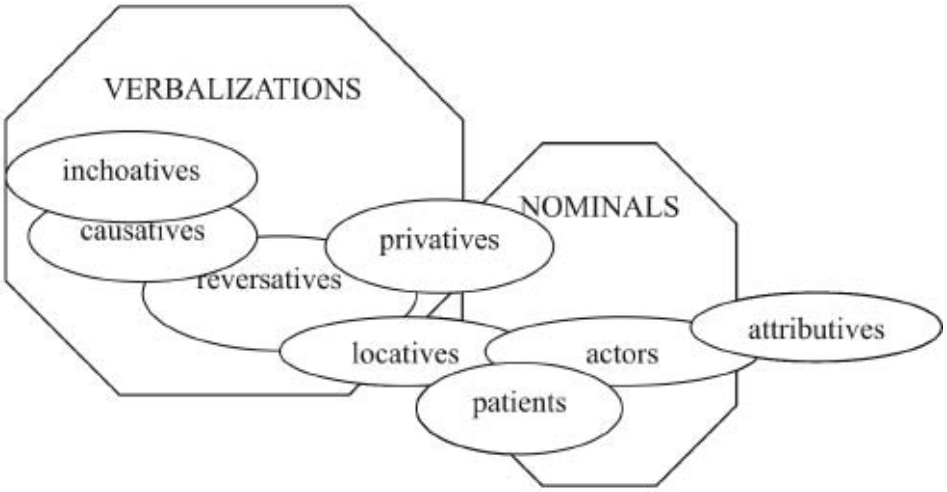

Figure 7. *Map of affixal classes in the lexicon (A partial view)*

3.1. *Verbalizations*

As stated above, word-formation morphology –as originally envisaged in the FLM (Martín Morillas 1984; Cortés Rodríguez 1997; Martín Mingorance 1998) – constitutes a grammar of the internal structure of words, and this feature is reflected in the different grammatical operations that affixes execute. Among these, verbalizations –the set of

processes that account for the derivation of verbal predicates– is one of the most interesting ones.

English and Spanish verbalizations are vast affixal classes that include several subtypes with many interrelations and overlapping areas; among these subclasses are, at least, causatives, inchoatives, reversatives and –partly– privatives and locatives.

The lexical template representing English and Spanish verbalizations would be as follows:

(6) φ_V: [LT(…φ_{BASE} [LT]...)]], LT ≠ (**do'**(x, Ø) CAUSE) **do'**(y,…)

Word-formation templates begin with a φ_x variable that states the form class of the units produced, followed by the symbol **:** which introduces the semantic representation of the derivational pattern; the meaning representation is to be understood as a restriction on the potential meanings of the lexical variable φ_x.

One general restriction is that the base word is never part of a causing subevent; i.e. it cannot refer to an effector entity. Another constraint on the template is that there does not seem to be an affix that produces causative activities in either Spanish or English.

3.1.1. Causatives

The prototypical function of causative formations is to output verbal lexical structures from objects with the morphological feature [-V]; i.e. nouns and adjectives. Among the members of this class in Spanish are the following affixes[6]: *–a–, –iz–, –ific–, –e–* and conversion processes by a ∅ morpheme; some English equivalents are *–ize, –ify,* and also zero-morpheme formations.

The canonical causative template is as follows:

(7) φ_V: **do'**(x, ∅) CAUSE [LT (…φ_{BASE} [LT]...)]

The formula in (7) encodes a complex semantic structure in which there is causal bond between two subevents, the induced one corresponding to a state of affairs in which the base word is involved or affected more or less directly. That is, as a subclass of verbalizations the function of causative affixes is to build up a predicational structure around the LS of a (potential) argument. A verb like Spanish *enlatar* is the output of a causative locative template (see below) such that the base noun *lata* is enmeshed in a semantic scenario as a locus for the placement of some other entity. Thus the derived formation takes the base noun as a pillar around which to build up an event. The locative meaning is determined by the semantic characterization of the noun –specifically its Formal and Telic Qualia characterization (Pustejovsky 1995)[7]– and the appropriate SRR that would read this characterization and impose a definite interpretation of the template.

As just mentioned, the specific nature of the relation of the argument slot where the base word should be inserted[8] with the complex structure in (7) is to be determined by certain compatibility conditions imposed both by the template of the affix and that of the base word. That is, the variable LT (= "any Lexical Template corresponding to a predicate") should be further specified. Those compatibility conditions are captured by the already mentioned Semantic Redundancy Rules, which will determine the type of semantic structure that will occupy the LT position. Thus, depending on this factor, the canonical template will yield three different causative interpretations:

(8) φ_V: **do'**(x, ∅) CAUSE [BE-LOC (y, z)] E.g. *arrinconar, acorralar, hospitalizar, parchear*[9], $jail_v$, $land_v$, $perfume_v$, gasify.[10]

(9) φ_V: **do'**(x, ∅) CAUSE [BECOME **pred'**(y)] E.g. *entristecer, redondear, encarroñar, afear*, *alargar*, solidify, purify, $narrow_v$, $smooth_v$, legalize.

