

A FUNCTIONAL INTERPRETATION OF LOCATIVE PREFIXES IN ENGLISH

EULALIA SOSA ACEVEDO
University of La Laguna

ABSTRACT. *This paper explores the adequacy of the Functional Lexematic Model (FLM) for the description and interpretation of bound lexical units with a special insight into the cognitive mechanisms underlying locative prefixation in English. The basic claim here will be that the FLM constitutes an adequate framework for the treatment of morphology as a dynamic rather than as a static encapsulated phenomenon in language and that, with the incorporation of a cognitive axis, the FLM facilitates access to the underlying properties and the structure of the lexicon.*

1. INTRODUCTION¹

Much of the work done in linguistics during the last decades of the twentieth century was devoted to the study of the lexicon. Important contributions like Aronoff's (1985) or Spencer's (1988) within the framework of *Transformational Generative Grammar* depart from both lexicist and syntacticist views of word formation and mark a significant turn in the course of morphology in the eighties and nineties. Inspired by the same course, Dik's *Functional Grammar* (1997) contributes to reinforce the view that the lexicon constitutes a central, rather than a subsidiary, component of the grammar of languages.

1. This paper is part of two research projects: "Gramática y mecanismos de interficie de las clases léxicas verbales del inglés antiguo" funded by the Spanish Ministry of Science and Technology (Ref: BFF 2002-00639), and "Mecanismos de interficie en los procesos de prefijación locativa en inglés", funded by the University of La Laguna (Code: 1802640402). Research work has also been carried out in the Instituto de Lingüística Andrés Bello, Universidad de La Laguna.

As far as derivation is concerned, the Model of Functional Grammar (Henceforth FG) propounds crucial mechanisms and principles. Particularly relevant are Predicate Formation and Stepwise Lexical Decomposition. No methodological framework, however, has been designed for the performance of these mechanisms within the model.

In this paper we will precisely lay out the methodological bases of the *FLM* which seems to exhibit an extremely high degree of adequacy for lexical analysis in general and for the appraisal of the properties that govern the derived vocabulary in particular.

2. WORD-FORMATION AND PREDICATE FORMATION RULES

Though FG avoids transformations, Dik claims that the component of Predicate Formation “[...] does require transformations of a sort” (1997, *Part I*: 21). Predicate Formation Rules (Henceforth PFRs) serve to derive simple forms like *walk-walker* or *white-whitened* (E.g.: *The paper whitened* from *The paper was white*), as well as more complex structures like *This typewriter writes nicely* from *John writes on this typewriter* (1997, *Part I*: 220,349). As De Groot (1987:7) states, therefore, a PFR “does not necessarily involve any morphology”, and hence, the representation of morphological processes by means of transformations does not guarantee any adequate distinction between word formation associated to syntactic processes (E.g.: *white_{Adj}-whitened_V* in *The paper whitened*) and syntactically independent processes of lexicogenesis, derivation proper (E.g.: *man-foreman*, *walk-walker*; etc.). In addition, evidence provided by Cortés (1997a, 1997b and 1997c) about nominalizing suffixes and by Sosa (2004a) about locative prefixation in English indicates that PFRs are not sufficiently powerful to account for the factors that most fundamentally determine the properties and the structure of the derived lexicon. We may certainly propose a PFR for derived forms like, for instance, *superman*, *superstar* and *super-structure*. By adapting the representation of non-verbal predicates from Hengeveld (1992) and Mackenzie (1986), this rule can be formulated as follows:

(1)

input: pred_P (x₁)_{Loc} (x₂) ∅

output: OVER_P (x₁:man)_{Loc} (x₂) ∅

2. The methodological framework of the FLM was first designed by Martín Mingorance (1984, 1985a, 1985b, 1987a, 1987b, 1987c, 1990). For the configuration of the Word Formation Component within the FLM, see Faber (1991). Faber and Mairal (1994, 1997a, 1997b, 1998, 1999) and Mairal (1999). Among others, the following publications present relevant work on the treatment of derivation within this model: Cortés (1996, 1997a, 1997b, 1997c), Sosa (2000, 2004a, 2004b).

where:

x₁ and **x₂** represent spatio-temporal entities;

p refers to the prepositional category of the predicate;

Loc refers to the semantic function Location;

∅ is assigned to the entity involved in a state (E.g. location)

meaning: 'the entity designated by x_2 is presented as taking a higher position with respect to x_1 ', x_1 and x_2 being entities of the same typology ('man'...).

E.g. *superman, superstar, super-structure*: 'man OVER man, star OVER star...'

The input specifies a two-place prepositional predicate ($\text{pred}_{\text{preposition}}$: $\text{OVER}_{\text{preposition}}$) that embodies the meaning of the prefix (see Mackenzie 1986). The first argument (x_1) realises the semantic function Location (Loc: 'place, position') whereas the second argument (x_2 : 'entity subject to location') is assigned Zero semantic function (see Dik 1997, *Part I: Chapter 5*). Both x_1 and x_2 prototypically designate the same type of first-order (spatio-temporal) entity (see Dik 1997, *Part I: 137*). In the output predicate, these variables are replaced with the corresponding lexical items: $\text{OVER}_p (x_1:\text{man/star/structure})_{\text{Loc}} (x_2:\text{man/star/structure})$, expressing that 'the entity x_2 is presented as taking a higher position with respect to x_1 '. Since x_1 and x_2 are entities of the same typology, the output reads as follows: 'man OVER/SUPERIOR TO man, star OVER/SUPERIOR TO star, structure OVER/SUPERIOR TO structure...'

