

## SELECTION IS A HEAD PROPERTY\*

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**Abstract:** In the present paper we deal with the semantics of prefixation. We will show that prefixes acquire their semantic values in accordance with the meaning of the words which they are attached to. Hence, the choice of a prefix is semantically determined by the base constituent which is generally the head of the complex word. (We assume that the head of a derived word is the constituent passing on categorial and syntactico-semantic information to the derived word.) Whilst we are not ready to dispense with lexical categories as invoked by many scholars—see, among others, Croft (2001); Plag (2004); Di Sciullo (2005) and supporters of Distributed Morphology—, we are sympathetic with recent views grounding word formation on the role of semantics more heavily than in the past.

**Keywords:** morphology, prefixation, compounding, exocentricity principle, selection principle

The paper is organised as follows: §1 presents an introduction to issues to be discussed and proposals put forth; §2 and subsections contain the illustration of our main tenets; §3 deals with the grounding of the Exocentricity Principle (EP) we are proposing; §4 discusses possible counterexamples to EP and in §5 some conclusions are drawn.

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## 1. Introduction

A widely accepted view, since Aronoff (1976), is that in derivational word formation it is the affix that selects the category of its base. Affixal selection, however, has almost entirely dealt with suffixation and only marginally considered the semantics of both suffixes and base words, though suffixation has been rightly viewed as a process governed by a complex array of restrictions.

Prefixation, however, has been scarcely studied from the point of view of selection and a common practice was to subsume this process of word formation under the generic label of derivation. Prefixes, consequently, were treated in the same vein as suffixes and, as the latter, considered—at least tacitly—to be constituents responsible for the selection of base words. As a result it was, and still is, usual to maintain that affixes select their bases.

However, a crucial, well-known difference exists between suffixation and prefixation: suffixes are heads, at least from a categorial point of view, while prefixes (generally and particularly in Italian) are not.

In this paper, we would like to explore the nature of selection that takes place in prefixation and to maintain that prefixes, not being heads, do not select their bases. The data to be discussed are drawn from Italian but it is not excluded that the same line of reasoning can be applied to other languages, at least to those where prefixes are not heads.

As a starting point, we would like to propose the following generalization:

- (1) (a) in suffixation, only suffixes which are heads<sup>1</sup> select their base
- (b) in prefixation, when the prefix is not the head, it is the base constituent that selects the prefix

Furthermore, on the basis of a recent work by Scalise et al. (2005) aiming to demonstrate that there is selection by the head constituent over the non-head also in compound formation, we will propose that the above generalisation, namely selection by the head, leads to the following morphological<sup>2</sup> principle:

<sup>1</sup> We refer here to derivational suffixes that are category changing, thus excluding from our analysis evaluative and inflectional suffixes.

<sup>2</sup> We do not discuss here inflectional processes. However, we are inclined to think that in these processes it is the lexical head that demands for the inflectional

(2) **Morphological Selection Principle**

In morphological processes the head selects the non-head.

Another main tenet that we intend to propose here is that derived words cannot be exocentric and this is true—we claim—both for suffixed and prefixed words. We maintain, in fact, that the meaning of derived words is strictly compositional; namely, in order to interpret a derived word no supplementary information but that carried by the constituents actually present in the string is needed. In the Italian word *verduraio* ‘vegetable seller’, for example, the base noun *verdura* has its own lexical meaning and the suffix *-aio* has the constant meaning ‘person who makes an activity related to the base noun’. Nothing else is needed in order to correctly interpret the word *verduraio*.

This sort of meaning composition is what we find in suffixation, prefixation and endocentric compounding. There are cases (exocentric compounds), on the other hand, where recourse to lexical information missing in the construction is necessary. To interpret a word like *redskin* ‘person who has red skin’, for instance, we have to make recourse to an element of meaning, ‘person’, which has no phonological representation in the complex and—so to speak—has to be reconstructed or just guessed.

We will thus propose the following:

(3) **Exocentricity Principle**

In morphology, exocentricity is an exclusive property of compounds.

The presence of an element of meaning “external” to the complex word is essential for the distinction between compounds and prefixed words obtained with phonologically identical left constituents. The Exocentricity Principle has the crucial consequence of excluding exocentric affixed words from the vocabulary of complex words; in particular, with respect to the problem we are concerned with here, excluding exocentric prefixed words (as suggested, for example, in Iacobini 2004; Amiot 2004; 2005; and Ralli 2005).

## 2. Two case studies

Prefixes are well known for being affixes that do not obey (or better, obey to a lesser extent than suffixes) either the Unitary Base Hypothesis

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morpheme. Also excluded from our analysis is evaluative suffixation because, as just said, evaluative suffixes are not heads.