(10) φ_V: **do'**(x, ∅) CAUSE [BECOME/BE (**like'**)(y, z)] E.g. *abovedar, acampanar, carbonear*.[11]

In relation to (8), a vast group of denominal formations has a causative-locative interpretation, motivated by the semantic characterization of the bases. Their Qualia characterization (formal and/or telic) provides the contextual feature that triggers this reading: these nouns typically have the form of/have the function of containers, involving a locative relation with respect to another entity. In some occasions, the base noun is the locandum/theme argument, as it is involved by its Agentive/Telic Qualia characterization, as for instance in the case of $varnish_V$.[12]

The following diagram will express this alternation:

(11)

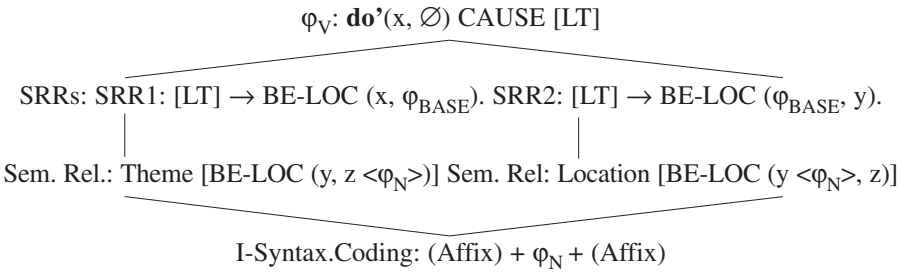

Figure 8. *SRRs for causative-locative derivatives*

The diagram shows how the two possible semantic relations are linked to different SRRs and how both are coded in the same I-syntactic coding(s). The semantic (derivation) of *varnish* is:

(12) varnish_V:

/Ø/$_V$: do'(x, Ø) CAUSE [LT] + $varnish_N$: **varnish'** (x < {…QTELIC: BE-**on'** (furniture, y)…})
→ SRR: [LT] → BE-LOC (x, φ_{BASE}).
→ Semantic Relation: Theme: [BE-LOC (y, z<φ_N>)]
→ Syntaxeme's realization: Superpositive : BE-LOC > BE-**on'**
→ I-Syntax: $[\varphi_N+Ø]_V$
→→OUTPUT: varnish_V: **do'**(x, Ø) CAUSE [BE-**on'**(furniture, $varnish_N$)]

Encage's derivation shows the effect of the other type of semantic relation included in the SRR above:

(13) encage_V

/en#/ φ_N **/Ø/$_V$: do'**(x, Ø) CAUSE [LT] + $cage_N$: **cage'** (x < {… *QFORMAL*: **container'** (x,y) *QTELIC:* [BE **in'** (cage,y)]…}>)
→ SRR: [LT] → BE-LOC (φ_{BASE},y).
→ Semantic Relation:Location: [BE-LOC (y <φ_N>, z)]
→ Syntaxeme's realization: Illative: BE-LOC > BE-**into'**
→ I-Syntax: $[\text{en}\#\varphi_N+ Ø]_V$[13]
→→ OUTPUT: encage_V: **do'**(x, Ø) CAUSE [BE-**into'**(cage_N, z)]

The LOC operator itself is susceptible to further lexical values, which will provide a specific interpretation to the locative relation; those values are considered as variants of a syntaxeme, as defined by Mukhin and Yulikova (1991: 291):

> […] an elementary syntactic unit (an invariant) represented in the language by a system of variants, which may be expressed by both individual lexemes and syntactically indissoluble combinations of lexemes with auxiliary elements, e.g. prepositions. The content of a syntaxeme is formed by its syntactico-semantic features which manifest themselves by the distributional characteristics of the syntaxeme, as well as by its specific system of variants.

The meaning of the following formations reflects different values of the locative syntaxeme:

Illative: encarcelar_V: **do'**(x, Ø) CAUSE [BE-**in(side)'** (y <φ_N>, z)]
Adlative: arrinconar: **do'**(x, Ø) CAUSE [BE-**at'** (y <φ_N>, z)]

Circumlocative: vendar: **do'**(x, Ø) CAUSE [BE-**around'** (y, z <φ_N>)]
Superpositive: empapelar: **do'**(x, Ø) CAUSE [BE-**on'** (y, z <φ_N>)]

Deadjectival formations express a causative-mutative/adscriptive meaning: derived verbs of this kind express a process in terms of which an entity is caused to show the properties depicted by the meaning of the base. That is, one entity comes to have the properties of the base.