The rule in (1), however, does not capture essential features of the derived forms that have a direct impact on the structure of the lexicon:

(2)

- (i) It does not prevent the formation of units like *?super-smoker, *supersee*, etc.
- (ii) No specifications are provided for the restriction of forms like **hypersuper-market* in favour of *supermarket* and *hypermarket*, or like **fore-active* in favour of *hyper-active*.
- (iii) Conversely, this rule does not account for the formation of *ad hoc* expressions like *superfather, super-school, super-soul...* formations that are not registered in the corpus and lexicographical records but that obviously constitute part of the speaker's lexical competence (see Faber and Mairal Usón 1999).
- (iv) It does not capture the restrictions that motivate related combinations like *super/ultrasonic, super/hypermarket...* but not like *super/*ultraman*

In general, it seems that PFRs are not sufficiently *restrictive* and thus they miss relevant regularities of the derived vocabulary. Rule (1) basically expresses that there is a consistent semantic relation of *superiority* underlying the output units (E.g: ‘man OVER man’, ‘star OVER star...’). But, how can we account for the fact that both *foreman* and *superman* may be outputs of rule (1)? Do *foreman*, *superman*, *hypermarket*, *ultraviolet*, etc. characterise superiority in the same way?. As Martin Mingorance (1990: 232-233) observes, even though the model of FG propounds the principle of Stepwise Lexical Decomposition as a means to approach semantic relations within the lexicon (see Dik 1997, *Part I*: 99-101), it does not provide any appropriate methodology to access lexical structures:

[...] it is somewhat paradoxical that within FG no coherent methodology has been devised for the onomasiological structuring of the lexicon which would make possible its organization in lexical fields and, consequently, the stepwise lexical decomposition of groups of lexemes of each field.

We will propose the FLM as a more adequate framework to account for the structure of and the interrelations within the derived lexicon. In so doing, we will confine ourselves to the analysis of prototypical formations of Anteriority and Superiority since we believe they clearly illustrate the general structure and the mechanisms that operate in the organization of the locative derived vocabulary. Since this analysis is, however, part of a broader corpus-based research on locative prefixation, we first introduce some general aspects related to the selection of the corpus in the next section.

3. THE SELECTION OF THE CORPUS

From a functional-lexematic perspective, the essential criterion for the selection of derived units is that derived formations must be semantically-motivated units, that is to say, they must constitute combinations of morphemes or *composites* (see Marchand 1969: 11-12). This basically means that forms like *precede*, *antecedent*, *hypocrite*, etc. do not represent instances of derivation proper, as opposed to, for instance, *pre-conceive*, *anteroom*, *hypotension*, etc., since the particles *-cede*, *-cedent* and *-cite* are not morphemic, they do not constitute form-meaning pairings (cf. *conceive*, *room* and *tension*).

By applying this criterion, the first step in extracting the data from the corpus has been to collect prefixed formations from *The Tagged LOB Corpus* (see Johansson *et al.* 1986) and *The Collins COBUILD English Dictionary* (see Sinclair 1995), the latter serving also as reference for meaning check.³ The number of instances

collected for each locative prefix is presented in *Table 1* below where *LOB* samples are given within brackets while unbracketed numbers indicate the total amount of samples (both *LOB* and *COBUILD*). In a second step, sampled prefixed formations have been grouped into eight lexical classes on the basis of the prototypical meaning they exhibit: Anteriority, Posteriority, Centrality, Superiority, Inferiority, Exteriority, Opposition and Motion. In Section 4 we present the main principles and criteria that determine the organization of lexical units into lexical classes within *FLM*. The full body of data and the general results regarding each of these lexical classes can be found in Sosa (2004a).

Finally, it seems worth noting at this point that prefixed formations appear hyphenated and/or in full form (see *Table 1*). Sosa (2004b) observes that hyphenation systematically correlates with the degree of lexicalisation of the prefixed units. Prototypically, non-hyphenated formations show a higher degree of lexicalisation as compared with full forms. The coexistence of both possibilities in the same unit (E.g. *foreroom*; *fore-room*) is generally interpreted as lexicalisation in progress, but it seems to be also determined by socio-cultural conditions associated to the different varieties of English.

(3)

Domain	Prefixes	Prototypical Formations	Number of formations registered
Anteriority	Ante#	anteroom	4
	Fore#	forecourt	40
	Pre#	predeterminer	73 Lob* (31)
Posteriority	Post#	postdeterminer	34 Lob (15)
Centrality	Inter#	inter-parliamentary,	75 Lob (32)
	Intra#	intracontinental	3 Lob (1)
	Mid#	mid-section,	36 Lob (29)
Superiority	Meta#	metaphysical	4 Lob (1)
	Para#	parapsychology	4 Lob (2)
	Super#	superman	25 Lob (23)
	Hyper#	hyper-sophisticated	5 Lob (2)
	Ultra#	ultra-sophisticated	6 Lob (4)
	Sur#	surmount	3 Lob (2)

3. Formations not registered in *The Collins COBUILD* have been checked at other dictionaries: *The Longman Dictionary of Contemporary English* (1995) and *The Oxford English Dictionary* (1933, 1989).

<i>Inferiority</i>	Hypo#	hypoallergenic	3 Lob (1)
	Sub#	subculture	48 Lob (35)
<i>Exteriority</i>	Ex#	exorbitant	22 Lob (20)
	Extra#	extraordinary	8 Lob (4)
<i>Opposition</i>	Anti#	antibody	47 Lob (39)
	Counter#	counter-espionage	29 Lob (24)
<i>Motion</i>	Trans#	transexuality	20 Lob (14)

Table1: *prototypical lexical classes for sampled locative formations.*

4. THE LEXICON IN THE FLM: THE COGNITIVE AXIS AND THE SCHEMATA

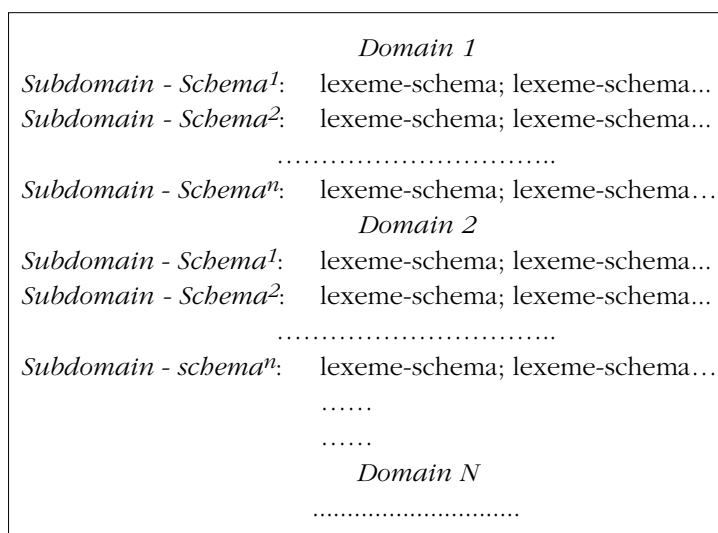
One of the major obstacles that the linguistic models of the seventies and eighties are faced with concerns the fact that word formation is considered to be a *static* phenomenon, that is to say a phenomenon generally associated to the syntactic component.⁴ In contrast, the data provided by Cortés (1997c) and by Sosa (2004a) reveal that derivation is a *dynamic* process (i.e. a complex process simultaneously restricted at all the levels of linguistic description and organization, namely phonology, morphology, semantics, pragmatics and syntax), and that such restrictions operate systematically across the derived lexicon. Furthermore, from a functional perspective, the static view of the lexicon is in conflict with the ordinary communicative strategies the speakers make use of, like metaphors, presuppositions, pragmatic factors, etc. As Rosch (1978) claims, the *categorization* of the reality around us is not a closed and discrete capacity and the way the physical experience is conceptualised depending on a variety of factors (movement of the body, social environment, perception...) is projected onto lexical properties. In this respect, Faber and Mairal (1994: 196) contend, "[...] one can arrive at an inventory of conceptual categories and their interrelationships through the structure of language itself, as a reflection of our understanding of reality, or our way of having the world".

