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Abstract

The formal and semantic differences between compounds and phrases are proposed to follow from general economy considerations, forcing X^0 and XP expressions to be distinct as soon as possible in the derivation. Some consequences of this hypothesis for the differences in conceptual interpretation between the two sorts of expressions are discussed. It is shown that the formal differences involved, basically that the spec-head and the head-complement relations and the features they bare are not visible for interpretation at the interface between word-structure and the Conceptual-Intentional system, correctly predict that the semantic features associated i) with the subject or external argument, ii) with delimiting and measuring modification, and iii) with referential specific categories, are not available for interpretation in compound structure, whereas they are in phrasal structure.

ECONOMY OF X⁰/XP DERIVATIONS[1]

1. Purpose

The purpose of this paper is to account for the differences and the similarities between words (X^0s) and phrases (XPs) in terms of economy considerations. We focus on compounds, as they exhibit both X^0 and XP properties.

On the one hand, compounds are X^0s by phonological criteria, they have a unique stress on the non-head (Chomsky and Halle, 1965; Cinque, 1992), by conceptual criteria, they exhibit conceptual and referential opacity (Di Sciullo and Gruber, 1992), and by syntactic criteria, they are non separable (Di Sciullo and Williams, 1987). On the other hand, compounds are XPs by categorial criteria, viz., they include more than one categorial item, they may include a phrasal constituent, and they may instanciate pseudo-modification and pseudo-complementation (Di Sciullo, 1994, 1997). The question we address in this paper is the following: why are compounds both different and similar to phrases?

1.1. Proposal

We propose that the differences and the similarities between compounds and phrases are an effect of the economy of the grammar. Compounds and phrases may share properties in their derivations, which proceed in the same computational space. However, they crucially must differ at the interfaces with the performance systems by conceptual necessity, as the conceptual system must distinguish X^0s from XPs on configurational grounds in order to associate each expression to a different sort of interpretation.

1.2. Assumptions

We assume that the derivation of the linguistic expressions, X^0s and XPs, takes place in the same computational space as an effect of the operation of the different modules of the grammar, including the morphology and the syntax (Chomsky, 1995). The modules are autonomous to the extent that they instanciate specific treatments of the grammatical primes, features and elemental configurations, as in Di Sciullo (1996a).

We assume further, as in Di Sciullo (1996b), that the computational space includes interacting types of derivations leading to optimal target configurations. The derivations lead to canonical target configurations (CTC), the features of which can be visible, i.e. interpreted, at the interfaces with the cognitive system. The canonical target configurations are limited to specifier-head, head-complement and adjunct-head configurations.[2] They are the elemental structures upon which the configurational asymmetries and the features they bare are legible at the interfaces. We assume that a feature is visible/interpreted only in a target configuration. X^0s CTC is an adjunct-head configuration, XPs CTC is a spec-head-compl configuration at the conceptual interface.

1.3. Hypothesis

We propose that the similarities between compounds and phrases may not survive in the derivation and crucially not at the conceptual interface, given the Optimality of X^0/XP derivations, that we define as follows:

(1) Optimality of X0/XP derivations
X^0/XP derivations must be distinct as early as possible in the derivation.

Thus, compounds and phrases may share configurations in the derivation and at the acoustic interface (PF), but they must differ at the conceptual interface.

This condition is part of the economy conditions internal to the grammar. It narrowly restricts the possible derivations of words and the possible derivations of phrases. It ranges over properties not covered by the economy conditions of the Minimalist Program (Chomsky, 1995).[3]

1.4. Consequences

If the derivation of the X^0s and XPs lead to distinct target configurations at the conceptual interface, we predict that X^0s and XPs have different conceptual properties at that interface. We show that they differ with respect to the visibility of the features of:

(2) a. the subject or external argument
b. delimiting and measuring modification
c. referential specific nominals

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[2] We take the specifier-head configuration to be the target configuration for feature agreement under identity; the head-complement configuration to be the target configuration for feature matching under partial identity; and the adjunct-head configuration to be the target configuration for feature inclusion under distinctiveness, as in Di Sciullo (1997).

