ON THE PLACE OF INFORMATION STRUCTURE IN A GRAMMAR

ROBERT D. VAN VALIN, JR.
Heinrich Heine University Düsseldorf
Max Planck Institue for Psycholinguistics, Nijmegen
University at Buffalo, The State University of New York

RESUMEN

La pregunta 'dónde encaja la estructura informativa en la estructura de una gramática' es una pregunta arquitectónica, a la cual diferentes arquitecturas gramaticales dan diferentes respuestas. En esta articulo daré una posible respuesta basada en la Gramática del Papel y la Referencia [RRG] (Van Valin 2005, Mairal et al. 2012), una teoría de enlaces monoestratal (no derivativa). En la RRG hay un enlace directo entre la representación semántica de una oración y su representación sintáctica, y la estructura informativa juega un rol en este enlace. Los pasos del algoritmo de enlace que asigna la semántica a la sintaxis serán especificados y se demostrará como nociones de la estructura informativa pueden jugar un rol en ellos.

Palabras clave: topico, foco, la estructura informativa, la Gramática del Papel y la Referencia

ABSTRACT

The question, 'where does information structure fit in the structure of a grammar' is an architectural question, and different grammar architectures give different answers. In this paper I will give one possible answer, based on Role and Reference Grammar [RRG] (Van Valin 2005, Mairal et al. 2012), a monostratal (non-derivational) linking theory. In RRG there is a direct linking between the semantic representation of a sentence and its syntactic representation, and information structure plays a role in this linking. The steps in the linking algorithm mapping semantics into syntax will be specified, and it will be shown how information structure notions can play a role in them.

Keywords: topic, focus, information structure, Role and Reference Grammar

1. INTRODUCTION[1]

The question of where information structure fits in a grammar raises fundamental questions about the architecture of grammar. As Jackendoff (2002) points out, there are two general conceptions: syntactocentric vs. parallel architecture theories. They are sketched in Figure 1.
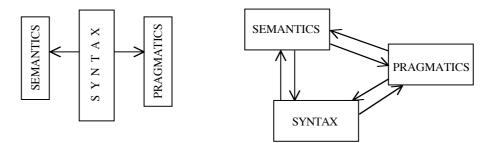

Figure 1 : Syntactocentric vs. parallel architecture theories

The syntactocentric conception is associated with Chomsky's work, from *Syntactic Structures* through the Minimalist Program. Syntax is the core of the system, and semantics and pragmatics (information structure) are derivative of the syntax. Contrasting with this is the parallel architecture conception, in which there is no dominant component but rather a series of interacting components, and, crucially, the interactions are not mediated through the syntactic component. One of the many parallel architecture approaches is Role and Reference Grammar [RRG] (Van Valin & LaPolla 1997, Van Valin 2005, González Vergara 2006, Mairal et al. 2012), and in this paper the place of information structure in a grammar will be explored from an RRG perspective.

RRG is a mono-stratal, non-derivational theory, in that it posits only a single syntactic representation of a sentence, which must be concrete and correspond to the actual form of the sentence, morphophonemic complications aside. No phonologically null elements are permitted in syntactic representations in RRG. There is also a semantic representation, which is based on a system of lexical decomposition. The two representations are related by a set of linking rules

termed 'the linking algorithm'. The basic organization of RRG is presented in Figure 2.

SYNTACTIC REPRESENTATION

↑

**Linking
Algorithm**

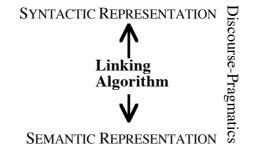↓

SEMANTIC REPRESENTATION

Discourse-Pragmatics

Figure 2: The basic organization of Role and Reference Grammar

Important for this discussion is 'discourse-pragmatics', which is a representation independent of syntax and semantics, and which plays an important role in the linking system, as we will show below.

The discussion will proceed as follows. In §2 the relevant aspects of RRG, including the linking system, will be presented. In §3 the RRG approach to information structure will be introduced, and in §4 examples of some of the possible different interactions of information structure with linking syntax and semantics will be presented. A brief conclusion follows in §5.

