COGNITIVE DIMENSIONS OF ANTERIORITY
IN LOCATIVE PREFIXES

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ABSTRACT

The *Functional-Lexematic Model* (FLM) assumes that, together with non-derived, primary vocabulary, affixal units constitute a part of the lexicon of natural languages, which ultimately leads to the configuration of an autonomous *Word-Formation Component* (WFC). Functional-Lexematic approaches to the analysis of lexical meaning have largely been restricted to the domains of primary vocabulary. Encouraged by this background, the description expounded in this paper seeks to explore the suitability of the Functional-Lexematic cognitive-semantic approach to account for the interpretation of the meaning of prefixal morphemes within the derived lexicon of present-day English.

In the last decades, the development of *Functional Grammar* (FG) guarantees a fairly satisfactory functional model of clause structure in which the *Lexicon* is viewed as a container of *the full stock of basic predicates of the language* (Dik 1997, Part I: 59). Subsequent contributions to this model very frequently focus on the refinement of clause structures and the development of the component of expression rules, the one that determines the conditions under which lexical units are inserted into appropriate places in clause structures.[1] However, they provide no specific description of the structure of the Lexicon. Advancements in Linguistics during the last years lead to the conclusion that the description of the lexicon is essential for the development of an adequate linguistic model of natural languages. Furthermore, contributions from the field of Psychology have furnished Linguistics with sufficient empirical evidence that cognitive experience and knowledge underlie the semantic organization of lexical units. These circumstances have favoured the emergence of the *Functional-Lexematic Model* (FLM) which correspondingly assumes the primacy of the lexicon

in terms of both its "bridging" nature and explanatory power for the relations be-tween lexical meaning and other levels of the structure of languages, more signifi-cantly the syntactic level, since lexical information seems to map onto the syntactic patterns in various ways and degrees.[2]

Though lexical meaning as well as the role cognitive information as conceived in Functional Lexematics have no explicit room within the Model of FG, both the Theory and the Model of FG stand out as the starting framework from which hypotheses about lexical organization have been formulated and become feasible within the FLM. In its essence, the FLM is actually characterized by undertaking an extensive revision of the functional view of lexical meaning and of derivational morphology.

Within FG, the meaning of the lexical unit comprises the full specification of the corresponding predicate frame (either basic or derived) together with the associated *stepwise lexical definition.* Stepwise definitions are characterized by the following features:

> (a) they link predicates by forming hierarchically organized definitions of meaning. Such definitions are captured by means of the process of *Stepwise Lexical Decomposition.*[3]
> (b) they guarantee the uncircularity of the lexical definitions since the process ends in predicates which cannot be further decomposed.

What follows is a master example of *Stepwise Lexical Decomposition* in FG lit-erature (Dik 1997:100-101):

> *assassinate* [V] $(x_1: \text{<hum>})_{Ag} (x_2: \text{<hum>})_{Go} \leftrightarrow$ murder [V] $(x_1: \text{<hum>})_{Ag} (x_2: \text{<hum>})_{Go} (x_3: \text{treacherous [A]})_{Man}$
> 'murder in a treacherous way'
> *murder* [V] $(x_1: \text{<hum>})_{Ag} (x_2: \text{<hum>})_{Go} \leftrightarrow$ kill [V] $(x_1)_{Ag} (x_2)_{Go} (x_3: \text{intentional [A]})_{Man}$
> 'kill a human being intentionally'
> *kill* [V] $(x_1)_{Ag/Fo} (x_2: \text{<anim>})_{Go} \leftrightarrow cause$ [V] $(x_1)_{Ag/Fo} (e_1 :[die \text{ [V] } (x_2))_{Proc}])_{Go}$
> 'cause an animate being to die'
> *die* [V] $(x_1: \text{<anim>})_{Proc} \leftrightarrow$ come about [V] $(e_1 :[dead \text{ [A] } (x_1)) \emptyset])_{Proc}$
> 'become dead'

Predicates are thus *defined* by other predicates. Besides, predicates may be *de-rived* from other predicates. While definitions are captured by means of this process of hierarchical decomposition of meaning, derived predicates are the result of *Predi-cate Formation Rules* (PFRs) operating on basic predicates. PFRs account for deriva-tional morphology within the framework of FG. They are, however, more syntactic than lexical in nature since, though they certainly testify for processes involving syn-tactic operations such as di-transitivization, caussitivation, composition, etc. those processes deprived of any direct association with syntactic phenomena lie beyond the reach of such rules.

As an alternative, Functional Lexematics postulates a component of word forma-tion (WFC) that associates derivational morphology with lexical meaning. This pro-posal rests on the following assumptions.

(a) if meaning links predicates, meaning is "language-internal" and it must be sought in language itself. This view is directly inherited from Coseriu (Geckeler 1976).

(b) SLD reveals that meaning in languages is organized into hierarchical systems.

(c) if the meaning of words is language-internal, the formation of new words presumably triggers a new language-internal meaning. The formation of new words does not simply entail the formation of a new predicate frame but "creation of meaning" which lexical formation rules should account for.

(d) if the meaning of new words is language-internal, then description of word-formation processes requires a component to account for contributions of linguistic information to the building of new words.

The WFC appears as an explanatory model, complementary to the Model of FG.[4] It actually stands on a parallel with the structure of the clause propounded within the model of FG and basically incorporates two sub-components into the *Fund*, namely, the *Word-Formation Lexicon* (WFL) and the *Sub-component of Rules*. Each of these is associated with a specific methodological and descriptive procedure labelled *Analytic Phase* and *Synthetic Phase* respectively. The full layout of the WFC as developed by Martín Mingorance (1982, 1985b) is provided below in *Table 1*:[5]
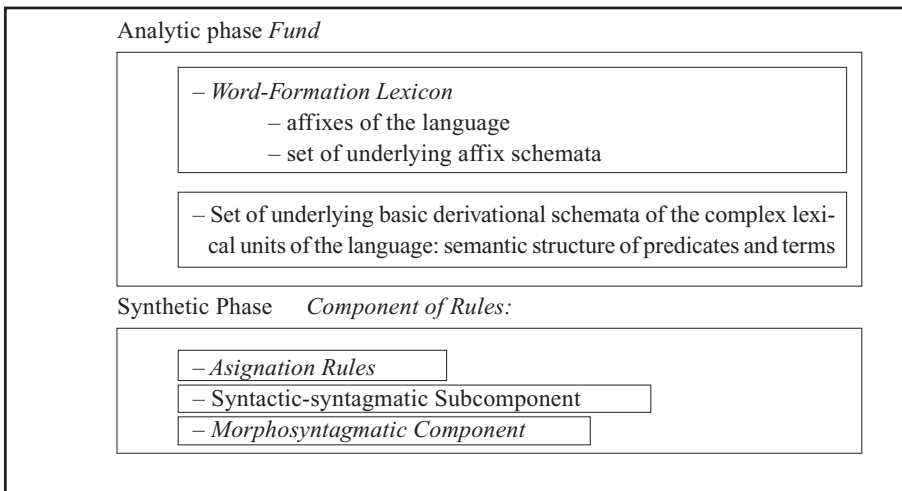
Analytic phase *Fund*

– *Word-Formation Lexicon*
    – affixes of the language
    – set of underlying affix schemata

– Set of underlying basic derivational schemata of the complex lexical units of the language: semantic structure of predicates and terms

Synthetic Phase   *Component of Rules:*

– *Asignation Rules*
– Syntactic-syntagmatic Subcomponent
– *Morphosyntagmatic Component*

Table 1

The *Fund* embraces the Word-Formation Lexicon which contains:

1.- the affixes of the language and their morphophonological and lexical-semantic structure, as well as affixation rules and their restrictions.

    2.- the set of underlying derivational schemata of the affixes together with the meaning of the complex lexical units.

Besides, the Fund comprises the set of underlying basic derivational schemata of the complex lexical units of the language which are derived from the underlying schemata of the affixes. Basic schemata capture:

    3.- the semantic structure of predicates and terms which specifies lexical field and archilexeme. It is developed by means of a process that combines Dik's SLD and Coseriu's "factorising" in Lexematics (Coseriu 1978, Chapter 7)

    4.- the pragmatic functions, morpho-phonological structure and syntactic category of predicates and terms which introduce additional restrictions on word formation.

This part of the component, whose structure constitutes the framework of this paper, is elaborated by means of an *analytic-inductive process*. The other half of the component constitutes the Sub-component of Rules which maps the fully specified underlying structures onto lexical complex units.

