UNIVERSALS OF SEMANTIC CONSTRUAL FOR LEXICAL SYNTACTIC RELATIONS[1]

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Meaning is a function of both
conceptual content and construal
R.   Langacker**1.**

Introduction: the uniformity hypothesis

In this paper we will try to clarify some fundamental issues of the 'Problem of Correspondence' between syntax and conceptual semantics. In particular, we will be dealing with the so-called 'linking problem': namely, how semantic arguments are expressed in syntactic positions. Different solutions of the mapping or linking problem can be found in the recent literature: on the one hand, there are those who believe that the linking is quite direct and uniform (e.g., cf. Baker (1997) or Hale & Keyser (1993) for arguments in favor of the uniformity hypothesis). On the other hand, there are those who are fully convinced that such an ideal hypothesis is clearly untenable, since the mapping is argued to be rather complex, involving a many-to-many relation (e.g., cf. Jackendoff (1990, 1997)).

In this sense, our position will be shown to be clearly sympathetic with that of proponents of the uniformity hypothesis. After characterizing properly some crucial *structural* aspects of the S(yntactic)S(tructure)-C(onceptual)S(tructure) interface, we will show that there are some nontrivial reasons for maintaining a natural version of the "ideal situation" alluded to in Jackendoff (1990: 155-156).

(1)   "The Problem of Correspondence is to state a theory of the relation between conceptual structures and syntax -including a theory of lexical entries, for lexical entries are correspondence rules too. (...) In terms of the simplification of lexical entries, an ***ideal situation*** <(emphasis mine: JM)> would be one in which conceptual relations were reflected directly and uniformly in syntactic relations. (...) This idealization finds expression in Case Grammar (Fillmore (1968)), in GB Theory as the Uniformity of Theta Assignment Hypothesis (Baker 1988), and in Relational Grammar as the Universal Alignment Hypothesis (Rosen 1984; Perlmutter and Postal 1984). Unfortunately, the true story is not so simple. There are many apparent mismatches between conceptual arguments -even *expressed* conceptual arguments- and syntactic positions".

Let us consider one well-known attempt of 'minimizing' the syntax-semantics interface, namely Baker's (1988) U(niformity) of T(heta) A(ssignment) H(ypothesis): cf. (2). The linking principles that give content to the 'strong' version of UTAH have been recently

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put forward by Baker (1997): cf. (3). According to Baker (1997: 120), "UTAH is sensitive to a medium-coarse grained version of Theta theory, one that distinguishes three primary (proto)-roles: agent/causer, theme/patient, and goal/path/location. The conditions that it puts on the structural realization of these roles seem to be absolute, rather than relative, and they map the theme to a higher position than the goal".

(2)   "Identical *thematic* <(emphasis mine: JM)> relationships between items are represented by identical *structural* <(emphasis mine: JM)> relationships between those items at the level of D-Structure."

<div align="right">Baker (1988: 46)</div>

(3)   (i)   An agent is the specifier of the higher VP of a Larsonian Structure.
       (ii)   A theme is the specifier of the lower VP.
       (iii) A goal, path or location is the complement of the lower VP

<div align="right">Baker (1997: 120-121)</div>

Quite particularly, we will try to show that the identification of "thematic" with 'contentful' and that of "structural" with 'syntactic' (cf. (2)) have caused a lot of misinterpretations of the syntax-semantics interface. The following passage from Hale & Keyser (1997a: 40) is quite representative of such a syntactocentric position:

(4)   "While meaning is a fine heuristic, its use is methodologically incorrect within the framework we are assuming here, not merely because ***meaning is slippery, a thin reed to lean on,*** <(emphasis mine: JM)> but because we maintain that certain crucial aspects of meaning are dependent on the very *structural* features whose identification is at issue. If we 'knew the meaning", we would know the structure, perforce, because we know the meaning *from* the structure."

<div align="right">Hale & Keyser (1997a: 40)</div>

As we will see in Section 3, Hale & Keyser claim that "the very *structural* features" alluded to in (4) are purely syntactic (i.e., non-meaningful). To be sure, we agree with them that 'conceptual content' or 'background/encyclopedic knowledge' is "slippery", but this does not mean that we must turn to syntax to determine "certain crucial aspects of meaning". Indeed, "we know the meaning *from* the structure", but we will argue that we do not "know" the meaning from the syntactic or non-meaningful structure, but from the *meaningful structure*.

Baker's (1996) position with respect to the linking problem is also clearly syntactocentric when he claims that "the reason linguistic theory seems to make use of exactly three proto-thematic roles is because X-bar theory defines exactly three kinds of positions -sister of X°, sister of X', and outside XP- so thematic distinctions are neutralized to the point that they fit into this template provided by the language faculty". Baker (1997)

recognizes that there is a potential problem with such a syntactocentric position if X-bar theory turns out to be derivative (Chomsky (1995)).

Despite our differences with some current syntactocentric work on the linking problem, we would like to point out here that we share with them their attempt of 'minimizing' a non-trivial part of the complexity of the SS-CS. In fact, we are fully convinced that the uniformity hypothesis must be regarded as desirable if we want to give a principled explanation to important questions such as those put forward by Hale & Keyser (1993) (cf. (5a-b)). Although these linguists adopt a syntactocentric position (i.e., it is syntax that plays an important role in the solution of ((5a-b)), we want to argue that it is relational semantics rather than relational syntax what appears to be relevant here.

(5)   a. What is a possible 'lexical item'?
        b. Why are there so few (linguistically relevant) theta roles?

Finally, it should also be noted that the uniformity hypothesis is also pursued by those who claim that it is aspectual and/or event-based notions that turn out to be relevant to the semantics-syntax mapping (cf. Tenny (1987, 1994), Grimshaw (1990), Borer (1994), van Hout (1996), Arad (1996), or Rosen (1996), among others).
Against the aspectual approach, Baker (1997: 119) concludes that "aspectual distinctions do not determine the underlying structure of a clause, but something more like thematic roles does". We agree with Baker's (1997) criticisms of the aspectual approach, but we will see that the conceptual content encoded in so-called 'thematic roles' is not directly relevant either.

