Chapter 5: Linking Syntactic and Semantic Representations in Simple Clauses

5.0 General Considerations

The various components of a description of grammatical structure have been presented (clause structure, lexical representation and semantic roles, syntactic functions, focus structure), and now the principles that link them together will be presented. They illustrate the workings of the syntax-semantics-pragmatics interface. The linking algorithm is central to a theory like RRG that posits only one level of syntactic representation, for it must be able to deal not only with canonical clause patterns, i.e. those in which the default correlations between syntactic and semantic structure exist, but also with the non-canonical patterns as well. The general linking schema in RRG may be sketched as in Figure 5.1. The relation between logical structure and macroroles is mediated by the actor-undergoer hierarchy in Figure 4.4. The relation between macroroles (and non-macrorole arguments of the verb) and morphosyntactic functions is subject to extensive cross-linguistic variation and is affected by the privileged syntactic argument selection hierarchy in (4.13) and selection principles in (4.14) and by the extent to which focus structure is grammaticalized in clause-internal relational syntax (cf. Figure 4.3).

SYNTACTIC FUNCTIONS:  PSA Direct Core Arguments Oblique Core Arguments

Privileged Syntactic Argument [PSA] Selection:
Highest ranking MR = default (e.g. English)
Lowest ranking MR = default (e.g. Dyirbal)

SEMANTIC MACROROLES:

ACTOR  UNDERGOER
Arg of  1st arg of  1st arg of  2nd arg of  Arg of state
DÔ     do´ (x,... pred´ (x,y) pred´ (x,y) pred´ (x)

Transitivity = No. of Macroroles [MRα]
Transitive  = 2
Intransitive = 1
Atransitive  = 0

Argument Positions in LOGICAL STRUCTURE

Verb Class Logical Structure

STATE  predicate´ (x) or (x, y)
ACTIVITY  do´ (x, [predicate´ (x) or (x, y)])
ACHIEVEMENT  INGR predicate´ (x) or (x, y)
SEMELFACTIVE  SEML predicate´ (x) or (x, y)
ACCOMPLISHMENT  BECOME predicate´ (x) or (x, y)
ACTIVE ACCOMPLISHMENT  do´ (x, [predicate´ (x, (y))]) & INGR predicate´ (z, x) or (y)
CAUSATIVE  α CAUSE β, where α, β are LSs of any type

Figure 5.1: Summary of RRG linking system

The opposition labelled ‘universal’ vs. ‘language-specific’ in Figure 5.1 reflects the fact that there is very little cross-linguistic variation in the lexical phase of the linking and a great deal of
cross-linguistic variation in the syntactic phase. The primary variation in the lexical phase is limited to three areas: what role animacy plays in macrorole assignment (e.g. in Lakhota, actor NPs must be animate), whether a language allows variable undergoer selection, and whether the language follows the ‘direct-indirect object’ pattern of lowest-ranking argument in LS as undergoer or the ‘primary-secondary object’ pattern of second-highest ranking argument in LS as undergoer. One of the most intriguing findings in Van Valin & LaPolla (1997) is a correlation between semantic motivation and universality: the more semantically motivated or semantically driven a grammatical phenomenon is, the less likely it is to show cross-linguistic variation. An example of this was already discussed in chapter 1: the units of the layered structure of the clause are semantically motivated and universal, while other constituents such as the left-detached position and the precore slot are pragmatically rather than semantically motivated and are not universal.

5.1 The Linking Algorithm

A distinctive feature of the RRG linking algorithm is that it is bidirectional; that is, it links the semantic representation to the syntactic representation, and it also links the syntactic representation to the semantic representation. Viewed in terms of a language processing model, the semantics-to-syntax linking is an aspect of the production process, while the syntax-to-semantics linking is an aspect of the comprehension process. In the comprehension process, the parser would take the input and produce a structured syntactic representation of it, identifying the elements of the layered structure of the clause and the cases, adpositions and other grammatically relevant elements in the sentence. It is then the task of the grammar to map this structure into a semantic representation, as the first step in interpreting it, and this is where the syntax-to-semantics linking algorithm is required. The same syntactic and semantic representations are used in both linking algorithms.

The linking between semantic and syntactic representations is governed by a very general constraint, the Completeness Constraint, which is stated in (5.1).

(5.1) Completeness Constraint:

All of the arguments explicitly specified in the semantic representation of a sentence must be realized syntactically in the sentence, and all of the referring expressions in the syntactic representation of a sentence must be linked to an argument position in a logical structure in the semantic representation of the sentence.1

In simple sentences, this guarantees that there will be a match between the number of arguments in the clause and in the logical structure of the verb. As will be seen in chapter 7, it is extremely important in linking in complex sentence constructions.

The semantic representation of a sentence is built around the logical structure of the predicant, usually a verb, and it is put together in the lexicon. For the semantics-to-syntax linking, the information in the semantic representation is crucial for the selection of the syntactic template(s) constituting the syntactic representation. In chapter 1, it was suggested that syntactic

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1‘Explicitly specified’ means that the argument position in the logical structure is filled by a variable or a constant; for it to be unspecified, it would be filled by ‘Ø’, as in (i).

(i) a. Max loaded the minivan.

   b. [doţ(Max, Ø)] CAUSE [BECOME be-in’ (minivan, Ø)]

   b’. [doţ(Max, Ø)] CAUSE [BECOME be-in’ (minivan, the boxes)]

The LS in (ib) does not specify what the second argument of be-in’ is, unlike the one in (ib’), and it is not specified in the sentence in (ia). Hence only (ib) is a legitimate LS for (ia), because of the Completeness Constraint.
representations were best conceived of as ‘syntactic templates’, stored in what was called the ‘syntactic inventory’. There are principles governing the selection of the appropriate core template; they are given in (5.2).

(5.2)a. Syntactic template selection principle:
The number of syntactic slots for arguments and argument-adjuncts within the core is equal to the number of distinct specified argument positions in the semantic representation of the core.

b. Language-specific qualifications of the principle in (a):
1. All cores in the language have a minimum syntactic valence of 1.
2. Argument-modulation voice constructions reduce the number of core slots by 1.
3. The occurrence of a syntactic argument in the pre/postcore slot reduces the number of core slots by 1 [may override (1) above].