2. ASPECTS OF ROLE AND REFERENCE GRAMMAR

The RRG syntactic representation is not a traditional phrase structure representation, nor is it an X-bar representation. Rather, it is a semantically-motivated conception known as 'the layered structure of the clause'. The innermost layer is the *nucleus*, which houses the predicating element, typically but not necessarily a verb. The next layer up is the *core*, which contains the nucleus plus the semantic arguments of the predicate in the nucleus (default). The next layer is the *clause*, which consists of the core, an optional periphery containing adjunct modifiers of the core, and an optional pre-core slot [PrCS], in which displaced phrases, including WH-expressions, can occur In languages like English and Spanish semantic arguments of the predicate can occur outside of the core, e.g. in the PrCS in a WH-question,

as in Figure 3 below. The highest layer is the *sentence,* which includes the clause plus optional detached positions for dislocated phrases. This is the constituent projection of the sentence, and it is exemplified in Figure 3 by the structure above the lexical string.
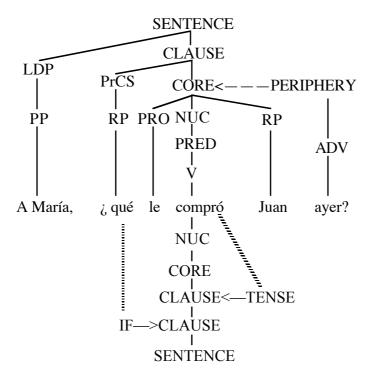
```
                        SENTENCE
                           CLAUSE
     LDP                PrCS      CORE<———PERIPHERY
      |                  |      ┌──┴──┐
      PP               RP PRO NUC      RP
      |                 |    |  PRED         |
      |                 |    |   |           ADV
      |                 |    |   V           |
   A María,      ¿ qué  le  compró    Juan     ayer?
                  ┊                  ╲
                  ┊         NUC       ╲
                  ┊          |         ╲
                  ┊        CORE         ╲
                  ┊          |           ╲
                  ┊     CLAUSE<—TENSE
                  ┊          |
               IF—>CLAUSE
                           |
                      SENTENCE
```

Figure 3 : Aspects of the layered structure of a Spanish sentence

In this example *qué* is a semantic argument of *comprar* but occurs in the PrCS rather than in the core, due to its function as a WH-expression. 'RP' stands for 'reference phrase', which is the syntactic category of referring expressions (Van Valin 2008b), and 'LDP' stands for 'left-detached position', the position of the dislocated PP *a María,* which is cross-referenced by the resumptive clitic pronoun *le* in the core.[2] RPs have a layered structure, too, as do predicative PPs, but it will not be introduced, as the internal structure of RPs and PPs is not directly relevant to the issues to be discussed.

Grammatical categories like tense, aspect, modality and illocutionary force are termed 'operators' in RRG, and they are represented

in a mirror-image projection of the clause, known as the 'operator projection', which is graphically below the lexical string in Figure 3. The operators in this example are tense, signaled by the suffix on the verb, and illocutionary force, signaled by the WH-expression *qué* and prosody.[3]

The semantic representation of a sentence involves lexical decomposition, which is based on a set of *Aktionsart* distinctions originally proposed in Vendler (1967). Examples of three sentences and their semantic representations are given in (1).

(1) a. ¿Qué dio Juan a María?
⟨$_{IF}$ *INT* ⟨$_{TNS}$ *PAST* [**do**′ (Juan, Ø)] CAUSE [BECOME **have**′ (María, qué)]⟩⟩

    b. Juan está comiendo.
      ⟨$_{IF}$ *DEC* ⟨$_{TNS}$ *PRES* ⟨$_{ASP}$ *PROG* [**do**′ (Juan, [**eat**′ (Juan, Ø)]⟩⟩⟩

    c. María sabe la respuesta.
      ⟨$_{IF}$ *DEC* ⟨$_{TNS}$ *PRES* [**know**′ (María, la respuesta)]⟩⟩

The decomposition of *dar* in (1a) and its equivalents in other languages would be [**do**′ (x, Ø)] CAUSE [BECOME **have**′ (y, z)], in which *x* is the effector (interpreted as an agent), *y* is the recipient, and *z* is the theme. The representation states that *x* does something unspecified which causes *y* to come to have *z*. In (b) the verb is an intransitive activity predicate, which in this instance takes an effector as its sole argument; **do**′ signals that the predicate is an activity and that the *x* argument is an effector (interpreted as an agent). Finally, in (c) there is a state predicate, a cognition state predicate to be exact, and the first argument is a kind of experiencer and the second denotes the content of the cognitive state. Grammatical operators are represented as well.