## 2. Relational Construal at the Syntax-Conceptual Semantics Interface: *Relational Semantics*

Our main proposal concerning the interface between Conceptual Semantics and Syntax is that there is a syntactically relevant conceptual structure, which can be represented in a *meaningful* tree structure (cf. also Bouchard (1995)): one of the basic hypotheses adopted here is that the mere formalism that is used to represent the so-called 'Argument Structure' level has meaning, i.e.*,* there is an inherent semantics to the formal relations one can establish among the elements of tree structures such as those in (6) (i.e., the *R*(elational) *S*(emantic) *S*(tructure) of transitive structures), (7) (i.e., the RSS of unergative structures) or (8) (i.e., the RSS of unaccusative structures). For example, let us consider the more complex RSS, i.e., that in (6): there are two complete semantic relations, *R* and *r*. Given that each complete relational element must always involve two related elements, each of them will project up to a third level by virtue of binary branching. The related elements are situated in a different position with respect to the relational element, one occupying the specifier position and the other one occupying the complement position. In (6) there is only one 'relation' that has no specifier but only a complement. This 'semi-relation' is *T*. *T* can be regarded as a *transition* between the two (complete) relations *R* and *r*. *r* can be viewed as a basic *spatial* relation in the sense that it purely relates two non-relational elements into our cognitive space (e.g., adapting Talmy's (1985) terminology, let us call them 'Figure' (specifier of *r*) and 'Ground' (complement of *r*)). *R* can be considered to be a *source* relation in the sense that its complement can come into existence by virtue of being immediately related with the superior

relational node *R*, whose specifier can be interpreted as the 'Originator' (in accordance with van Voorst's (1988) or Borer's (1994) terminology).
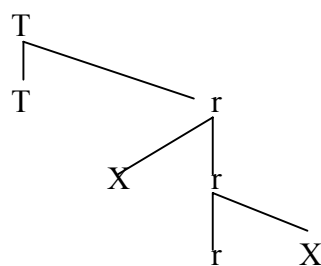
(6) **The RSS of transitive structures**
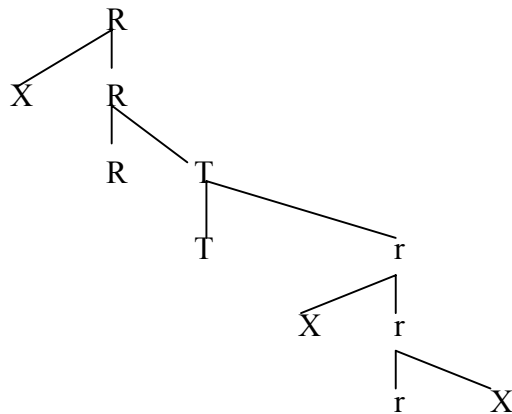
(7) **The RSS of unergative structures**
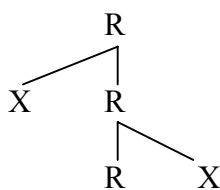
(8) **The RSS of unaccusative structures**

From a localist point of view, we want to argue that the formal relations one can find in structures such as those in (6), (7), and (8) turn out to be *meaningful* if they represent basic relations of our cognitive space: basically, *source* relations (**R**), *transitional* relations (**T**) and *spatial* relations (**r**). For our present purposes, we have no objection to those who want to claim that ***R, T***, and ***r*** *can* be argued to take on two different values according to their 'corresponding' conceptual semantics (cf. (9)), but it is important to note that these binary values are irrelevant to the syntactic projection of arguments. It is in this sense that conceptual content will be considered to be *directly* irrelevant to the syntax. Our main claim

is that only the *relational*/structural part (but not the contentful/aspectual one) of conceptual structures like those in (6)-(8) is *directly* relevant to the syntax-semantics interface.

(9) **Relational**   **R**:   (+) CAUSE/DO   / / (-) HAVE
    elements:[2]   **T**:   (+) BECOME/GO / / (-) BE
                 r: (+) TERMINAL/DIRECTIONAL RELATION
                     (-) CENTRAL COINCIDENCE/LOCATIVE RELATION

(10) **Non-relational element**:   **X**

We exemplify the RS analysis with some representative examples like those in (11), which are typically discussed in the lexical semantics-syntax literature.[3]

(11)   a. Octavius went to the hall: *T (POSITIVE TRANSITION) - X (OCTAVIUS) - r (DIRECTIONAL RELATION) - X (HALL).*
     b. Octavius remained in the hall: *T (NEGATIVE TRANSITION) - X (OCTAVIUS) - r (LOCATIVE RELATION) - X (HALL).*
     c. Octavius went into the hall: *T (POSITIVE TRANSITION) - X (OCTAVIUS) - r (DIRECTIONAL RELATION) - r (LOCATIVE RELATION) - X (HALL).*
     d. Octavius slept/cried/worked: *X (OCTAVIUS) - R (DO) - X {SLEEP/CRY/WORK}.*
     e. Octavius put the book onto the shelf: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (BOOK) - r_1 (DIRECTIONAL RELATION) - r_2 (LOCATIVE RELATION) - X (SHELF).*
     f. Octavius broke/emptied the glass: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (GLASS) - r (TERMINAL RELATION) – X {BREAK / EMPTY}.*
     g. Octavius helped/pushed/chased Claudia: *X (OCTAVIUS) - R (CAUSE) - X (CLAUDIA) - T (NEGATIVE TRANSITION) - r (CENTRAL COINCIDENCE RELATION) - X {HELP/PUSH/CHASE}.*
     h. Octavius gave an apple to Claudia: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (APPLE) - r (DIRECTIONAL RELATION) - X (CLAUDIA).*

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[2]   The binary values are irrelevant to the syntactic projection of arguments. Feel free to use your own favorite "syntactically relevant" semantic primitives (ACT, CHANGE, ...) instead of the chosen ones. On the contrary, the just three meaningful relations are not open to 'free choice'.

[3]   Cf. Arad (1996), Baker (1997), Bierwisch (1996), Borer (1994), Bouchard (1995), Demonte (1994), Dowty (1991), Goldberg (1995), Grimshaw (1990), Gropen *et al*. (1991), Hale & Keyser (1992, 1993), van Hout (1996), Jackendoff (1990), Juffs (1996), Kaufmann (1995), Levin & Rappaport Hovav (1991, 1995), Mateu (1998), Mulder (1992), Pesetsky (1995), Pinker (1989), Pustejovsky (1991,1995), Rosen (1996), Talmy (1985), Tenny (1994), Wechsler (1995), Wunderlich (1997), Zaenen (1993), Zubizarreta (1987), among others.
    For reasons of space, the RS analysis is given in flat structures. The reader is prayed to convert them into their truly structural correspondents of (6)-(7)-(8).

i. Claudia frightened Octavius: *X (CLAUDIA) - R (CAUSE) - T (POSITIVE TRANSI-TION) - X (OCTAVIUS) - r (TERMINAL RELATION) - X (FRIGHT))*.

j. Octavius feared Claudia's fame: *X (OCTAVIUS) - R (HAVE) - X (FAME) - r (CENTRAL COINCIDENCE RELATION) - X (FEAR)*.

k. Octavius loaded the books onto the truck: *X (OCTAVIUS) - R (CAUSE) – T (POSITIVE TRANSITION) - X (BOOKS) - r$_1$ (DIRECTIONAL RELATION) - r$_2$ (LOCATIVE RELATION) - X (TRUCK)*.

l. Octavius loaded the truck (with books): *X (OCTAVIUS) - R (CAUSE) – T (POSITIVE TRANSITION) - X (TRUCK) - r (TERMINAL RELATION) - X (LOAD)*.

m. Octavius shelved the book: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (BOOK) - r (TERMINAL RELATION) - X (SHELF)*.

n. Octavius buttered the bread: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (BREAD) - r (TERMINAL RELATION) - X (BUTTER)*.[4]

One important caveat is in order here: the conceptual stuff depicted by capital letters must not be interpreted "as it stands". For example, we do *not* actually claim that the non-relational semantic element *BREAK* in (11f) is to be interpreted as the noun 'break'. Rather what is required is that (the) *BREAK* (depicted in capital letters) be interpreted as the non-relational semantic element included in the verb 'break'. Accordingly, it is not surprising at all that in many cases non-relational semantic elements lack their corresponding non-relational *morpho*syntactic elements. For example, *break* can be argued to be a 'denominal verb' in English (cf. Hale & Keyser (1997a)), but its exact corresponding version in Spanish (cf. *romper*) cannot. The very same issue will always arise when dealing with 'deadjectival verbs' (see *empty* in (11f)). We will return to the argument structure of deadjectival verbs in Section 3.