The default principle in (5.2a) is straightforward: if a verb takes $n$ arguments, then there needs to be $n$ positions in the core for those arguments to appear in, in order to satisfy the Completeness Constraint in (5.1). The exceptions in (b) are language-specific: all of them apply to English, which requires dummy subjects for argumentless verbs like rain, which has a passive and in which WH-words occur in the PrCS, while none of them apply to Lakhota, for example.

An example of an English syntactic template for a simple sentence with a transitive verb is given in Figure 5.2.
Figure 5.2: Syntactic template for a simple clause in English, containing both constituent (predicate and arguments) and operator (functional categories) projections

The operators that will be needed in a particular sentence or NP are a function of its semantic representation (cf. §§2.2, 2.3).

For syntax-to-semantics linking, the syntactic representation is created by the parser, as stated earlier. These considerations lead to a revised picture of the organization of RRG; it is presented in Figure 5.3.
5.1.1 Constructional templates

RRG recognizes the importance of grammatical constructions, and they are represented in terms of constructional templates. Cross-constructional and cross-linguistic generalizations are captured in terms of the general principles and constraints that constitute the linking algorithms, e.g. the Actor–Undergoer Hierarchy, the layered structure of the clause, the privileged syntactic argument selection hierarchy. Only the idiosyncratic, language-specific features of constructions are represented in constructional templates.

The English passive construction is a good example of interaction of the general and the language-specific. The general characterization of voice constructions in (4.27) defines the general features of a passive construction, but the specific features of the English passive are represented in the constructional template in Table 5.1.

<table>
<thead>
<tr>
<th>CONSTRUCTION: English passive (plain)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYNTAX:</strong></td>
</tr>
<tr>
<td>Template(s): (5.2b2)</td>
</tr>
<tr>
<td>PSA: (4.14a,c2), Variable [±pragmatic influence]</td>
</tr>
<tr>
<td>Linking: Actor ≠ PSA; omitted or in peripheral <em>by-PP</em></td>
</tr>
<tr>
<td>Undergoer = PSA (default)</td>
</tr>
<tr>
<td><strong>MORPHOLOGY:</strong></td>
</tr>
<tr>
<td>Verb: past participle</td>
</tr>
<tr>
<td>Auxiliary: <em>be</em></td>
</tr>
<tr>
<td><strong>SEMANTICS:</strong></td>
</tr>
<tr>
<td>PSA is not instigator of state of affairs but is affected by it (default)</td>
</tr>
<tr>
<td><strong>PRAGMATICS:</strong></td>
</tr>
<tr>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td>Focus structure: No restrictions; PSA = topic (default)</td>
</tr>
</tbody>
</table>

Table 5.1: Constructional template for English passive (plain)

Each constructional template contains syntactic, morphological, semantic and pragmatic information about the construction in question. This template expresses the specific features of the English passive.

As an example of cross-linguistic comparison, consider the English and Sama WH-question
constructions. Sama is a syntactically ergative language, and both languages have a PrCS in which the WH-word appears. However, there is a restricted neutralization in Sama: the WH-word must be the S, U_T or d-S of the clause. This is illustrated in (5.3).

(5.3)a. Say nda’ d’nda?
   who see woman
   ‘Who did the woman see?’ (*‘Who saw the woman?’)
b. Say N-nda’ d’nda?
   who ANTI-see woman
   ‘Who saw the woman?’ (*‘Who did the woman see?’)

When the WH-word is the undergoer, the plain form of the verb is used, as in (5.3a), but if it is the actor, then the antipassive form of the verb must be used, as in (b). The constructional template for the Sama antipassive is given in Table 5.2.

<table>
<thead>
<tr>
<th>CONSTRUCTION: Sama antipassive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SYNTAX:</strong></td>
</tr>
<tr>
<td>Template(s): (5.2)</td>
</tr>
<tr>
<td>PSA: (4.14b,c1), Variable [±pragmatic influence] = immediate postverbal direct core argument</td>
</tr>
<tr>
<td>Linking: Actor = PSA</td>
</tr>
<tr>
<td>Default choice for PSA = non-MR core argument</td>
</tr>
<tr>
<td><strong>MORPHOLOGY:</strong></td>
</tr>
<tr>
<td>Verb: N- + verb stem</td>
</tr>
<tr>
<td><strong>SEMANTICS:</strong></td>
</tr>
<tr>
<td>PSA is instigator of state of affairs</td>
</tr>
<tr>
<td>Aktionsart = atelic (default)</td>
</tr>
<tr>
<td><strong>PRAGMATICS:</strong></td>
</tr>
<tr>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td>Focus structure: Non-MR core argument = non-specific (default)</td>
</tr>
<tr>
<td>PSA = topic (default)</td>
</tr>
</tbody>
</table>

Table 5.2: Constructional template for Sama antipassive

The fact that there is a restricted neutralization with respect to the WH-word in questions means that there is never any ambiguity as to the function of the WH-word in the PrCS in Sama, unlike in English. The constructional templates for English and Sama WH-question constructions are given in Tables 5.3 and 5.4.
The syntactic template, semantics and pragmatics of the two constructions are the same; the crucial difference between them lies in the lack of a restricted neutralization in the English construction and the existence of a variable syntactic pivot in the Sama construction.

Constructional templates play an important role in linking in both directions. For the semantics-to-syntax linking they supply the language-specific and construction-specific details which are required for the correct encoding of meaning in the morphosyntax. They play a crucial role in the syntax-to-semantics linking, especially in languages which have different privileged syntactic arguments for different constructions, e.g. Jakaltek, Sama, because they specify what the privileged syntactic argument is in the construction, which is central to the linking. As an example, consider the interaction of WH-question formation and reflexivization in Sama. In this language, the actor is always the controller for reflexivization, regardless of the whether the clause is active or antipassive voice. The template for Sama reflexivization is given in Table 5.5. (The Role Hierarchy and LS-Superiority Conditions will be introduced in §5.2.)
Table 5.5: Constructional template for Sama reflexivization

The interaction of these two constructions is illustrated in (5.4).

(5.4)a.  B’lli  d’nda  daing ma di-na.
        buy   woman fish    for REFL-3sg
        ‘The woman bought the fish for herself.’

a’.Ay b’lli d’nda   ma di-na?
    what buy woman for REFL-3sg
    ‘What did the woman buy for herself?’

    ANTI-buy woman fish    for REFL-3sg
    ‘The woman bought fish for herself.’

b’.Say n-b’lli daing ma di-na?
    who ANTI-buy fish for REFL-3sg
    ‘Who bought fish for him/herself?’