(Aronoff 1976) or the Modified Unitary Base Hypothesis (Scalise 1983). In particular, Italian prefixes can merge (to a large extent but not without restrictions) with lexemes belonging to two or three lexical categories as Iacobini and Scalise (2005) have shown. The meaning manifested by prefixes when attached to members of diverse categories, however, is not constant and, as for the semantics of prefixation, we will show that three different situations can emerge:

- (4) (a) semantic uniformity across bases of a single category
- (b) polisemy on bases of a particular category
- (c) polisemy on bases of different categories

To substantiate our claim on selection by the head constituent, we will examine two Italian prefixes: *sopra-* ‘over’ and *contro-* ‘counter’. The two prefixes share the following three properties: both are disyllabic, can be attached to two or three lexical categories and have a corresponding preposition.

### 2.1. The prefix *sopra-*

The prefix *sopra-* (which has the phonological variant *sovra-*) originates from the homophonous locative preposition *sopra* ‘over’. The preposition, with its locative meaning, shows up obviously in phrases<sup>3</sup> like *sopra il letto* ‘over the bed’, *sopra il tavolo* ‘over the table’ but also in morphological constructions like the following:

- (5) *soprabito*      ‘overcoat’
- sopracciglio*   ‘eyebrow’
- sopraveste*    ‘overall’

We come back to these data at the end of this section. For now, let us observe that the locative meaning of the preposition is retained by *sopra* when attached to verbs (cf. (6)).<sup>4</sup> But, in order to merge with

<sup>3</sup> We do not consider here all the meaning variants the preposition can assume. For a detailed examination of the corresponding English preposition *over*, see Tyler – Evans (2001).

<sup>4</sup> We are not sure if, in this case, *sopra* is a preposition or a prefix. It is generally analysed as a prefix but it seems to us that the (few) examples in (6a) in the text are instances of some kind of (lexical) incorporation. In its prefixal use, in fact, *sopra* loses its locative meaning changing it into an evaluative one.

*sopra*, verbs must indicate activities somehow involving space (cf. (6a)); otherwise, the result is ungrammatical (cf. (6b)):

- (6) (a) *sopraedificare* 'to build on top'  
           *sovrapporre* 'to overlap'  
           *sovrastampare* 'to overprint'  
           *sovrascrivere* 'to overwrite'  
           *sovrainnestare* 'to overgraft'
- (b) \**sopraleggere* lit. 'overread'  
       \**sopraparlare* lit. 'overspeak'  
       \**soprachiamare* lit. 'overcall'

A peculiar case involving *sopra* is represented by complex adjectives pertaining to the technical-scientific language of medicine (7a) or, to a minor extent, to everyday language (7b):

- (7) (a) *sopra renale* lit. 'over renal'  
           *sopra nasale* lit. 'over nasal'  
           *sopra occipitale* lit. 'over occipital'  
           *sopra orbitale* lit. 'over orbital'  
           *sopra aortico* lit. 'over the aorta'  
           *sopra scapolare* lit. 'over scapular'
- (b) *sovratemporale* lit. 'over temporal'  
       *sovranaZIONALE* lit. 'over national'

The peculiarity of such constructions lies in *sopra* taking scope over the noun on which the relational adjectives are constructed (e.g., *rene* 'kidney', *naso* 'nose', *occipite* 'occiput', *orbita* 'orbit', *aorta* 'aorta', *scapola* 'scapula' and *tempo* 'time', *nation* 'nation'), so the semantic structure of these complex words turns out to be  $[[sopra + \text{noun}] + \text{suf}_A]_A$ . This seems to suggest, consequently, that these are not actual cases of adjectival prefixation: if this were the case, the meaning of *sopra* could not be locative (an adjective cannot accept a locative modifier). What we can say about such formations is that there is a kind of (possible) compound which is derived with an adjectival suffix.<sup>5</sup>

Let us now examine the behaviour of *sopra* as a prefix.

<sup>5</sup> A construction involving derivation of a compound of this kind is actually present in Italian: *sopracciliare* 'superciliary', in fact, has the structure *sopracciglio* + *are*, *sopracciglio* 'eyebrow' being an existing word.

With verbs *sopra-* assumes an evaluative meaning (cf. Grandi–Montermini 2005 with respect to prefixal evaluation) indicating ‘excess’:

- (8) *sovrabbondare* ‘to super-abound’  
*sovracaricare* ‘to overload’  
*sovragesporre* ‘to overexpose’  
*sovrappagare* ‘to over-charge’  
*sovrappagare* ‘to over-tire’  
*sovrapporre* ‘to superimpose’  
*sopravalutare* ‘to over-estimate’

The evaluative meaning of *sopra-* is determined by the meaning of the verbs to which it is joined; all the verbs involved in the complex forms in (8) (and listed in (9)) indicate activities which are “measurable” on a quantitative or qualitative basis, and convey the idea of a—more or less natural—limit. Such a limit can, of course, be exceeded and this is why the prefix can be attached to them and assume the meaning ‘excessively’:

- (9) *abbondare* ‘to abound’  
*caricare* ‘to load’  
*esporre* ‘to expose’  
*fatturare* ‘to bill’  
*affaticare* ‘to tire’  
*imporre* ‘to impose’  
*valutare* ‘to evaluate’

Verbs not having a similar semantics do not allow *sopra-* evaluative prefixation as (10) below illustrates:

- (10) \**sovracorrere* ‘to over-run’  
\**sovrapprendere* ‘to over-take’  
\**sovraccendere* ‘to over-light’  
\**sovrasalire* ‘to over-go up’  
\**sovratradurre* ‘to over-translate’

The shift from locative to evaluative meaning is not unexpected (cf. Iacobini 2004, 132; Lieber 2004). Locative meaning in fact indicates limits that can be superior or inferior to an external position; via metaphorical extension, consequently, the superior position can be identified with intensification and the inferior one can be identified with diminution.