As pointed out above, the conceptual/aspectual material between parentheses is fully irrelevant to the syntactic projection of arguments. Thus, for example, (11a) and (11b) have the same RSS, that in (8), despite their having different conceptual/aspectual material associated with their relational positions. According to the RS analysis, it is clear that *all* unaccusative verbs represent a unified, *schematic* semantic 'class', in the sense that they all have the same syntactically relevant conceptual configuration, namely, the RSS in (8), where the spatial relation *r* can be simple as in (11a) -(11b), or complex as when it encodes both the directional relation and the locative relation (see (11c)). Given this, our proposal is that the so-called unified syntactic approach to unaccusativity can be put in correspondence with a unified semantic approach in a quite elegant way.

If our analysis is on the right track, note that there is no reason to propose that there are three *linking rules* that hold for the unaccusative structures (cf. (12): the *Directed Change Linking Rule*, the *Existence Linking Rule*, and the *Default Linking Rule*, which are put forward by Levin & Rappaport Hovav (1995)). As noted, our claim is that the conceptual material that can be argued to be matched with the relational elements in (6)-(8) is irrelevant to the syntactic projection of arguments.

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[4]   Contra Jackendoff (1990), 'locative verbs' (cf. (11m)) and 'locatum verbs' (cf. (11n)) are to be analyzed as having the same distribution of arguments (cf. Hale & Keyser (1997a)).

(12)   If all unaccusative structures have the same RSS (cf. (8)), there is no need for three different descriptive linking rules (cf. Levin & Rappaport Hovav (1995)).

>   a. *Directed Change Linking Rule*
>   The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.
>   b. *Existence Linking Rule*
>   The argument of a verb whose existence is asserted or denied is its direct internal argument.
>   c. *Default Linking Rule*
>   An argument of a verb that does not fall under the scope of any of the other linking rules is its direct internal argument.

Were our present proposal too simplistic, how could we give a principled explanation of Levin & Rappaport Hovav's stipulation that there are *three* linking rules for unaccusative verbs but only *one* for unergative verbs, that in (13))? Why isn't it the other way around?

(13)   *Immediate Cause Linking Rule*
        The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument.

On the other hand, if we want to maintain the 'ideal situation' commented on above, that is, the strong version of the uniformity hypothesis, it is required that a crucial distinction inherent to what is referred to as 'meaning' be drawn. Let us explain it with some simple examples. For example, consider the sentences in (14):

(14)   a. The chimney smoke.
        b. The chimney gave smoke off.
        c. The smoke went out of the chimney.

Adapting Langacker's (1987, 1990, 1993) claim that "meaning is a function of both conceptual content and construal", we want to argue that the sentences in (14) represent three different 'construals' of an allegedly identical 'conceptual scene': (14a) is to be associated to the unergative RSS (cf. (7)), (14b) is to be associated to the transitive RSS (cf. (6)), and (14c) is to be associated to the unaccusative RSS (cf. (8)).

Unfortunately, the distinction between structural construal and conceptual content is not always delimited clearly in Jackendoff's work: for example, the unergative sentence of (14a) is assigned the Conceptual Structure in (15) by Jackendoff (1990: ex (29), p. 168). As a result, note that the 'linking' turns out to be non-uniform or indirect.

(15)   The chimney smoke.
        CS: [GO ([SMOKE], [FROM [IN [CHIMNEY].

<div align="right">Jackendoff (1990: ex (29), p. 168)</div>

With this relevant distinction in mind, let us comment on Jackendoff's (1997: 34-35) assertion in (16), which apparently knocks down the uniformity hypothesis:

(16)   "The syntactic position of direct object can express the thematic roles Theme, Goal, Source, Beneficiary or Experiencer (...) To claim dogmatically that these surface direct objects must all have different underlying syntactic relations to the verb, as required by UTAH, necessarily results in increasing unnaturalness of underlying structures and derivations."

<div align="right">Jackendoff (1997: 34-35)</div>

To be sure, an important remark is in order here: Baker's (1988) UTAH should not be intended to hold for substantive/contentful elements like 'theta roles' as they are conceived of in Gruber (1965, 1997), or in Jackendoff (1990), but rather the range of such a hypothesis should be restricted to the non-relational elements (Xs) to be drawn from RSSs.

The RSSs in (17), repeated from (11), show that Jackendoff's criticism in (16) against the 'uniformity hypothesis' does not apply to our RS theory:

(17)   a. RSS containing a "Theme object":
Octavius put the book onto the shelf: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (BOOK) - r_1 (DIRECTIONAL RELATION) - r_2 (LOCATIVE   RELATION) - X (SHELF).*

b. RSS containing a "Goal object":
Octavius loaded the cart (with coal): *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (CART) - r (TERMINAL RELATION) - X (LOAD).*

c. RSS containing a "Source object":
Octavius emptied the glass: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSI- TION) - X (GLASS) - r (TERMINAL RELATION) - X (EMPTY).*

d. RSS containing a "Beneficiary object":
Octavius helped Claudia: *X (OCTAVIUS) - R (CAUSE) - X (CLAUDIA) -- T (NEGATIVE TRANSITION) - r (CENTRAL COINCIDENCE RELATION) – X (HELP).*

e. RSS containing a "Experiencer object":
Claudia frightened Octavius: *X (CLAUDIA) - R (CAUSE) - T (POSITIVE TRANSI- TION) - X (OCTAVIUS) - r (TERMINAL RELATION) - X (FRIGHT).*

In striking contrast to Jackendoff (1990: chap. 11), Relational Semantics provides a more direct and uniform 'linking': the 'external argument' is to be associated with the specifier of R, the 'direct internal argument' is to be associated with the specifier of r, and the 'indirect internal argument' is to be associated with the complement of r

Current theories of thematic structure have failed to make the crucial distinction argued for here, namely, that between 'non-relational roles', which are extracted from pure meaningful relations belonging to semantic construal, and 'situational roles', which are

usually defined, and sometimes formalized (cf. Jackendoff (1990)), on the traditional basis of Fillmorian or Gruberian intuitive terms.

We feel strongly that this happened because they neglected what is expressed clearly in Bouchard (1995). Consider his relevant remarks in (18):

(18)   "The assumption that information from background knowledge is involved in the mapping from semantic structures to syntactic structures has led researchers to postulate semantic representations which are very different from the syntactic representations they assume (..) If inadequate semantic representations are adopted, then the correspondence between semantics and syntax is impossible to state because one of the elements in the relation does not have the appropriate properties".