This view of the WFC entails far-reaching implications for the configuration of the lexicon:

    (a) the lexicon, composed of primary as well as derived *lexica*, is conceived as an autonomous sub-component which is linked to grammatical information. Therefore, it is not exclusively dependent on syntax.

    (b) it follows from (a) that lexical description comprises all levels of linguistic organization (phonological, syntactic, semantic, pragmatic, morphological). For this reason, the word-formation component is envisaged as a "grammar" of the lexicon and word-formation processes involve a "grammaticalization of the lexicon" since they draw on the grammar of languages.

    (c) affixes are, therefore, linguistic signs, bound signs.

    (d) if the primary lexicon is organized into hierarchies of lexemes (Faber and Mairal 1998), affixal lexical units presumably follow the same pattern of organization so that the lexicon of natural languages, whether primary or derived, is designed as an onomasiological rather than a semasiological dictionary. To this respect, some research studies already mentioned (note 2) put forward that such hierarchical structures actually constitute complex networks of meaning relations within the lexicon. This insight into the lexicon leads to the evaluation of certain assumptions about the nature of meaning and of meaning relations as well as about the representation of meaning. As discussed in Mairal Usón (1999:20ff), research advancements in Linguistics and related fields of Psycholinguistics seem to converge in considering that meaning is of a relational character, that is to say, it relates different kinds of linguistic information, and that its representation must be of a corresponding relational shape. Functional Lexematics assumes a *predicational* representation in the manner of the predicate frame proposed within the framework of FG. By virtue of this relational nature, lexical

units, whether simple or complex, are outlined as "minigrammars" comprising information related to the different levels of linguistic organization. In addition, lexical units are considered to be layered structures (cf. the layered structure of the clause in FG) since they represent relations that operate at the paradigmatic, the syntagmatic and the pragmatic levels. Each of these levels is associated to a specific perspective of the analysis and description of the lexicon, namely, the *Paradigmatic Axis,* the *Syntagmatic Axis and* the *Pragmatic Axis of the Lexicon*. Furthermore, psycholinguistic research has put forward that the organization of lexical meaning mirrors the organization of cognitive information which, in turn, seems to originate in our experience of the world (Svorou 1994) This assumption has given rise to a fourth perspective in the analysis of meaning which constitutes the *Cognitive axis* largely based on the works of Langacker (1987) and Lakoff and Johnson (1990).

The *Paradigmatic axis* yields a map of inter-lexical as well as intra-lexical relations and affixal units. Martín Mingorance (1990) proposes the factorising method of Coseriu's Lexematics to counterbalance the insufficiency of SLD as a means to account for the complexity of meaning relations. As a result of this analytic method, affixal entries are organized into lexical domains, that is to say, into hierarchies, and each lexical domain is subdivided into sub-domains which constitute prototypical patterns of meaning.

Such hierarchies or domains are organized on the basis of Coseriu's concepts of *claseme* and *seme* which constitute the referent poles on which lexical fields are built. The paradigmatic organization of vocabulary is thus introduced by an archilexeme (basic or prototype pattern) which embeds a number of hypomyns which are defined in their turn in terms of their hierarchically established hyperonyms.

The *Syntagmatic Axis* captures the relational features that characterize primary vocabulary as well as affixal combinations. These are represented by means of predicate structures.

The organization of vocabulary into dimensions constitutes *the Cognitive axis*. Each paradigmatic-syntagmatic coupled structure establishes a basic derivational schema which represents a "grammar of the lexical domain or subdomain." As a grammar proper, these schemata encapsulate phonological, semantic, pragmatic and syntactic information relevant to a lexical class, in Coseriu's terminology, or dimension (Mairal Usón 1999: 72). Derivational schemata therefore depict grammatical scenarios that seem to be motivated by cognitive experience and knowledge.

The *Pragmatic Axis* overimposes on the preceding axes since it operates when speakers make a decision about lexemes. Pragmatic information is highly relevant since it may be coded in the grammatical structure of lexemes in different degrees.

Now, considering that hierarchies of meaning are inclusive and that they map information on higher levels of linguistic organization, the paradigmatic description of lexical units becomes a prerequisite for the description of the WFC. The following sections are devoted to the description of the *locative* prefixes of Anteriority *ante-, pre-, fore- pro-*, which is intended to show a sample of the complex paradigmatic relations (i.e. inter-domain/dimension and intra-domain/dimension relations) that

operate within the affix lexicon of present-day English. Following Martín Mingorance (1985b), the analytical description of the lexicon requires the following methodological steps:

    1.- Selection of the corpus/corpora
    2.- Description of underlying derivational schemata
    3.- Description of basic schemata
    4.- Description of paradigmatic-syntagmatic (cognitive) prototypes.

Corpora selection is tied to Coseriu's *norm*. Martín Mingorance (1990: 235) draws attention on the relevance of this level for lexical analysis:

> Virtual patterns of formation of new lexical units allowed by the system crystalize only through the norm, which acts as a restrictive-selective screening of systematic potentialities. Metaphorical processes, essentially also lexical creation processes, may be thought of as norm-guided processes.

The analysis of coinages of complex lexical units containing locative prefixes and of their meanings has been carried out by drawing on lexicographic sources of present-day English.[6] Besides, corpora data is analysed with respect to *productivity* conceived as the morphophonological transparency, the semantic recoverability, of the lexical units in the present stage of the English language. This interpretation of productivity becomes specially relevant for the analysis of affixes since the number of coinages containing locative prefixes that is registered in lexicographical sources is quantitatively poor as compared with their realization in present-day English which frequently shows a richer, sometimes even quantitatively unlimited, productivity. Certainly, formations such as *pre-washed*.dishes, *pre-Lewinsky*.Clinton, *pre-wedding*.fear, *fore-claws* (...of a cat), and *pro-Euthanasia*.groups, which are not registered in any dictionary, are however interpretable on the basis of the formation patterns underlying actual registered words such as *pre-cooked*, *pre-Nazi*, *pre-boiling*, *foreleg* and *pro-life* respectively. All these formations are therefore non-registered instances of the lexical competence of English speakers.

Corpora selection is also tied to a number of conditions among which one of the most relevant for the analysis of prefixes is that prefixes are *extensions*.[7] Marchand (1969) describes the pattern of an extension by means of the formula $AB = B$ expressing that the resulting complex unit shares the lexical category with the free morpheme B, A being a bound morpheme. This description imposes the condition that only those formations of present-day English that share the lexical category of the *BASE*-word are to be considered as genuine instances of prefixed units.

After the selection of relevant entries, the analysis of prefixes of *Anteriority* yields the following distribution of underlying derivational schemata. Patterns of formation are organized into domains indicated by headings (e.g: *ANTERIORITY*), dimensions, written in bold italics (e.g: ***LOCATIVE SPATIAL***) and subdomains, given in normal type (e.g: Anteriority → Immediateness). Relations along this network are represented in *Table 2*:

ANTERIORITY

LOCATIVE TEMPORAL	*ANTERIORITY*	
Anteriority: *PRE- / ANTE-/ FORE-*		
Anteriority → Predictability /Certainty	*FORE- / PRE-*	

LOCATIVE SPATIAL	*ANTERIORITY*	
Anteriority: *PRE-*		
Anteriority → Immediateness	*ANTE- /FORE-/ PRE-*	
Anteriority → Partition	**1.-Fronting FORE-**	
	2.-Circling/Rounding FORE-	

LOCATIVE NOTIONAL	*ANTERIORITY*	
Anteriority → Superiority	1.- In position (rank,status)	*FORE-*
	2.- Substitution/Replacemen	*PRO-*
Anteriority → Superiority → Intensity	*PRE-*	
Anteriority ↔ Posteriority	*PRO-*	

Table 2

Hierarchies ultimately organize lexical units and their derivational patterns or schemata into dimensions. Domains, subdomains and dimensions are not to be interpreted as discrete fields delimited by clear-cut borderlines. They actually overlap since frontiers between them are fuzzy and usually take the form of "middle-fields." *Inclusiveness* is therefore expected everywhere throughout dimensions, domains and subdomains of the lexicon.

Anteriority is projected onto three dimensions: temporal, spatial and notional. Location seems to be basically established on either temporal or spatial relations. To this respect, Langacker (1987: 149) writes:

> I incline to agree with Givón (1979, ch.8) that time is in some sense more fundamental than space: the conception of spatial relationships involves scanning, which requires processing time, and our notions of spatial extensions are intimately bound up with time-extended physical actions (e.g. movement and the manipulation of objects). Be that as it may, we must certainly posit some kind of inborn field of spatial representation.