(14) φ_V: **do'**(x, ∅) CAUSE [BECOME **pred'**(y)]

Examples: smooth, dry, solidify, *alargar, afear, redondear, falsear*

The corresponding process that yields such formations is:

(15) φ_V: **do'**(x,∅) CAUSE [LT] + $\varphi_{BASE\text{-}WORD}$

→ SRR: [LT] → BECOME **pred'** (φ_{BASE})
→→ I-Syntax: (Affix)+ φ_{ADJ}+(Affix)
→→ OUTPUT: φ_V: **do'**(x, Ø) CAUSE [BECOME **pred'**(y)]

Note that there is a third subsidiary type of causative formation, the meaning of which is similar to that in (14); the difference is that the bases are not adjectives but nouns. In these cases, however, the SRR is not sensitive to the Q_{TELIC} or the $Q_{AGENTIVE}$ in the semantic description of the base noun, but to the State characterization provided in the Q_{FORMAL} or/and $Q_{CONSTITUTIVE}$. In other words, the base is understood as a conjunction of features that are attributable to another entity, and not as a lexeme with referential power. In this regard, the functionality of the base reminds the use of inherent arguments (cf. Van Valin and LaPolla 1997: 122-125). The corresponding lexical template for these formations is (10), reproduced here as (16):

(16) φ_V: **do'**(x, ∅) CAUSE [BECOME/BE (**like'**)(y, z)]

Examples: *endiosar, carbonear, arquear,* heap*, abancalar, acampanar*

This LT is the output of applying the following SRR to the causative template:

(17) φ_V: **do'**(x, ∅) CAUSE [LT] + $\varphi_{BASE\text{-}WORD}$

→ SRR: [LT] → BE (**like'**) **pred'** (φ_{BASE})
→→ I-Syntax: (Affix)+ φ_{ADJ}+(Affix)
→→ OUTPUT: φ_V: **do'**(x, ∅) CAUSE [BECOME/BE (**like'**)(y, z)]

One interesting subclass is the group of reversative formations, as it occupies a transition zone between the subclass of causative verbalizations and the negative class (see next section); this is reflected in the format of the maximal template for reversative formations:

(18) φ_V: **[**LT_{LOCin} $^{temp \leftarrow}$] **do'**(x, ∅) CAUSE [ANTI [LT]][14]

This template also yields interpretations similar to the ones explained for the causatives, which makes it feasible to postulate that they result from the application of SRRs very much like the ones mentioned above:

(19) φ_V: [BE-$LOC_{2,3LOCin}$ $^{temp \leftarrow}$] **do'**(x, ∅) CAUSE [ANTI BE-LOC (y, z)] E.g. uncage, unhinge, delouse, deflower, debone, *desencapuchar, desengoznar, escamar*.[15]

(20) φ_V: [BE-**pred'**$_{2LOCin}$ $^{temp \leftarrow}$] **do'**(x, ∅) CAUSE [BECOME/BE ANTI **pred'** (y <φ_{BASE}>)] E.g. defrost, decentralize, demagnetize, unsanctify, decontaminate

The effect of the overlap with the negative class can be seen in the necessity in most occasions of adding a semantic specification that refers to a temporal modification ([BE-LOC/ **pred'**$_{2,3LOCin}$ $^{temp \leftarrow}$]). The implication is that the reversative effect presupposes a previous contrary state of affairs; hence, a formation like "decentralize" means not just 'to cause to be not central' but 'to cause to be no longer central'.

4. Affixal Negation

Negation is a universal feature, as all languages have means for expressing the notion of opposition, and many exhibit this meaning by means of morphological exponents, which permits to create antonymous terms. Thus, in English there is a class of affixal units which includes, among others, *un-, dis-, a-, non-, in-, anti-,* etc. and in Spanish *in-, des-, contra-, a-*, etc. whose semantic function is to produce lexical negatives or antonyms. However, antonymy is not a simple phenomenon, as it includes different types of meaning opposition. At least there are two ways of codifying negativity: by expressing the lack of properties or attributes of an entity (then, we may speak of cases of contradictoriness or privativity), or by expressing opposing features or attributes of entities (cases of contrariness). Contradictory terms constitute binary pairs of the type *live/dead*, whereas contrary terms allow for gradable properties as in *hot/warm/cool/cold* (for detailed descriptions of (non)gradability and negation cf. Zimmer1964: 21 and ff.; Lyons 1977: 281 and ff.; Kastovsky 1982; Cruse 1986: Chapters 9-11; Saeed 1997: 66-68; Joe and Lee 2002, among many others).

Affixal negatives exhibit these two types of meaning opposition, which are encoded in the following templates:

(21) φ_X: $ANTI_{COMP}$[LT (x <φ_{BASE}>)] E.g. non-moral, amoral

(22) φ_X: ANTI [LT (x <φ_{BASE}>)] E.g. immoral

Due to their universal character, the templates encode the meaning in terms of two Lexical Functions ANTI and $ANTI_{COMP}$, extracted from Melc'uk's (1988, 1989; Mel'cuk and Wanner 1996) inventory and Alonso Ramos and Tutin's (1996) modifications to the inventory, respectively. $ANTI_{COMP}$ is to be understood merely as a function that encodes complementary antonymy and, therefore, has an absolute non-gradable (i.e. binary) value (cf. Alonso Ramos and Tutin 1996: 152), whereas contrary values are encoded by ANTI; i.e. it involves a negative value along some scalar standard; i.e. it codifies negativity as long as it is compared with the value(s) of the attributes expressed by the base word; $ANTI_{COMP}$, on the other hand, merely states the absence of such attribute(s).

There is a subtype of the contradiction template, in which the operator ANTI is semantically modified by a temporal lexical function:

(23) φ_V: [LT_{LOCin} $^{temp \leftarrow}$] ANTI [LT (x <φ_{BASE}>)]

This variant of the original template is necessary to explain the meaning of those formations that involve the cessation of an event *(disuse$_v$, discontinue*: 'to use/continue **no longer**') or of a property or condition: *(descreer, disbelieve* 'to not believe **any more**'). That is, these prefixed formations presuppose the occurrence of these states of affairs in some previous time-span.