Much in accordance with this view, the *FLM* incorporates a cognitive perspective (*the cognitive axis*) and propounds a multi-level structure for the lexicon in which cognitive mechanisms are regarded as an essential factor (see Martín Mingorance 1985b, 1987a, 1987b, 1990):

4. For an overview of the most salient lexicist and syntactacist approaches to word formation, see Cortés (1997b,c).

(4)

- (i) The lexicon constitutes a *structure* in the Coseriu sense (see Coseriu 1986: 212) and comprises at least four interrelated levels or axes: *paradigmatic level*, *syntagmatic level*, *pragmatic level* and *cognitive level*.
- (ii) The meaning or definition of lexical units lies at the convergence of information provided by these four levels or axes. *Derivational schemata* constitute formal representations of this lexical content.
- (iii) The lexicon exhibits a hierarchical *onomasiological*, rather than *semasiological*, organization of lexemes. They are arranged in *domains* and *sub-domains* (lexical fields), from the most basic to the most complex. The full body of this hierarchy constitutes a *macrostructure*, the general layout of which is given below (see Faber and Mairal Usón 1994, 1999):



Macrostructure of the lexicon.

- (iv) From a cognitive perspective, a *derivational schema* constitutes a cognitive pattern, a maximal projection of a conceptual content. Each domain and subdomain, as well as the lexemes they comprise, is therefore associated to a specific cognitive schema (see Faber y Mairal 1999: 217 ff.):

DOMAIN: Superiority		
Lexemes	Conceptual content: "x ₂ OVER x ₁ "	Cognitive schema
<i>Superman</i>	'man OVER man'	x ₂
<i>Superstar</i>	'star OVER star'	↓ OVER
<i>Super-ego</i>	'ego OVER ego'	x ₁

The principles outlined above roughly establish that, from a functional-lexematic perspective, information from all the linguistic levels projects onto the derived units, and that derivational schemata constitute appropriate representations of such projections. In the following sections, we will specifically lay the emphasis on how lexeme schemata embody the paradigmatic, the syntagmatic and the semantic-cognitive levels, and how the information they provide ultimately shapes the macrostructure of the lexicon.

4.1 THE SYNTAGMATIC AND THE PARADIGMATIC STRUCTURE OF LOCATIVE DERIVED UNITS

The syntagmatic properties underlying prefixed units are represented by means of prepositional schemata, prepositional predications like, for instance, [(BEFORE_p (x₁:room)_{Ref})_{Locus} (x₂: room)_{Lcdum}]_{STATE} for *forerroom* with the meaning 'room_{x2} BEFORE room_{x1}' and where:

(5)

- (i) the variables x_1 and x_2 represent entities, and p specifies the grammatical category of the predicate BEFORE as preposition (see Mackenzie 1992).
- (ii) the labels *Ref* (Referent), *Lcdum* (Locandum) and *Locus* represent semantic functions. Locative relations involve the participation of three entities that perform the semantic functions *Locandum* (the entity that is subject to location, E.g. x_2 : *room*), *Referent* (the entity with respect to which the *Lcdum* is placed, E.g. x_1 : *room*) and *Locus* (the entity designating the position the *Lcdum* takes, E.g. *before*, *at the front of...* x_2 : *room*).
- (iii) STATE indicates that the predication designates a non-dynamic, non-controlled state of affairs (see Dik 1997, *Part I*: 105 ff): 'room BEFORE room', 'man OVER man'...

Following Lakoff and Johnson (1980:35 ff), we assume that such state relations constitute part-whole, *metonymic* conceptualisations in which a part (E.g. x_2 : room_{Lcdum}) of an entity as a whole (E.g. an architectural setting) is presented as taking a specific position (*[before room_{Ref}]_{Locus}*).

Interestingly enough, metonymic relations of this sort seem to be ubiquitous across the locative derived lexicon and motivate the rise of *paradigms* (domains or lexical fields), as specified in (4) above (paradigmatic structure). For instance, formations with the prefix *fore#* (E.g. *fore-room*, *forefinger*, *forefoot*, *foreleg*, *forename*, *fore-stress*, etc.) share syntagmatic and paradigmatic features with other prefixes (E.g: *anteroom*, *pre-determiner*...). They all conceptualise the basic relation 'x₂ BEFORE x₁' and they therefore constitute members of the same domain. Much in the same way, *superman*, *hypermarket*, *ultraviolet*, *exorbitant*, etc. designate 'x₂ OVER/ABOVE/BEYOND...x₁'. All of these formations belong in the domain Superiority, even though, as we shall show in Section 5, each prefix instantiates specific degrees of superiority:

(6)

SYNTAGMATIC STRUCTURE:

Anteriority	Superiority
$[(\text{BEFORE}_P(x_1)_{\text{Ref}})_{\text{Locus}}(x_2)_{\text{Lcum}}]_{\text{STATE}}$	$[(\text{OVER?BEYOND}_P(x_1)_{\text{Ref}})_{\text{Locus}}(x_2)_{\text{Lcum}}]_{\text{STATE}}$

PARADIGMATIC STRUCTURE:

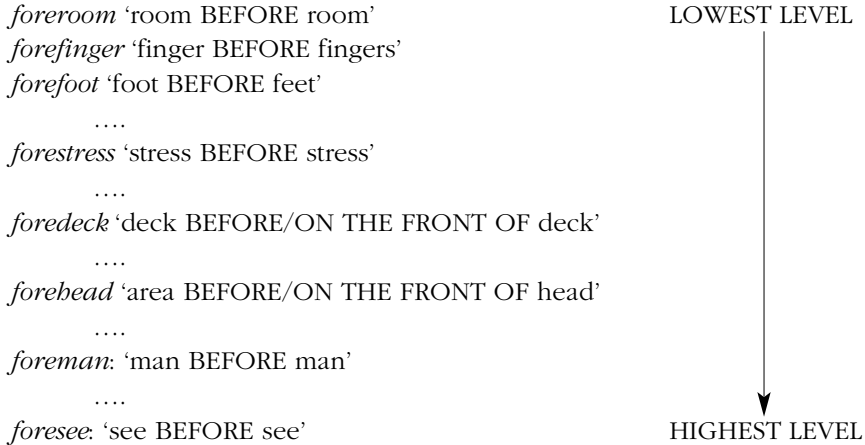
Anteriority	Superiority
<i>forerom</i> : 'room BEFORE room'	<i>superman</i> : 'man OVER man'
<i>forefinger</i> : 'finger BEFORE/first finger'	<i>hypermarket</i> : 'market OVER market'
<i>predeterminer</i> : 'determiner BEFORE determiner'	<i>ultraviolet</i> : 'violet OVER/BEYOND market'
...	

4.2 THE SEMANTIC-COGNITIVE MOTIVATIONS OF LOCATION: THE EXPERIENTIAL ACCOUNT

One of the most relevant properties of the lexicon is that the formations that belong in the same domain appear in hierarchical (onomasiological) order, from the most basic or lowest level to the most complex or highest level:

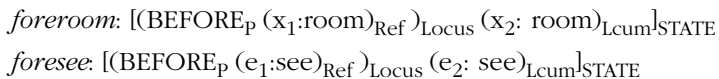
(7)

PARADIGMATIC STRUCTURE:



Two basic factors seem to determine this ordering. First, the typology of the entities, that is to say, the way in which the entities are conceptualised as mental constructs (see Dik 1997, *Part I*: 137 and Svorou 1993: 5). By incorporating Dik's typology of entities, derivational schemata distinguish first-order entities x_1 and x_2 (E.g: *room* in *foreroom*) that prototypically designate more basic conceptualisations from second-order entities e_1 and e_2 (E.g.: *see* in *foresee*) that conceptualise more complex relations:⁵

(8)



The second relevant factor concerns the semantic properties that characterise the entities. Following the classification of *high-level* or *HPRIM* and *lower-level* or *LPRIM* features established by Aarts y Calbert (1979: 18), the semantic contour of each entity is specified by means of features of the form [+Shape, +Dimensional].⁶ Those entities characterized as [-Shape] (with no physical contour) or as [-Artifact]

5. Entities are classified into four main orders on the basis of the typology of entities proposed by Dik (1997, Part I: 137). First-order entities designate entities that can be located in space and time. Second-order entities designate states of affairs.

6. It seems worth comment that other means of semantic description and representation may be likewise compatible with this framework. Particularly interesting seem to be Pustejovsky's (1998) QUALIA Structures.

(naturally created entity) are interpreted as conceptually more complex (notional) than those specified as [+Shape] (spatio-temporal entities) or [+Artifact] (manufactured, not naturally formed object):⁷

(9)

foreroom: [(BEFORE_p (x₁:room<[+Sh, +Art]>)_{Ref})_{Locus} (x₂: room<[+Sh, +Art]>)_{Lcum}]_{STATE}
forestress: [(BEFORE_p (x₁:stress<[-Sh,-Art]>)_{Ref})_{Locus} (x₂: stress<[-Sh,-Art]>)_{Lcum}]_{STATE}

It should be noted that both the typology of entities and the semantic features constitute semantic-cognitive restrictions rather than abstract properties of the linguistic units. Within the approach taken here, this means that cognitive and *experiential* aspects play a fundamental role in the structuring of lexical meaning (see Lakoff and Johnson 1980: 77 ff). Thus, for instance, we will claim in Section 6 that, though formations like *foreroom* and *foreman* both entail first-order entities (*room* and *man* respectively), *man* is not conceptualised as a spatio-temporal entity (i.e. a physical entity: ‘man physically BEFORE man’), but rather as a conceptual entity involved in a hierarchically determined social grouping which entails ‘man who is SUPERIOR TO other men’. This fact explains why *foreman* appears at a higher level, notional level, in (7) above, as opposed to *foreroom*, *forefinger*, etc. that represent spatio-temporal, physical conceptualisations (see Svorou 1993: 5 ff.). To illustrate this in more detail, let us sketch out how experiential ontological factors such as Number, Physicalness, Dimensionality and Perspective motivate the existence of different levels of conceptual complexity within the domain Spatial Anteriority.

NUMBER

The formations *foreleg*, *forefinger* and *forefoot* designate a part-whole relation between a definite number, not necessarily two, of first-order entities. The Referent designates ‘set of first-order entities’ (two or four *legs*, *feet*, *parts*, etc.) and it is the partition one-of-the-*legs/feet/parts* that is foregrounded here rather than the spatial contiguity of two entities (cf. *foreroom*: ‘room BEFORE/SIDE TO SIDE WITH room’). Variation in the number of entities, therefore, seems to evoke different spatial conceptualisations, one more basic in which two entities are categorised as contiguous (E.g: *foreroom*), the other more complex in which one entity contrasts with a group of related entities (*forefinger*, *forefoot*, etc.). In the

7. As registered in the COBUILD (¬stress), stress designates ‘emphatic pronunciation of a word or part of a word’.

light of this distinction we propose a subdivision of the domain Spatial Anteriority into two subdomains: first, *Anteriority*→*Contact* (E.g. *forerom*) and second, *Anteriority*→*Partition* (E.g. *forefinger*). The operator *dN* (definite number) in the schemata below captures such distinctions of number:⁸

(10)

DIMENSION: Spatial

DOMAIN 1: Spatial Anteriority

SUBDOMAIN 1.a) ANTERIORITY→*CONTACT*

1. [[BEFORE_P (x₁: <[+Sh,+Art]> (x₁))_{Ref}Locus (x₂: < [+Sh, +Art]> (x₂))_{Lcdum}]STATE
forerom