In Langacker's terminology, temporal and spatial patterns of anteriority seem to be metaphorically mapped on the Locative Notional dimension. This progression from time and space into "notion," represented by arrows in *Table 2*, is justified both in terms of grammatical structure and cognitive motivations.

The domain of *Anteriority* is considered to be basic, more prototypical, the starting point of the onomasiological hierarchical organization of the different domains subsumed under Location (Anteriority, Posteriority, Superiority, etc.). Though Langacker's *domain* corresponds to the word *dimension* rather than to the word *do-*

main in this paper, his definition of *basic domain* is equally valid for any of these concepts (Langacker 1987:149):

> By definition, basic domains occupy the lowest level in hierarchies of conceptual complexity: they furnish the primitive representational space necessary for the emergence of any specific conception.

Anteriority is captured by the "classeme" *BEFORE* and the most basic or archilexematic pattern of prefixal word formation may be represented by the relational prepositional two-place predicate *BEFORE (X) (Y)*. This predicate specifies information about:

(a) the typology of the entities involved in the locative relation (Dik 1997:136ff.).

(b) the semantic restrictions that specify the typology of entities involved in the locative relation and their lexical category. The former are specified by means of selection restrictions adopted from the typology of *higher-level and lower-level primary features* propounded by Aarts and Calbert (1979:16-40). E.g: *room* [Prot. +Sh, +Art], specifies *room* as an entity prototypically (Prot.) described as having *Shape*, an *Artifact* made by human beings.

(c) semantic functions of *Locandum* (*Lcdum*), *Locus* and *Referent* (*Ref*) as basic functions of participants in any locative relation expressing "a *Locandum* in a *Locus* with respect to a *Referent*." E.g: (*BEFORE* (room)$_{Ref)Locus}$ (room) $_{Lcdum}$ expresses "room BEFORE room" in *anteroom*.

(d) the pragmatic functions *Theme*, *Topic* and *Focus* assigned to the entities which are specifically relevant for the development of the Synthetic Phase of the word-formation component since *Topic* and *Focus* correlate with the participants, *Determinant and Determinatum* respectively, of the grammatical *syntagma*, that is to say, with the grammatical synthesis of a complex lexical unit (Marchand 1969: 11-12). E.g: ante$_{Topic}$room$_{Focus}$ ⇔ ante$_{DT}$room$_{DM}$.

(e) coindexation of "i" indicates whether one of the entities involved is directly projected over the resulting complex unit. Differences in the position of "i" mark differences between related patterns of formation such as, for example, the patterns underlying *anteroom* and *forecourt* which are basically distinguished by the assigment of index "i" to the entities x$_1$ and Φ_{NFocus} respectively (cf. schemata 1.1 and 1.4 within the Spatial dimension).

(f) the type of entity designated by the locative predications with a reference to the typology of States of Affairs as defined by Dik (1997, Chapter 5). Most of the formation patterns designate STATES (cf. schemata below).

Each respective predication of *BEFORE* is therefore an instrument that specifies the structure of an underlying schema of word formation. The meaning each basic underlying schema is associated with is measured against the most basic, archilexematic or prototypical meaning expressed as "entity (immediatly) before entity." This basic meaning represents the lowest level within the Locative Temporal and Spatial dimensions of the domain of Anteriority. For this reason, the Temporal dimension and the domain of Anteriority stand out as the most basic and prototypical within Locative

prefixation. From this basic meaning a "cascade" of progressive more complex meaning relations gradually unfolds. Both metaphorical and metonymic mappings articulate lexical units into an integrated network of meaning relations that go from the Temporal and Spatial to the Notional dimensions:

LOCATIVE TEMPORAL DIMENSION

Anteriority
1.- individual entity before individual entity.   (*forefather...*)
2.- time period before lifetime of individual entity.   (*pre-Bach*)
3.- time period before property of individual human entity in a period of time.
    (*pre-diabetic.s, pre-existing, pre-literate ...*)
4.- time period before property of individual non-human entity in a period of
       time.   (*pre-school*)
5.- time period before Prot. action.   (*pre-war*, *pre-race*...)
6.- time period before a point in time.   (*forenoon*)
7.- time period before a period in time.   (*prehistory*)

Anteriority → Predictability/Certainty
1.- time period before a period in time.   (*foreplay*, *pre-ordained*...)

LOCATIVE SPATIAL DIMENSION

Anteriority → Immediateness
1.- individual entity immediately before individual entity.
    (*ante/room*, *ante/chamber*, *predeterminer*)[8]
2.- individual entity immediatly before different individual entity.
    (*foreword*, *forecourt*)
3.- property of zero or first order entity immediately before property of zero or
    first order entity.   (*pre-cordial*, *pre-lower*)

Anteriority → Partition
1.-Fronting
1.- individual entity in front of a set of individual/mass entities.
    (*forefinger, forefoot, foreleg,*)
2.- PROT. zero order entity on the front of PROT. zero order entity.
    (*forename, forestress*)
3.- individual entity on the front of a different individual entity.
    (*fore-gallows, fore-loader, forelock*)
4.- part of individual entity on the front of this individual entity.
    (*forehead, forehand, forearm, forepart, fore-deck*)
5.- part of mass entity on the front of this mass entity.
    (*fore-shore, fore-ground, forefront*)
1.-Circling/rounding
1.- mass entity on/around individual entity.
    (foreskin)

LOCATIVE NOTIONAL DIMENSION

Anteriority → Superiority
1.- in position
1.- individual entity on/above individual entity/-ies.
  (*foreman*)
1.- Substitution/replacement
1.- individual/mass entity on/above/instead of individual/mass entity.
  (pro-form, pronoun, pro/consul, pro-settler)
2.- individual entity on/above/instead of individual entity.
  (pro-cathedral)

Anteriority → Superiority → Intensity
1.- property (zero order entity) on/above property (zero order entity).
  (*pre-eminence, predominance*, *pre-eminent, predominant*)
2.- manner/degree of property (zero order entity) on/above manner/degree of
  property.
  (*pre-eminently, predominantly*)

Anteriority ↔ Posteriority
1.- second order entity (state) before /above/towards/in favour of second order
  entity. (action/state)
  (*pro-choice, pro-life*)
2.- second order entity (state) before /above/towards/in favour of individual
  entity.
  (*pro-airship.s*)
3.- second order entity (state) before /above/towards/in favour of property of
  individual. entity (zero order entity)
  (*pro-American, pro-European, pro-communist, pro-western, pro-nuclear*)

    The associated underlying schemata are correspondingly organized from a para-
digmatic perspective as follows[9]:

Anteriority
FORE-/PRE-
DENOMINAL
1.- $\Phi^i_{N\ Theme}$ [Σ_1 : $(BEFORE_{P/Topic}\ (x_1 : NP <+Hum>\ (x_1))_{Ref})\ _{TempLocus}$.- $(\Phi^i_{N\ Focus}$
    $<+Hum>)_{Lcdum}\ [\Sigma_1]]_{STATE}$
    forefather   forebear   forerunner
2.- $\Phi^i_{N\ Theme}$ [Σ_1 : $(BEFORE_{P/Topic}\ (x_1 : NP <+Dim \in Place :: timespan, lifetime>\ (x_1))_{Ref})$
    $_{TempLocus}$.- $(\Phi^i_{N\ Focus}\ <+Dim \in Place :: timespan>)_{Lcdum}\ [\Sigma_1]]_{STATE}$
    pre-Bach
3.- $\Phi^i_{N\ Theme}$ [Σ_1 : $(BEFORE_{P/Topic}\ (x_1 : NP <+Dim \in Place :: diseasetime>\ (x_1))_{Ref})$
    $_{TempLocus}$.- $(\Phi^i_{N\ Focus}\ <+Hum>)_{Lcdum}\ [\Sigma_1]]_{STATE}$
    pre-diabetic.s

4.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <+Dim $\in$ Time:: Art period> (x$_1$))$_{Ref)\ TempLocus}$.-
($\Phi^i_{N\ Focus}$ <Prot. +Hum>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-Raphaelite

4.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <+Sh, ±Art $\rightarrow$ +Dim $\in$ Time:: timespan>
(x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-school