[3] Procrastinate. Greed and Minimal Link apply at every step in the derivation and allow to choose amongst convergent derivations, i.e. interpretable at the interface, optimal ones. Full Interpretation is a condition on representations requiring that no superfluous element be part of the interfaces. The Optimality distinguishes X^0s and XPs, notwithstanding their similarities.

These features, visible in spec-head and head-complement configurations in XP structure, are not visible in compounds, which are, in our theory, adjunt-head structures at the conceptual interface.

This paper is organized as follows. In section 2, we discuss the features supported by the predication relation and show that the features associated with the subject are not visible/interpretated in compounds. In section 3, we consider the differences between words and phrases with respect to aspectual modification, bringing evidence to the effect that at least one sort of aspectual modification cannot be obtained within compounds. In section 4, we show that, as it is the case for measuring modification and subjecthood, specific reference cannot be obtainted with compounds because the configuration supporting the features is not available at the morpho-conceptual interface. These facts are predicted by our theory and follow in a unified way. In the last section, we consider some theoretical advantages of our proposal over alternative treatments.

2. Predicates and Predication

In this section we focus on the differences between compounds and phrases with respect to predication. Compounds are X^0s, they are predicates, viz., open functions, and they include predicates. On the other hand, phrases are XPs, they are closed functions, and include closed functions. Functional closure may be achieved via predication (Williams, 1980, 1994), Theta-binding (Higginbotham, 1985) and feature checking (Chomsky, 1995).

2.1. Primary predication

In the Minimialist framework, (Chomsky, 1995; Ura, 1997) predication is a manifestation of the spec-head relation, where features of the external argument or the subject are in the spec position.

(3)　[Spec　X]$_x$
　　　　　　|
　　　subject

While predicates are legitimate in XPs and X^0s, the predication relation may only be legitimate in XPs. In deverbal compounds, the bare nominal category does not qualify as an external argument or a subject. This is the case for compounds, where the nominal non-head qualifies as an internal argument, but not as an external one. The nominal non-head is interpreted as the theme, but not as an agent or an experiencer, compare (4) and (5).

(4)　a.　LI-readers
　　　b.　LI-reading

(5)　c.　*student-reader of LI
　　　d.　*student-reading of LI

The exclusion of subject within compounds follows, in our theory, from the fact that spec-head configurations are not canonical target configurations for words, assuming that sujets may only be visible under spec-head relation at the conceptual interface.

2.1.1. Relatives

Furthermore, assuming that the predication relation also holds between the head of a relative clause and that clause, as suggested in Williams (1994), our theory correctly

predicts that relative clauses may not be visible/interpreted as a compound at the morpho-conceptual interface.

In effect, in the case of the relativization of the subject, the head of the relative agrees in phi-features with the verb via the wh-element in spec-CP. Subject-verb agreement does not hold within compounds.

(6) a. the [one who writes] the book is out of town.
     b. the [ones who write] the book are out of town.

(7) a. *the [[writes]-er] of SPE
     b. the [[write]-er] of SPE

This again follows from our hypothesis that at the conceptual interface, the spec-head configuration and the features it bares are not visible/interpretable in X^0s, whereas they are in XPs.

Thus, our theory correctly predicts that compounds and phrases are different with respect to primary predication, and derives the fact that the features supported by a subject are not visible/interpreted within compounds.

2.1.2. Secondary predication

We also predict that secondary predication, depictive or resultative, may not be obtained within compounds, as it also is a manifestation of the spec-head configuration, which is not part of X^0s.

(8) a. [He [puts [the book on the shelf]]].   secondary predication on argument
     b. *book-shelf-putting is boring

(9) a. They consider [smoking crazy]   selected predication
     b. *Smoking-crazy-considering is quite common.

(10) a. They eat [fish raw]   depictive adjunct
     b. *Fish-raw-eating is particular in Japan.

(11) a. They iron [shirts flat]   resultative adjunct
     b. *Shirt-flat-ironing is what you want to do.

This again follows from our hypothesis that the spec-head configuration is not visible in X^0s at the conceptual interface, while it is in XPs.

3. Aspectual modification

There is a difference in the range of aspectual modification that can be licensed in XPs and in X^0s. For concreteness, we take event structure to be a representation that covers the internal spatiotemporal constituency of a situation or an event denoted by a verbal expression (Vendler, 1967; Comrie, 1976; Dowty, 1979; Bach, 1986; Kipka, 1990; Parsons, 1990; Smith, C. 1991; Verkuyl, 1993). Various features and properties of this spatiotemporal structure can be referred to or modified by affixal or phrasal elements across languages. We examine the following three types of aspectual modification: sequencing, bounding and measuring.