Another interesting feature of this class concerns its internal structure; the templates above involve a major division into two subclasses; affixes are distributed along this major division between the contrary-negative and the contradictory-negative subclasses, thus having one group of exclusively contrary affixes (counter-, anti-, e.g. *antibody, anticommunist, counter-irritant, countertenor*), another of exclusively contradictory ones (a-, non- formations e.g. *amoral, achromatic, non-metal, non-smoker*) and a third group with both values (in-, dis-, un- e.g. *invisible, inactive, infertile vs. immoral, inhuman; unavailable, unbeliever, unborn vs. unclean, unsmooth, unperson, unfrequented; distrust, disbelieve, discommodity vs. dissimilar, disharmonious, disapproval, distaste$_N$*).

One interesting case of overlap between classes concerns the relation between the contrariness-as-opposition meanings and the locative class.

The notion of contrariness, expressed in (22) by means of the Lexical Function ANTI, can be further divided into more specific semantic values, as is shown for instance by the formations with the affix *anti-* not only in Spanish or English, but also in other languages like Classical Greek, where the affix's origin lies. There are formations from that

period –some of which still are present in Modern Greek and in other contemporary languages– where the meaning of opposition is clearly seen as a development from a locative meaning ('be-in-front-of': *Ant-artic*; *Anti-kythira* –the name of the Greek island that is in front of the island called Kythira); the conceptual development is schematically as follows: what is located in front of an entity is seen as an obstacle, and obstacles are opposed to the entity; there is also the implication of (a)symmetry: what opposes to something is somehow similar to it and somehow dissimilar at the same time: an anti-novel is contrary to a novel being a novel at the same time, or an anti-hero is the contrary of a hero; however, not any character is an anti-hero as it must have some 'heroic' attributes though in an insufficient or adequate degree (cf. Cortés Rodríguez and García Gálvez 1990); Sosa Acevedo (2001, 2005) provides a detailed explanation of the semantic relations among the different values of prefixes. The following diagram illustrates the different values of the prefix *anti-* that are derived from the original template:

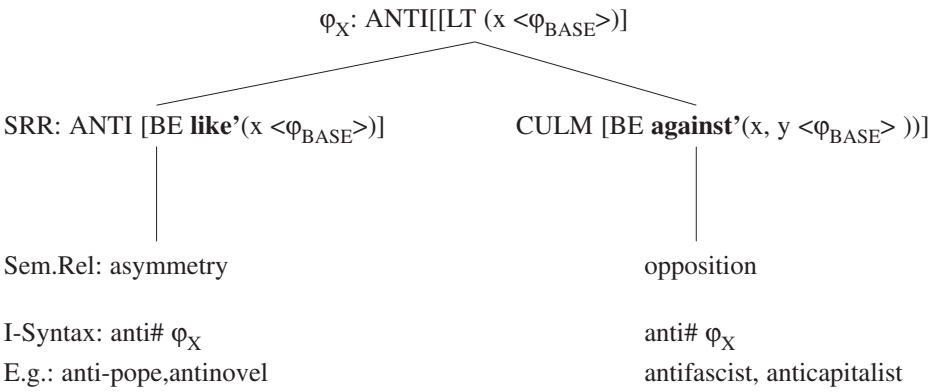

Figure 9. *SRRs for anti-*

A more recent development in the meaning values of this affix –and others of the contrary class– is the one present in formations like *anti-dandruff, anticorrosion*, with clear causative nuances, thus leading us to another transition zone between the negative class and the reversative one. It seems logical to consider that the source for the causative formations is the opposition value. The semantic transition implicit in these formations can be captured by the following diagram:

(24) φ_X: ANTI [[LT (x <φ_{BASE}>)]

→ CULM [BE **against'**(x, y <φ_{BASE}>))]
→→ **do'**(x, ∅) CAUSE [ANTI EXIST (y <φ_{BASE}>)]
→→→ **do'**(x, ∅) CAUSE [NOT EXIST (y <φ_{BASE}>)]

5. NOMINALIZATIONS

Nominalizations are processes to construct ontological objects out of either other ontological objects (nouns), ontological operators (adjectives and adverbs) or predicates. Following Laca (1993) a major division can be established within nominalizations: those that are oriented towards one entity involved in the semantic structure of the base (agent and patient nominalizations), on the one hand, and the group of predicative nominalizations (action nominals), on the other. The next section deals with the first group of formations, specifically with Actor nominalizations.