5.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <Prot. +Act > (x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$
<+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-war   pre-revolution   pre-acquisition   pre-trial   pre-
recession   pre-retirement   pre-race   pre-apprenticeship   pre-
examination   preview

6.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <+Dim $\in$ Time:: point in daytime> (x$_1$))$_{Ref)}$
$_{TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
forenoon

7.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <+Dim $\in$ Time:: timespan>) (x$_1$))$_{Ref)\ TempLocus}$.-
($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
prehistory   pre-1914   pre-1880   pre-1959

DEADJECTIVAL

1.1.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <±Con> (x$_1$))$_{Ads}$: $\Phi_{Adj\ Focus}$ <+Dim $\in$ Time::
timespan> (x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-classical   pre-natal   pre-human   pre-historic   pre-Muslim
pre-Christian   pre-Cambrian

1.2.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <±Con> (x$_1$))$_{Ads}$: $\Phi_{Adj\ Focus}$ <+Dim $\in$ Time::
lifetime>) (x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-existing

1.3.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <±Con> (x$_1$))$_{Ads}$: $\Phi_{Adj\ Focus}$ <+Sta, -Ph >)
(x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
premarital   premature   pre-commissioning   pre-literate

1.4.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (x$_1$: NP <±Con> (x$_1$))$_{Ads}$: $\Phi_{Adj\ Focus}$ <-Dim >)
(x$_1$))$_{Ref)\ TempLocus}$.- ($\Phi^i_{N\ Focus}$ <+Dim $\in$ Time:: timespan>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-industrial preverbal   pre-automated   pre-cellular   p r e -
boiling

2.1.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref)\ TempLocus}$ (x$^i_1$: NP <+Sh, ±Art> (x$_1$))$_{Ads}$:
$\Phi_{Adj\ Focus}$ <-Dim >) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-recorded   precast

2.1.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref)\ TempLocus}$ (x$^i_1$: NP <-Liv> (x$_1$))$_{Ads}$: Φ_{Adj}
$_{Focus}$ <-Dim >) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-cooked   pre-treated   pre-fired   pre-digested   pre-packed
pre-dried   prefabricated

2.1.- $\Phi^i_{Adj\ Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref)\ TempLocus}$ (x$^i_1$: NP <Prot.+Act, +Ph>
(x$_1$))$_{Ads}$: $\Phi_{Adj\ Focus}$ <+Sta, -Ph>) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-preparatory (work)
$\Downarrow$

Anteriority $\rightarrow$ Predictability $\rightarrow$ Certainty
ANTE-

DEVERBAL

1.- $\Phi^i_{vVTheme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Cert X$_1$: Fut e$_1$: $\Phi_{v\,Focus}$)$_{STATE/\,Ref}$) $_{TempLocus}$ ((e$_i$) $_{STATE}$)$_{Lcdum}$ [Σ_1]]$_{STATE}$

    antedate   predate

FORE-

DEVERBAL

1.- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Cert X$_1$: Fut e$_1$)$_{STATE/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{v\,Focus}$ (x$_1$)$_{Ag}$)$_{Lcdum}$ [Σ_1]]$_{ACTION}$

    foregather

2.- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{v\,Focus}$ (x$_1$)$_{Proc/Ag}$ (X$_2$: Pres e$_2$)$_{Go/\,Lcdum}$)$_{PROCESS/ACTION}$ [Σ_1]]$_{ACTION}$

    foresee   foreshadow   foreordain   forecast

3.- Φ^i_{VTheme} [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{v\,Focus}$ (x$_1$)$_{Ag}$ (x$_2$)$_{Go}$ (X$_2$: Pres e$_2$)$_{Ref/\,Lcdum}$)$_{PROCESS/ACTION}$ [Σ_1]]$_{ACTION}$

    foretell   forewarn

PRE-

DEVERBAL

1.1- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ ($\Phi_{v\,Focus}$ (x$_1$: NP <+Hum> (x$_1$))$_{Ag}$ (x$_1$: NP <±Con> (x$_2$))$_{Go}$)$_{ACTION/\,Ref}$) $_{TempLocus}$ (e$^i_2$)$_{ACTION\,Lcdum}$[Σ_1]]$_{ACTION}$

    prejudge

1.2- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ ($\Phi_{v\,Focus}$ (x$_1$: NP <+Hum> (x$_1$))$_{Ag}$ (X$_1$ /e$_1$)$_{Go}$)$_{ACTION/\,Ref}$) $_{TempLocus}$ (e$^i_2$)$_{ACTION\,Lcdum}$[Σ_1]]$_{ACTION}$

    prefigure

1.3- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ ($\Phi_{v\,Focus}$ (x$_1$: NP <±Con> (x$_1$))$_{Proc/Exp}$)$_{Ref}$) $_{TempLocus}$ (e$^i_1$)$_{PROCESS/EXP\,/Lcdum}$[Σ_1]]$_{ACTION}$

    pre-exist

1.4.- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ ($\Phi_{v\,Focus}$ (x$_1$: NP <+Hum> (x$_1$))$_{Ag}$ (x$_2$: NP <+Sh,+Art> (x$_2$))$_{Go}$)$_{Ref}$) $_{TempLocus}$ (e$^i_1$)$_{ACTION\,/Lcdum}$[Σ_1]]$_{ACTION}$

    pre-set   preheat

FORE-

DENOMINAL

1.- Φ^i_{NTheme} [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{N\,Focus}$ <+Act, +Ph>)$_{Lcdum}$) [Σ_1]]$_{STATE}$

    foresight   foretaste   foreplay

2.- Φ^i_{NTheme} [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{N\,Focus}$ <-Act::cognition>)$_{Lcdum}$) [Σ_1]]$_{STATE}$

    forethought   foreknowledge

PRE-

DENOMINAL

1.1- Φ^i_{NTheme} [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{N\,Focus}$ <-Attr>)$_{Lcdum}$) [Σ_1]]$_{STATE}$

    precaution   preconception   precondition   prerequisite

1.2- Φ^i_{NTheme} [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$: Fut e$_1$)$_{ACTION/\,Ref}$) $_{TempLocus}$ ($\Phi^i_{N\,Focus}$ <+Sta, -Ph ::feelings>)$_{Lcdum}$) [Σ_1]]$_{STATE}$

    presentiment-

1.3.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{ACTION/Ref}$)$_{TempLocus}$ ($\Phi^i_{N\,Focus}$ <+Act, -Ph >)$_{Lcdum}$)
[Σ_1]]$_{STATE}$
premeditation

FORE-

DEADJECTIVAL

1.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Cert/Prob X$_1$. Fut e$_1$)$_{Ref}$) $_{TempLocus}$ (x$^i_1$: NP <±Con>
(x$^i_1$)/ X$_1$)$_{Ads}$: $\Phi_{Adj\,Focus}$ <+Sta, -Ph >) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
foredoomed

PRE-

DEADJECTIVAL

1.1.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Cert Fut e$_1$)$_{Ref}$) $_{TempLocus}$ (x$^i_1$: NP <Prot. +Hum>
(x$^i_1$)$_{Ads}$: $\Phi_{Adj\,Focus}$ <+Sta, -Ph >) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
predestined   preordained

1.2.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref}$) $_{TempLocus}$ (x$^i_1$: NP <±Con> (x$^i_1$)$_{Ads}$: $\Phi_{Adj\,Focus}$
<+Sta, -Ph >) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
predetermined   preconditioned precautionary   prepaid

2.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref}$) $_{TempLocus}$ (x$^i_1$: NP <-Attr> (x$^i_1$)$_{Ads}$: $\Phi_{Adj\,Focus}$
<-Act>) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
preconceived

3.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P/Topic}$ (Fut e$_1$)$_{Ref}$) $_{TempLocus}$ (x$^i_1$: NP <Prot. +Act,+Ph> (x$^i_1$)$_{Ads}$:
$\Phi_{Adj\,Focus}$ <+Sta, -Ph>) (x$^i_1$)) $_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-arranged

From the horizontal temporal perspective, in the patterns underlying formations like *forefather, forebear* and *forerunner* a one-dimensional relation designates "human being before another/other human being/s" which may eventually suggest "human being superior to (above) another/other human being/s." This temporal anteriority, which in fact is temporal superiority in time, is mapped onto notional superiority suggesting complete superiority in all respects (cf. Notional Dimension below). The patterns thus designate a one-dimensional relation (cf. *Figure 3.1* below). Though the entities involved, both as *Lcdum* and as *Locus*, are specified as [+Hum] individual entities, it is the temporal-notional fact that human beings exist and that existence consumes time that is pointed as *Ref* in this pattern. Much in the same way, by virtue of this metonymic interpretation, *Bach*, which is specified as [+Hum] invidual entity, is ultimately interpreted as an entity designating time in the complex unit *pre-Bach*. Similarly, *diabetic* which designates a property, prototypically assigned to human beings (a zero-order entity), is interpreted in the complex unit as "diseasetime." Likewise prototypical [+Act] entities participating in pattern 5 (*war*, *apprenticeship*...) are interpreted in the complex formations as "time required to carry out the corresponding action." Finally, *school* in pattern 4 designates "schooltime" rather than "school building," since "school is the part of lifetime spent at school." These formations are thus interpreted by means of metonymic relations both between the entity-*Lcdum* and the entity-*Ref*, and between the most prototypical designation of the entity-*Ref* and presupposed designations derived from this.