<div align="right">Bouchard (1995:3-8)</div>

With Bouchard's remarks in mind, let us exemplify it with some well-known cases. In particular, we will review Jackendoff's (1985, 1990) analysis of *climb* and Jackendoff's (1990) solution of the so-called 'locative alternation' problem.

2.1. The case of *climb* revisited

In order to express the argument structure alternation exemplified in (19), Jackendoff proposes the unification device in (20) for the lexical entry of *climb*:

(19)   a. Joe climbed (for hours).
          b. Joe climbed the mountain.

          c. Joe climbed $\begin{cases} \text{down the rope.} \\ \text{along the ridge.} \\ \text{through the tunnel.} \\ \text{etc.} \end{cases}$

<div align="right">Jackendoff (1990: 76; ex. (22))</div>

(20)

$$\begin{bmatrix} \text{climb} \\ \text{V} \\ \underline{\quad} <XP_j> \\ [_{Event}\, GO\, ([_{Thing} \quad]_i\, ,\, [_{Path} \quad \{TO\, ([_{Place}\, TOP\text{-}OF\, ([_{Thing} \quad]_j\,)])\}_{\{j\}}\,)] \end{bmatrix}$$

<div align="right">Jackendoff (1990: 76; ex. (24))</div>

According to Jackendoff's notation, the Path-constituent in (20) abbreviates the two possibilities in (21):

(21)	a. [$_{Path}$ TO ([$_{Place}$ TOP-OF ([$_{Thing}$]$_j$)])]; cf. (19b)

　　　b. [$_{Path}$]$_j$;   cf. (19a) (its Path being unspecified), and (19c)

　　　To be sure, the conceptual analysis of (20) relates well with our intuitions about our background knowledge concerning *climb*. However, we cannot trust in them when *construing* the syntactically relevant conceptual structures (i.e., the RSSs). Despite appearances, the RSS of (19a) does not encode any transitional semi-relation. Its RSS is that depicted in (22).

(22)	In spite of the fact that *Joe climbed* and *Joe cried* refer to different background knowledge, both sentences have the very same RSS: *X (JOE) - R (DO) - X {CLIMB/CRY}*.

　　　The three 'unaccusative diagnostics' depicted in (23) (auxiliary selection in (23a), postverbal subjects without determiner in (23b), and absolute participial clauses in (23c)) are enough to show that *climb* in (19a) is basically associated with an unergative structure.

(23)	a. Italian:Gianni ha /*è scalato (cf. ^{ok} Gianni è arrivato /venuto...).
　　　　　　　Gianni HAS/*IS climbed   (lit. Gianni IS arrived / come...).
　　　a'. Dutch: dat Jan geklommen heeft/*is.
　　　　　　　　that Jan climbed   HAS/*IS
　　　b. Catalan: *Escalen   nois (cf. ^{ok} Arriben/vénen nois...).
　　　　　　　　Climb-3perspl   boys (lit.   Arrive / come boys...).
　　　c. Catalan:*Una vegada escalats   els nois,... (cf. ^{ok} arribats/vinguts els nois,...).
　　　　　　　　Once   climbed-pl the boys,...(lit. arrived/come   the boys,...).

　　　Concerning the transitive sentence in (19b), its corresponding RSS is given in (24a). To be sure, in (24a) *Joe* can be said to be the entity that has moved to the top of the *mountain* (as depicted in (21a)). This notwithstanding, the description of this 'fact' is not what the speaker has semantically *construed* in (24a), but in (24b).

(24)	a. Joe climbed the mountain (=(19b))
　　　X (JOE) - R (CAUSE) - T (POSITIVE TRANSITION) - X (MOUNTAIN) - r (TERMINAL RELATION) - X (CLIMB).

　　　b. Joe climbed to the top (of the mountain).
　　　T (POSITIVE TRANSITION) - X (JOE) - r (DIRECTIONAL RELATION) - X (TOP) is **conflated** with *X (JOE) - R (DO) - X (CLIMB)*

　　　That is to say, the sentences in (24a) and (24b) can be argued to refer to an identical conceptual scene, but they represent two different construals of such a conceptual scene. While (24a) is to be associated with a transitive RSS, (24b) involves a conflation of two different RSSs: the main unaccusative RSS in (24b) (that is, that corresponding to *Joe went to the top*) is conflated with the subordinate unergative RSS in (24b) (that is, that corresponding to *Joe climbed*). Two arguments in favor of the conflation process involved in (24b) are

presented in (25): on the one hand, the so-called unaccusativization process involved in (24b) correlates with the selection of the *BE* auxiliary in languages like Dutch (see (25a), and compare it with that in (23a'), where the *HAVE* auxiliary is selected).

On the other hand, conflation processes like those involved in sentences like *Joe climbed to the top* or *Joe danced into the room* do not exist in Romance languages like Catalan or Spanish (see (25b)). To put it in Talmy's words, conflation of motion with manner is not the lexicalization pattern found in Romance languages . See Mateu & Rigau (1999) for an attempt to integrate Talmy's insights into Chomsky's (1995) minimalist approach.

(25)   a. dat Jan naar de top geklommen is.
           that Jan to   the top climbed   IS

        b. Catalan: *El Joe va escalar al cim   de la muntanya.
           Spanish: *Joe   escaló   a la cima de la montaña.
                     Joe   climbed   to the top of the mountain

        Catalan: *El Joe va ballar a dins de l'habitació
        Spanish: *Joe bailó a la habitación
                  Joe danced into the room.

Let us now review Jackendoff's (1990) solution of the 'locative alternation' problem.

2.2. The 'locative alternation problem' revisited

(26)   a. Bill loaded the books onto the truck.
        b. Bill loaded the truck (with books).

According to Jackendoff (1990: 130), "*the thematic relations in each case are the same* <(emphasis mine: JM)>: the books go onto the truck (...)The change is in which entity is viewed as most directly 'affected' by Bill's action, and the direct object has a stronger claim on the role in either case. Thus the action tier is strongly implicated in choice of objects as well as subjects".

Given this, the lexical entry for *load* in the frame NP-PP is represented as in (27):

(27) $\begin{bmatrix} \text{load} \\ \text{V} \\ \underline{\quad} \text{ NP}_j <[_{PP} \text{ P NP}_k]> \\ [\text{CAUSE } ([\alpha], [\text{GO } ([\beta], [\text{TO } [\text{IN /ON } [\quad]_k])])]) \\ [\text{AFF } ([\quad]^{\alpha}_i, [\quad]^{\beta}_j)] \end{bmatrix}$

In addition, Jackendoff's lexical entry for *load* in the NP-*with*-NP frame is depicted in (28):

(28)
$$\begin{bmatrix} \text{load} \\ \text{V} \\ \underline{\quad\quad} \text{NP}_j \\ [\text{CAUSE ([}\alpha\text{], [INCH [BE([\ ], [IN}_d\text{ /ON}_d\text{ [}\beta\text{]])]])])} \\ [\text{AFF ([\ ]}^\alpha{}_i\text{ , [\ ]}^\beta{}_j\text{)]} \end{bmatrix}$$

<div align="right">Jackendoff (1990: ex. (45), p. 173)</div>

In (28) the Theme is not coindexed to the syntax (note that it is not bound by any role in the action tier), whereas the Goal is coindexed to the direct object position via the Patient role. Moreover, to explain that the books end up in the truck, Jackendoff proposes that the *with*-phrase in (26b) meets the structural description of the "Adjunct Rule" in (29), and then comes to be interpreted as Theme:

(29)   With-*Theme Adjunct Rule*
   If V corresponds to [... [BE([X], [F ([$_{\text{Thing}}$])])]...],
   with [X] unindexed, and NP corresponds to [Y],
   then [$_S$ ... [$_{VP}$ V ... [$_{PP}$ with NP]...] may correspond to
   [... [BE ([X - Y], [F ([$_{\text{Thing}}$])])] ...]