In (5.4a), d’nda ‘woman’, the actor NP, is the controller of the reflexive dina. This is also the case in the WH-question in (a’); in this sentence, the actor is the privileged syntactic argument (semantic controller) for reflexivization, and the undergoer is the privileged syntactic argument (syntactic pivot) for WH-question formation. The third example presents a clause in the antipassive voice, and the actor d’nda is the controller of the reflexive. In the final example, the privileged syntactic argument of the WH-question and the privileged syntactic argument of reflexivization are the same argument, the actor NP say ‘who’. Thus, the analysis of (5.4a’,b’) involves three constructional templates: the one for antipassive voice in Table 5.2, the one for WH-questions in Table 5.4, and the one for reflexivization in Table 5.5. The syntax-to-semantics linking algorithm for Sama would refer to these templates at crucial points to guide the interpretive process.

5.1.2 From Semantics to Syntax

The linking procedure from semantics (LS) to syntax (LSC) is summarized in (5.5).² These are

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²The linking algorithm in (5.5) differs from the one presented in Van Valin & LaPolla (1997) in two ways. First, steps 1 and 4 are presupposed by the algorithm presented there, and they are made explicit here. Second, the
the general linking principles, which may be overridden by the specific requirements of a construction as expressed in its constructional template.

(5.5) Linking algorithm: Semantics → Syntax

1. Construct the semantic representation of the sentence, based on the LS of the predicator.
2. Determine the actor and undergoer assignments, following the Actor-Undergoer Hierarchy in Figure 4.4.
3. Determine the morphosyntactic coding of the arguments
   a. Select the PSA, based on the PSA selection hierarchy and principles in (4.13)-(4.14).
   b. Assign the XPs the appropriate case markers and/or adpositions.
   c. Assign the agreement marking to the main or auxiliary verb, as appropriate.
4. Select the syntactic template(s) for the sentence following the principles in (5.2).
5. Assign XPs to positions in the syntactic representation of the sentence.
   a. Assign the [-WH] XPs to the appropriate positions in the clause.
   b. If there is a [+WH] XP,
      1. assign it to the normal position of a non-WH-XP with the same function, or
      2. assign it to the precore or postcore slot, or
      3. assign it to a position within the potential focus domain of the clause (default = the unmarked focus position).
   c. A non-WH XP may be assigned to the precore or postcore slot, subject to focus structure restrictions (optional).
   d. Assign the XP(s) of LS(s) other than that of the predicator in the nucleus to
      1. the periphery (default), or
      2. the precore or postcore slot, or
      3. the left-detached position.

All steps are all subject to cross-linguistic variation. As discussed in §4.4, some languages allow variable undergoer selection while other do not, and languages differ as to the principle governing undergoer selection (direct object vs. primary object languages) (step 2). The privileged syntactic argument selection principles in (4.14) vary along two major parameters, accusative vs. ergative privileged syntactic argument selection and whether privileged syntactic argument selection is restricted to macrorole arguments or not (step 3a); information from constructional templates can play a crucial role at this point. Case and agreement show substantial cross-linguistic variation (step 3b,c). The positions to which XPs are assigned in sentences varies not only within languages but across languages (step 5a), and the possibilities under step 5b cover the range of WH-question types found in human languages. Thus (5.5) lays out the general linking algorithm, which would have to be specialized for each individual language.

The workings of (5.5) can be illustrated by going through it with respect to the realization of several related versions of a sentence. As an example, let’s take a speaker wanting to express that Sandy transferred some flowers to Chris at a party. There are a number of verbs that could be used here, and in this instance the speaker chooses present. The system in (5.5) presumes that a speaker is realizing a specific communicative intention, and consequently whether the sentence will be e.g. active or passive, declarative or interrogative, figures into the formulation of the semantic representation and concomitant syntactic template selection. Moreover, the discourse status order of the steps is somewhat different; the reasons for this change will be spelled out below. Also, linking in head-marking languages will not be discussed, due to space limitations; see Van Valin & LaPolla (1997), §§7.2.2, 7.2.3 for detailed discussion.
(activation level) of the referents of the NPs is also represented (cf. §3.4). The output of step (1), which takes place in the lexicon, is given in Figure 5.4.

\[
\langle IF \text{DEC}_{\text{TNS}} \text{PAST} \langle \text{be-at}^\prime \text{party}_{\text{ACS}}, [\text{do}^\prime \text{Sandy}_{\text{ACV}}, \emptyset]\rangle \text{CAUSE} [\text{BECOME} \text{have}^\prime \text{Chris}_{\text{INA}}, \text{flowers}_{\text{ACV}}]\rangle\rangle
\]

Figure 5.4: Output of step (1) in (5.5)

The operators for the NPs are not represented here, in the interest of space. The next step in actor and undergoer assignment; this is illustrated in Figure 5.5, in which irrelevant details are not specified.

\[
[\text{do}^\prime \langle \text{ACT: Sandy}_{\text{ACV}}, \emptyset\rangle \text{CAUSE} [\text{BECOME} \text{have}^\prime \langle \text{NMR: Chris}_{\text{INA}}, \text{UND: flowers}_{\text{ACV}}\rangle]\]
\]

Figure 5.5: Output of step (2) in (5.5)

This reflects the unmarked or default macrorole assignments for English: the leftmost argument, Sandy, is the actor, and the rightmost argument, the flowers, is the undergoer. This leaves the third NP, Chris, as a non-macrorole argument. The next step concerns the morphosyntactic properties of the arguments, specifically privileged syntactic argument selection and case/adposition assignment.

\[
[\text{do}^\prime \langle \text{ACT: Sandy}_{\text{ACV}}, \emptyset\rangle \text{CAUSE} [\text{BECOME} \text{have}^\prime \langle \text{NMR: to Chris}_{\text{INA}}, \text{UND: flowers}_{\text{ACV}}\rangle]\]
\]

[PSA: NOM] Active, 3sg [ACC] [ACC]

Figure 5.6: Output of step (3) in (5.5)

The most important part of step (3) is privileged syntactic argument selection, and in this instance the actor is chosen as privileged syntactic argument, yielding an active voice sentence (step 3a). This determines the case marking of the clause: Sandy, as the highest ranking core macrorole, would receive nominative, and the flowers, as the other core macrorole, would receive accusative. Chris is a non-macrorole core argument, and the conditions for the to-assignment rule in (4.45a) are met, resulting in Chris being assigned to. All prepositions in English assign accusative case to their objects; of course, since full NPs do not inflect for case in English, these rules apply vacuously. Their application would only be apparent if the argument variables in the logical structure were filled by pronouns. The verb is active voice, as noted above, and the result of step 3c is that it would show 3sg agreement; however, since only be shows person differences in the past tense, the agreement features would not be realized morphologically.