Temporal interpretation in patterns 6 and 7 is more straightforward since the entity with the role *Lcdum* itself designates time (*noon, history, 1914...*). Further differences become relevant by comparing *pre-Bach* and *pre-1914* since the entity-*Ref*

is interpreted as "a point in time" in schema 5 whereas it is "a period of time" in schemata 2 and 6.

Deadjectival patterns 1.1, 1.2 , 1.3 and 1.4, like denominal patterns 1 to 4, highlight temporality as conveyed by the entity-*Ref*, either because it designates "state in a period of time" (*pre-classical, pre-human, pre-marital*....) or "action/event in a period of time" (*pre-existing, pre-commissioning*...).

In the interpretation of deadjectival formations that belong to schemata 2.1, and 2.2 (*pre-recorded, pre-cooked*...), the fact that the entity-*Lcdum* is a past participle of a verb of action is a key feature. The respective formations convey "period of time" (cf. denominal patterns 5 and 6). The entity-*Ref* designates a future action to which the *Lcdum* is referred. Both actions, one indirectly designated by the entity-*Lcdum* and the other more directly signalled by the entity-*Ref*, are co-referential since they belong to exactly the same typology of entities. The result is interpreted as "action before the same action" and the entities are classed as second-order entities (E.g. *pre-cooked*: "cooking before cooking"). Schema 3 exhibits similar characteristics. Though the entity-*Lcdum* does not prototypically designate action, it is interpreted metonymically so that it is the associated entity-*Adscriptum*[10] (for instance *work* in *pre-preparatory work*) that is recovered. Accordingly, it is not the property but the action, of which this property is predicated, that is submitted to a future action.

The definition "time period before a period in time" underlies schemata within the subdomain *Anteriority → Predictability/Certainty*. The most prototypical schema is represented by the deverbal pattern 1 under which formations designate a temporal relation between prototypical second-order entities (*antedate*). The entity-*Lcdum* is interpreted with respect to two different temporal settings, present and future. Predictability emerges from the fact that the future setting is under the scope of anteriority (the entity-*Ref*) which suggests "state/action before the same certain/probable future state/action." Since the verbal lexical unit prototypically designates a state of affairs, most formations under this dimension are verbal or deverbal. Actually, deadjectival as well as denominal temporal formations seem to be synchronically motivated by the meaning of the verbal bases from which they have been diachronically derived (cf. *foredoomed, forethought, foreplay, predetermined, pre-ordained*...).

Temporal formations involve a one-dimensional horizontal relation which is projected, as will become clear later, on both the Spatial and the Notional dimensions (cf. *Figures 3.1* and *8*). Anticipating future states of affairs may have a temporal/spatial correlate in the physical experience of moving towards an object that is being perceived at a long distance. In a sense, perception from a long distance (spatial experience), predicts what is going to come (temporal experience) that is to say, the perceived object. From this perspective, basic formations such as *foresee, foreknown*, share with this temporal/spatial interpretation the process of "perception" (*Figure 1*):
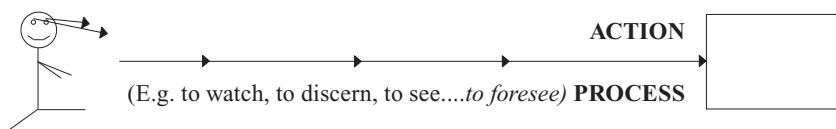

(E.g. to watch, to discern, to see....*to foresee)* **PROCESS**   **ACTION**

Figure 1

The Spatial dimension of anteriority comprises the following subdomains:

Anteriority
DENOMINAL
ANTE-
1.1.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <+Sh, +Art:: architecture>)$_{Ref}$)$_{Locus}$ (x^i_1 : NP < +Sh, +Art ::architecture>(x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
    ante/room   ante/chamber
PRE-
1.2.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <Prot. +Sh, +Art:: grammar>)$_{Ref}$)$_{Locus}$ (x^i_1 : NP < +Sh, +Art ::grammar>(x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
    predeterminer
FORE-
1.3.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <Prot. +Sh, +Art:: grammar>)$_{Ref}$)$_{Locus}$ (x^i_1 : NP < +Sh, +Art ::writing>(x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
    foreword
1.4.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <Prot. +Sh, +Art:: building>)$_{Ref}$)$_{Locus}$ (x^i_1 : NP < +Sh, +Art ::area >(x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
    forecourt
DEADJECTIVAL
1.5.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE$_{P\,Topic}$ (x_1 : NP < ±Con > (x_1))$_{Ads}$: $\Phi_{Adj Focus}$ NP < +Dim $\in$ Place: position >(x^i_1))$_{Ref}$)$_{Locus}$ (x_2 : AdjP <+Dim $\in$ Place ::position>) (x^i_2)$_{Lcdum}$ [Σ_1]]$_{STATE}$
    pre-cordial   pre-lower
    ⇓

Anteriority → Partition
1.- Fronting
DENOMINAL
FORE-
2.1.- $\Phi^i_{N\,Theme}$ [Σ_1 : (IN FRONT OF$_{P Topic}$ (**dN**x_1 : NP < +Sh, -Art ::bodypart>(x_1))$_{Ref}$)$_{Locus}$ (F$^i_{N\,Focus}$ <+Sh, -Art ::bodypart >) $_{Lcdum}$ [Σ_1]]$_{STATE}$
    forefinger   forefoot   foreleg
2.2.- $\Phi^i_{N\,Theme}$ [Σ_1 : (IN FRONT OF$_{P Topic}$ (**dN**$\Phi_{N\,Focus}$ <Prot. -Sh, +Art >)$_{Ref}$)$_{Locus}$ (x^i_2 : NP < Prot.-Sh, +Art>(x_1)) ($\Phi^i_{N\,Focus}$ <+Sh, -Art ::bodypart >) $_{Lcdum}$ [Σ_1]]$_{STATE}$
    forename   forestress
3.1.1.- $\Phi^i_{N\,Theme}$ [Σ_1 : (AT THE FRONT OF → ON$_{P Topic}$ (x_1 : NP < +Sh, +Art ::large artifact>(x_1))$_{Ref}$)$_{Locus}$ ($\Phi^i_{N\,Focus}$ <+Sh, +Art >) $_{Lcdum}$ [Σ_1]]$_{STATE}$
    fore-gallows   fore-loader   fore-deck
3.1.2.- $\Phi^i_{N\,Theme}$ [Σ_1 : (AT THE FRONT OF → ON$_{P Topic}$ (x_1 : NP < +Sh, -Art ::larger bodypart>(x_1))$_{Ref}$)$_{Locus}$ ($\Phi^i_{N\,Focus}$ <+Sh, -Art ::bodypart>) $_{Lcdum}$ [Σ_1]]$_{STATE}$
    forelock
3.1.3.- $\Phi^i_{N\,Theme}$ [Σ_1 : (AT THE FRONT OF → ON$_{P Topic}$ (x_1 : NP < +Sh, -Art :: bodypart>(x_1))$_{Ref}$)$_{Locus}$ ($\Phi^i_{N\,Focus}$ <+Dim $\in$ Place:: area >) $_{Lcdum}$ [Σ_1]]$_{STATE}$
    forehead   forehand   forearm   forepart

3.1.4.- $\Phi^i_{N\ Theme}$ [Σ_1 : (AT THE FRONT OF $\rightarrow$ ON$_{P\,Topic}$ (x_1 : NP < +Sh, -Art :: surface>(x_1))$_{Ref)\,Locus}$ ($\Phi^i_{N\ Focus}$ <+Sh, -Art ::area>) $_{Lcdum}$ [Σ_1]]$_{STATE}$
fore-shore   fore-ground   forefront
ß