We claim, however, that this shift in meaning, though attributed to the prefix, does depend on the meaning conveyed by the base lexeme.

Evaluative meaning is also manifested by *sopra-* in (a few) constructions involving adjectives:

- (11) *sovrasensibile* 'supersensible'  
*sovranaturale* 'supernatural'  
*sovrumano* 'superhuman'  
*sopracuto* lit. 'supersharp'  
*soprarazionale* lit. 'superrational'

The adjectives in the example are qualifying adjectives and, as such, they express properties that can be intensified or exceeded. The forms in (11) mean something like 'more than sensible/natural/human' etc., so the prefix acquires a meaning that can be generalized as 'more than'.

Let us consider, now, the behaviour of *sopra-* when attached to nouns in the absence of locational meaning. The prefix is interpreted as conveying the meaning 'supplement, addition' as in the words listed below:

- (12) *soprammercato* 'in addition'  
*soprannome* 'nickname'  
*soprappaga* 'additional pay'  
*sopratassa* 'additional tax'

The interpretation of the prefix again depends on the meaning of the base lexemes. Consider, for example, the word *sopratassa* (which is an 'administrative sanction consisting in an increased contribution in case of late payment'). A 'tax' is an amount of money to be paid to a public administration. This amount of money can be increased in case of delayed payment and the increased sum is a "supplement" of taxation: this is why *sopra* in *sopratassa* acquires the specific meaning 'addition'.

With nouns, however, *sopra-* also forms constructions like the following:

- (13) *soprannumero* 'supernumerary'  
*sovraccarico* 'overload'  
*sovrappeso* 'overweight'

Here, again, the meaning of the prefix—strictly related to the semantics of the base nouns—is of the 'evaluative' type: implicitly associated with the nouns *number*, *load* and *weight* is the information 'quantitatively

measurable'; and a quantity can be exceeded. This is why the prefix in the complexes in (13) above acquires this specific meaning.

Summing up, we can say that, starting from a basic 'locative' meaning 'over', *sopra-* acquires the meanings 'in excess' and also 'in addition'. Different or specialized meanings of the prefix are the result of its interaction with the semantics of the lexical items with which it is merged.

Let us now review the data just examined taking into account the possible variation listed in (4) above: *sopra-* represents a case of (4a), that is a case of semantic uniformity on bases of a single category in structures [pref + A] (i.e., *sovrumano*) while it represents a case of (4b), viz. of polisemy on bases of a particular category when attached to verbs ('locative' in *sovrastampare*, 'evaluative' in *sopravalutare*) or to nouns ('in addition' in *soprammercato*, 'eccessively' in *sovraccarico*) since with each of the two categories the prefix carries two meanings.

If we consider the whole behaviour of *sopra-*, we can also say that the prefix represents a case of (4c), namely of polisemy on bases of different categories since, when placed before lexemes of different lexical categories, it assumes different meanings.

Going back to the constructions seen in (5), we want to maintain that, in accordance with our Exocentricity Principle, they are to be analysed as compounds. The merger of *sopra* with nouns (such as *abito*, *veste*, *ciglio*), in fact, introduces an element of meaning not present in the complexes: a *soprabito* is a 'garment put over a coat' but, if we take into account the meanings of the two constituents, we are not able to construct the whole meaning of *soprabito*; a *sopracciglio* is the 'part of the face delimiting eyes' but *sopracciglio* only conveys the meaning 'over the eyelashes' and the same happens with *sopraveste* which is 'something covering other clothes'.

Introduction of a new element of meaning is a property of *sopra* in its prepositional use: prepositions are bi-argumental categories (cf. Bierwisch 1988) and, as such, have an 'internal' and an 'external' argument. In constructions such as those in (5), the noun satisfying the external position of the preposition is not lexically realized and the position is unfilled: consequently, the constructions are exocentric.

## 2.2. The prefix *contro-*

Like *sopra-*, *contro-* is also a prefix originating from a preposition and still functioning as a preposition whose meaning, however, is not different from



that of the prefix.<sup>6</sup> There are, clearly, constructions with the structure [*contro* + N] that we consider to be exocentric compounds. An example of such a construction is the noun *controaliseo* lit. ‘counter-Trades’ which means ‘wind blowing in a direction opposite to that of the Trades’; even though a *controaliseo* is a wind like an *aliseo*, it is not an *aliseo* and one cannot refer to it with the name *aliseo*. Other examples are represented by forms like *contronatura* lit. ‘against nature’ and *contromano* ‘in the wrong direction’ both of which have adverbial uses; but as far as neither *contro* nor *natura* and *mano* are adverbs, the constructions are exocentric.