The following paragraphs provide evidence to the effect that while sequencing modification may be licensed in compounds, this is not the case for delimiting and

measuring modification, which can occur only in XPs. This difference, not noticed before in the litterature, brings further support to the differences between words and phrases at the conceptual interface and provides a rationale to the X^0/XP differences with respect to aspectual modification.

3.1. Sequencing modification

Sequencing modification, as a manifestation of the adjunction configuration, may be licensed in X^0s and in XPs. It takes the form of iterative and inverse prefixes in X^0s and of adverbial phrases in XPs.

The scopal difference between XP and X^0 sequencing modification gives rise to the differences in aspectual interpretation (cf. Weshler, 1990; Di Sciullo, 1997; Roeper and Keyser, 1992, 1995).

(12) a. Mary wired a house <u>again</u>   (a different house)
     b. Mary <u>re</u>wired a house   (the same house)

Sequencing modification can be licensed in verbal compounds, via an iterative prefix that modifies a directional preposition, as in (13d), but not the verbal complex formed by a verb and a particle, as in (13c).

(13) a. to turn the chair over again
     b. to [turn-over] the chair again
     c. *to [re-turn-over] the chair
     d. to [re-over-turn] the chair
     e. to [re-re-over-turn] the chair

These facts are consistent with the generalization that we established elsewhere, on the basis of Romance data (cf. Di Sciullo, 1996), that external prefixes, such as the iterative or the inverse prefix, c-command the internal prefixes, mainly the directional prefixes. Similar facts, even though more limited, are observed in English.

(14) a. porter/apporter/reporter
     b. réapporter/*areporter
     c. to lighten/to enlighten
     d. to reenlighten/*to enrelighten

     e. V
         $/\,\backslash$
      P_{ex} V
         $/\,\backslash$
       P_{in} V
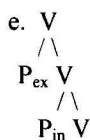
Thus, sequencing modification can be lincensed within compounds via prefixation, as an adjunct to a prepositional prefix. This is predicted by our theory since this is achieved via adjunction.

3.2. Delimiting modification

Moreover, in XP structure, a DP or a PP complement may add an endpoint to the event denoted by the verbal projection, as discussed in Tenny, 1988, 1994; Di Sciullo and Klipple, 1994; Pustejovsky, 1995; Di Sciullo, 1997).

It has also been established that the presence of a specific DP object or locative PP may have a delimiting effect on the event denoted by a verbal projection. Where 'delimitedness' refers to the property of an event's having a distinct, definite, and inherent endpoint in time (Tenny, 1994).

(15) a. x ran for one hour/*in one hour.   (activity)
     b. x ran the mile *for one hour/in one hour.   (accomplishment)
     c. x drove the car for one hour/*in one hour.   (activity)
     d. x drove the car to New York *for one hour/in one hour. (accomplishment)

Non referential, non specific cognate objects do not have a delimiting effect.

(16) a. Mary laughed for an hour/*in an hour.   (activity)
     b. Mary laughed a mirthless laugh (in one minute/for one minute) (Tenny, 1994)
     c. John ran a great run (in an hour/for an hour)

This is also the case for deverbal compounds, where the nominal non-head is not delimiting.

(17) a. Marathon-running (in an hour/for an hour) is fun.
     b. Pasta-eating (in an hour/for an hour) is hard.
     c. Newspaper-reading (in an hour/for an hour) is easy to do.

In compounds, the nominal expression included in a devernal compound cannot have a delimiting effet on the event denoted by the deverbal head because the non-referential, non specific expression is in adjunct position.

Thus, delimiting modification is blocked for deverbal compounds, where the nominal expression within has no effect on the event structure of the deverbal head. This follows in our theory from the fact that the nominal expression is not in a head-complement configuration at the conceptual interface. It is interpreted as non-referential and non-specific in the head-adjunction structure it is a part of at that interface.

3.3. Measuring modification

Measuring modification, as a manifestation of the head-complement configuration, is instanciated by a class of degree modifiers found in XP structure, which modifies the path or the change of state in the event structure.