2.- Circling/Rounding
DENOMINAL
FORE-
4.- 3.1.2.- $\Phi^i_{N\ Theme}$ [Σ_1 : (AT THE FRONT OF $\rightarrow$ ON $\rightarrow$ AROUND$_{P\,Topic}$ (x_1 : NP <+Sh, -Art ::bodypart>(x_1))$_{Ref)\,Locus}$ ($\Phi^i_{N\ Focus}$ <-Sh,-Art ::body area, surface>) $_{Lcdum}$ [Σ_1]]$_{STATE}$
foreskin

Temporal formations like *forefather*, *predeterminer*, etc. seem to underlie the most basic patterns of the spatial dimension *Anteriority* (schemata 1.1 to 1.5) all subsumed under the subdomain of *Anteriority → Immediateness*. In all the patterns representing denominal formations (*ante/room, ante/chamber, predeterminer, forecourt*), the entities involved in the relation *BEFORE* share the same semantic contour, the same selection restrictions, as well as the same type of order of reference. Both are first order entities semantically restricted as [+Sh, +Art] and designating "physical objects" such as *room, court, determiner*. Consequently, the most basic pattern is associated with the meaning "physical object before physical object" or more specifically, "physical object immediatly before physical object" which suggests physical contact, side by side, between the entities and inspires the heading *Anteriority → Immediateness* introducing this sub-domain.

Further semantic specifications among the first four patterns are introduced by the restrictions *architecture, building, book* or *grammar*. The entities involved in schemata 1.1 and 1.2 show the same semantic specifications so that the functions *Lcdum, Locus* and *Ref* are realized by exactly the same type of entity, that is to say, entities that point to the same type of individual entity. With respect to the pragmatic functions, the entity assigned the semantic fuction *Referent* is also assigned the pragmatic function of *Focus* in the first three patterns. The analysis of the locative prefixes in general reveals that coindexation by "i" is generally established between the two entities bearing *Theme* and *Focus* functions respectively and very rarely between those that show *Theme* and *Topic* functions. As mentioned previously, this arrangement of pragmatic functions involves certain implications for the synthetic phase of complex prefixed units though these aspects fall outside the scope of this paper.

Patterns 1.3 and 1.4, however, do not share any of these features. The entities involved do not show the same semantic restrictions (the entity-*Referent* designates "book" in 1.3 and "building" in 1.4). In addition, the entity exhibiting the function *Ref* does not stand as the *Focus* constituent, and coindexation affects the entity with the pragmatic function *Focus* and the semantic function *Lcdum*. By virtue of these distinctions, these patterns break away from the more basic prototypical patterns 1.1. and 1.2. and so do the corresponding associated meanings. The following pictures (*Figure 2*) illustrate the difference between more basic formations such as *fore/room* (a room before a room) and the more complex *forecourt* (a court before a building).

Though both formations signal relations on a one-dimensional setting (cf. *forefather*, *forebear*...), illustrations clearly state that reference relations are more simple and uniform in the former. Besides, these pictures reveal the importance of physical perception and experience in the interpretation of location. Differences between the two participant entities amount to physical differences in size as well as in structure.
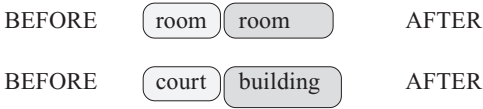
BEFORE   (room)(room)   AFTER

BEFORE   (court)(building)   AFTER

Figure 2. One-dimension patterns 1.1 and 1.4

Schema 1.5 represents the only pattern of formation of deadjectival lexical units within the spatial dimension (*pre-cordial, pre-lower*). Deadjectival patterns designate a relation between properties of entities (*zero-order entities*) instead of a relation between the entities themselves (*first-order entities*). They, however, share most of the features with the basic denominal pattern described previously (cf. *anteroom* and *forecourt*)

The subdomain of *Anteriority → Partition* differs from the preceding subdomain *Anteriority → Immediateness* while embracing the basic archilexematic features of the latter. This fact testifies for *inclusiveness* through the paradigmatic structure of vocabulary. Like patterns 1.1, 1.2 of the first subdomain, schema 2.1 appears as the most prototypical and represents a middle-field between the two sub-domains. It specifies a relation between two first-order entities that designate the same physical object. However, this relation is slightly different from the ones described previously in as much as the function *Ref* correlates with the designation of a set of first-order entities (*2-4 legs, feet, parts...*) which is represented by the quantifying operator *dN* (definite even number). Consequently, there is a reference of one of the entities included in this set (front/first *leg*, *fo*ot...) to the total set of entities (the four/two *legs, feet...*) which is actually a Part-whole, metonymical relation between the entity-*Lcdum* and the set of entities-*Ref*. Since partitive or metonymical relations of this kind go across this subdomain it has been labelled *Anteriority → Partition*.

More complex patterns of *Partition* arise from changes in selection restrictions of one or the two entities. Schema 1.1 is linked to the sub-domain *Anteriority → Immediateness* since selection restrictions of the latter [Prot.-Sh,+Art] prototypically designate a non-physical object (*name, stress*), that is to say, the direct opposite of pattern 1.1. Since the relation between the entities involved does not designate "non-physical object *before* non-physical object" but rather "non-physical object *in front of* non-physical object" the prepositional predicate develops into the *hyponym, IN FRONT OF,* from the *superordinate* classeme *BEFORE*. Semantic restrictions therefore seem to trigger the choice of a prepositional variant that is at a lower position in the hierarchical structure under *BEFORE*. Once again, such changes seem to be ultimately motivated by cognitive strategies since, prototypically, non-physical objects cannot be located side by side in space (cf. *room, leg ...*).

Similarly, pattern 3.1.1 relates to a partitive relation between two entities designating physical objects. However, the front surface of a large physical object inter-

preted as a three-dimensional object is foregrounded as *Ref* (the front part of the surface *deck*, etc.). Formations within this pattern are accordingly interpreted as "physical object ON the front part of the surface of a larger physical object." They convey intrinsic opposition between *front* and *back* in a one-dimensional setting, which is actually the characteristic feature of the subdimension *Anteriority → Immediateness*.

Much in the same way, in pattern 3.1.2 both entities designate a part of the body but it is more specifically the front surface of the face, which designates a two-dimensional object, that is pointed out as *Ref*. Similarly, schemata 3.1.3 and 3.1.4 designate "the area, surface ON/AT a three-dimensional object (bodypart, surface, ...)."

In short, these schemata show a progressive advancement into gradually more complex partition relations which may be graphically illustrated as in *Figure 3.1:*
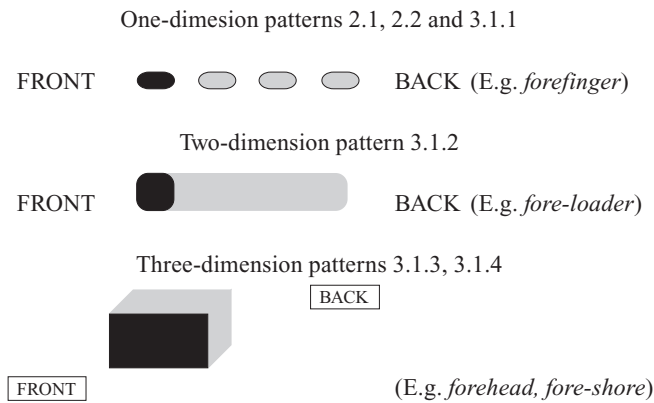

One-dimesion patterns 2.1, 2.2 and 3.1.1

FRONT   BACK (E.g. *forefinger*)

Two-dimension pattern 3.1.2

FRONT   BACK (E.g. *fore-loader*)

Three-dimension patterns 3.1.3, 3.1.4

BACK

FRONT   (E.g. *forehead, fore-shore*)

Figure 3.1

Figure 3.2 below represents a step forward into this sub-domain. This representation fits pattern 4.1 which designates "area, surface of an entity (body element) ON/ AROUND bodypart," and this relation seems to rest halfway between the two-dimensional and the three-dimensional patterns since it is now the surface *around* the front part of a three-dimensional object (body part) that becomes the entity-*Ref*:
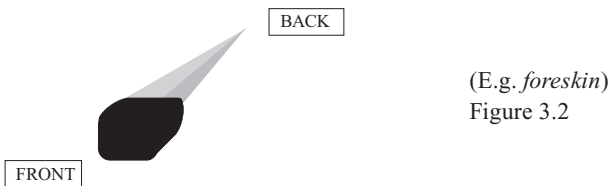

BACK

(E.g. *foreskin*)
Figure 3.2

FRONT

The Locative Spatial Dimension is therefore structured by means of a hierarchy of formation patterns together with their associated meanings in such a way that, the more complex patterns are, the more complex their meanings. Gradual complexity starts at the most basic schema of the subdomain of *Anteriority → Immediateness* and gradually increases through this subdomain to proceed to the subdomain *Anteriority*

→ *Partition,* which in turn goes from the most prototypical to the most complex patterns. The structure of the prefixal locative vocabulary somehow resembles "a chinese box" in which hierarchies are embedded into other hierarchies which means, as it has been made clear throughout the present analysis, that the most basic relations of anteriority are embedded into the more complex relations of *Anteriority → Partition*.