RRG recognizes two types of semantic roles. The first, traditional thematic relations, has been mentioned in the previous paragraph; they are defined in terms of argument positions in the decomposed semantic representations. The second type is 'semantic macroroles', of which there are only two, *actor* and *undergoer*. The actor is the most agent-like argument of the predicate and the undergoer the most patient-like. In (1a) and (1b) *Juan* is the actor, and in (1c) *María* is

the actor; in (1a) *qué* is the undergoer, while in (1c) *la respuesta* is the undergoer. Their interaction with grammatical relations is illustrated in (2).

(2) a. El chico [SUBJ, ACTOR] comió el pastel [OBJ, UND].
    b. El pastel [SUBJ, UND] fue comido por el chico [ACTOR].
    c. El perro [SUBJ, ACTOR] ladró.
    d. El perro [SUBJ, UND] murió.

In syntactically accusative languages like Spanish and English, the actor is the subject in the active voice, and the undergoer is the direct object, as in (2a). In a passive construction, on the other hand, the undergoer is the subject and the actor is an optional adjunct in the core-level periphery, as in (2b). With an intransitive predicate, the choice of macrorole depends on its semantics: with an activity verb like *ladrar* in (2c), the subject is an actor, whereas with a change of state verb like *morir* in (2d), the subject is an undergoer.

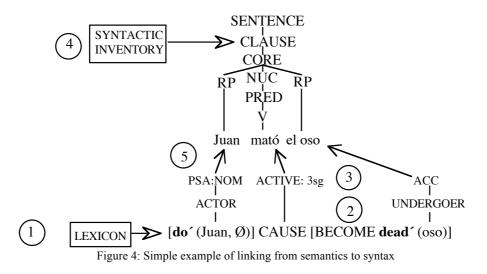The linking between syntax and semantics is governed by the Completeness Constraint in (3).

(3) Completeness Constraint: all of the specified arguments in the semantic representation of a sentence must be realized in the syntax, and conversely all of the expressions in the syntax must be linked to positions in the semantic representation of a sentence, in order to be interpreted.

The semantics-to-syntax linking algorithm is summarized in (4); see Van Valin (2005:) for detailed discussion.

(5) Summary of semantics-to-syntax linking
    a. Step 1: Construct a semantic representation, based on the logical structure of the predicate (e.g. as in (1) above).
    b. Step 2: Assign actor and undergoer.
    c. Step 3: Select an argument to be the 'subject' (privileged syntactic argument) and assign case and adpositions.
    d. Step 4: Select the appropriate syntactic templates.

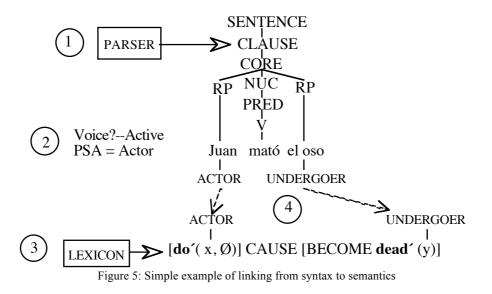e. Step 5: Link the elements into the appropriate positions in the clause.

There are principles governing steps 2 through 4, and step 5 is intentionally vague, as every language has different ordering principles for the elements in a clause. An example of the semantics-to-syntax linking for *Juan mató el oso* is given in Figure 4.

Figure 4: Simple example of linking from semantics to syntax

The syntax-to-semantics linking algorithm is summarized in (6).

(6) Summary of syntax-to-semantics linking
  a. Step 1: The parser outputs a syntactic representation.
  b. Step 2: Semantic information is gleaned from the morphosyntactic form, i.e. from word order, case, voice, etc.
  c. Step 3: The logical structure of the predicate is accessed in the lexicon, and as much information is deduced from it as possible.
  d. Step 4: The information from steps (2) and (3) is matched up, satisfying the Completeness Constraint.