In order to demonstrate our main point on selection, however, we will discuss only the use of *contro-* as a prefix.

*Contro-* represents a clear case of variation in meaning within a single process. When attached to nouns, in fact, *contro-* has at least four different meanings (cf. Iacobini 2004, 143):

- (a) a “central” meaning which is ‘contrary/opposite’ (as in (14a))
- (b) an array of meanings (*in front of, over, under, alternant*) somehow connected with the central meaning ‘contrary/opposite’ (as in (14b)),
- (c) a meaning ‘strengthening, protection, validation’, as in (14c) and
- (d) a fourth meaning which is ‘control’ (14d):

- (14) (a) *controaccusa*            ‘countercharge’  
           *controffensiva*        ‘counter-offensive’  
           *controcritica*        ‘counter-criticism’  
           *controinchiesta*      ‘counter-investigation’  
           *controindicazione*   ‘contra-indication’
- (b) *controriva*        (in front of) lit. ‘counter-bank’  
           *controcoperta*    (over)        lit. ‘over-deck’  
           *controfilare*      (alternant) lit. ‘counter-row’  
           *controfondo*      (under)       ‘false bottom’
- (c) *controbraccio*    (reinforcement) lit. ‘counter-arm’  
           *controchiglia*    (reinforcement) lit. ‘counter-keel’  
           *controfasciame*    (protection)    lit. ‘counter-planking’  
           *controfinestra*    (protection)    ‘double-window’  
           *controfirma*        (validation)    ‘counter-signature’
- (d) *controcommissione* ‘committee of control’  
           *controesame*        ‘checking’  
           *controperizia*       ‘additional expert report’

<sup>6</sup> E.g., *contro il dittatore* ‘against the dictator’. *Contro* is also an adverb (cf. *votare contro* lit. ‘to vote against’)

As is apparent, a unique structure [*contro* + N] gives rise to a series of meanings. Also in this case we can say that the particular meaning the prefix assumes is **base-driven**.<sup>7</sup> Consider, for example, the complex noun *controriva* whose meaning is ‘strip of land in front of another strip of land touching a river’: here *contro-* acquires the meaning ‘in front of’ due to the meaning of *riva* ‘bank’; a river has two banks, and consequently one of them is a *controriva*, namely *a bank situated in the front, on the opposite side*.

In the same vein, we can explain why *controfirma* is a validation signature: the meaning of *contro-* depends on what we know about the function of a signature.

Apart from the forms in (14b–c) which have been grouped together for their similarity in meaning, an interesting case is represented by the group of prefixed words of the (14a) type, those carrying the central meaning ‘contrary/opposite’. Let us examine a larger list of derivatives:

- |      |                           |                            |
|------|---------------------------|----------------------------|
| (15) | <i>controesodo</i>        | lit. ‘counter-exodus’      |
|      | <i>controdata</i>         | lit. ‘counter-date’        |
|      | <i>controdecreto</i>      | lit. ‘counter-decree’      |
|      | <i>controcultura</i>      | lit. ‘counter-culture’     |
|      | <i>controinformazione</i> | lit. ‘counter-information’ |
|      | <i>controfferta</i>       | lit. ‘counter-offer’       |
|      | <i>controfilare</i>       | lit. ‘counter-row’         |

The meanings of the forms can be *grosso modo* paraphrased as “opposite/contrary *esodo/data/decreto/cultura/informazione/offerta/filare*”, respectively. Nonetheless, a more accurate examination of the semantics of these derivatives allows us to say that there is a slight shift in the meaning of the prefixes when compared to each other. Actually the interpretation of these lexemes is the following.

- |      |                           |   |
|------|---------------------------|---|
| (16) | <i>controesodo</i>        | = ‘opposite direction’                    |
|      | <i>controdata</i>         | = ‘modification’                          |
|      | <i>controdecreto</i>      | = ‘modification’                          |
|      | <i>controcultura</i>      | = ‘position opposite to the dominant one’ |
|      | <i>controinformazione</i> | = ‘position opposite to the dominant one’ |
|      | <i>controfferta</i>       | = ‘substitution’                          |
|      | <i>controfilare</i>       | = ‘alternance’                            |

<sup>7</sup> We borrowed the term from Giegerich (1999) and Plag (2004).

This shows that a huge variation represented by many different nuances of meaning is present within a single morphological process. The general meaning ‘opposite’, in fact, can assume various values which are not interchangeable. For example, the meaning of *contro-* in *controesodo* is not the same as that in *controdata*: while the first *contro-* means ‘opposite’, the second one does not and the two meanings cannot be mutually substituted. In fact, a *controdata* is not a ‘date opposite to another date’ but is a ‘date annulling or modifying a preceding one’.

Therefore, we claim that it is the base constituent of prefixed words, namely the head constituent, that determines the peculiar semantic value the prefix assumes in a specific formation. Consequently, we can say that prefixation is **base-driven** (i.e., **head-driven**) and that it is the head (the lexeme) that attributes a specific meaning to the prefix. In other words, the prefix has a general meaning and the head word that it is merged with specifies this meaning on the basis of its own semantic information.