The next step in syntactic template selection (step 4), and the result of this is shown in Figure 5.7.
As noted in §1.6 proper nouns do not have a layered structure, since they take neither operators nor arguments, hence the lack of operator projections in two of the NPs. The semantic representation of the NP *the flowers* would be \( \langle \text{DEF} + \langle \text{NEG} - \langle \text{QNT} \exists \langle \text{NUM PL} \langle \text{NASP COUNT} \langle \text{flower} \rangle \rangle \rangle \rangle \rangle \), and this determines the operators to be found in the operator projection in the syntactic representation of the NP; of these operators, only definiteness and number are realized overtly in the morphosyntax. The same would be true for the NP *the party*. The final step involves linking the XPs in Figure 5.6 into the structure in Figure 5.7; this is represented in Figure 5.8.
The NP *Sandy*, as the privileged syntactic argument, is linked to the core-initial position, and the NP *the flowers*, as the undergoer, is linked to the immediately postverbal position. The PP *to Chris* follows the undergoer as the last phrase in the core. The predicative adjunct PP *at the party* is linked to the periphery. The verb *present* is linked to the nucleus and is inflected for past tense, and the core-internal position of the morpheme expressing the tense operator signals declarative illocutionary force.

It will not be possible to give this much detail for every sentence that will be analyzed, and consequently the steps illustrated in Figures 5.4 through 5.8 can be abbreviated as in Figure 5.9. In such abbreviated diagrams, the operator projections and the internal structure of NPs and PPs will not be specified unless it is relevant to the point under discussion.
All of the relevant linking information from Figures 5.4-5.8 is summarized in Figure 5.9, with the outputs from steps (2) and (3) depicted above the semantic representation of the sentence for clarity.

The alternative undergoer choice is presented in Figure 5.10. In this sentence Chris is selected as undergoer, rather than the flowers.
Because there is a marked undergoer choice, the with assignment rule in (4.45c) applies, resulting in the NP the flowers being marked by with. These last two figures represent the two possible active voice linkings with present; one of the possible passive voice linkings is given in Figure 5.11.
The macrorole assignments in Figure 5.11 are the same as in Figure 5.10, but in this figure the undergoer rather than the actor is selected as the privileged syntactic argument, yielding a passive construction. Accordingly, the actor NP _Sandy_ is assigned the preposition _by_ and is linked to a position in the periphery, while the undergoer NP _Chris_ is linked to the core-initial privileged syntactic argument position, following the constructional template in Table 5.1.

WH-questions have long been an important topic in syntactic theory, especially the kind found in English which involve a long-distance dependency. A phenomenon which all syntactic theories must account for is the case which may appear on a WH-word in the precore slot, as in e.g. _Whom did Sandy present with the flowers at the party?_. As Figure 5.12 shows, this follows without any further specifications from the RRG linking algorithm. It should be noted that simple WH-words like _who_ and _what_ have no activation level, since in the question they have no specific referent. WH-NPs like _which boy_ would have one, since they presuppose that some set of boys has been previously mentioned or is accessible; such WH-expressions have often been referred to as being ‘discourse linked’.
Figure 5.12: Linking in a WH-question in English

Since the WH-word who is the undergoer of present in an active voice construction, it would be assigned accusative case (at least in the grammar of the speakers who have whom) in step (3), and then in step (5) it would be linked directly to the precore slot, following the constructional template in Table 5.3. In a complete representation as in Figure 5.8, did would be represented in the operator projection as expressing past tense and interrogative illocutionary force (by virtue of its core-initial position).

English exhibits the rare phenomenon of preposition stranding in extraction constructions, e.g. Who did Sandy present the flowers to at the party? The semantics-to-syntax linking algorithm proposed in Van Valin & LaPolla (1997) cannot account for preposition stranding, because it orders the preposition assignment rule after the rule linking the XPs into the syntactic representation. Since the preposition can be linked independently of its NP object, it must be assigned before the linking of the NP to the syntax occurs. Since many contemporary speakers of English do not have whom in their grammar, the only possible form of a WH-question in which the WH-word is the object of a preposition is the stranded form. The linking in Who did Sandy present the flowers to at the party? is given in Figure 5.13.

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3See §5.3.3 for a discussion of the discourse-pragmatic conditions on preposition stranding.
There are two distinctive attributes of this construction. First, the preposition links to the third argument position in the core, just as in Figure 5.9, but it lacks an object. This is not unprecedented in English, because there are intransitive prepositions that can fill core slots, e.g. *away* as in *He put the book away.* Second, this structure violates the template selection principle in (5.2b3); it permits only *To whom did Sandy present the flowers at the party?*, since it requires that the core have one less argument slot to compensate for the occurrence of the argument XP in the PrCS. However, in an adjunct WH-question, e.g. *Where did Sandy present the flowers to Chris?*, there is a PrCS together with a full three-slot core, and accordingly this structure has a precedent in English syntax. Given the cross-linguistic rarity of this construction, this violation of (5.2b3) is normally not permitted by languages in which WH-words occur in the precore slot. The accusative case assigned by *to* is in parenthesis, since it is optional (and dispreferred) in this construction even for speakers who have *whom* in their grammar.

If the question were *Where did Sandy present Chris with the flowers?*, then the logical structure would be **be-LOC**′ (where, [[do′ (Sandy_{ACV}, Ø)] CAUSE [BECOME have′ (Chris_{ACV}, flowers_{ACV})]]). The core internal linking would be the same as in Figure 5.10, and step 5b2 would assign the adjunct WH-word *where* to the PrCS.

It would be useful to illustrate the steps in (5.5) with respect to a language with a full case system, e.g. German. Consider the examples in (5.6); their semantic representation is given in (5.6d).