The syntax-to-semantics linking for this same Spanish sentence is given in Figure 5.

Figure 5: Simple example of linking from syntax to semantics

3. INFORMATION STRUCTURE IN RRG

The approach to information structure used in RRG is based on Lambrecht (1994), especially his theory of focus structures. The three main focus types are illustrated in (7); focal stress is represented by small caps.

(7) Focus structure in English, Italian and Spanish (Lambrecht 1994, Bentley 2008)

    a. Q: What happened to your car?   **Predicate Focus**
      A: i. My car/It broke DOWN.   English
          ii. (La mia macchina) si è ROTTA.   Italian
          iii. (Mi auto) se AVERIÓ.   Spanish[4]

    b. Q: What happened?   **Sentence Focus**
      A: i. My CAR broke down.   English
          ii. Mi si è rotta la MACCHINA.   Italian
          iii. Se averió mi AUTO.   Spanish

c. Sp1: I heard your motorcycle broke down.   **Narrow Focus**
    Sp2: i. My CAR broke down/
          It was my CAR that broke down.   English
      ii. Si è rotta la mia MACCHINA./   Italian
          È la mia MACCHINA che si è rotta.
     iii. Se averió mi AUTO./
          Fue mi AUTO que se averió.   Spanish

Predicate focus, as in (7a), is the traditional topic-comment structure with a topical subject and a focal predicate phrase. Sentence focus, as in (7b), is a topic-less construction in which the focus encompasses both subject and predicate phrase. In Italian and Spanish a focal subject cannot normally be preverbal and so must occur postverbally. Predicate and sentence focus are types of broad focus, i.e. the focus domain can potentially larger than a single constituent. Narrow focus, on the other hand, is restricted to a single constituent; iti may be expressed by focal stress on the single constituent or via a cleft construction, as in (7c).

    Lambrecht characterizes the focus as the assertion minus the presupposition. So in (7a) the assertion is 'the speaker's car broke down', and the presupposition, created by the question, is that the speaker's car exists and is the thing at issue. Subtracting 'the speaker's car' from the assertion leaves the focus, 'broke down'. In sentence focus there is no presupposition to subtract, so the focus is the entire assertion 'the speaker's car broke down'. This interaction between presupposition and assertion can be represented formally using the version of Discourse Representation Theory proposed in von Heusinger (1999). Figure 6 gives the Discourse Representation Structure [DRS] representing the presupposition created by the question *What did Mary do?* ('P' is a variable representing an unspecified predicate) and the DRS for the assertion made by the utterance *Mary kissed Sam*; subtracting the former from the latter yields the predicate focus utterance *Mary* KISSED SAM.

Presupposition   Assertion

x
Mary(x)
x P

x, y
Mary(x)
Sam(y)
x kiss y

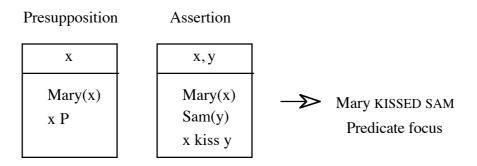$\Longrightarrow$ Mary KISSED SAM

Predicate focus

Figure 6: Representation of predicate focus, following von Heusinger (1999)

Figure 7 represents the derivation of (completive) narrow focus, i.e. the answer to an argument WH-question such as *Who kissed Sam?* ('X' is an unspecified referent). Subtracting this presupposition from the same assertion as in Figure 6 yields narrow focus on the subject.