### 3. The Exocentricity Principle

To support the Principle of Exocentricity we proposed in (3) above, we will further discuss the prefix *sopra-* in order to show how the difference between a prefixed word and an exocentric compound can be accounted for.

In order to do that, we will make use of a slightly modified version of Lieber’s (2004) theory of lexical semantics, here very briefly summarized only for the purposes of the present discussion.

#### 3.1. Lieber’s theory of lexical semantics

Assuming, with much of the literature on the subject, that prefixes are not heads (to the extent that they do not produce any change in the category of the base constituent which they are attached to), Lieber proposes a representation of prefixes as affixes having a (semantic-grammatical) skeleton and a (semantic-pragmatic) body. The prefix *over*, for example, is considered to be the bound equivalent of the preposition *over* and, consequently, to carry the same skeletal information. The preposition has the following skeleton:<sup>8</sup>

<sup>8</sup> [Loc], which stands for ‘location’, is a feature Lieber uses for lexical items “for which position or place in time or space is relevant”. Consequently, [+ Loc] signals

- (17) *over*  
 skeleton: [+Loc ([ ], [—])]

viz.: *over* is a locational preposition which takes two arguments (the second of which is optional since *over* can be both transitive and intransitive)<sup>9</sup> and is characterized by a body specifying that:

- its object argument is sometimes a point and sometimes a surface
- its focal point is P<sub>f</sub> (= final point), meaning implied progression towards the endpoint
- it implies (generally) a vertical axis of orientation
- it implies sometimes mere approach to the endpoint and sometimes the reaching of the limit.<sup>10</sup>

Formally, all that has the cumulative representation that follows:

- (18) *over*  
 skeleton: [+Loc ([ ], [—])]  
 body: dimension-0/2; focus-P<sub>f</sub>; axis-vertical; limit-no/yes

The prefixal form *over-* has only some of the meanings of the preposition, those illustrated in (19):

- (19) *over-*
- (a) locational  
 skeleton: [+Loc ([ ], [—], ⟨base⟩)]  
 body: dimension-0; focus-P<sub>f</sub>; axis-vertical; limit-no  
 examples: *overarch* (intrans.), *overprint* (trans.)
  - (b) locational/completive  
 skeleton: [+Loc ([ ], [—], ⟨base⟩)]  
 body: dimension-2; focus-P<sub>f</sub>; axis-vertical; limit-yes  
 examples: *overcloud* (intrans.), *overcover* (trans.)
  - (c) excess  
 skeleton: [+Loc ([ ], ⟨base⟩)]  
 body: dimension-0; focus-P<sub>f</sub>; axis-vertical; limit- P<sub>f</sub>  
 examples: *overact* (intrans.), *overcapitalise* (trans.)

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that the items bearing the feature “pertain to position or place” while “[–Loc] items [are] those for which the explicit lack of position or place is asserted” (2004, 99).

<sup>9</sup> Optionality is signalled by underlining.

<sup>10</sup> Cf. Lieber (2004, 130) for a more detailed explanation.

As can be seen, the only difference in the lexical semantic representation of the simple preposition (in (18)) and that of the prefix is found in the ‘excess’ sense of the prefix that is associated with an intransitive skeleton. This is so because with the ‘excess’ meaning there is no change at all in the argument structure of the base verb to which the prefix is attached.

In the formation of derived words, the skeletons of the constituents add to one another and the Principle of Coindexation<sup>11</sup> integrates affixal arguments with base arguments.

The skeleton of a prefix is a simple one<sup>12</sup> except in the case of prefixes which are heads; the latter introduce a different category and possibly new arguments.<sup>13</sup>

To demonstrate the validity of our Exocentricity Principle, let us analyse *sopra* in accordance with Lieber’s framework.

### 3.2. *Sopra*

We have shown above that *sopra* is an item which can work lexically both as a preposition and as a prefix. In its prepositional use it forms, in the lexicon, compound lexemes. According to Lieber, the skeleton of the preposition should be that in (18). However, though we agree with the idea that prepositions are bi-argumental categories, we are inclined to think that the representation of the skeleton of a preposition made by Lieber is not quite correct. The external argument of P is not, according to Bierwisch (1988), inside P'' since it is not the specifier of P. In other words, the external argument of the preposition is not projected by P. To code this fact, consequently, we suggest for *sopra* the (tentative) modified skeleton below:

- (20) *sopra*  
 [+Loc ([ ], [( [ ] )])]

<sup>11</sup> The Principle of Coindexation sounds like this: “In a configuration in which semantic skeletons are composed, co-index the highest non-head argument with the highest (preferably unindexed) head argument. Indexing must be consistent with semantic conditions on the head argument, if any.” Cf. Lieber (2004, 60).