(5.6) a. *Der Mann ha-t der Frau den Hut geschenkt.*
the.MsgNOM man have-3sgPRES the.FsgDAT woman the.MsgACC hat give.PSTP
‘The man gave the hat to the woman [as a gift].’
b. *Wem hat der Mann den Hut geschenkt?*
   ‘To whom did the man give the hat?’
c. *Den Hut hat der Mann der Frau geschenkt.*
   ‘The hat the man gave to the woman.’
d. 〈*IF DEC/INT TNS PRES ASP PERF (doˈ (Mann, Ø)) CAUSE [BECOME haveˈ (Frau/we-, Hut))]〉

The linking in (5.6b), which has a WH-word in the PrCs, is presented in Figure 5.14, while the
linking in (5.6c), which has a non-WH NP in the PrCS, is given in Figure 5.15.

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Figure 5.14: Linking from semantics to syntax in (5.6b)
The output of step (2), macrorole assignment, is always the same, as German does not allow variable linking to undergoer like English; hence *hat* ‘hat’ is always the undergoer and *Frau* ‘woman’ or *we-‘who’ is always a non-macrorole core argument.  In step (3) the actor is selected as privileged syntactic argument, yielding an active construction.  The actor NP, *Mann* ‘man’ is the highest ranking core macrorole, and it therefore receives nominative case, and the finite verb would agree with it.  The undergoer NP, *Hut* ‘hat’, is the other macrorole, and therefore it receives accusative case, while the non-macrorole core argument, *Frau* ‘woman’ or *we-‘who’, receives dative case.  In both of these constructions, the NP in the PrCS is linked directly from its logical structure position to the PrCS, and no special considerations are required to account for its case.

Variable undergoer selection is unusual for languages with case systems, but Dyirbal exemplifies both an ergative syntactic system as well as variable undergoer selection, as discussed in §4.4.  In Dyirbal, as in English and German, the rightmost argument in the logical structure is the default choice for undergoer.  The relevant examples are given in (5.7), repeated from (4.30).

(5.7) a. *Balam mirap-Ø bangun dyugumbil-ru wag-a-n bagul yara-gu.*
NM.ABS beans-ABS NM.ERG woman-ERG give-TNS NM.DAT man-DAT
‘The woman gave beans to the man.’
b. *Bayi yara-Ø wag-a-n bangun dyugumbil-ru bangum mirap-dyu.*
NM.ABS man-ABS give-TNS NM.ERG woman-ERG NM.INST beans-INST
‘The woman gave the man beans.’
c. 〈IFDEC〈TNSNFUT′[do’ (dyugumbil-, Ø)] CAUSE [BECOME have’ (yara-, mirap-)]〉〉

In Dyirbal the rules in (4.41) apply, assigning absolutive case to the undergoer, the lowest ranking macrorole, and ergative case to the actor *dyugumbil* ‘woman’.

4Dyirbal has a person-based split case marking system; first and second person pronouns are subject to the rules in
undergoer affects the coding of the third core argument. When the default selection is made, i.e. 麦 – ‘beans’ as undergoer, then the rule assigning dative case in (4.41) applies, yielding (5.7a). When the marked selection is made, i.e. 人 – ‘man’, then instrumental rather than dative case is assigned to the non-macrorole core argument, following the case analog of (4.45c), yielding (5.7b). The pattern in (5.7b) is analogous to that in Figure 5.10. The linking in (5.7b) is illustrated in Figure (5.13).

![Figure 5.16: Linking from semantics to syntax in (5.7b)](image)

A different kind of variable undergoer assignment is found in possessor raising constructions like the one found in Acehnese in (4.4), repeated below.

(5.8) a. Seunang até lôn.
    happy liver 1sg
    ‘I am happy.’ (lit: ‘My liver is happy.’)

b. Lôn seunang-até.
    1sg happy-liver
    ‘I am happy.’

The logical structure for both of these sentences is be’ ([have.as.part’ (1sg, até)], [happy’]), and they differ with respect to undergoer selection. In the unmarked linking in (5.8a), the logical structure is be’ ([have.as.part’ (lôn, até)], [happy’]), and até lôn ‘my liver’ is selected as undergoer and is linked to the postnuclear core position. In the marked linking in (5.8b), the logical structure is be’ ([have.as.part’ (lôn, até)], [happy’]), in which the possessor lôn is selected as head and hence as the undergoer. This is analogous to the alternation discussed in §2.3 between the woman’s book (have’ (woman, book)) and the woman with the book (have’ (woman, book)), in which either the possessed N (unmarked) or the possessor (marked) may be selected as the head of an NP expressing possession. The undergoer is linked to a core argument position, while the

(4.40). See Van Valin & LaPolla (1997), §7.3.1.2 for a discussion of split-ergative case systems.
possessed body part is incorporated into the nucleus. These two linkings are illustrated in Figure 5.17.

![Diagram](image_url)

**Figure 5.17:** Linking from semantics to syntax in Acehnese possessor raising construction

When a single participant appears in more than one argument position in a logical structure, as in \[\text{do'} (x, \emptyset) \ CAUSE \text{BECOME have'} (x, y)\] ‘take’ or \[\text{do'} (x, \text{eat'} (x, y)) \& \text{INGR consumed'} (y)\] ‘eat’ (active accomplishment), its linking properties with respect to actor are determined by the higher ranking position and with respect to undergoer by the lower ranking position. So with *take* the *x* argument is both effector and recipient, and the linking rules treat it as an effector with respect to actor selection; similarly, with *eat* the *y* argument is both consumed and patient, and it is treated as a patient with respect to macrorole selection.

### 5.1.3 From Syntax to Semantics

Of the two directions of linking, going from the syntactic representation to the semantic representation is the more difficult of the two, because it involves interpreting the overt morphosyntactic form of a sentence and deducing the semantic functions of the elements in the sentence from it. Accordingly, the linking rules must refer to the morphosyntactic features of the sentence. One of the main reasons there are so many steps in (5.9) is that it is intended to cover a significant cross-linguistic range of grammatical phenomena; the linking algorithm for any particular language will contain only those steps that are relevant to that language. The procedure for taking a sentence and linking it to its semantic representation is summarized in (5.9).