(18) a. x closes the door partway
     b. x walks halfway to New York

The adverb "partway" modifies the final resulting state of the event, to supply a new final state only part of the distance to the original final state. This kind of interpretation has been discussed by Tenny and Heny (1993) and has been represented formally by Parsons (1990).

Measuring modification, unlike sequencing or delimiting modification, may only occur in XP structure. Prefixes which are candidates for a measuring interpretation, such as under-, do not in fact provide that interpretation. Evidence comes from the possible interpretations of the sentences, as well as from the verb classes they may apply to, which is not the same set.

(19) a. x(*under)closed the door partway
    b. x(*under)walked halfway to y
    c. *x appreciated y halfway/x underappreciated y

Measuring modification is not found within the verbal morphology because it crucially involves the composition of a verb with its complement, which can only occur in syntax. Measuring cannot modify within a word because it requires a complement, a referential specific DP, not found within the word at the conceptual interface.

The following morphological consequences follow from the absence of measuring modification in the basic adjunct and head composition of words. First, deverbal compounds will not include a category that can be interpreted as a path.

(20) a. x mixed the paint completely
    b. paint-mixing (*completely) is fun

Second, given D&W's (1987) definition of the head of the word and Kayne's (1994) LCA, the fact that measuring modification requires a complement and that such modification cannot be obtained within the word brings further support to the view that complements cannot be licensed within the word at the conceptual interface. In fact, aspectual modification in derivational morphology is only possible to the left, in adjunct position.

(21) a. to reoverprotect
    b. *to reprotectover
    c. to overoverprotect
    d. *to reprotectover

This follows from our hypothesis that X^0s are canonical adjunct-head configurations at the conceptual interface, while XPs are canonical Spec-head-compl configurations.

4. Referentiality

In XPs, both spec-head and head-complement configurations may support the referential and the specific features for nominal expressions. We predict that these features are not visible at the conceptual interface for X^0 expressions such as compounds, the CTC of which is an Adjunct-head configuration.

Let us first distinguish two sorts of interpretation for a nominal expression, referential and non-referential, as depicted in (22), where the referential interpretation further ramifies into specifics and non-specifics. Let us assume with Diesing's (1994) instanciation of Heim/Kemp's theory, that specific move out of the nuclear scope (the VP), whereas referential non-specifics are subject to existential closure. Let us further assume that non-referential non-specific categories are subject to adjunction.

(22) a. referential: specifics, definites, quantifiers (move out of the nuclear scope)
                  non-specifics   (subject to existential closure)
    b. non-referential: non-specifics   (subject to adjunction)

The referential and non-referential interpretations are exemplified in (23a,b,c) respectively. The difference in interpretation is reflected in a difference in structure, since while referential specific nominals may undergo passive for instance, this is not the case for non-referential non-specific ones.

(23) a. He ate the pasta.   (referential specific)
     b. He ate some pasta.   (referential non-specific)
     c. He ate pasta.   (non-referential non-specific)

(24) a. The pasta was eaten.
     b. Some pasta was eaten.
     c. *Pasta was eaten.

Relevant to our purpose is the fact that a nominal expression included in a compound is non-referential and non-specific.

The lack of referentiality of the nominal expression in the compound is evidenced by the fact that it may not undergo passive, (25b), it may be the antecedent of a pronoun, (25c), and it can be licensed in gapping structures, (25d).

(25) a. John grocery-shopped today.
     b. *Grocery was shopped by John today.
     c. *His pen$_i$-holder is in marble and it$_i$ is in gold.
     d. *Mary likes book-shelving and Paul newspaper.

Matsumoto (1996) observed that the referential as well as the non-referential interpretations were available for cognate objects:

(26) Mary danced a beautiful dance.

(27) a. A certain type of dance, say tango, is famous for its beauty (referential, specific)
     b. The result of the activity of dancing is beautiful (referential, non-specific)
     c. The activity of dancing is beautiful (non-referential, non-specific)

As expected, passive is not possible with the non-referential, non-specific reading (27c):

(28) a. A beautiful dance was danced by Mary and it was tango.
     b. A beautiful dance was danced by Mary and everybody was delighted.
     c. *A beautiful dance was danced by Mary and it was never-ending.