SUBDOMAIN 1.b) ANTERIORITY→*PARTITION*

1. [[IN FRONT OF_P (dNx₁:< [+Sh, -Art]> > (x₁))_{Ref}Locus (x₂: < [+Sh, -Art] >(x₂))_{Lcdum}]STATE
forefinger forefoot foreleg

PHYSICALNESS

The participant entities in the formations *forename* and *forestress* are characterised as non-physical. The interpretation ‘non-physical object BEFORE non-physical object’ does not satisfy the spatial analysis suggested in the above examples since, prototypically, only physical objects can be placed side by side with other objects (cf. *room, leg* vs. *name, stress*). Within the subdomain *Anteriority*→*Partition*, therefore, the schemata 1 and 2 represented below, distinguish formations that, on the one hand, share properties of PARTITION rather than of mere CONTIGUITY and, on the other hand, show different semantic properties with respect to the higher-level restriction of Physicalness ([+Sh,-Art]: ‘non-artifact with shape’ vs. [-Sh,-Art]: ‘non-artifact with no shape’):

(11)

DIMENSION: Spatial

DOMAIN 1: Spatial Anteriority

SUBDOMAIN 1.b) ANTERIORITY→*PARTITION: Fronting*

1. [[IN FRONT OF_P (dNx₁:< [+Sh, -Art] > (x₁))_{Ref}Locus (x₂: < [+Sh, -Art] >(x₂))_{Lcdum}]STATE
forefinger forefoot foreleg

2. [[IN FRONT OF_P (dNx₁:< [-Sh, -Art] > (x₁))_{Ref}Locus (x₂: < [-Sh, -Art] >(x₂))_{Lcdum}]STATE
forename forestress

8. Operators constitute optional grammatical means that do not affect the internal structure of the predication (see Dik 1997, Part I: 138).

DIMENSIONALITY

Dimensionality accounts for the fact that objects may be conceptualised as one-dimensional, two-dimensional or three-dimensional entities in an increasing degree of perceptual complexity. While all the preceding patterns categorise objects as unitary one-dimensional entities (*room, finger, etc.*), the derived form *fore-deck* characterises the Referent as a two-dimensional entity (*deck* as a surface), whereas *forehead* categorises the Referent as a three-dimensional entity (*head*). Dimensionality thus emerges as a high-level restriction over the categorisation of unitary objects. In the respective schemata of these formations, distinctions of Dimensionality are expressed by means of the prepositional hyponym ON (surface ON the front part of *deck*...) as opposed to the hyperonym IN/AT THE FRONT OF that characterizes basic formations (cf. *forefinger, foreleg, etc.*):

(12)

DIMENSION: Spatial

DOMAIN 1: Spatial Anteriority

SUBDOMAIN 1.b) ANTERIORITY→PARTITION: Fronting

1. [[IN FRONT OF_P (dN_{x1}:<[+Sh, -Art]> >(x₁))_{Ref}]¹Locus(x₂:<[+Sh, -Art]>(x₂))_{Lcdum}]¹STATE
forefinger forefoot foreleg
2. [[IN FRONT OF_P (dN_{x1}:<[-Sh, +Art]>(x₁))_{Ref}]¹Locus(x₂:<[-Sh, +Art]>(x₂))_{Lcdum}]¹STATE
forename forestress
- 3.1. [[In/At the Front of→ON_P (x₁:<[+Sh,+Art]>(x₁))_{Ref}]¹Locus(x₂:<[+Sh, +Art]>(x₂))_{Lcdum}]¹STATE
fore-gallows fore-loader fore-deck
- 3.2. [In/At the Front of →ON_P (x₁:<[+Sh,-Art]>(x₁))_{Ref}]¹Locus(x₂:<[+Sh,-Art]>(x₂))_{Lcdum}]¹STATE
forelock
- 3.3. [In/At the Front of →ON_P (x₁:<[+Sh,-Art]>(x₁))_{Ref}]¹Locus(x₂:<[+Sh,-Art→subpart]>(x₂))_{Lcdum}]¹STATE
forehead forehand forearm forepart

Derivational Schemata affected by dimensionality within Anteriority →Partition

PERSPECTIVE

Closely bound to Dimensionality, Perspective builds on the fact that physical objects are asymmetrical and show *exterior* and *external regions*⁹ (see Svorou 1993:

9. The exterior region of the entity is usually marked by its conceptual shape or outward contour (E.g. the shape of one finger with respect to the other fingers). The external region may be defined as the conceptual space in between various exterior regions (E.g. the space in between the fingers).

16). They may be interpreted as *individual regions* or conceptualised in terms of sub-regions that stand in contrast, either on a *horizontal axis* (front/back, left/right) or on a *vertical axis* (top/bottom, up/down). The underlying patterns representing *foredeck*, *forelock*, *forehead* and *foreskin* categorise a specific sub-part (the front) of the Referent which, together with properties associated to dimensionality, subsume all these formations under the sub-subdomain *Fronting* (see (11) above). The units *foregallows*, *fore-loader* and *foredeck*¹⁰ designate ‘physical object ON the FRONT PART of the surface of a larger object (ship, loader...)’ whereas, in *forehead*, the Referent categorises ‘the FRONT surface of the head’, of a three-dimensional entity, and *foreskin* designates ‘area, surface of an entity (body element) ON/AROUND FRONT OF body-part’.

The entire structure of the spatial domain thus seems to develop progressively from, first, prototypical spatial relations between objects conceptualised as unitary entities, second, the more complex specification of the number of entities and their intrinsic properties, and finally, the sub-parts of the entities, altogether ontological factors of experience. The gradual complexity that this hierarchy of spatial configurations involves may be illustrated as follows:

10. Lexicographical sources do not register the forms *fore-gallows* and *fore-loader*. Below we quote the selections collected from the LOB corpus and from which we have inferred the meaning ‘gallows, loader ON the front part of a two-dimensional object (ship, farm vehicle like a tractor respectively).

23.395 c:\lobtagh\lobt-n3.h 77. [...] other craft lay for their lives in the hurricane wind and giant seas. The ton-weight outer board of the net had ripped free of its dog-chain and, swinging inboard from the **fore-gallows**, had crushed the boatswain to a pulp.

26.758 c:\lobtagh\lobt-e3.h 85. [...] silo unloaders, feeders, side-unloading trailers and other associated equipment for the new techniques. But the material also handles well with a **fore-loader**, it is said, and has zero grazing possibilities as well.