<sup>12</sup> For example, the skeleton of the negative *in-* is [–Loc ([ ], ⟨base⟩)]

<sup>13</sup> Commonly, for example, English *en-* (*rich*<sub>A</sub> → *enrich*<sub>V</sub>) is considered a prefix with head properties.

where the argument external to the preposition is not in the first position but in the second one and its particular nature of not being a specifier of the preposition is marked by additional square brackets.

The structure of complex forms like those in (5) above (here illustrated with *soprammobile* lit. ‘over furniture’ = ‘ornament’) is thus the following:

- (21) *soprammobile*  

$$[+ \text{Loc } ([_i \quad ], [( [ \quad ] ])] \text{ } ([+ \text{material}^{14} ([_i \quad ]))]$$
*sopra* *mobile*

In formations like this, compositions of arguments take place and coindexation has effect between the sole argument of the noun and the internal argument of the preposition (the only one it projects and which is the first—or higher—one).

Such an indexing constitutes, actually, a kind of violation of the Coindexation Principle, since coindexation should involve the head constituent missing in the PN construction. Selection, however, also operates between the [+Loc] and the [+material] elements and we guess that coindexation is necessary here, too, in order to justify the fact that the [+material] constituent—namely, the noun—saturates the internal argument of the [+Loc] constituent.<sup>15</sup>

The additional argument carried by the preposition is, in the composed skeleton, the external one that remains free and can be made to refer to the absent head—thus accounting for the exocentricity of the complex.

However, these constructions would not constitute a violation of the Coindexation Principle if they could be viewed as a sort of (para)synthetic construction where the three constituents (P, N, and the covert nominaliser) merge simultaneously. In this case, the covert nominal head’s argument should be coindexed with the higher argument of P (the external one) while the second P’s argument would be coindexed with the argument of N.<sup>16</sup> Clearly, a solution like this deserves further investigation.

<sup>14</sup> The feature [+material] stands for concrete nouns while [–material] stands for abstract ones.

<sup>15</sup> It seems to us, in fact, that in a PN construction, though headless, it is P that subordinates N and, consequently, its higher argument (the first one, which is the internal) co-indexes with the argument of N.

<sup>16</sup> Exocentric compounding can be viewed as a ‘double phase’ construction where two constituents are merged either on a categorial basis or on the basis of the

Thus, an accurate semantic structure of a complex lexeme such as *soprammobile*, accounting for its full interpretation, should actually be the following:

(22) *soprammobile*

[+material [<sub>j</sub> ]], [+Loc ([<sub>i</sub> ], [[<sub>j</sub> ]]) ([+material ([<sub>i</sub> ])))]  
 $\emptyset$  *sopra* *mobile*

Here the zero constituent (of a nominal nature as [+material] indicates), signalling a phonologically non-overt element, is the head and its higher (sole) argument co-indexes with the only unindexed argument of its (complex) base.

Another case of prepositional locative meaning carried by *sopra* is represented by formations like *soprarenale*, *sopracciliare*, etc. discussed in (7) above. For such constructions we suggest, therefore, the following structure:

(23) *soprarenale*

[−dynamic<sup>17</sup> ([<sub>j</sub> ]), [+Loc ([<sub>i</sub> ] [[<sub>j</sub> ]]) ([+material ([<sub>i</sub> ])))]  
*-ale* *sopra* *rene*

Here, Lieber's formalism allows us to highlight the semantic structure of the formation: starting from a kind of (possible) exocentric [P + N] compound where coindexation takes place between the unique R argument (in Williams' 1981 terms) of the noun and the first (internal) argument of the preposition, the complex structure of the adjective—which is consequently a derived formation—is obtained by coindexing the first (sole) argument of the (relational) adjectival suffix with the external argument of *sopra*. Here coindexation points to the fact that the arguments merge in a single one which will be projected in the syntax as a property of the adjective.

In its use as a true prefix, *sopra-* changes its meaning and loses the prepositional skeleton in favour of a prefixal one that consequently has only one argument. Prefixes are not heads but, to guarantee non-creation of new arguments, the skeletons of the two words must compose. Thus,

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respective semantic values. Since neither of the two constituents is the head of the complex, a further phase of covert category attribution is consequently needed (where coindexation is probably unnecessary).

<sup>17</sup> According to Lieber's theory, [−dynamic] is the semantic feature for stative verbs and adjectives.

coindexation of the first argument of the head-verb with that of the prefix guarantees the lack of independent reference of the prefixal argument in the syntax:

- (24) *sopravalutare*  
 [+dynamic ([<sub>i</sub> ] [ ], [+Loc ([<sub>i</sub> ]))]  
*valutare* *sopra*

Forms such as *soprannaturale* have a similar structure. This kind of adjectives bears the meaning ‘more than A’, as we saw in (11) above; the representation is the one in (25), since the prefix has scope over the entire adjective:

- (25) *soprannaturale*  
 [–dynamic ([<sub>i</sub> ], [+Loc ([<sub>i</sub> ]))]  
*naturale* *sopra*

The skeleton of the head (the adjective) subordinates that of the non-head and coindexation guarantees unique reference in syntax.

A problematic case of prefixation keeping the locative value of the preposition is represented by forms like *sovrastampare* ‘to overprint’, listed in (6a) above.