Moreover, a cognate object with a non-referential reading cannot be the antecedent of a pronoun nor can it be licensed in a gapping structure, as the following b. examples show.

(29) a. Mary danced a delightful dance$_i$ and it$_i$ was attractive.
     b. *Mary danced a never-ending dance$_i$ and it$_i$ was attractive.

(30) a. Mary danced a mysterious dance and Jane an attractive dance.
     b. *Mary danced a never-ending dance and Jane a sudden dance.

Borer (1994) following Stowell (1989) assume that the difference between referential and non-referential nominals is set in categorial terms. Referential nominals are DPs, while non-referential nominals are NPs. This position is also taken by Matsumoto (1996) to distinguish the interpretations of a cognate object.

(31) a. DP
    / \
  D NP

  a, some

  many, three

b. DP
   / \
  D NUMP
   /   / \
  [e] NUM NP

  three, a

c. DP
   / \
  D NP
  / / \
 [e] NUM N'

  three, a   (Borer, 1994)

(32) a. FP
   / \
 Spec F'
    / \
  F   VP
    / \
[+acc] V DP

smiled a beautiful smile
    [+acc]

b. FP
  / \
 F VP
   / \
  V NP

smiled a sudden smile

             (Matsumoto, 1996)

However, analyses that capture the differences between referential and non referential nominals in terms of a categorial difference are difficult to hold for compounds, where the definite article, but not a numeral may be licensed. French compounds are ungrammatical with a numeral, compare (33) and (34).

(33) a. un coupe-la-soif, un trompe-l'oeil, un hors-la-loi, un sans-le-sou
   a' 'a thurst-quencher','un trompe-l'oeil', 'an out-law', 'a poor-one'
   b. *un coupe-une-soif,*un trompe-un-oeil,*un hors-une-loi, un sans-un-sou

The definite article projects a DP structure in these compounds. However, the interpretation of the DP is non-referential and non-specific.

(34) a. Ce vin est un vrai coupe-la-soif.
      `This wine is a real thirst-quencher.'
   b. *La soif a été coupée par ce vin.
      `Thirst was cut by this wine.'
   c. *Ce [coupe-la-soif$_i$] est efficace lorsqu'elle$_i$ est persistante.
      `This thirst-quencher is good when it is strong.'

What prevents a referential specific interpretation for that DP? We claimed in Di Sciullo (1996b) that the nominal expression included in the compound is an adjunct to D before Spell-Out and at the conceptual interface.

(35)   N
       / \
      V   N
     /   / \
 coupe D [e]
        / \
       D   N
       | |
      la soif

Given the strong R feature of D in Romance (Longobardi, 1994), the overt adjunction is forced by the strong features of D in the language under consideration and is sustained by the fact that the adjunct structure is not subject to DP movement such as passive, as well as other syntactic properties of DPs.

5. Summary

Thus, notwithstanding the presence of XP structure in X^0s, we show that our theory captures, in configurational terms, basic differences between the interpretation of compounds and the interpretation of phrases with respect to predication, delimiting modification and specific reference at the conceptual interface. As manifestations of the spec-head-compl configuration, these relations and the features they bare are not interpretable in an X^0 adjunct-head configuration at the conceptual interface.

6. Advantages

In this last section, we identify three theoretical advantages of our proposal. The first is that such construction-specific conditions are no longer required in the grammar of compounding.

Thus, to rule out the compounding of subjects, such as in the examples in (5) above, construction-specific constraints have been proposed in the literature, including the First Sister Principle and the Subject Condition.
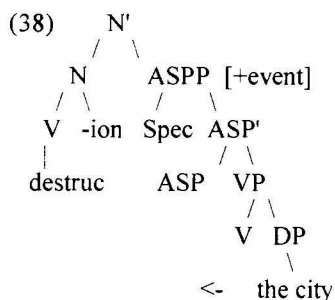
(36) **First Sister Principle**
All verbal compounds are formed by the incorporation
of a word in first sister position of the verb.
Roeper and Siegel (1978: 208)

(37) **Subject Condition**
The SUBJ argument of a lexical item may not be satisfied
in compound structure.
(Selkirk 1982:34)

A second theoretical advantage of our proposal is that no independent aspectual ASP node is required in the derivation of words, as the restrictions relative to aspectual modification follow from the configuration, head-adjunction preventing measuring modification to be obtained word internally.