5.1. *Actor nominalizations*

The following Template corresponds to Actor nominalizations, which include a vast group of derived formations with the affixes *–er*, *-ant*, *-ist*, *-ician* for English, and *–ero*, *-nte*, *-or*, *-ista* in Spanish:

(25) φ^{i}_{N}: [LT (x^{i}, [φ_{BASE}])]

The label 'Actor nominalizations' that we use for this affixal class explains the wide scope of these types of derivational processes: the term Actor explains the fact that all the formations are nominalizations of the macrorole Actor, as defined in RRG[16]. This in turn justifies the superscript **i** which co-indexes the lexical variable for the derived word (φ_{N}) with the participant that would receive that macrorole function. That is, they mark the nominals as oriented towards one entity involved in the state of affairs depicted by the base word. Let us recall that the variable 'LT' expresses the fact that the event where this entity participates can be of any kind, a state (**pred'**), an activity (**do'**), or any other logical structure, and, consequently, the semantic function of the entity nominalized is not necessarily that of Agent, but there is a wide range of values that can be derived by different SRRs from the maximal template; the following diagrams illustrate several of these values together with their corresponding redundancy rules:

(26) Agent nominalizations

iff : [LT (x^{i}, [φ_{BASE}])] + φ_{V}: **do'**(x, …)/ $\varphi_{[-V]}$: (y, <{…$Q_{T/A}$: **do'** (x)…>})]

SRR: [LT] → **do'** (x^{i},….)

Template for Agents: φ^{i}_{N}: [**do'** (x^{i}, [φ_{BASE}])]

Example (26) expresses the semantic content of the most prototypical nominalizations within the class: the derived words corresponding to this construction describe the Agent involved in the event described in the semantics of the base word. Now there are two matching possibilities expressed in the above representation, depending on whether

the formation is deverbal (φ_V) or not ($\varphi_{[-V]}$). In the case of deverbal agent nouns the matching is usually quite straightforward: verbal basis that participate in this construction typically designate an event that is dynamic, and therefore the meaning of agenthood derives from the semantic function of its first argument. The second case that the SRR contemplates is applicable to agent nouns from non-verbal bases: there must be a matching with the events described by the Qualia (Telic or Agentive) of the base. Such is the case of the noun 'historian':

(27) *historian*'$^{i}_{N}$:

φ^{i}_{N}: [LT (x^{i}, [φ_{BASE}])]

|

[LT (x^{i}, [φ_{BASE}])] + history$_N$: **history'** (x <Q_c *and* Q_f, Q_t [**do'** (y, [**work'** (y)])], Q_a [**science'** (x), **do'** (y, [**work'** (y)])>)

|

SRR: [LT] → **do'** (x^{i},….)

|

φ^{i}_{N}: [**do'**(x^{i}, [history$_N$: **history'** (x <Q_c *and* Q_f, Q_t [**do'** (y^{i}, [**work'** (y^{i})])], Q_a [**science'** (x), **do'** (y^{i}, [**work'** (y^{i})])>)])]

The representation in (27) reveals in the first place how the base noun *history* involves an activity both in its Telic and its Agentive Qualia (**do'** (y, [**work'** (y)])), which determines the SRR that will impose an agentive reading on the derived word by replacing the LT variable with an activity structure ([LT] → **do'**(x^{i},….)); let us recall again that the co-indexation of the argument (x) with the variable φ^{i}_{N} marks the formation as a restriction on the entity described by such an argument, i.e. the effector of the corresponding activity.

The template for instrument formations is as follows:

(28) φ^{i}_{N}: [$CAUS_{1,2}$ $INSTR_3{}^{i}$ [**do'** (x^{i}, [φ_{BASE}])]]; 1 = ∅, x= 3

As described in Cortés Rodríguez and Mairal (2000-01), the instrument construction codifies a structure where the Actor formation is oriented towards the implement of an activity. This choice is not random but appears modulated by the RRG's scale of Actor Macrorole Assignment (Van Valin and LaPolla 1997: 146):

Figure 10. *The Actor-Undergoer Hierarchy*

The instrument construction, therefore, accounts for those formations from a causal chain where the first argument is left unspecified, thus yielding the INSTRUMENT entity as first candidate for the Actor function. Note that this construction is modulated by one restriction that affects the participants of the event: in these cases the Agent is left unelaborated as indicated by the condition 1 = ∅ that affects the internal variable related to the causal subevent codified by the LFs $CAUS_{1,2}$ to the benefit of the Instrument, which is highly elaborated, as codified by the condition on the internal variable 3 (x =3); that is, the semantic description encoded in the first part of the template encodes a causative subevent in terms of which and effector (variable 1) causes an event by using an instrument (variable 3) in such a manner that this instrument argument actually carries out the activity described in the LT; i.e. the LT codifies a causal chain.

In these cases, the restrictions affecting the fusion must encode the fact that the base predicates include such a causal chain in their semantic characterization; this is captured by the following formula:

(29) iff: [LT (x^i, [φ_{BASE}])] + φ_V: [[$CAUS_{1,2}$ $INSTR_3$] **do'**(x, …)]/ $\varphi_{[-V]}$: (y, <{…$Q_{T/A}$: [[$CAUS_{1,2}$ $INSTR_3$]**do'** (x)…>]})] , 1 = ∅, x= 3

SRR: [LT] → **do'** (x^i,….)