Though keeping our doubts about the prefixal nature of such constructions,<sup>18</sup> (a topic that deserves further investigation), we propose for the moment the following skeletal representation for prefixal *sopra*-:

- (26) *sovrastampare*  
 [+dynamic ([<sub>i</sub> ] [ ], [+Loc ([<sub>i</sub> ]))]  
*stampare* *sopra*

Here the first argument of the head constituent, the verb *stampare* ‘to print’, coindexes with the argument of the prefix to avoid addition of an argument to the verb; the two arguments, nevertheless, will remain free for syntactic saturation.

<sup>18</sup> See footnote 2. *Sopra*, actually, introduces an additional argument: *stampare y/sovrastampare y con z* ‘to print y/to overprint y with z’ and thus manifests peculiar properties in comparison to the majority of prefixes.



#### 4. Two alleged counterexamples

One of the goals of the present paper is to demonstrate that in word formation an Exocentricity Principle is at work that excludes exocentricity from derivational processes and allows for it only in compounding. In what follows, we will discuss some alleged counterexamples in two different languages, Modern Greek and French.

##### 4.1. Modern Greek

In Modern Greek there are some complex forms (cf. (27)) that Ralli (2005) analyses as exocentric prefixed words. Such forms are obtained from a nominal root to which a prefix and an adjectival ending are attached:

(27)	akeros/-i/-o	< a-	ker-	-os/	-i/	-o
	‘ill-timed, inopportune’		time	masc.nom.sg/	fem.nom.sg/	neu.nom.sg
	antimetopos/-i/-o	< anti-	metop-	-os/	-i/	-o
	‘confronting, faced’		front	masc.nom.sg/	fem.nom.sg/	neu.nom.sg

Ralli maintains that the adjectival endings (*-os*, *-i*, *-o*) are not derivational suffixes but inflectional elements because they are always present in adjectives and convey number, gender and case information. The base constituent is a nominal one, but the structure [base + *os/-i/-o*] does not form an adjective since the result is not a free form. This structure becomes a free element when a prefix is attached. The constituents on the edges must be both present, since [prefix + base] is not even a free standing form.

Ralli observes that constructions of this kind cannot be given the category ‘adjective’ even by the prefix because prefixes, usually, are not heads and do not change the category of the constituent they are attached to. These are the reasons why, according to Ralli, such forms should be analysed as exocentric prefixed constructions.

The constructions in (27) resemble Romance parasynthetic formations where neither [base + suffix] nor [prefix + base] form actual words.<sup>19</sup> Their similarity with Romance parasynthetic forms is reinforced by the fact that, in the Modern Greek formations, the prefix does not add its

<sup>19</sup> On Italian parasynthesis, cf. Scalise (1983) and Crocco Galeas-Iacobini (1993) (among others).

prototypical meaning but a peculiar one, as is the case, for example, in Italian parasynthetic verb formation, too.

We are thus inclined to think that the Modern Greek formations discussed by Ralli are parasynthetic adjectives, formations in which a covert adjectival suffixation process (namely a process of zero suffixation or conversion) converting the nominal root into an adjective is accompanied by an overt process of prefixation.<sup>20</sup>

#### 4.2. French

French also has prefixed forms that Amiot (2004; 2005)<sup>21</sup> considers as exocentric. Amiot says that forms such as *après-communisme* lit. ‘after-communism’, *après-dîner* ‘after dinner’ and *avant-scène* lit. ‘front stage’ are denominal nouns whose (absent) referent is in relation with the referent of the base noun. *Communisme*, for example, indicates in both lexemes (the complex and the simple one) a ‘period of time’ but *communisme* has a meaning different from *après-communisme*. Amiot points out that “Les deux sont de même nature mais ne désignent pas la même réalité” (Amiot 2005, 74–5). Consequently, she suggests treating the complex forms as exocentric prefixed constructions.

A possible answer to Amiot’s claim is in the discussion on the Exocentricity Principle in section 3 above. Actually, the data discussed by Amiot are completely similar to the Italian ones we have presented in this paper. As such they are not, to our mind, counterexamples to the Exocentricity Principle.

### 5. Conclusions

In this paper we have tried to demonstrate, on the basis of the Italian prefixes *sopra-* ‘over’ and *contro-* ‘counter’, that prefixes lacking head properties do not select the constituent they merge with.<sup>22</sup> On the con-

<sup>20</sup> Several different analyses have been proposed in order to explain parasynthetic formations. However, we are not defending here any theoretical position.

<sup>21</sup> We thank Bernard Fradin for drawing our attention to Amiot’s works in personal communication.

<sup>22</sup> In this paper we have produced evidence for Italian but we are inclined to think that our conclusions can be equally applied to all prefixation processes where prefixes are non-category-changing elements.

trary, it is the base lexeme that “selects” the prefix on the basis of its own meaning. The encyclopaedic information tied to the head constituent is also responsible for the meaning variation that prefixes manifest. It is the array of information contained in what Lieber (2004; 2006) calls “the body” that determines the meaning shift that can be observed in prefixes. Such a shift is, we guess, a peculiar property of non-head prefixes. This is not the case with suffixes: the meaning of a suffix is “autonomous” and “constant” while a prefix usually has a general meaning whose specialisation is the result of its attachment to a base word.