(13)

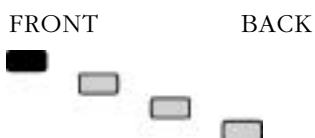
One-dimension patterns of contact.

E.g.: *anteroom*



One-dimension patterns of partition (no contact)

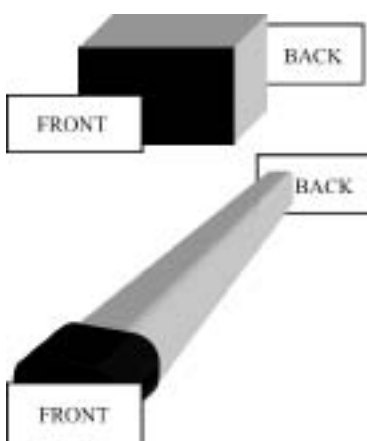
E.g.: *forefinger*



Two-dimension patterns. E.g.: *fore-loader*



Three-dimension patterns. E.g. *forehead, foreskin*



Dimensionality and Perspective in formations with the prefix fore#.

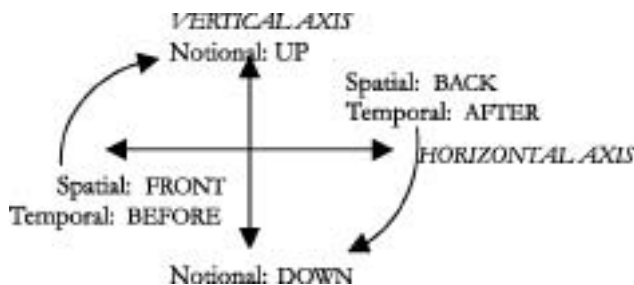
What we conclude from this analysis is that the typology of the entities and the semantic specifications entail experiential factors that should be considered as essential criteria in the description and interpretation of locative units. As illustrated above, these factors predict that, taking formations like *foreroom*, *forefinger*, *foregallows*, *forehead* and *foreskin*, all of them subsumed under the domain Spatial Anteriority, the unit *foreroom* will be associated to the lowest level within the domain, whereas *forefinger*, *foregallows*, *forehead* and *foreskin* will follow down as more complex configurations.

5. LOCATIVE DIMENSIONS AND THE ROLE OF METAPHOR

In the preceding sections, we argued that lexemes and their schemata are organized into domains on the basis of semantic-cognitive criteria and that locative conceptualisations are based on a part-whole, metonymic relation. We will now lay the emphasis on the fact that domains are in turn organized into hierarchies, and that *metaphor* constitutes one of the primary resources for lexical structuring at this level.

Locative domains instantiate Spatial, Temporal and/or Notional conceptualisations. We may thus state that Space, Time and Notion constitute *dimensions*, high-level semantic-cognitive restrictions within Location (see Langacker 1987:149). Sosa (2004a: 373 ff) observes that domains prototypically associate to the spatial and the temporal dimensions and that the notional dimension emerges from projections or *metaphorical mappings* of the more basic spatio-temporal features. Below we illustrate this progression from spatial and temporal scenarios into notional conceptualisations as a rotation of a *horizontal spatio-temporal axis* towards a *vertical notional axis*:

(14)



Rotation of axes and metaphorical projection, from space/time into notion.

The rotation of the axes involves metaphorical processes through which inherent basic features of horizontal relations “are translated into” vertical interpretations: BEFORE becomes UP, AFTER becomes DOWN and the prepositional relations BEFORE/FRONT and AFTER/BACK become ON/OVER and BELOW/UNDER respectively (see Lakoff and Johnson 1980:14 ff.). Mappings of lexical features, however, seem to be deeply grounded not only in ontological factors (up, down, etc.), but also, and more significantly, in epistemic knowledge.

As an example, consider the form *foreman*. Svorou (1993: 74-75) claims that the experience of social relationships among human beings conforms to an *anthropomorphic model* of hierarchical categorisation. On the assumption that this model activates a general analogy between ‘a man BEFORE a man’ and ‘a man ABOVE, at a higher position OVER a man’, *foreman* may be interpreted as a part-whole relation in which *man* stands *notionally*, rather than physically, OVER a *set of men* (cf. *forefinger*). The orientational metaphor formulated by Lakoff and Johnson (1980: 15) as MORE IS UP gives way here to HAVING (more) CONTROL OR FORCE IS UP. In what follows, we shall show that the expansion of the metaphor MORE IS UP into *chained metaphors* like MORE IS UP ÷ CONTROL IS UP in fact constitutes a recurrent device for the notional interpretation of spatio-temporal relations.

6. METONYMY AND METAPHOR: THE CASE OF *SUPERIORITY*

Thus far, the analysis of locative units suggests that there are two distinct, though interrelated, instruments, *metonymy* and *metaphor*, which are motivated by both ontological and epistemic knowledge and which operate at different levels of the semantic-cognitive structure of vocabulary: *metonymy* is essentially an *intra-dimension* phenomenon affecting the organization of lexemes into domains and subdomains, whereas *metaphor* is prototypically an *inter-dimension* device that motivates the expansion of basic spatio-temporal meaning (see Fernández Sánchez 1998):

(15)	METONYMY	METAPHOR
	Part: individual entity (man, finger...)	MORE IS UP
	Whole: set of individual entities (men, fingers...)	
	Domains	Dimensions
	<i>foreroom</i>	Spatial
	<i>forefinger</i>	
	<i>foreman</i>	Notional

Metonymy and metaphor in formations with the prefix fore#

One of the most interesting and clear instances of the role of metaphorical mappings is provided by the subdomain *Anteriority*→(*Distance*)→*Superiority*. Formations of Superiority share a set of ontological and epistemic presuppositions associated to the concept of *vertical parallelism*. The two parallel entities are interpreted here as physical entities of the same typology that stand one over the other at a relative short distance in space, they never interact. However, the longer the physical distance between the entities, the higher the superiority of the upper over the lower and, not surprisingly, the longer the conceptual distance between the two. This view of parallelism as a process of gradual development articulates the whole domain of *Superiority* that comprises prototypical formations like *foreman*, *supermarket*, *hypermarket*, *ultraviolet* and *exorbitant*.