Presupposition   Assertion

x, y
X(x)
Sam(y)
x kiss y

x, y
Mary(x)
Sam(y)
x kiss y

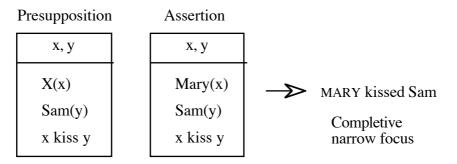$\Longrightarrow$ MARY kissed Sam

Completive
narrow focus

Figure 7: Derivation of completive narrow focus following von Heusinger (1999)

Focus structure can be represented in tree structures like the one in Figure 3 by adding an additional projection. The components of the focus structure projection are (i) basic information units, which encodes the information content of a simple WH-expression, usually corresponding to basic phrasal unit in the syntax (but not always), (ii) the potential focus domain, which is a property of the grammar and restricts where focus can be in a clause, and (iii) the actual focus domain, which is the part of the clause in focus in a particular context. Languages may differ with respect to the potential focus domain. Lambrecht argues that in French and Italian, it does not include the preverbal 'subject' position, unlike in English, and that is the explana-

tion for the obligatory 'subject' inversion in sentence focus construc-
tions like (7b). An example of predicate focus is given in Figure 8.
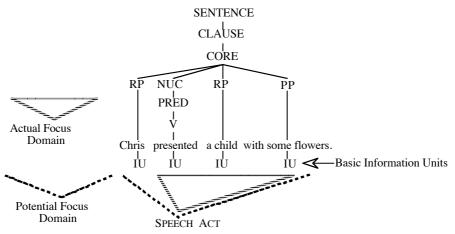
Figure 8: Focus structure projection of an English predicate-focus construction

It is possible to have all three projections represented simultaneously,
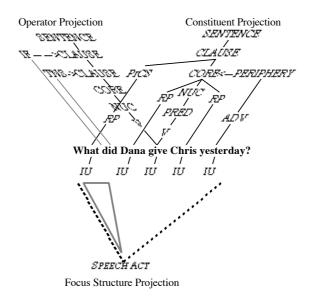as in Figure 9.

Figure 9: English sentence with all three projections represented

All of this information is simultaneously present in the sentence and the grammar may make use of any of it.

4. INFORMATION STRUCTURE AND LINKING

We now turn to the interaction of information structure and linking between semantics and syntax. We will briefly examine for instances of this interaction: word order in Italian, subject selection in English, case marking in Kaluli, and ellipsis in Japanese.

It was pointed out in §3 that the potential focus domain constrains word order in Italian in sentence and narrow focus constructions, and this can be represented as in Figure 10.
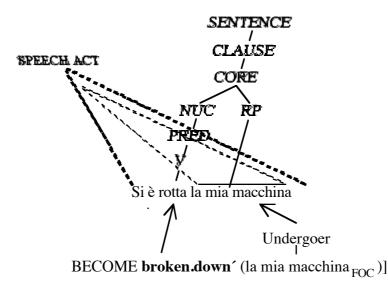

Figure 10: Simplified semantics-to-syntax linking in Italian example (7c)

Linking the focal subject *la mia macchina* 'my car' to a preverbal position is ruled out, because the focal RP, which is the actual focus domain, must occur in the potential focus domain, which excludes the regular preverbal subject position. It is a well-known fact that word order in many languages is strongly constrained by information structure, and the interaction of the linking with the constituent and focus structure projections provides a principled means of capturing this.

Subject (or in RRG terms, privileged syntactic argument) selection can be influenced by information structure. It has been argued since at least the 1970's that subject in many languages is a grammaticalized topic: roughly speaking, given a transitve verb with actor and undergoer arguments, the actor is selected as subject if it has the more topical referent, yielding active voice, whereas the undergoer is selected as subject if it has the more topical referent, yielding passive voice. Braningan & Prat-Sala (2000) and Heydel & Murray (200) present cross-linguistic experimental evidence of a discourse motivation for passive constructions in certain contexts. In languages without voice options, information structure plays no direct role in subject selection; but see Van Valin (2009)/Van Valin & Guerrero (2012) for discussion of two revealing exceptions to this generalization.

If the prototypical subject is a grammaticalized topic in a language like English or Spanish, then focal subjects should lack some of the properties of canonical subjects. We have already seen an example of this in Italian and Spanish, where focal subjects do not normally occupy the usual core-initial subject position. Focal subjects can also lose some of the behavioral properties associated with canonical subjects, e.g. the ability to control a gap in the following clause, as in *John$_i$ saw Bill$_j$ and __$_{i/*j}$ waved*, in which the one who waved must be *John* and not *Bill*. When the subject of the first clause is focal, the ability to control a gap is degraded and a pronoun is preferred instead of a gap, as noted by Lambrecht (1986, 2000).