6. Conclusions

The proposal put forward in this paper offers, in essence, a new model for the description of derivational phenomena within Role and Reference Grammar. The LGM reflects the view that behind both a primary and a derived predicate there is a rich set of linguistic factors that converge within the lexicon. From this theoretical angle, the lexicon – the repository of predicates – comes to have a much stronger presence and force within a linguistic theory. In fact, the lexicon as a whole is in itself a grammar, where a number of fusion principles and linking rules come into play. This is even more evident when dealing with word formation processes such as the ones described in the previous sections, where it has been made apparent that the lexicological processes at work in the creation of a new lexeme involve the activation of several rules and principles to explain the final semantic value(s) of such a new predicate.

NOTES

1. Financial support for this research has come from the research project HUM2005-07651-C02-01, funded by the Spanish Ministry of Education.

2. The LGM is actually the offspring of the Functional Lexematic Model (cf. Marín Rubiales 1998 for a compilation of the pioneering works of its creator, Prof. Martín Mingorance), which was a lexicological model designed originally for its integration in functional explanatory grammars. Initially it adapted itself to the formal apparatus of Dik's Functional Grammar (1997a, 1997b), but because of the limitations of semantic descriptions in this model to account for the interface semantics-syntax, there was a major shift towards Role and Reference Grammar. It is at this stage that the original model changed to its present design and was termed differently.
3. The actual process for the creation of a derived unit is much more complex, since it involves the activation of other grammatical processes necessary to account for at least the phonological, morphological, and syntactic configuration of the derived word. The exact working of these processes in the model is located in the linking algorithm devised within the Word Formation Component for a RRG lexicon as proposed in Cortés Rodríguez and Mairal Usón (2005) and Mairal Usón and Cortés Rodríguez *forthcoming*. Such processes can be described as a "lexicalization of grammatical structures", which is one of the two complementary views of word-formation in the FLM (Cortés Rodríguez 1997; Martín Mingorance 1998; Sosa Acevedo 2001, 2005).
4. This is the function, among others, of agent and patient formations: they are processes to build up argument-referential expressions out of original predicational structures. See section 5 for examples.
5. In this regard, note the parallelism of the functions of a word formation component with those of a grammatical model for syntactic structures above the word level, which basically must account for three basic processes: the construction of predicational structures (which typically involves explaining the configuration of verbal phrases), the construction of referential structures (usually expressed in nominal phrases or constructions) and modifiers of these two major structures (adjectival and adverbial phrases).
6. Neither these are all the members of the class nor their meanings are exclusively the ones mentioned here. Most affixes show different values, which makes them belong to more than one class. By way of example, formations with Spanish *–e-* from bases which are colour nouns (*azulear, amarillear, blanquear,* etc) are not typically causative, but can have also an inchoative ('to become N') or even an (inchoative-) attributive interpretation ('to (start to) have colour N`).
7. RRG makes use of Pustejovsky's Qualia Theory for a characterization of the semantic properties of nouns. We believe that they can also be taken as part of the characterization of properties of objects in the ULM. The Qualia representation of Spanish *lata* ('can') includes: **can'**: *Qconstituive:* **metallic'** (x)**,** *Qformal*: **container'** (x,y) *Qtelic:* [BE **in'** (x,y)])], *Qagentive:*[**artifact'** (x ∨ y).
8. This is the (y) location argument in the semantic representation of *enlatar:* φV: **do'**(x, ∅) CAUSE [BE-**in'** (*lata*, z)].
9. In cases like *parchear, airear,* etc. (Kastovsky 2002: 101's ornative verbs) there is a possible ambiguity between a causative-locative or a causative-possessive interpretation. This is due to the features encoded by the different Qualia of the base; if attention is given to the Formal/Constitutive ones a possessive reading is favoured (the verb then means 'hacer tener un parche'); if on the other hand the Telic Qualium is more relevant a locative reading is preferred ('colocar un parche').
10. Kastovsky (2002: 99-100) proposes a similar pattern for the derivation of the different types (our subclasses) of causative derived verbs in English. The main difference in his proposal lies in the structure of the second subevent which he describes in all cases as a location ([[AGENT]] CAUSE THEME (T) BECOME [NOT] BE IN LOCATION (L)) and considers all other possible meanings (State and Status, as he labels them) metaphorical extensions of the original, since for him it does not seem unlikely that the causative locative semantic structure has "a universal cognitive foundation […] reflecting the basic human activity of moving objects around in space" (*ibid.*). Since no proof is provided of the centrality of the locative interpretation we prefer to maintain an open variable LT in the basic lexical template and to treat locative structures as well as any other specific values of the complex lexemes, as the effect of one SRR, as shall be shown below.

11. See Wunderlich (1999) for a very similar semantic representation of denominal causatives with the notational conventions of Lexical Decompositional Grammar.
12. Note that this rule is also effective in the class of locative prefixations, and marks the difference between locative formations like 'forefather' or 'forerunner' where the base noun encodes a theme entity that is located with regard to some unexpressed location (in time or space), whereas in formations like 'forenoon' the base encodes the location around which a locandum is constructed morphologically. For a detailed analysis of locative prefixation see Sosa Acevedo (2001).
13. For a detailed description of the I(nternal to word) Syntactic status of the components of a complex lexeme within an RRG framework, see Martín Arista (2006) and Cortés Rodríguez (*in press).*
14. For an explanation on the Lexical Function ANTI see section 4 on affixal negation.
15. Note that the parallelism with the rest of causatives is also applicable to the possible interpretations of some of the reversative-locative formations as reversative-privative; e.g. *delouse* may be interpreted not only as 'cause lice not be on entity' but also 'cause entity not have lice')
16. "Macroroles are generalizations across the argument-types found with particular verbs which have significant grammatical consequences; it is they, rather than specific arguments in logical structure, that grammatical rules refer primarily" (Van Valin and LaPolla 1997: 139). RRG distinguishes two macroroles: the Actor, or generalized agent-type role, and the Undergoer or generalized patient-type role; it is important to emphasize that the term actor is compatible with non-volitional things such as in *The key opened the door* where *key* is the actor (Van Valin and LaPolla 1997: 141).