FOREMAN

As in the case of spatial and temporal scenarios (cf. *anteroom*, *forefather*, etc.), the participant entities in *foreman* are first-order entities (E.g: *man* in *foreman*). The specific relation they designate, however, is neither spatial nor temporal, but rather conceptual in nature: if first-order entities prototypically involve spatio-temporal relations (E.g: *forefinger*: ‘finger BEFORE finger’), within the *notional dimension*, such entities are located on the *vertical axis* and designate ‘entity BEFORE→ON/ABOVE/BEYOND entity’ (E.g: *foreman*). These projections justify why the patterns underlying *forerom* and *foreman*, which seem not to differ essentially from one another, are actually different in *meaning*, they belong in different dimensions. The subscript *Notional Locus* in the schemata below correspondingly indicates that *foreman* is interpreted as a notional formation in contrast to *forerom*, *forefinger*, etc:

(16)

DIMENSION: Notional

DOMAIN 1: Notional Anteriority→*Superiority*

SUBDOMAIN 1.) ANTERIORITY→(*DISTANCE*)→*SUPERIORITY*

SUB-SUBDOMAIN 1.a) *SUPERIORITY*→*RELATIVE REMOTENESS*

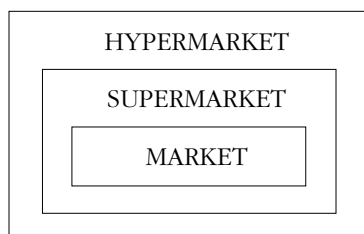
1. [[(ABOVE)_p (x₁: NP +Hum) (x₁)_{Ref}] **Notional Locus** (x₂: NP +Hum (x₂)_{Lcdum}]_{STATE}

foreman: ‘individual entity ON/ABOVE individual entity/-ies of exactly the same typology’.

SUPER/HYPERMARKET

Both *supermarket* and *hypermarket* prototypically entail ontological properties related to the size and height of buildings. In *hypermarket*, one entity is conceptualised as being larger than (going beyond the limits of) another entity of the same typology (i.e. *supermarket*) which, in its turn, is larger than *market*. The formation *hypermarket* is thus construed on the basis of *chained metonymies*: '*hypermarket* embeds *supermarket* that embeds *market*'.

(17)



Conceptual image of chained metonymies in super/hypermarket.

Together with the physical interpretation of *super/hypermarket* as 'shopping place, building', however, there is a subtler, but socially rooted reading of these formations as the notional '*to go shopping*'. The activity here substitutes for the object or place which, according to Lakoff and Johnson (1980:58-59) conforms to the ACTIVITY FOR OBJECT or PLACE metonymy. What is relevant about this metonymy is that, just as buildings are subject to gradation in size and height, once the activity 'shopping' *replaces* the object 'building', the former may be also subject to gradation, this time in amount and intensity: if ontological presuppositions based on size and height trigger degrees of physical superiority (i.e. hypermarket LARGER THAN supermarket LARGER THAN market), epistemic presuppositions related to 'shopping' give rise to degrees of superiority in amount or intensity (i.e. prototypically, the larger the object or place -shopping centre-, the larger the number of goods to buy – more intensive activity).

We will assume that the association of formations like *hyper/supermarket* to more than one dimension constitutes a case of conceptual *polysemy* (see Lakoff and Johnson 1980). Since these forms are related simultaneously to Space and Notion, we propose to regard them as part of a *transitional dimension*, the *Spatial-Notional dimension* (E.g. Spatial interpretation: *They are building a new supermarket/hypermarket in the city*; Notional interpretation: *The European supermarket/hypermarket of strawberry*):

(18)

LOCATIVE SPATIAL/NOTIONAL DIMENSION

1) *SUPERIORITY*

1.a) *SUPERIORITY*→*INCLUSION*

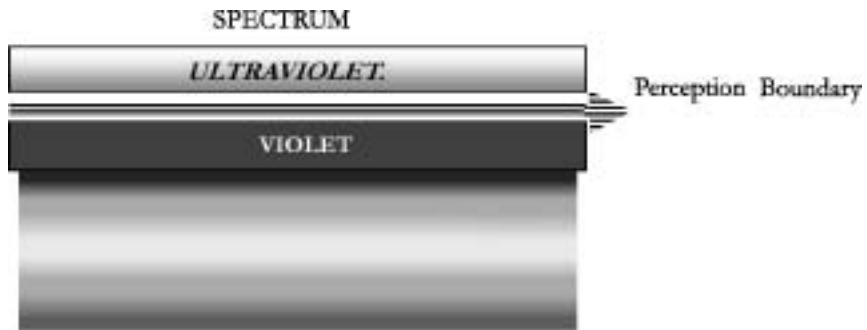
(A) *DENOMINAL*

1. [(OVER →ON_p (x₁: NP+Sh,+Art::building(x₁))_{Ref}]^{Spat/Not.Locus} (x₂: NP +Sh,+Art::building (x₂))_{Lcdum}]_{STATE}
 supermarket (LOB) hypermarket

ULTRAVIOLET

Like *super/hypermarket*, *ultraviolet* designates a property that goes *beyond* the limits of the basic property *violet* (entity-*Ref*). If we assume that the spectrum of light is conceptualised as a set of parallel perceptual boundaries, *ultraviolet* is radiation that falls outside the range of perception within the spectrum, lying parallel to the upper borderline of *violet*. It thus conceptualises a relation between entities that still share basic properties (i.e. they are all *light*, just as *market*, *supermarket* and *hypermarket* are all buildings) but that differ dramatically with respect to conditions of visual perception:

(19)



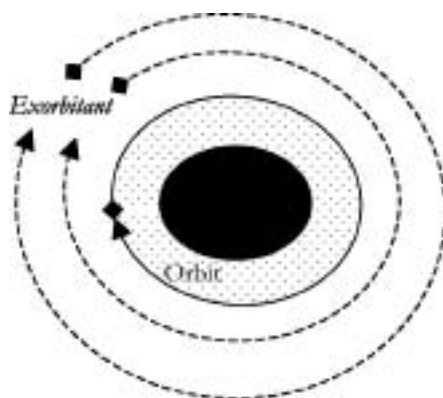
Conceptual image of Ultraviolet

EXORBITANT

Exorbitant expresses ‘property of an entity BEYOND/OUTSIDE property of an entity’. Vertical parallelism here takes the form of concentric itineraries as a result of

the circular shape of the orbit: 'circle around and OVER circle'.¹¹ Like *ultraviolet*, *exorbitant* indicates that one of the entities goes beyond the other, that is to say, beyond the range of the orbit. However, while *ultraviolet* is still part of the spectrum, the entity characterized as *exorbitant* is conceptualised as being extremely distant from the orbit, no longer within its scope, and therefore, at a higher position from the Referent. It is precisely the presence of such epistemic presuppositions that allows for the metaphorical interpretation of this unit, widely spread in present-day English standards, as 'exaggeration, extreme degree of...' which seems to be based on the chained metaphor MORE IS UP ÷ EXCESS IS ABOVE (E.g. *exorbitant prices, fees, amounts...*). The corresponding conceptual image may be represented as follows:

(20)

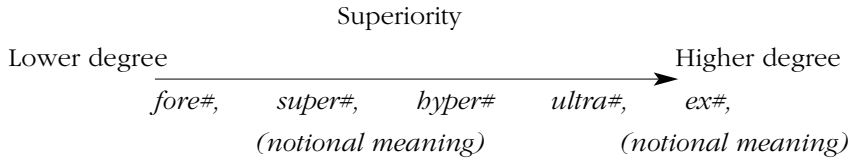


Conceptual image of vertical parallelism in concentric shape. E.g.: Exorbitant

The main conclusion to be drawn from this section is that the prefixes *fore#*, *super#*, *hyper#*, *ultra#* and *ex#* correlate with increasing degrees of superiority and constitute part of a continuum in which such degrees are viewed as progressive, rather than as clear-cut distinctions:

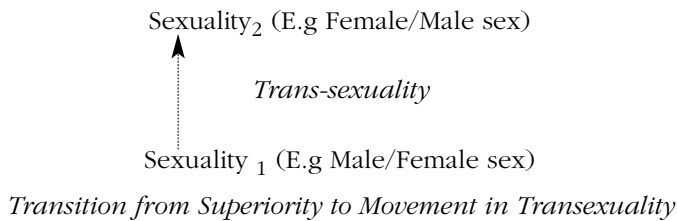
11. Concentric relations entail the basic ontological presuppositions of vertical parallelism, including the fact that the spatial scenario is categorised as a two-dimensional setting: trajectories describe itineraries with two ends, be they straight (E.g. horses running parallel in a horse race) or circular (E.g. planets moving parallel within the orbit).

(21)



Furthermore, the existence of polysemous interpretations like *super/hypermarket* indicates that there is also a dynamic transition of both ontological and epistemic information from domain to domain, and/or from dimension to dimension. Indeed, there seem to be no discrete borderlines within the whole macrostructure of the lexicon in which transitions even arise between apparently unconnected domains. Consider, for example, the domains Superiority and Movement (E.g. *transplant* ‘movement of a plant from one place to another’). In some denominal formations of Movement like *trans-sexuality*, the entities are interpreted as being extremely separate, remote, no longer parallel, and a new metaphorical mapping from space into notion seems to operate: LOSING A PROPERTY IS GOING TOO FAR BEYOND THE STANDARD PROPERTY. By the action of this metaphor, *trans-sexuality* designates ‘sexuality₂ FAR BEYOND/REMOTE FROM/NO LONGER sexuality₁’, that is to say, going so much BEYOND the social standards of sexual identity means becoming a member of the *opposite* sex. Once again, this complex configuration embodies a *chained metaphor*: LOSS OF PROPERTY IS MOVEMENT AWAY FROM THE PROPERTY MOVEMENT AWAY FROM A PROPERTY IS CHANGE LOSS IS CHANGE:

(22)



7. CONCLUSION

Far beyond the formal properties of prefixed lexical units, there is sufficient evidence to believe that the underlying mechanisms of metonymy and metaphor consistently determine lexical structure. The functional-lexematic approach has been presented here as a powerful means to capture the role of these two complementary mechanisms.

Through transformations like PFRs, morphological regularities are subject to insufficient restrictions at the same time that irregularities are given no adequate functional explanation.

Now, going back to (2) above, where we stated some of the weak points that PFRs show for an adequate treatment of derivation, we conclude that, first, *ad hoc* formations like, for instance, *super-school*, are motivated by the same presuppositions that generate prototypical formations of superiority. In particular, *super-school* could be interpreted metaphorically as ‘school with ideal or optimum conditions to study’ on the basis of the ACTIVITY FOR OBJECT metonymy that characterizes prototypical formations like *supermarket* in its notional interpretation (‘larger market’, ‘more goods to buy’). Similarly, *?superfather* or *?super-soul* could be reinterpreted as novel formations that follow fixed derivational patterns (E.g. *superman*, *super-ego*: *man/father*; *ego/soul* OVER *man/father*; *ego/soul*).

As for *forefinger* and *hyperactive*, we may state that the motivations underlying these formations are the same that restrict **ultraman*, **fore-active*, **hyper-see* or **hypersupermarket*. On the one hand, locative prefixes instantiate specific conceptual scenarios based on ontological and epistemic information. Thus, the prefix *fore#* prototypically designates spatial or temporal conceptualisations of a physical entity and, for this reason, it adjoins nominal and verbal bases rather than adjectival forms (E.g. *forefinger*: ‘finger BEFORE finger’: ‘first, more salient finger’; *foresee*: *see* (an entity) BEFORE *see*: ‘see in advance’). In contrast, *hyper#* and *ultra#* prototypically designate degrees of inherent properties with adjectival bases (E.g. *hyperactive*: ‘ACTIVE_{PROPERTY} in a high degree’). On the other hand, this division of labour gives rise to a hierarchy of lexemes and, in turn, to a hierarchy of domains and of dimensions that together constitute the lexical macrostructure. Since lexemes are onomasiologically organized, lower-level prefixes cannot combine with higher-level prefixes on the same formation which explains why combinations like **superhypermarket* would not be possible in English. Hence also, the distinction between *foreman* (man OVER man on a social scale) and *superman* (man OVER/BEYOND man on a notional scale), each of which designates specific degrees of superiority within the same domain. Finally, “transitional” formations like *super/hypermarket* or *transsexuality* add to the evidence that location is conceptualised as a continuum and that metonymy, metaphor and polysemy cut across dimensions as a means to expand basic meaning.

As it was pointed out at the beginning of this paper, it has been our central concern to show that the functional-lexematic framework provides a fine-grained methodology that contributes to reinforce the functional perspective adopted by FG.

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