In view of the preceding analysis, it seems that within the domain or realm of Anteriority, temporal/spatial patterns and experience are more basic and develop into notional relations establishing a network of inter-connections. Thus, as expected, going beyond the limits of *Anteriority → Partition* relations, a middle-field pattern arises between the spatial and the notional dimensions of *Anteriority*. The set of schemata within the Locative Notional dimension is distributed as follows:

Anteriority → Superiority
1.- Position
DENOMINAL
FORE_
1.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE$_{P\ Topic}$ ($\Phi_{N\ Focus}$ <+Hum>)$_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP < +Hum >(x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
foreman
⇓

2.- Substitution/Replacement
DENOMINAL
PRO-
1.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE → ON → INSTEAD OF$_{P\ Topic}$ ($\Phi_{N\ Focus}$ <±Sh::grammar >)$_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP <±Sh::grammar > (x^i_1)))$_{Lcdum}$ [S$_1$]]$_{STATE}$
pro-form   pronoun
2.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE → ON → INSTEAD OF$_{P\ Topic}$ ($\Phi_{N\ Focus}$ <+Sh, +Art::building>)$_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP <+Sh, +Art::building> (x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
pro-cathedral
3.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE → ON → INSTEAD OF → AS$_{P\ Topic}$ ($\Phi_{N\ Focus}$ <+Attr>)$_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP <+Hum> (x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$
pro-consul   pro-settler
⇓

Anteriority → Superiority → Intensity
PRE-
DENOMINAL
1.- $\Phi^i_{N\ Theme}$ [Σ_1 : (BEFORE → ON → AMONG → OVER$_{P\ Topic}$ (x_1 : NP <+Con> (x_1))$_{Ref}$)$_{NotionalLocus}$ ($\Phi^i_{N\ Focus}$ <+Eval>)$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-eminence   predominance
ADJECTIVAL
1.- $\Phi^i_{AdjTheme}$ [Σ_1 : (BEFORE → ON → AMONG → OVER$_{P\ Topic}$ (x_1 : NP <±Con> (x_1))$_{Ref}$)$_{NotionalLocus}$ (x^i_2 : NP <+Con> (x^i_2))$_{Ads}$: $\Phi_{Adj\ Focus}$ <+Sta,-Ph> (x^i_2))$_{Lcdum}$ [Σ_1]]$_{STATE}$
pre-eminent   predominant

DEVERBAL

1.- $\Phi^i_{V\,Theme}$ [Σ_1 : (BEFORE → ON → OVER$_{P\,Topic}$ ($\Phi_{V\,Focus}$ (x_1 : NP <±Con> (x_1))$_{Ag}$ (x_2 : NP/PP <±Con> (x_2))$_{Go/Place}$)$_{Ref}$)$_{NotionalLocus}$ (e^i_1)$_{ACTION/Lcdum}$ [Σ_1]]$_{STATE}$

predominate

DEADVERBIAL

1.- $\Phi^i_{Adv\,Theme}$ [Σ_1 : (BEFORE → ON → OVER$_{P\,Topic}$ ($\Phi_{Adv\,Focus}$) $_{Manner/Ref}$) $_{NotionalLocus}$ (x^i_1 : AdvP)$_{Manner}$)$_{Lcdum}$ [Σ_1]]$_{STATE}$

pre-eminently   predominantly
⇓

Anteriority ↔ Posteriority

PRO-

DENOMINAL

1.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE → IN FAVOUR OF → FOR$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <-Attr:: cause >) $_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP <+Sta, -Ph :: attitude > (x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$

pro-choice   pro-life

2.- $\Phi^i_{N\,Theme}$ [Σ_1 : (BEFORE → IN FAVOUR OF → FOR$_{P\,Topic}$ ($\Phi_{N\,Focus}$ <+Sh, +Art >) $_{Ref}$)$_{NotionalLocus}$ (x^i_1 : NP <+Sta, -Ph :: attitude > (x^i_1)))$_{Lcdum}$ [Σ_1]]$_{STATE}$

pro-airships

DEADJECTIVAL

1.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE → IN FAVOUR OF → FOR$_{P\,Topic}$ (x_1 : NP <±Con> (x_1))$_{Ads}$: $\Phi_{Adj\,Focus}$ <Prot. +Sta,-Ph> (x^i_2))$_{Ref}$)$_{NotionalLocus}$ (x^i_2 : AdjP <Prot. +Sta, -Ph> (x^i_2)) $_{Lcdum}$ [Σ_1]]$_{STATE}$

pro-American   pro-European   pro-communist pro-western

2.- $\Phi^i_{Adj\,Theme}$ [Σ_1 : (BEFORE → IN FAVOUR OF → FOR$_{P\,Topic}$ (x_1 : NP <Prot. ±Con> (x_1))$_{Ads}$: $\Phi_{Adj\,Focus}$ <Prot. +Sta,+Ph::weapons> (x^i_2))$_{Ref}$)$_{NotionalLocus}$ (x^i_2 : AdjP <+Sta, -Ph::attitude> (x^i_2)) $_{Lcdum}$ [Σ_1]]$_{STATE}$

pro-nuclear

Though the entities involved in schemata of the first two subdomains of this dimension are first-order entities, and therefore, closely resemble patterns of the locative spatial as well as of the locative temporal dimensions (cf. *anteroom*, *forefather*...), the locative relation that is established between them is not properly spatial.

Schema 1 represents a middle-field pattern between the temporal, the spatial and the notional dimensions. Certainly, there seem to be only some slight differences between schemata representing *fore-room* and *foreman*, or between those underlying *forerunner* and *forefather*. While *foreroom* designates a spatial, one-dimensional horizontal relation that is expressed as "individual entity BEFORE individual entity," the latter does not point to the spatial horizontal relation. It rather aims at the "vertical" interpretation of individual entities that can be expressed as "individual entity BEFORE → ON/ABOVE identical individual entity." Though first order entities (*room*, *man, ...)* are prototypically framed within a spatial setting, physical relations among human beings seem to be interpreted in this pattern in notional terms rather than on spatial grounds. On the assumption that "a man before a man" is notionally interpreted as "a man above, at a higher position over a man," semantic restrictions seem to trigger the prepositional hyponym ON/ABOVE from the classeme BEFORE. This

metaphorical progression from the horizontal spatial dimension into the vertical notional dimension is represented in *Figure 4* according to which if a *man* is *above* another *man* (*men*) , he is *before* him (them) from a vertical top-down viewpoint. It is this progression that motivates the label *Anteriority → Superiority:*
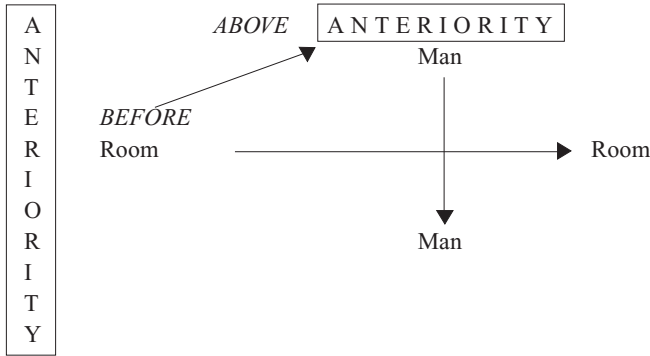

Figure 4

This picture represents an instance of the spatial metaphor *HAVING CONTROL OR FORCE IS UP; BEING SUBJECTED TO CONTROL OR FORCE IS DOWN* formulated by Lakoff and Johnson (1990:14-21). This metaphor embodies the development of *spatial anteriority* into *notional anteriery*, the latter being *superiority*, since it is allocated on the vertical perspective of a spatial relation between individual entities. Certainly, features of human physical perception such as the point of view seem to fulfil a definite role in the construction of these patterns (Svorou, 1994). Thus, the vertical perspective of the spatial relation between physical entities may be perceived *from above*, in a top-down direction, so that both entities seem to overlap, either partially or completely. Partial overlapping would represent mere superiority of the entity *above /over* the entity beneath as illustrated in *Figure 5* representing *foreman* (cf. *Figure 2*)

Figure 5

Besides, *pro-consul* represents a vertical bottom-up perspective of this overlapping. Looking upwards in *Figure 6*, the entity beneath (pro-consul) comes to the

foreground and is perceived as a substitute for the entity above (real, true consul). This complete bottom-up overlapping is viewed as S*ubstitution/Replacement* which suggests that formations subsumed under these patterns designate a relation between an entity that is in the place of, a substitute for, another entity of exactly the same type.