REFERENCES

Alonso Ramos, M. and A. Tutin. 1996. "A classification and description of lexical functions for the analysis of their combinations". *Lexical Functions in Lexicography and Natural Language Processing*. Ed. L. Wanner. Amsterdam/Philadelphia: John Benjamins. 146-167.

Aronoff, M. 1979 (1976). *Word Formation in Generative Grammar*. Cambridge, Mass./London: The MIT Press.

Bybee, J. 1998. "The emergent lexicon". *CLS 34: The Panels.* Chicago: Chicago Linguistics Society. 421-435.

Chomsky, N. 1970. "Remarks on nominalization". *Readings in English Transformational Grammar.* Eds. R. Jacobs and P. Rosenbaum. Waltham, Mass.: Ginn and Co. 184-221.

Cortés Rodríguez, F.J. and I. García Gálvez. 1990. "Contrastive analysis and evolution of the prefix *anti-* (Ancient Greek, Latin, Modern Greek, Spanish and English)". Paper delivered at the *9TH World Congress of Applied Linguistics*. University of Thessalonica.

Cortés Rodríguez, F.J. 1997. *La Creación Léxica. Una Aproximación Funcional.* Universidad de La Laguna: Servicio de Publicaciones.

Cortés Rodríguez, F.J. and R. Mairal Usón. 2005. "La formación de palabras, de nuevo, como encrucijada: la interfaz semántica-morfología-sintaxis-fonología en el Modelo de Gramáticas Léxicas". *Algunos problemas de la descripción sintáctico-semántica.* Eds. J. Cuartero Otal and G. Wotjak. Berlín: Frank and Timme. 159-174.

Coseriu, E. 1978. *Gramática, semántica, universales.* Madrid: Gredos.

Cruse, D.A. 1986. *Lexical Semantics.* Cambridge: Cambridge University Press.

Dik, S.C. 1997a. *The Theory of Functional Grammar. Part 1: The Structure of the Clause.* Ed. K. Hengeveld. Berlin: Mouton de Gruyter.

Dik, S.C. 1997b. *The Theory of Functional Grammar. Part 2: Complex and Derived Constructions.* Ed. K. Hengeveld. Berlin: Mouton de Gruyter.

Dowty, D. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel

Faber, P. and R. Mairal 1999. *Constructing a Lexicon of English Verbs*. Berlin: Mouton de Gruyter.

Goddard, C. and A. Wierzbicka. 2002. *Meaning and Universal Grammar: Theory and empirical findings.* Amsterdam/Philadelphia: John Benjamins.

Hagège, C. 1993. *The Language Builder. An Essay on the Human Signature in Linguistic Morphogenesis.* Amsterdam/Philadelphia: John Benjamins.

Jackendoff, R. 1975. "Morphological and semantic regularities in the lexicon". *Linguistics* 51: 639-671.

Joe, J. and C. Lee. 2002. "A 'removal' type of negative predicate". *Semanticsarchive.Net*. (Internet document available at http://semanticsarchive.net/Archive/DczODk5M/).

Kastovsky, D. 1982. "Word-formation: a functional view". *Folia Lingvistica* 16: 181-198.

Kastovsky, D. 2002. "The derivation of ornative, locative, ablative, privative and reversative verbs in English: A historical sketch". *English Historical Syntax and Morphology*. Eds. T. Fanego, M.J. López-Couso and J. Pérez-Guerra. Amsterdam/ Philadelphia: John Benjamins. 99-110.

Laca, B. 1993. "Las nominalizaciones orientadas y los derivados españoles en *–dor*". *La formación de palabras.* Ed. S. Varela Ortega. Madrid: Taurus. 180-204.

Lyons, J. 1977. *Semantics.* Cambridge: Cambridge University Press.

MacWhinney, B. 1978. *The Acquisition of Morphophonology*. Child Development Publications. Chicago: University of Chicago Press.

Mairal Usón, R. and F. J. Cortés Rodríguez. 2000-01. "Semantic packaging and syntactic projections in word formation processes: the case of agent nominalizations". *Revista Española de Lingüística Aplicada* 14: 271-294.

Mairal Usón, R. and F. J. Cortés Rodríguez. *forthcoming*. "Rethinking lexical representation in Role and Reference Grammar". *The English Lexicon: Structure and Genesis.* Ed. D. Kastovsky. Berlin and New York: Mouton de Gruyter.