(5.9) Linking algorithm: Syntax → Semantics

1. Determine the macrorole(s) and other core argument(s) in the clause.
   a. If the verb is intransitive, then assign the privileged syntactic argument either macrorole or direct core argument status, depending upon the language (language-specific)
   b. If the language lacks voice oppositions, determine the macroroles from case marking and/or word order (language-specific).
c. If the language has a voice opposition, determine the voice of a transitive verb:
   (language-specific)
   1. If the construction is syntactically accusative:
      a. If it is the unmarked voice, the privileged syntactic argument is actor.
      b. If it is passive, the privileged syntactic argument is not the actor of the predicate in the nucleus;
         1. The actor may appear as a direct core argument (language-specific); or
         2. The actor may appear in the periphery marked by an adposition or an oblique case (language-specific); or
         3. If there is no actor in the core or the periphery, then replace the variable representing the highest ranking argument in the logical structure with ‘Ø’.
   2. If the construction is syntactically ergative:
      a. If it is the unmarked voice, the privileged syntactic argument is undergoer.
      b. If it is antipassive, the privileged syntactic argument is actor;
         1. The undergoer may appear as a direct core argument or as an oblique element (language-specific).
         2. If there is no undergoer in the core or the periphery, then replace the variable representing the lowest ranking argument in the logical structure with ‘Ø’.
      3. Assign macrorole status to the other direct core argument, if it is not dative or in an oblique case (language-specific).
   2. Retrieve from the lexicon the logical structure of the predicate in the nucleus of the clause and with respect to it execute step (2) from (5.5), subject to the following proviso:
      a. If the language allows variable undergoer selection and if there is more than one choice for undergoer, do not assign undergoer to an argument in the logical structure.
      b. Determine the linking of the non-macrorole core argument:
         1. If there is a two-place state predicate in the logical structure and if the non-macrorole core argument is marked by a locative adposition or dative or a locative-type case, then link it with the first argument position in the state predicate in the logical structure and link the other non-actor core argument (if there is one) to the second argument position in the state predicate, or
         2. If there is a two-place state predicate in the logical structure and if the non-macrorole core argument is not marked by a locative adposition or dative or a locative-type case, then link it with the second argument position in the state predicate and link the other non-actor core argument (if there is one) to the first argument position in the state predicate.
         3. Otherwise, link the animate NP with the first argument position in the state predicate in the logical structure.
   3. Link the arguments determined in step 1 with the arguments determined in step 2 until all core arguments are linked.
   4. If there is a predicative adpositional adjunct, then retrieve its logical structure from the lexicon, insert the logical structure of the core as the second argument in the logical structure and the object of the adposition in the periphery as the first argument.
   5. If there is an element in the pre- or postcore slot (language-specific),
      a. assign it the remaining unlinked argument position in the semantic representation of the sentence.
      b. and if there are no unlinked argument positions in the sentence, then treat the WH-

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5This handles sentences like (4.25a), in which there are two non-actor core arguments in the same case.
word like a predicative preposition and follow the procedure in step 4, linking the
WH-word to the first argument position in the logical structure.

The steps in 1c refer crucially to constructional templates, especially in languages which have both
syntactically ergative and syntactically accusative constructions.

The application of this linking algorithm to English can be illustrated with a sentence like
Kim broke the glass. The first step is to identify the verb and its voice: broke is transitive and
active voice, which means that the privileged syntactic argument is the actor. The NP following the
verb is direct, and therefore it must be the undergoer. Step (2) involves retrieving the logical
structure of break from the lexicon, \([\text{do}´(x, \emptyset)] \text{CAUSE } \text{BECOME } \text{broken}´(y)\], and assigning
macroroles, yielding ‘x = actor’ and ‘y = undergoer’. In step (3), the arguments from the sentence
are linked to the logical structure arguments, yielding the result that ‘x = Kim’ and ‘y = the
glass’. This is illustrated in Figure 5.18.

![Diagram](image-url)

Figure 5.18: Linking from syntax to semantics in simple English transitive clause

In step 1, step (c) is required only in language with voice oppositions. In \([S, A_T]\) languages
this step would be unnecessary, and the linking from syntax to semantics in such languages is
basically trivial: in a clause with a transitive verb, the privileged syntactic argument is always an
actor and the other direct core argument is always the lower-ranking argument in terms of (4.13).
The linking from syntax to semantics in Enga, a Papuan language of this type (Lang 1973), is
illustrated in Figure 5.19 for the example in (5.10).

(5.10) Baa-mé mená dóko-Ø p-i-á.
3sg-ERG pig DET-ABS kill-PAST-3sg
‘He killed the pig.’
The ergative case in Enga always marks the actor and the absolutive the undergoer. Hence the linking is simple and straightforward. The syntax-to-semantics linking algorithm for Enga would include only steps 1a-b, 2 (without a-b), 3 and 4 from (5.9); Enga has in situ WH-words, and therefore there is no need for step 5. This is the simplest possible syntax-to-semantics linking algorithm that a language could have, and it is perhaps one of the reasons why this language type is the most frequent cross-linguistically.

Steps (2a,b) are required only in languages in like English and Dyirbal in which variable linking to undergoer is possible with a single verb and there is no indication on the verb, e.g. an applicative morpheme, that a marked linking has occurred. Consider the following examples of the locative alternation in German.

(5.11) German streichen/bestreichen ‘spread’

a. Max hat die Farbe an die Wand gestrichen.
   have.3sgPRES the.FsgACC paint on the.FsgACC wall spread.PSTP
   ‘Max [actor] spread the paint [undergoer] on the wall.’
   a´. [do´ (Max, [spread´ (Max, Farbe)])] CAUSE [BECOME be-on´ (Wand, Farbe)]

b. Max hat die Wand mit der Farbe bestrichen.
   have.3sgPRES the.FsgACC wall with the.FsgDAT paint spread.PSTP
   ‘Max [actor] spread the wall [undergoer] with the paint.’
   b´. [do´ (Max, [spread´ (Max, Farbe)])] CAUSE [BECOME be-on´ (Wand, Farbe)], U = y

In the English translations of these two sentences, there are two different selections for undergoer, and there is no indication on the verb spread as to whether an unmarked or a marked linking has occurred; the only clue is the preposition marking the oblique core argument. This is not the case in German, however: the verb streichen ‘spread [on]’ takes only the unmarked linking, i.e. the lowest ranking argument in the logical structure as undergoer, while the verb bestreichen ‘spread [with]’ takes only the marked linking, i.e. the higher ranking non-actor argument. While these verbs would be related to each other in the lexicon via a lexical rule (cf. Van Valin & LaPolla (1997), §4.6), for linking purposes they count as distinct verbs each of which takes only a single
undergoer possibility. This would be indicated in the lexical entry for the verb lexicalizing the marked choice, i.e. ‘U = y’ for bestreichen ‘spread [with]’. Hence steps (2a,b) would not apply to them, unlike their English counterpart.