In fact, ASP nodes (Travis, 1992; Borer, 1995) are partial descriptions for aspectual modification. They fail to predict the basic word/phrase asymmetry with respect to aspectual modification, as our configurational theory predicts.

```
(38)    N'
       /  \
      N    ASPP [+event]
     / \   /  \
    V  -ion Spec ASP'
    |        / \
 destruc    ASP  VP
                / \
               V  DP
                   \
           <-   the city
```

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In our theory, the bare output conditions impose a strong requirement on the form of words and phrases. The two sorts of grammatical objects must be configurationally distinct at the interface in order to be properly interpreted by the performance systems. One part of the distinctiveness lies on the visibility of the head-complement configuration in phrases and its non-visibility in words. This asymmetry makes the correct predictions with respect of aspectual modification.
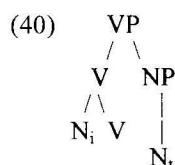
A third theoretical advantage of our proposal is that no head-movement is required to account for the lack of specific reference for the nominal expressions included in compounds (Baker, 1988; Bock-Bannema, 1994).

This is a welcome result, as head-movement violates the Uniformity Condition on movement of the Bare Phrase Structure Theory (Chomsky, 1994).

(39) Uniformity
A chain is uniform with respect to its phrasal status.

The chain created by head-movement violates Uniformity since the tail of the chain is a minimal category and the head of the chain is both minimal and maximal.

(40)
$$
\begin{array}{c}
\text{VP} \\
/\ \backslash \\
\text{V} \quad \text{NP} \\
/\backslash \quad | \\
\text{N}_i \ \text{V} \quad | \\
\quad\quad \text{N}_t
\end{array}
$$

Thus, head-movement is not a possible sort of movement and thus is not available for word-formation including compound formation, given Uniformity on the one hand and a configurational definition of categogy types on the other.

References

Baker, N. 1988. *Incorporation*. Chicago : University of Chicago Press.
Borer, H. 1994. "The Projection of Arguments", UMOP 17, 19-47.
Anderson, S. 1993. *A-Morphous Morphology*. Cambridge : Cambridge University press.
Aronoff, 1994. *Morphology by Itself*. Cambridge : The MIT Press.
Chomsky, N. 1995. *The Minimalist Program*. Cambridge: The MIT Press.
Chomsky, N. 1994. *Bare Phrase Structure*. Cambridge: MIT.
Diesing, M. 1994. *Indefinites*. Cambridge. MIT Press.
Di Sciullo, A.M. 1996a. "Atomicity and Relatedness in Coniigurational Morphology", in A.M. Di Sciullo ed. *Configurations*. Sumerville: Cascadilla Press. pp. 17-41.
Di Sciullo, A.M. 1996b. "Modularity and X⁰/XP Asymmetries", *Linguistic Analysis* 26: 3-28.
Di Sciullo, A.M. forthcoming. "Verbal Structures and Variation", *LSRL* 26.
Higginbotham, J. 1985. "On Semantics", *Linguistic Inquiry* 16, 547-593.
Kayne, R. 1995. *The Antisymmetry of Syntax*. Cambridge: The MIT Press.
Lieber, R. 1992. *Deconstructing Morphology*. Chicago : University of Chicago Press.
Longobardi, G. 1994. "Reference and Proper Names", *Linguistic Inquiry* 25: 609-667.
Matsumoto, M. 1996. "Cognate Objects and Referentiality". GISSL Workshop, Girona.
Rothstein, S. 1983. *The Syntactic Forms of Predication*. Ph.D. dissertation, MIT.

Stowell, T. 1989. "Subject, Specifiers and X-bar Theory", Alternative Conceptions of Phrase Structure. M.R. Baltin and A.S. Kroch (eds.), 232-262, The University of Chicago Press, Chicago.

Tenny, C. 1994. *Aspectual Roles and the Syntax-Semantics Interface*, Kluwer, Dordrecht.

Williams, E. 1980. "Predication". *Linguistic Inquiry* 8, 101-139.

Williams, E. 1994. *Thematic Structure in Syntax*. Cambridge, Mass: MIT Press.