(8) Q: Who married Rosa?
    A: a. JOHN$_i$ did but he$_i$ didn't really love her.
       b.??JOHN$_i$ did but ___$_i$ didn't really love her.

The subject of the first clause is focal, as it is the answer to a WH-question, and as the contrast between (a) and (b) shows, controlling a gap in the second clause is dispreferred in contrast with simple coreference with a pronoun. This preference is even stronger in clauses with an inverted subject, as in (9).

(9) a. Into the room walked a tall man, and he refused to speak to Bill.
    b.*Into the room walked a tall man and __ refused to speak to Bill.

Thus, focal subjects lack some of the syntactic properties of canonical topical subjects.

Case marking is usually thought of as a marker of grammatical relations, but there are instances in which information structure can influence case marking. An example of this can be seen in Kaluli (Papua New Guinea; Schieffelin 1985), a typical OV language, as shown in (10).

(10) Default word order   Actor   Undergoer V
     Information structure of Kaluli clause: Topic   Focus   V

The default correlations are thus actor with topic and undergoer with focus in a clause with a transitive verb. Kaluli has a complex split-ergative case marking system. In the default situation, an actor receives ergative case only when the undergoer is a proper name or a kin term. In (11a) the undergoer is inanimate, and so both actor and undergoer receive absolutive case. In (11b), however, the undergoer is a proper name, and accordingly the actor receives ergative case.

(11) a. Abi-yò   siabulu-wò   mènigab.
         Abi-ABS sweet.potato-ABS eat.3.TNS
         'Abi is about to eat a sweet potato.'
     b. Abi-yè   Suela-yò   sandab.
         Abi-ERG Suela-ABS hit.3.TNS
         'Abi hits Suela.'

In the default situation in (10), pronouns are distinguished by order, not form, as shown in (12). The verb agrees with the actor argument of a transitive verb.

(12) a. E   ne sandab.
         3sg 1sg hit.3.TNS
         'He/she hits me.'
     b. Ne e   sondòl.
         1sg 3sg hit.1.TNS
         'I hit him/her.'

However, when (10) does not obtain, i.e. the actor is focal and the undergoer topical, then a pronominal actor appears in a special contrastive ergative form, as in (13a), and a full RP actor receives ergative case, regardless of the nature of the undergoer, as in (13b).

(13) a. Nodo-wò   niba   diòl.
       one.side-ABS 1sgCNTR take.1.TNS
       'I (not you) take one side.'
    b. Nodo-wò   Suela-wè   diab.
       one.side-ABS Suela-ERG take.3.TNS
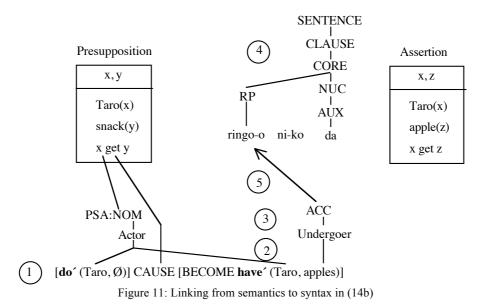   'SUELA takes one side.'

Thus, Kaluli exhibits a significant interaction between case assignment and information structure.

The final example of the interaction of information structure and linking concerns an interesting construction in Japanese, the verb-less numeral quantifier construction, as analyzed in Shimojo (2008). Japanese is a straightforwardly accusative language, with the actor (*Taro*) appearing in the nominative case and the undergoer (*ringo* 'apple') in the accusative case, as in (14a). The construction in question is presented in (14b).