<div align="right">Jackendoff (1990: 169; ex. (32))</div>

This said, we would like to make the following remarks: To be sure, both (26a) and (26b) can be argued to refer to an identical conceptual scene, according to which 'the theme' (i.e., *the books*) is the entitiy that is in motion towards 'the goal' (i.e*., the truck*). This notwithstanding, it is important to keep in mind that the same conceptual scene can be semantically *construed* in different ways. In the present case, note that this involves a different (re)arrangement of the semantic arguments: that is to say, *the truck* is construed as *Ground* (in our terms, as complement of *r*) in (26a), but as *Figure* (in our terms, as specifier of *r*) in (26b). Their corresponding RSSs (adapted from (11k-11l)) are given in (30):

(30)   a. Octavius loaded the books onto the truck: *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (BOOKS) - r$_1$ (DIRECTIONAL RELATION) - r$_2$ (LOCATIVE RELATION) - X (TRUCK).*
   b. Octavius loaded the truck (with books):   *X (OCTAVIUS) - R (CAUSE) - T (POSITIVE TRANSITION) - X (TRUCK) - r (TERMINAL RELATION) - X (LOAD).*

*His rebus cognitis,*the relevant conclusion appears to be the following: For any I-Semanticist, his/her analyzing the **structural** aspects of the syntax-semantics interface basically ought to be a task to be preferably made on the reliable basis of the linguistic

structures provided by the Internal Language, rather than on the (formalized or not) 'facts' provided by our intuition/common sense or whatever.

3. Relational Syntax & Relational Semantics

In this section, we will try to show why our proposal is not to be identified with Hale & Keyser's syntactocentric position expressed in (31)

(31)   "That the list of thematic role terms is not endless or even large follows, we claim, from the fact (if it is a fact) that *the roles are derivative of lexical syntactic relations* <(emphasis mine: JM)> (...) Again, however, these semantic roles, like *the elementary semantic interpretations in general are derivative of the lexical syntactic relations* <(emphasis mine: JM)>".

<div align="right">Hale & Keyser (1993: 69; 72)</div>

Despite appearances, our view of 'argument structure' is not syntactocentric: in fact, our position turns out to be more in tune with that of Bierwisch & Lang (1989), Kiparsky (1997), or Wunderlich (1997). According to them, for example, any limitations on the number of (linguistically relevant) theta-roles can be accounted for by the restricted number of basic semantic predicates in lexical decomposition. To put it in our terms, it is not (relational) syntax, but rather (relational) semantics what is actually constraining the notion of 'possible lexical item' (and more specifically, that of 'possible argument structure'), since this notion can be argued to be delimited by the number of *semantic* relations that can be encoded in a single lexical item (cf. Mateu (1997)).

Inspired by Bouchard (1995), we claim that notions like 'structure dependency', 'binary branching', 'unambiguous projection', 'specifier/complement/head positions', 'dominance' or 'sisterhood' (among others), which have been thought to be *only* syntactic or purely formal, can also be argued to be *meaningful* notions when applied to relational semantics. In other words, it is important to note that, although these notions can be argued to be relevant to RSSs, this does not mean that syntax is relevant to these conceptual configurations. Rather, the conclusion that must be drawn is that these notions cannot be reduced to be purely syntactic (i.e., non-meaningful) primitives, but they are more general notions that can also be applied to other *non-syntactic* levels of mental representation.

Accordingly, it is clear that Hale's statement in (32) must be reconsidered in the sense that the structural combinations in (33) cannot be argued to be purely syntactic *ex principio*.[5]

(32)   "For the lexical projections, just the relations head-complement and subject-predicate are relevant -this is part and parcel of the very notion of 'lexical head'"

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[5]   According to Hale, lexical heads can enter into four possible combinations: that is, in (33a) *x* takes a complement; in (33b) *x* takes a specifier and a complement; in (33c) *x* only takes a specifier, being a host category that provides the necessary configuration for *x* to have a specifier; finally, in (33d) *x* takes no specifier and no complement either. The English prototypical morphosyntactic realizations of the lexical syntactic heads in (33) are the following: *V* in (33a), *P* in (33b), *A* in (33c), and *N* in (33d).
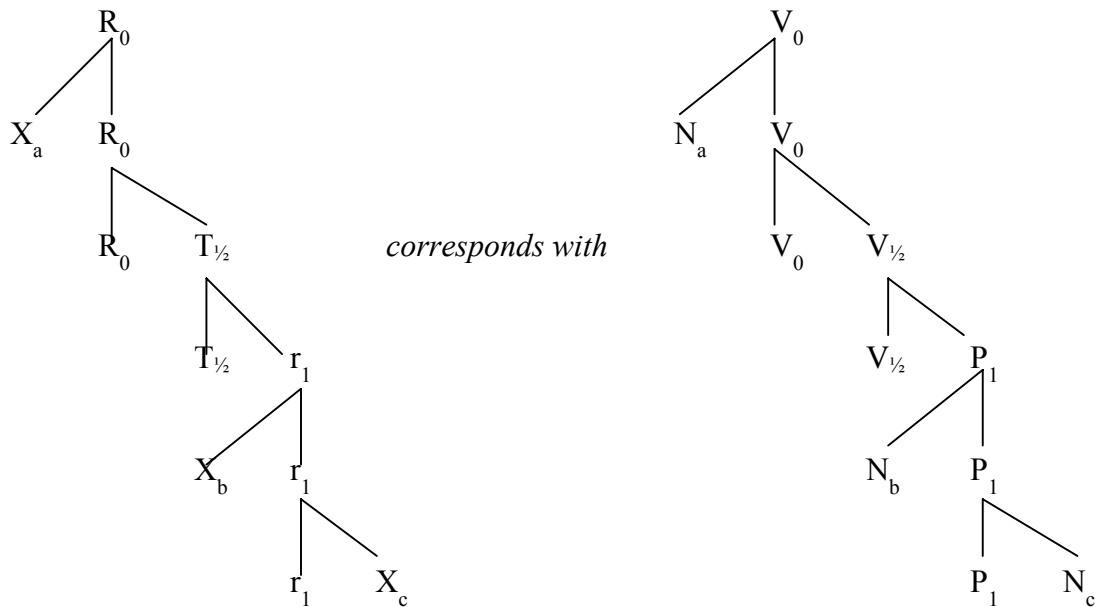
(33)   Head (x); complement (y of x), predicate (x of z)