Figure 6

The subdomain *Superiority → Intensity* is characterized by the fact that the entities do not designate an individual but properties of individual entities (prototypically, properties of human beings) which classes them as zero-order entities. Since such properties of superiority are inherently designated by the *Lcdum* (*eminence, dominance*), the relation established between the participants is viewed as the overlapping of a property (*Lcdum*) over the same property (*Ref*), which causes the effect of duplicating or intensifying the given property, that is to say of highlighting "eminence." Accordingly, "*eminence* above *eminence*" is "*eminence* in a very high degree" and this can be graphically interpreted as an instance of complete or total top-down overlapping (cf. *foreman*):

Figure 7

The notional relation between entities that designate a property does not always yield an intensifying effect. The symbol ↔ in *Anteriority ↔ Posteriority* testifies for the fact that, a middle-field lies between the two domains *ANTERIORITY* and *POSTERIORITY*, rather than between two sub-domains. This relation presumably entails the metaphorical interpretation"*attitude is movement*" which foregrounds the fact that *Anteriority* "moves towards" *Posteriority* because there is a change in position with respect to a given referent. Accordingly, from the point of view of temporal/

spatial experience, what is "in favour of" is or moves "in the direction of." This can be represented by the following diagram:

"In favour of"　　　　　　　　　　"In favour of"
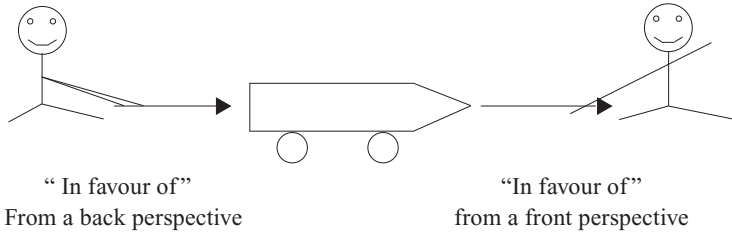From a back perspective　　　　　from a front perspective

Figure 8

It is assumed that a formation such as *pro-life* basically designates "*attitude prototypically in the direction of a cause*" it therefore designates a State. In the temporal/spatial setting, this State correlates with the actions of "dragging on or pushing something towards the direction to which this something is already moving.*"* Being in front of or behind the object that moves is not relevant for the progression of the movement in the same direction. This relation is therefore interpreted as a metaphorical projection of one-dimensional horizontal relations from a temporal/spatial onto a notional horizontal setting as represented in *Figure 9:*

Last/Back position　　　　　　　　　　*First/Front position*

STATE
(E.g. *forerunner*)

PRO-LIFE

Last/Back position　　　　　　　　　*First/Front position*
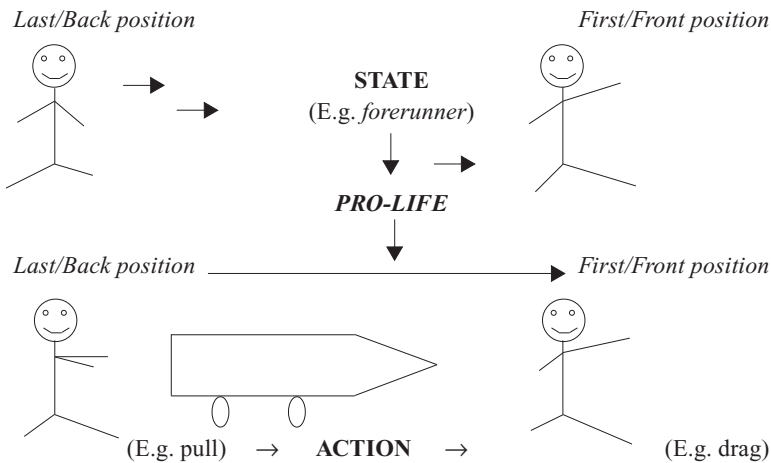
(E.g. pull)　→　**ACTION**　→　(E.g. drag)

Figure 9

Likewise formations such as *pro-American* designate a relationship between properties of entities which do not belong to the same typology, but which may eventually share the same property. In a sense, "being in favour of the property American" involves "acquiring / assuming the property American."

The preceding analysis of the Notional dimension of *Anteriority* reveals that notional *ANTERIORITY* may be the result of a projection or some kind of relation connected with both the temporal and the spatial dimensions of *ANTERIORITY, UPERIORITY* and *POSTERIORITY*.[11] This mapping may be represented as follows:
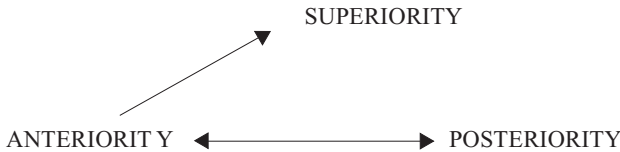
SUPERIORITY

ANTERIORIT Y ◄────────────► POSTERIORITY

Figure 9. Notional Dimension of Anteriority

The Temporal dimension is therefore associated with the Spatial subdomain of *Anteriority → Immediateness,* to the Notional subdomain of *Anteriority → Superiority* as well as with the notional sub-domain of *Anteriority ↔ Posteriority*.

As shown above, the paradigmatic description of Anteriority seems to cohere with the basic presuppositions posited within the FLM as presented in the first sections of this paper. Besides, physical perception has proved to be a key feature in the interpretation of the respective patterns of location (Svorou 1994). Dimensionality (one-, two- three–dimensional distinctions) and perspective or point of view (vertical, horizontal, front-back...) contribute to increase the range of meaning possibilities within the realm of location. These possibilities are claimed to be motivated by communicative demands of novel expressions of meaning. Pragmatics thus seems to put grammar at the service of cognition in order to create lexical meaning. This close connection is the basis of the coherence of the FLM and of the "logics" of vocabulary organization in natural languages.

Notes

My sincere thanks to F.J. Cortés Rodríguez for his kind support and wise advice, and to M. Mele Marrero for her helpful suggestions. I am solely responsible, however, for any inconsistencies and mistakes.

[1] The scope of Functional Grammar is actually restricted to clause structure (Dik 1997, Part I: v).

[2] The Functional Lexematic Model embraces original publications by Prof. Leocadio Martín Mingorance (among others, 1984, 1985a, 1985b 1987, 1990) as well as several subsequent contributions. The present article specifically draws on the refinements of the derived lexicon propounded by Cortés Rodríguez (1997).

[3] SLD is first developed by Dik (1978). Cf. Mairal Usón (1999: 62 ff) for a detailed account of this process.

[4] Complementariness between the two models is usually represented by means of a diagram (Cortés Rodríguez 1997:181).

[5] Adapted from Martín Mingorance (1985b:43)

[6] Namely, *The Collins COBUILD Dictionary of English* (1987) and *The Tagged LOB Corpus* (1986).

[7] Cf. Cortés Rodríguez (1997:183-84) for other relevant conditions.

[8] Slant marks dividing complex words indicate that both hyphenated and one-word instances coexist in present-day English.

[9] Arrows signal progression from one domain, subdomain or dimension to the next.

[10] Cf. Cortés Rodríguez (1997: 229)

[11] The dimension Posteriority is basically represented by formations with the prefix *Post-* which are, in most of the cases, symmetrically opposite patterns of some formations with the prefix *Pre-* (*Postdate*, etc.)

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