Compare for example cases where a suffix (i.e., *-ino*) and a prefix (i.e., *mini-*) express more or less the same meaning (cf. Grandi–Montermini 2005). While in *tavolo* → *tavolino* ‘table—little table’, *gatto* → *gattino* ‘cat—little cat’ the meaning of the suffix is always ‘little’, *mini-* can have two meanings: ‘little’ (*market* → *mini-market*) and a meaning not strictly connected with ‘little’, namely ‘short’ (e.g., *skirt* → *mini-skirt*).

The fact that selection in prefixed words is **base-driven** (namely **head-driven**) allowed us to demonstrate that a Morphological Selection Principle, stating that it is the head that selects the non-head, is at work in word formation since suffixation and compounding, too, are **head-driven** processes.

Furthermore, the line of analysis developed in this paper is in accordance with our Exocentricity Principle stating that in word formation only compounds can be exocentric. Even though exocentricity has been claimed to be a property not only of compounds but also of prefixed words, we have demonstrated in this paper that prefixed words are entirely interpretable on the basis of their constituents. On the contrary, other complex words sharing with prefixed words the left constituent but requesting an extra element of meaning in order to be correctly interpreted are exocentric compounds.

### References

- Amiot, Dany 2004. Préfixes ou prépositions? Le cas de *sur(-)*, *sans(-)*, *contre(-)* et les autres. In: *Lexique* 16:67–83.
- Amiot, Dany 2005. Between compounding and derivation. Elements of word-formation corresponding to prepositions. In: Dressler et al. (2005, 183–95).
- Aronoff, Mark 1976. *Word formation in generative grammar*. MIT Press, Cambridge MA.

- Bierwisch, Manfred 1988. On the grammar of local prepositions. In: Manfred Bierwisch – Wolfgang Motsch – Ilse Zimmermann (eds): *Syntax, Semantik und the Lexikon: R. Ruzicka zum 65. Geburtstag*, 1–65. Akademie Verlag, Berlin.
- Crocco Galeas, Grazia – Claudio Iacobini 1993. The Italian parasynthetic verbs: A particular kind of circumfix. In: Livia Tonelli – Wolfgang Ulrich Dressler (eds): *Natural morphology*, 127–42. Unipress, Padova.
- Croft, William 2001. *Radical construction grammar: Syntactic theory in typological perspective*. Oxford University Press, Oxford.
- Di Sciullo, Anna Maria 2005. *Asymmetry in morphology*. MIT Press, Cambridge MA.
- Dressler, Wolfgang U. – Dieter Kastovsky – Oskar E. Pfeiffer – Franz Rainer (eds) 2005. *Morphology and its demarcations*. John Benjamins, Amsterdam & Philadelphia.
- Giegerich, Hans 1999. *Lexical strata in English. Phonological causes, morphological effects*. Cambridge University Press, Cambridge.
- Grandi, Nicola – Fabio Montermini 2005. Prefix-suffix neutrality in evaluative morphology. In: Geert Booij – Emiliano Guevara – Angeliki Ralli – Sergio Scalise – Salvatore Sgroi (eds): *Morphology and linguistic typology. On-line proceedings of the Fourth Mediterranean Morphology Meeting (MMM4, Catania, 2003)*. <http://morbo.lingue.unibo.it/mmm/>.
- Iacobini, Claudio 2004. Prefissazione. In: Maria Grossmann – Franz Rainer (eds): *La Formazione delle parole in italiano*, 97–161. Niemeyer, Tübingen.
- Iacobini, Claudio – Sergio Scalise 2005. Contraintes sur la catégorie de la base et de l'output dans la dérivation. In: Bernard Fradin (ed.): *La raison morphologique. Hommages à Danielle Corbin*. John Benjamins, Amsterdam & Philadelphia.
- Lieber, Rochelle 2004. *Morphology and lexical semantics*. Cambridge University Press, Cambridge.
- Lieber, Rochelle 2006. *The category of roots and the roots of categories: What we learn from selection in derivation*. Ms. University of New Hampshire.
- Plag, Ingo 2004. Syntactic category information and the semantics of derivational morphological rules. In: *Folia Linguistica* 38: 193–225.
- Ralli, Angeliki 2005. *Μορφολογία*. Patakis, Athens.
- Scalise, Sergio 1983. *Generative morphology*. Foris, Dordrecht.
- Scalise, Sergio – Antonietta Bisetto – Emiliano Guevara 2005. Selection in compounding. In: Dressler et al. (2005, 133–50).
- Tyler, Andrea – Vyvyan Evans 2001. Reconsidering prepositional polysemy networks: The case of over. In: *Language* 77: 724–765.
- Williams, Edwin 1981. Argument structure and morphology. In: *The Linguistic Review* 1: 81–114.