(a) x (b) x (c) α (d) x

    x y z x z α

                  x y α x
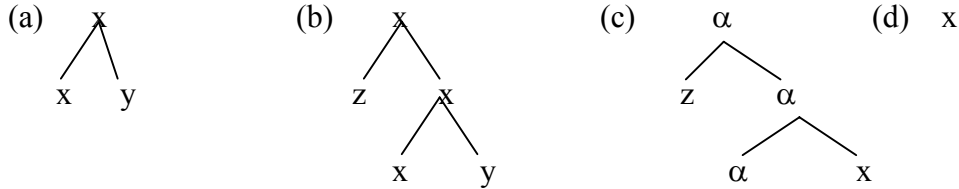
Hale (1995: 1)

In fact, as can be seen in (34), the *non-meaningful* syntactic relations extracted from the L(exical) S(yntactic) S(tructures*)* (that is, those on the right of (34)) are ***parasitic*** on the *meaningful* relations extracted from the RSSs (that is, those on the left of (34)):[6] as a result, note that the relation subject-predicate has an utterly derived status, and the existence of the relations head-complement and specifier-head are always dependent on the semantics of the relational element.
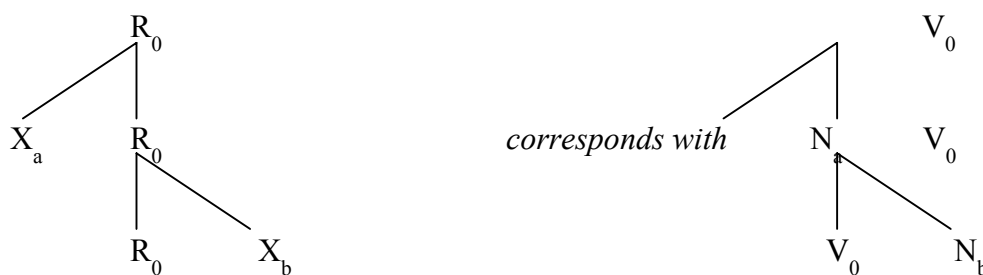
(34)   a. Octavius sent a letter to Mary.

R_0 V_0

X_a R_0 N_a V_0

    R_0 $T_{1/2}$ *corresponds with* V_0 $V_{1/2}$

         $T_{1/2}$ r_1 $V_{1/2}$ P_1

            X_b r_1 N_b P_1

                r_1 X_c P_1 N_c

---

[6]   RSS's and LSS's are explicitly linked by subscripted indices. Feel free to use another device to this end. Crucially, the relation to be established between them is that of a 'correspondence'(cf. Jackendoff (1997)). Note also that the incorporation/conflation processes involved in the LSS's have not been represented: feel free to use 'adjunction' or 'substitution' in the analysis of morphosyntactic incorporation (cf. Baker (1988), Hale & Keyser (1993)).

Unlike Hale's analysis of (33c), we postulate that 'A(djective)' is not a primitive element of grammatical theory (cf. the x in (33c)). Rather, our claim is that 'A' can be decomposed into two elements: a morphologically unspecified relational syntactic element corresponding to *r*, which is represented by the @ symbol in (34b), *plus* a non-relational syntactic element *X*, the latter being incorporated into the former.
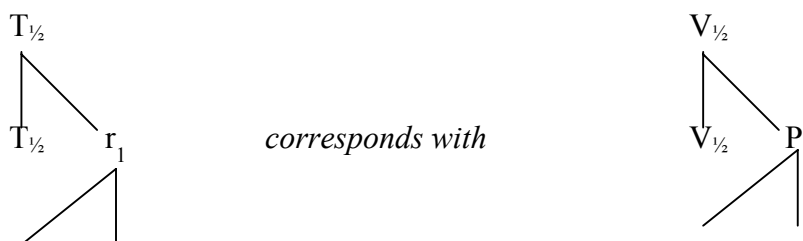
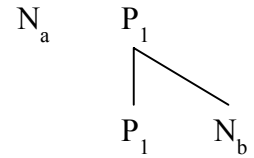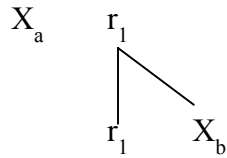(34)   b. Octavius emptied the glass.

corresponds with
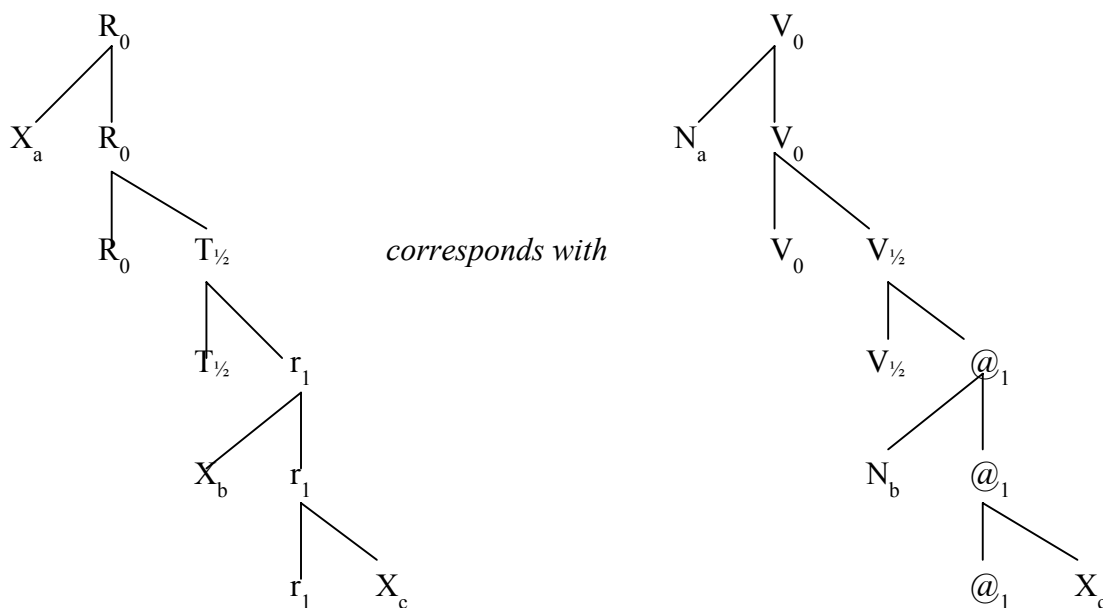
c. Octavius laughed. Cf. Basque *barre egin* 'laugh do' (Hale & Keyser (1991, ff.))

corresponds with

d. Octavius went to the hall

corresponds with

$$X_a \quad r_1 \qquad\qquad\qquad N_a \quad P_1$$
$$\overbrace{\quad r_1 \quad X_b \quad} \qquad\qquad \overbrace{\quad P_1 \quad N_b \quad}$$

Given the parallelism between the meaningful RSS's and the non-meaningful LSS's depicted in (34), one can imagine why it is so easy to get wrong if the *autonomous* relational power of semantics is overlooked. Thus, by recognizing that formal notions like 'structure dependency', 'binary branching', 'specifier/head/complement positions', 'sisterhood', among others, are appropriate notions to relational semantics as well as to relational syntax, and by recognizing the important contribution of the localist theories of cognitive space to the study of semantics, one can better appreciate the correspondence between semantics and syntax (rather than the derivation from syntax to semantics).