(14) a. (Taro-ga)   ringo-o   ni-ko   katta.
        Taro-NOM apple-ACC 2-CL   buy.PAST
        '(Taro) bought two apples.'

     b. Oyatu-wa, ringo-o   ni-ko da.
        snack-TOP apple-ACC 2-CL be.PRES
        'As for snack, (Taro got/will eat/etc.) two apples.'
        [Literally: 'As for snack, two apples is']

What is striking in (14b) is that the undergoer bears accusative case, and yet the only verb in the sentence is the copula *desu* 'be', which does not assign accusative case. Where does the accusative case on the undergoer come from? Shimojo shows that the verb is recovered from the discourse context in most cases (some instances involve inferences from real world knowledge) and uses the DRSs introduced in

Figures 6 and 7 to capture them. What is particularly striking is the linking in these construction involves not only the morphosyntactic form of the sentence but also the DRS representing the context. In Japanese it is often the case that only the focal material is overtly realized in an utterance; presupposed material is not expressed. The presupposition for (14b) is that Taro gets something for a snack, and the only part of the assertion that is overtly expressed is that what he gets is two applies. This is represented in Figure 11; the numbers refer to the steps in the semantics-to-syntax linking algorithm in (5).

Figure 11: Linking from semantics to syntax in (14b)

The proposition to be communicated is 'Taro gets two apples', and the logical structure of the verb 'get' is called up from the lexicon and the argument positions filled with *Taro* and *ringo* 'apple'. They are selected as actor and undergoer in step 2 of the linking algorithm; *Taro* is selected as 'subject' and assigned nominative case, while *ringo* 'apple' is assigned accusative case. *Taro* and the verb meaning 'get' are already established in the context, as represented in the DRS and therefore will not be linked into the syntax. Only the focal information, *ringo-o ni-ko* 'two apples' is linked to the syntax and is overt. The result is the assertion captured in the second DRS.

Context in the form of the DRS is crucial for the interpretation of (14b), i.e. for the linking from syntax to semantics. This is depicted in Figure 12; the numbers refer to the steps in the linking algorithm from syntax to semantics in (6).

SENTENCE
CLAUSE
① CORE
Presupposition   Assertion
┌─────────────┐   NUC   ┌─────────────┐
│   x, y   │   RP   │   x, z   │
├─────────────┤   AUX   ├─────────────┤
│   Taro(x)   │   │   Taro(x)   │
│   snack(y)   │ ringo-o   ni-ko   da │   apple(z)   │
│   x get y   │   ② Undergoer   │   x get z   │
└─────────────┘   └─────────────┘
      Actor   ④
   ③   Actor   Undergoer
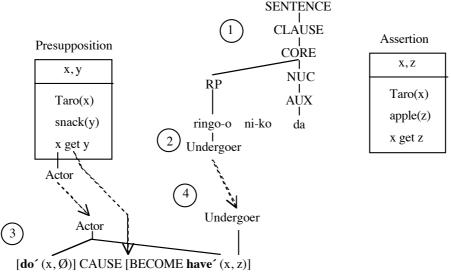
   [do′ (x, Ø)] CAUSE [BECOME have′ (x, z)]

Figure 12: Linking from syntax and discourse to semantics in (14b)

All that occurs in the overt sentence is *ringo-o ni-ko* 'two apples', and in terms of the syntax-to-semantics linking algorithm, the only information in step 2 is that *ringo-o* is the undergoer. For step 3, it is from the context in the DRS that *Taro* and the verb 'get' are recovered. In step 4, *ringo-o* is linked to the *z* undergoer argument. The Completeness Constraint can be satisfied only if contextual information is taken into account, and this is clearly acceptable in Japanese. Thus for languages like Japanese the Completeness Constraint would have to be modified to permit contextual information as well as the usual syntactic structures to satisfy it.

5. CONCLUSION

This paper has presented the Role and Reference Grammar model of the syntax-semantics-pragmatics interface, a model in which information structure is intimately involved in the workings of the gram-

mar. It represents a parallel architecture approach to the analysis of the interaction of syntax, semantics and discourse-pragmatics.

NOTAS

[1] This work was supported in part by grant BCS-0344361 from the US National Science Foundation and in part by a fellowship from the Max Planck Society. Abbreviations: ABS 'absolutive' ACC 'accusative', ASP 'aspect', CL 'classifier', CNTR 'contrastive', DEC 'declarative', DRS 'Discourse Representation Structure', ERG 'ergative', FOC 'focal', IF 'illocutionary force', INT 'interrogative', IU 'information unit', LDP 'left-detached position', LOC 'locative', NOM 'nominative', NUC 'nucleus', OBJ 'object', PrCS 'precore slot', PRED 'predicate', PRES 'present tense', PRO 'pronoun', PROG 'progressive', PSA 'privileged syntactic argument', RP 'reference phrase', SUBJ 'subject', TNS 'tense', TOP 'topic', UND 'undergoer'.