Mairal Usón, R. and P. Faber. 2005. "Decomposing semantic decomposition. Towards a semantic metalanguage in RRG". Lecture delivered at the *2005 Role and Reference Grammar International Conference*. Taiwan. (Internet document available at http:// linguistics.buffalo.edu/research/rrg/MairalRRG05.pdf).

Mairal Usón, R. and E. Guest. 2005. "Lexical representation based on a universal semantic metalanguage". *RAEL Revista Electrónica de Lingüística Aplicada* 5: 125-173.

Mairal Usón, R. and E. Guest. 2006. "Building a computational lexicon for automatic translation: a preliminary discussion". Unpublished manuscript.

Martín Mingorance, L. 1998. "Bases metodológicas para un estudio contrastivo del léxico derivado". *Leocadio Martín Mingorance. El Modelo Lexemático Funcional*. Ed. A. Marín Rubiales. Granada: Editorial Universidad de Granada. 61-82.

Martín Morillas, J.M. 1984. *La causatividad en el léxico derivado del inglés y el español: Un modelo contrativo funcional analítico-sintético.* Unpublished Ph.Dissertation. Universidad de Granada.

Marín Rubiales, A., ed. 1998. *Leocadio Martín Mingorance. El Modelo Lexemático Funcional*. Granada: Editorial Universidad de Granada.

Mel'cuk, I. 1988. "Semantic description or lexical units in an explanatory combinatorial dictionary: Basic principles and heuristic criteria". *International Journal of Lexicography* 1 (3): 165-188.

Mel'cuk, I. 1989. "Semantic primitives from the viewpoint of the Meaning-Text Linguistic Theory". *Quaderni di Semantica* 10 (1): 65–102.

Mel'cuk, I. and L. Wanner. 1996. "Lexical functions and lexical inheritance for emotion lexemes in German". *Lexical Functions in Lexicography and Natural Language Processing*. Ed. L. Wanner. Amsterdam/Philadelphia: John Benjamins. 209-278.

Mukhin, A. M. and N. M. Yulikova. 1991."Locative valency of the English verb: a historical approach". *Historical English Syntax*. Ed. D. Kastovsky. Berlin and New York: Mouton de Gruyter. 291-301.

Nunes, M. L. 1993. "Argument linking in English derived nominals". *Advances in Role and Reference Grammar*. Ed. R.D. Van Valin. Amsterdam/Philadelphia: John Benjamins. 375-432.

Peters, A. M. 1983. *The Units of Language Acquisition*. Cambridge: Cambridge University Press.

Pustejovsky, J. 1995. *The Generative Lexicon*. Cambridge MA: The MIT Press.

Rappaport Hovac, M. and B. Levin. 1998. "Building verb meanings". *The Projection of Arguments: Lexical and Compositional Factors*. Eds. M. Butt and W. Geuder. Stanford: CSLI. 97-134.

Roeper, T. and M. Siegel. 1978. "A lexical transformation for verbal compounds". *Linguistic Inquiry* 9: 199-260.

Saeed, J. 1997. *Semantics*. Oxford/Cambridge, Mass.: Blackwell.

Scalise, S. 1987 (1984). *Morfología generativa*. Madrid: Alianza.

Serrano-Dolader, D. 1999. La derivación verbal y la parasíntesis. *Gramática descriptiva de la lengua española. Vol 3.* Eds. I. Bosque and V. Demonte. Madrid: Espasa-Calpe. 4683-4755.

Smith, C. S. 1997 (1991). *The Parameter of Aspect*. Dordrecht: Kluwer Academic Publications.

Sosa Acevedo, E. 2001. *Análisis funcional cognitivo de los procedimientos de prefijación locativa en inglés.* Unpublished Ph.Dissertation. Universidad de La Laguna.

Sosa Acevedo, E. 2005. "Locative prepositional predicates in English: pragmatic, semantic and cognitive motivations". *Estudios Ingleses de la Universidad Complutense* 13: 23-48.

Van Valin, R. D. 2005. *Exploring the Syntax-Semantics Interface*. Cambridge: Cambridge University Press.

Van Valin, R. D. and R. LaPolla. 1997. *Syntax: Structure, Meaning and Function*. Cambridge: Cambridge University Press.

Van Valin, R. D. and D. Wilkins. 1993. "Predicting syntactic structure from semantic representations: *Remember* in English and its equivalents in Mparntwe Arrernte". *Advances in Role and Reference Grammar*. Ed. R.D. Van Valin. Amsterdam: Benjamins. 499-534.

Vendler, Z. 1967. *Linguistics in Philosophy*. Ithaca: Cornell University Press.

Wierzbicka, A. 1987. *English Speech Act Verbs: A Semantic Dictionary.* Sydney/New York: Academic Press.

Wierzbicka, A. 1996. *Semantics: Primes and Universals.* Oxford: Oxford University Press.

Wunderlich, D. 1999. "Semantic Issues in Morphology". Lecture delivered at *Sinn & Bedeutung 1999. Gesellschft für Semantik*. (Internet document available at http://www.phil-fak.uni-duesseldorf.de/asw/SuB99/abstracts/Wunderlich.html).

Zimmer, K. 1964. *Affixal Negation in English and Other Languages: An Investigation of Restricted Productivity.* Supplement to *Word* 20. 2.