The sentence in Figure 5.11, *Chris was presented with the flowers by Sandy at the party*, exemplifies three additional complications: passive voice, variable undergoer selection, and an adjunct locative PP. The first step is to determine the voice of the verb; it is passive voice, which means that the privileged syntactic argument is not the actor. The NP after the verb is oblique, marked by *with*, and the final NP is marked by *by*, which following (1c1b2) in (5.9) makes it the actor. The next step is to call up the logical structure for *present* from the lexicon, [do´(x, Ø)] CAUSE [BECOME have´(y, z)]. Step (2) from (5.5) is then carried out, with the result that x = the actor. Because there is more than one possible undergoer choice with this verb, undergoer cannot be assigned, following (2a) in (5.9). Rather, by step (2b) in (5.9), the role of the oblique core argument *the flowers* is deduced from its prepositional marker; since *with* is not a locative preposition, *the flowers* must be linked to the first argument position in a two-place state predicate. By step (3) the two actors may be linked; this leaves the non-actor MR in the clause and the y argument in the logical structure unassigned, and, the two remaining arguments must be linked in order to satisfy the Completeness Constraint. The result is Sandy = actor = x, Chris = undergoer = y, and *the flowers* = z. There is additional unlinked material in the clause, namely the PP *at the party*. Step (4) in (5.9) comes into play here. The logical structure be-at´(v, w) is retrieved from the lexicon; the logical structure of *present* serves as the second argument in the logical structure, and the NP *the party* functions as the first argument. This yields the logical structure be-at´(party, [[do´(Sandy, Ø)] CAUSE [BECOME have´(Chris, flowers)]]). This completes the linking, and it may be represented graphically as in Figure 5.20; the circled numbers refer to the steps in (5.9).

![Figure 5.20: Linking from syntax to semantics in English passive construction](image-url)
If the sentence being analyzed were *Sandy gave Chris the flowers*, the linking would work the same way with respect to the non-macrorole argument. In step (2c) the result would be that there is no locative-type preposition marking *the flowers*, and therefore that NP should be linked to the second argument position in the two-place state predicate, which is the correct result. Thus the same procedure works for ‘dative shift’ verbs like *give*, which do not mark the non-undergoer theme with a preposition, and for verbs like *present* and *load*, since the lack of a preposition imparts the same information as the occurrence of a non-locative preposition, i.e. this argument does not link to the first argument position in the two-place state predicate in the logical structure of the verb.

The same considerations regarding the non-macrorole argument in (2c) in (5.9) apply in Dyirbal as well. The linking from syntax to semantics for (5.7a) is presented in Figure 5.21. Since Dyirbal has a voice opposition and the verb is M-transitive, the first step is to ascertain the voice of the verb; it is active voice, which signals that the privileged syntactic argument in the absolutive case is the undergoer. This means that the ergative case NP is the actor. The third core argument is in the dative case. In step (2), the logical structure is retrieved from the lexicon, and the \( x \) argument is determined to be the actor. Step (2c) comes into play, and since the third core argument is marked by the dative case, it would be linked to the first argument in the two-place state predicate in the logical structure. This leaves the absolutive NP \( \text{bálam míran} \) ‘beans’ and the \( z \) argument in the logical structure unlinked, and they must be linked to each other to satisfy the Completeness Constraint. This yields the correct interpretation of the core NPs in the sentence. If the third core argument has been in the instrumental case, as in (5.7b), then it would have been linked to the second argument in the two-place stative predicate (\( z \)), leaving the absolutive NP \( \text{báyí yara} \) ‘man’ to be linked to the first argument in the two-place state predicate.

![Figure 5.21: Linking from syntax to semantics in Dyirbal sentence in (5.7a)](image)

When a WH-question like (5.6b) is linked to its semantic representation, the WH-word is linked last after all of the core-internal arguments and the peripheral actor in a passive (if there is one) are dealt with. The WH-question to be analyzed is *What did Sandy present to Chris?*. An
English WH-question will be analyzed, because it is more challenging for the linking system; in languages like German with case-marked WH-words, the function of the WH-word is indicated by the case, whereas in English there is normally no indication of the function of the WH-word from its form.\(^6\) Step (1) is to determine the voice of the verb; it is active, and therefore the privileged syntactic argument is the actor. Steps (2) and (2b) would then come into play. Step (3) would involve associating actor with actor. After this has been accomplished, there remains an unlinked argument position in the logical structure of present and an unlinked NP in the PrCs. The only possibility that would avoid a violation of the Completeness Constraint would be to link the two, and accordingly step (5) is executed: the NP in the PrCS is linked to the remaining argument position in the logical structure. This linking is represented in Figure 5.22.

Preposition stranding presents an interesting problem for the linking algorithm. In a sentence like \textit{Who did Sandy present the flowers to?}, the preposition \textit{to} still serves as the crucial cue for determining the linking of the non-actor arguments in step (2b). This is shown in Figure 5.23.

\(^{6}\)The exceptions are the few speakers who use \textit{whom} and for constructions in which the WH-word occurs with a preposition, as in \textit{To which boy did she give the book?} or as a possessor, e.g. \textit{Whose book is on the table?}.
When step (2b) is executed, the result is that the NP object of to should be linked to the first argument position in the two-place state predicate in the logical structure and the other non-actor core argument should be linked to the second argument position. However, there is no NP following to, and consequently only the other NP, the flowers, is linked by this step. In order to satisfy the Completeness Constraint the NP in the PrCS must be linked to an logical structure argument position, and the only unlinked position is the \( y \) argument; linking \( \text{who} \) to the \( y \) argument position satisfies this constraint and yields the correct interpretation. Thus, preposition stranding can be accommodated by the linking algorithm as formulated in (5.9).