[2] For an alternative approach to the representation of clitic pronouns and agreement in Spanish, see Belloro (2004).

[3] A formal representation of prosody, which would be an additional projection of the sentence, has been proposed in O'Connor (2008).

[4] For a discussion of information structure in Spanish in relation to Spanish punctuation, see Bellosta von Colbe (2008).

REFERENCIAS BIBLIOGRÁFICAS

Belloro, V. 2004b. An RRG Approach to Spanish Clitics. In B. Nolan, ed., *Linguistic Theory and Practice: Description, Implementation and Processing*. Proceedings of the RRG 2004 Dublin Conference. [Available on RRG web site.]

Bellosta von Colbe, V. 2008. Is Role and Reference Grammar an adequate theory for punctuation? In Van Valin, ed., 245-61.

Bentley, D. 2008. The interplay of focus structure and syntax: Evidence from two sister languages. In Van Valin, ed., 263-84.

Branigan, H. & M. Prat-Sala (2000) A cross-linguistic perspective on discourse context and syntactic processing in language production. In De Vincenzi & Lombardo, eds., 205-226.

De Vincenzi, M. & V. Lombardo, eds. 2000. *Cross-linguistic perspec-

tives on language processing. Dordrecht: Kluwer.

González Vergara, C. 2006a. La gramática del Papel y la Referencia: Una aproximación al modelo. *Onomázein* 14: 101-140.

Heusinger, Klaus von. 1999. Intonation and information structure. Habilitationschrift, University of Konstanz.

Heydel, M. & W. Murray. 2000. Conceptual effects in sentence priming: a cross-linguistic perspective. In De Vincenzi & Lombardo, eds., 227-254.

Jackendoff, R.. 2002. *The architecture of the language faculty.* Cambridge, MA: MIT Press.

Lambrecht, K.. 1986. Topic, focus and the grammar of spoken French. Unpublished Ph.D. dissertation, UC Berkeley.

-----. 1994. *Information structure and sentence form*. Cambridge: Cambridge University Press.

-----. 2000. When subjects behave like objects: a markedness analysis of sentence focus constructions across languages. *Studies in Language* 24:611-82.

Mairal, R., et al., eds. 2012. *El funcionalismo en la teoría lingüística: la Gramática del Papel y la Referencia. Introducción, avances y aplicaciones*. Madrid: Akal.

O'Connor, R. 2008. A prosodic projection for Role and Reference Grammar. In Van Valin, ed., 227-44.

Schieffelin, B. 1985. The acquisition of Kaluli. *The cross-linguistic study of language acquisition*, ed. by D. Slobin, 525-93. Hillsdale, NJ: Lawrence Earlbaum.

Shimojo, M. 2008. How missing is the missing verb? The verb-less numeral quantifier construction in Japanese. In Van Valin, ed., 285-304..

Van Valin, R. 2005. *Exploring the syntax-semantics interface*. Cambridge: Cambridge University Press.

-----. 2008a, ed. *Investigations of the syntax-semantics-pragmatics interface*. Amsterdam: John Benjamins.

-----. 2008b. RPs and the nature of lexical and syntactic categories in Role and Reference Grammar. In Van Valin, ed., 161-78.

-----. 2009. Privileged syntactic arguments, pivots and controllers. In L. Guerrero Valenzuela et al., eds., *Studies in Role and Reference Grammar*, 45-68. México City: IIFL-UNAM Press.

Van Valin, R. & L. Guerrero. 2012. De sujetos, pivotes y controladores: el argumento sintácticamente privilegiado. In Mairal et al. eds, 247-67.

Van Valin, R. & R. LaPolla. 1997. *Syntax: structure, meaning and function*. Cambridge: Cambridge University Press.

Vendler, Z. 1967. *Linguistics in philosophy*. Ithaca: Cornell University Press.