To be sure, one important question that appears to be relevant here is the following one: must we continue proposing the existence of LSS's? According to Jackendoff (1997), we must not. We must not fall into the same error Generative Semanticists made *illo tempore*, namely syntacticize lexical semantics. However, in our opinion, we do not see decisive arguments against the existence of LSS's such as the complex one depicted in (34b) if we are willing to accept those of (34c) and (34d) for the (say) 'visible' cases (the example in (34c) being a visible one in Basque).[7] Moreover, as noted above, transitive structures like that of *empty* are nothing more than unergative structures dominating unaccusative structures.

Finally, we would like to conclude this section with a non-trivial reply to Jackendoff's argument in (35) against the uniformity of the relation between syntax and semantics:

(35)   "It is widely accepted that syntactic categories do not correspond one to one with conceptual categories (e.g., N: Object (*dog*), Situation (*concert*), Place (*region*), etc.) (...); P: Place (*in the house*), Time (*on Tuesday*), Property (*in luck*); Adv: Manner (*quickly*), Attitude *(fortunately)*, Modality (*probably*))".

Jackendoff (1997: 33-34)

To be sure, Jackendoff's argument is quite indisputable, but note that what we are claiming here is that syntax does not interact directly with pure conceptual content but with *Relational Semantics*. Accordingly, the more uniform correspondences that can be drawn are the following ones in (36):

---

7   Complex LSS's have been argued to be crucial in order to account for the parametric differences concerning Talmy's (1985) conflation processes (cf. Mateu (1998b), Mateu & Amadas (1999), and Mateu & Rigau (1999)). Cf. Hale & Keyser (1991, ff.) for more arguments in favor of the structural complexity in the Lexical Syntax domain.

(36)   *N* corresponds with a non-relational semantic element (i.e., *X*),[8] *V* corresponds with
         {*R/T*}, *P* corresponds with *r*, and *Adj* and *Adv* correspond with *r* + *X* (*X* being
         incorporated into *r*). In non-predicative contexts, *Adj*'s modify non-relational
         elements, whereas *Adv*'s modify relational elements.[9]

         Quite interestingly, a principled explanation of the very limited number of lexical
syntactic categories can then be provided once the RS is taken into account (see Hale &
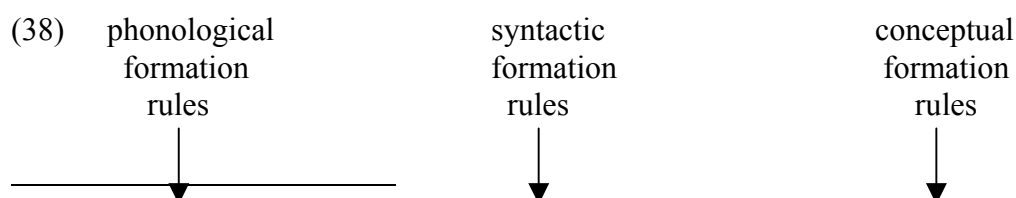Keyser (1993) for related discussion).

4. 'Relational Semantic Structure' as a 'Syntactic Interface Level of Conceptual Structure'

In this section, we will sketch out which status could be given to LSS's and RSS's in Jackendoff's (1997) tripartite model of the Language Faculty. We will also review the requirement that the so-called "syntactically relevant aspects of meaning" be included in a (linguistic) semantic level, this level being independent from a purely (i.e., non-linguistic) conceptual level (cf. Bierwisch & Lang (1989), Pinker (1989), Bouchard (1995), or Levin & Rappaport Hovav (1995)). With Jackendoff (1983, 1990, 1997), we will see that there are no reasons for arguing for such a "conceptual necessity".

         Before doing so, it will be useful to go over Jackendoff's (1997) basic proposals. Although our 'idealist' proposal differs from Jackendoff's (1990, 1997) particular treatment of the SS-CS interface in some important respects, we basically agree with his big picture of how the Language Faculty is mentally represented (see (37)-(38)):
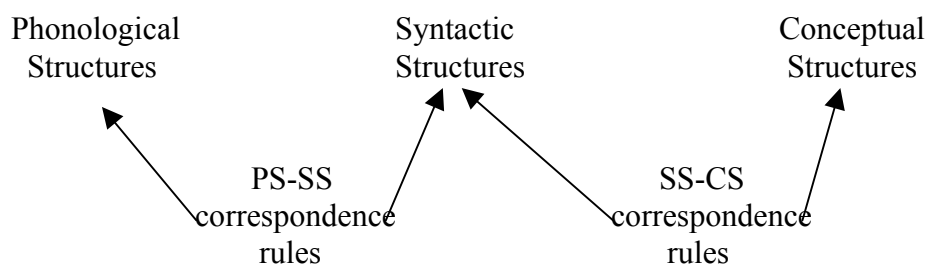
(37)   "We can regard a full grammatical derivation, then, as three independent and parallel derivations, one
         in each component, with the derivations imposing mutual constraints through the interfaces. The
         grammatical structure of a sentence can be regarded as a triple <PS, SS, CS>. Following Chomsky
         1993, we can think of a (narrow) syntactic derivation as 'converging' if it can be mapped through the
         interfaces into a well-formed PS and CS; it 'crashes' if no such mapping can be achieved. Figure 2.1
         <(our (38) JM)> sketches the layout of such a grammar"

                                                       Jackendoff (1997: 38-39)

(38)   phonological   syntactic   conceptual
           formation   formation   formation
             rules   rules   rules

              ↓   ↓   ↓

---

[8]   This correspondence can also be argued to hold for the N's heading nominalizations. Jane Grimshaw pointed out to us that they are relational nouns. Our reply is that they are non-relational elements *in the sense that* they must be related with some relational element in order to form a complete (i.e., sentential) argument structure. Arguments in favor of our hypothesis can be found in Law (1997), where it is argued that the N heading a nominalization does not take complements/arguments. For reasons of space, we leave the discussion open here.

[9]   In predicative contexts (cf. *John is happy / John is here*), note that there is no difference concerning the argument structure relations. Both have the same RSS, that in (8).

```
Phonological              Syntactic                 Conceptual
Structures                Structures                Structures


                PS-SS                    SS-CS
           correspondence            correspondence
               rules                     rules
```

According to Jackendoff , this organization includes three autonomous levels of structure: phonological, syntactic, and conceptual. Each of these has its own proprietary set of primitives and principles of combination. Each of these levels is described by a set of *formation rules* that generates an infinite set of expressions. Given this, one of the most attractive innovations is that the organization proposed in (38) rejects an important assumption that lies behind all models of Chomskian generative grammar (*cf.* Chomsky (1965), (1975), (1981), (1995)): Chomsky's 'syntactocentrism'. This is eliminated from the organization of grammar. All three components are regarded as equally 'creative', since none is derived from the others. Therefore, the relation of syntax with the alleged 'interpretive components' must not be seen any longer as a 'derivation' but rather as a 'correspondence'.

Jackendoff stresses the fact that this organization of grammar is wholly coherent with the larger hypothesis of the architecture of mind called 'Representational Modularity' (cf. Jackendoff 1987: chap. 12; Jackendoff 1992: chap. 1):

(39)   "The overall idea is that the mind/brain encodes information in some finite number of distinct formats or 'languages of the mind'. Each of these 'languages' is a formal system with its own proprietary set of primitives and principles of combination, so that it defines an infinite set of expressions along familiar generative lines. For each of these formats, there is a module of mind/brain responsible of it". (...)
"The informational architecture of the mind strictly segregates phonological, syntactic, and conceptual representations from each other. Each lives in its own module; there can be no 'mixed' representations that are partly phonological and partly syntactic, or partly syntactic and partly semantic. Rather, all coordination among these representations is encoded in correspondence rules" .

Jackendoff (1997: 41 / 83)

His proposal concerning what is a 'lexical item' is summarized in (40):

(40)   "Lexical items are not 'inserted' into syntactic derivations; rather they license the correspondence of certain (near-)terminal symbols of syntactic structure with phonological and conceptual structures (...) In short, *a lexical item is to be regarded as a correspondence rule (<i.e., as a <PS,SS,CS> triple>), and the lexicon as a whole is to be regarded as part of the PS-SS and SS-CS interface modules* (...) There is no operation of insertion, only the satisfaction of constraints" .

Jackendoff (1997: 91)

That is to say, 'lexical insertion' is replaced by 'lexical licensing'. The elegant conclusion to be drawn is that there is no *separate* interface of the computational system with the lexicon. Rather, lexical interface is part of the PS-SS interface and the SS-CS interface.

With Jackendoff's model in mind, let us now try to integrate the 'Argument Structure' interface level in Jackendoff's (1997) architecture of the Language Faculty. Our proposal is that this interface level must be decomposed into a *Conceptual Interface Level of Syntactic Structure* (called 'Lexical Syntactic Structure' (LSS) in our present paper) and a *Syntactic Interface Level of Conceptual Structure* (called 'Relational Semantic Structure' (RSS) in our present paper):

(41)   *Redefining Argument Structure*
        a. 'Conceptual Interface Level of Syntactic Structure' (CIL_{SS}) ='Lexical Syntactic Structure'
        b. 'Syntactic Interface Level of Conceptual Structure'(SIL_{CS})='Relational Semantic Structure'.

However, "the primary generative power" falls on (41b), (41a) being intended "more as a facilitator or a refinement than as a creative force", to adapt Jackendoff's (1997: 18) words. Note that we have taken pains to show that the 'non-meaningful' (that is, purely syntactic) relations extracted from Hale & Keyser's Lexical Syntax are *parasitic* on the 'meaningful relations' extracted from Relational Semantics.

With the introduction of RSS's into the architecture of the language faculty, note moreover that it is natural to consider the relation between relational syntax (i.e., LSS) and relational semantics (i.e., RRS) as homomorphic. See Bouchard (1995) and Baker (1997) for interesting discussion on the homomorphism/isomorphism between syntactic structures and semantic structures.

We would like to conclude this paper with some remarks concerning so-called "syntactically relevant aspects of meaning" (cf. Pinker (1989) or Levin & Rappaport Hovav (1995), among others). Basically, these aspects are often taken to be those which are relevant for determining the syntactic expression of arguments. Quite crucially, the projection of arguments is carried out by appealing to a set of 'linking rules' (e.g., cf. Pinker (1989) or Levin & Rappaport Hovav (1995)). However, these descriptive rules can actually be dispensed with, once a relational approach to Argument Structure is integrated in Jackendoff's (1997) 'architecture of the Language Faculty'.

We have also taken pains to show that, *stricto sensu*, the *relational*/structural part (but *not* the contentful/aspectual part) of conceptual structure is what is *directly* relevant to syntactic structure. Let us try to clarify what we mean by "*directly* relevant to syntax". It is often noted that semantic primitives like 'causation', 'motion', 'change of state', etc., must be considered as "syntactically relevant aspects of meaning". However, we must point out here that they are syntactically relevant in an *indirect* sense. That is to say, these conceptual notions can be argued to be "relevant to syntax" in virtue of the fact that they are put in correspondence with the meaningful relations of RSSs, which in turn are directly put in correspondence with the non-meaningful/morphosyntactic relations. RSSs are conceptual structures that are *directly* relevant to syntax, that is, they are the conceptual structures which are put in a direct correspondence or interface with syntax.

Accordingly, it is important to note that we do not agree with those who claim that so-called "syntactically relevant aspects of meaning" must be coded into a (linguistic) semantic level, i.e., this level being independent from a purely conceptual level (e.g., cf. Bierwisch & Lang (1989), Pinker (1989), Bouchard (1995) or Levin & Rappaport Hovav (1995)). In this respect, our position is actually more in tune with Jackendoff's (1997: n. 8, 220), where he points out that "my position is that this constraint is a consequence of the SS-CS correspondence rules: only certain aspects of conceptual structure are 'visible' to the correspondence rules".

Following Jackendoff's proposal, our claim is that *all* conceptual content must be encoded in the very same level of mental representation, C(onceptual) S(tructure). The only difference between "syntactically relevant" conceptual content and (say) "pure" conceptual content is that only the former is to be put in correspondence with the meaningful relations of RSSs.

5. Conclusions

- 'Conceptual content' is not directly relevant to the structural aspects of the syntax-semantics interface (Mateu (1998a)).

Colorless green ideas sleep furiously is well-formed as far its *Relational Semantics* is concerned. Situational semantic theories are not explicative theories of the 'Problem of Correspondence' between syntax and semantics (Bouchard (1995)). The "ideal situation" embodied in Baker's UTAH can be maintained *if and only if* (syntactically relevant) 'thematic relationships' are no longer seen as 'situational roles' extracted from (formalized or not) CSs encoding situational/encyclopedic knowledge, but as 'non-relational roles' extracted from the relevant RSSs.

- The non-meaningful syntactic relations extracted from Hale & Keyser's Lexical Syntax are 'parasitic' on those meaningful relations extracted from Relational Semantics.

'Argument structure' partakes in two interface levels: *Conceptual Interface Level of Syntactic Structure* (called 'Lexical Syntactic Structure' here) and *Syntactic Interface Level of Conceptual Structure* (called 'Relational Semantic Structure' here). We have argued that an homomorphic relation between them can be established (Baker (1997)).

With the introduction of RSSs into Jackendoff 's (1997) 'Architecture of the Language Faculty', we have tried to reduce the apparent chasm between Hale & Keyser's theory of Lexical Syntax and Jackendoff's C(onceptual) S(emantics) theory.

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