It must be emphasized that even though these linkings are described in terms of a sequence of steps, they are not equivalent to the stages in a transformational derivation, for two reasons. First, there is only one syntactic representation, the sentence itself, and one semantic representation, built around the logical structure of the predicate. Consequently, there are no derivationally related syntactic representations which are mapped into each other. Second, each step involves interpreting the structure in question, not manipulating or transforming it in any way. The argument positions in logical structure are assigned macrorole status (or not) with respect to the actor-undergoer hierarchy. The output of step (2) in (5.5) is not a distinct level of representation but rather the accumulation of this semantic information about the arguments. \( \text{Sandy} \) in Figure 5.4 is the first argument of \( \text{do} \)' in the logical structure for \text{present}, and the result of step (2) is that this characterization is enriched to include the information that this argument is the actor, as Figure 5.5 clearly shows. Thus the representation of actor and undergoer in e.g. Figure 5.9 is equivalent to an informationally enriched version of Figure 5.4, not a distinct level of semantic or syntactic representation.
5.2 Reflexivization

In Van Valin & LaPolla (1997) three different types of reflexive constructions were discussed: lexical reflexives of the type found in Lakhota and Dyirbal, clitic reflexives of the type found in Romance and Slavic languages, and coreference reflexives of the type found in English and Icelandic. In this section only coreference reflexives will be discussed; see Van Valin & LaPolla (1997), §§7.5.1, 7.5.3 for discussion of these other types.

Many languages have coreference reflexive constructions, in which the antecedent and the reflexive pronominal are independent syntactic arguments, with the reflexive element interpreted as obligatorily referring to the antecedent (controller). In a simple example like *Suzy saw herself*, the logical structure is see’ (Suzy, herself), and the linking is trivial. This simplicity masks a host of important questions, the primary ones stated in (5.12).

(5.12) a. What is the hierarchical relationship between the controller (antecedent) and the reflexive pronoun? Is it best characterized syntactically or semantically?
   b. In what syntactic domain must the controller and reflexive pronoun cooccur?

The first question refers to the problem of determining the range of possible relationships that the antecedent can bear to the reflexive. Why is *Herself saw Suzy* ungrammatical? Why is *Suzy’s brother saw herself* also ungrammatical? With respect to the second question, it is widely assumed that in English the clause is the syntactic domain in which reflexivization occurs, but it is necessary to distinguish the domain of possible reflexivization from the domain of obligatory reflexivization. In English, the clause is the domain of possible reflexivization but not the domain of obligatory reflexivization, as the following examples show.

(5.13)a. The woman_i sent the book to herself_i/*her_i.
   b. Nicole_i saw a rat near her_i/*herself_i.
   c. Suzy_i got some Alfredo sauce on her_i/herself_i.

All of these are simple sentences, and yet reflexivization is obligatory in (a), impossible in (b), and apparently optional in (c). What is the nature of the contrast here? Is it syntactic or semantic?

The RRG approach to the first question is based largely on Jackendoff’s (1972, 1992) work on reflexivization; he employs a somewhat different system of semantic representation, and accordingly his principles will have to be adapted to apply to the representations presented in chapter 2. In the earlier work he proposed a thematic-relations-based constraint on reflexivization: the antecedent must be higher on the thematic relations hierarchy than the reflexive. The hierarchy he assumed was agent > location, source, goal > theme. The relevant hierarchy in RRG is the privileged syntactic argument selection hierarchy in (4.13) and associated principles in (4.14). Jackendoff’s semantic hierarchy constraint on reflexivization may be reformulated as in (5.14).

(5.14) Role Hierarchy Condition on reflexivization:
   The reflexive pronoun must not be higher on (4.13) (as applied to selection of privileged syntactic arguments in the language in (4.14c)) than its antecedent.

For English, this means that actors and undergoers are possible controllers, but it also means that non-macrorole core arguments, both direct and oblique, can be controllers as well. Hence the hierarchy for English is actor > undergoer > other.
The Role Hierarchy Condition in (5.14) is universal, in that the reflexive is never higher on the hierarchy than the antecedent; in other words, actors are always the antecedents for undergoers, never the other way around. The phrase in (5.14) ‘as applied to the selection of privileged syntactic arguments in the language’ refers exclusively to whether selection of the privileged syntactic argument is restricted to macroroles only or not, or to direct core arguments only or not. In terms of what ‘higher on (4.13)’ means, it is the same for coreference reflexives in both syntactically ergative and syntactically accusative languages (cf. (5.4)).

Does the Role Hierarchy Condition make any predications that a purely syntactic analysis, e.g. Principle A stated in terms of c-command, does not? Consider the following examples from Toba Batak (Shugamoto 1984), a VOS language; the examples in (5.15) illustrate the voice system, while those in (5.16) exemplify the basic facts of reflexivization.

(5.15) a. Mang-ida si Ria si Torus. ‘Torus sees Ria.’
    ATV-see PM PM
b. Di-ida si Torus si Ria. ‘Torus sees Ria.’
    PASS-see
c. Mang-ida si Torus si Ria ‘Ria sees Torus.’
    ATV-see
d. Di-ida si Ria si Torus. ‘Ria sees Torus.’
    PASS-see

Active voice is shown in (5.15a,c), in which the NP immediately following the verb is the undergoer and the final NP is the actor. In the passive voice in (b,d), the actor remains a direct core argument and immediately follows the verb, while the undergoer is in final position.7 Toba Batak is like Sama in that the actor is always the reflexive controller, as the following examples demonstrate.

(5.16) a. Mang-ida diri-na si Torus. ‘Torus sees himself.’
    ATV-see self-3sgGEN Actor binds undergoer
b. *Di-ida diri-na si Torus. ‘Himself sees Torus.’
    PASS-see self-3sgGEN  *Undergoer binds actor
c. *Mang-ida si Torus diri-na. ‘Himself sees Torus.’
    ATV-see  self-3sgGEN   *Undergoer binds actor
d. Di-ida si Torus diri-na. ‘Torus sees himself.’
    PASS-see self-3sgGEN Actor binds undergoer

In terms of X-bar syntax, the ‘subject’, the final NP, c-commands the post-verbal NP, and Principle A predicts that (5.16a,b) should be grammatical and (c,d) should be ungrammatical. This is not the case, however. While (5.16a) is grammatical and (c) ungrammatical, as predicted, (5.16b) is ungrammatical and, perhaps even more surprisingly, (d) is grammatical. The Role Hierarchy Condition, on the other hand, correctly predicts the grammaticality of these four examples: when the actor binds the undergoer, the sentence is grammatical, as in (5.16a,d), and when the undergoer binds the actor, as in (b,c), the sentence is ungrammatical. Thus, the semantic condition in (5.14) correctly predicts the facts of Toba Batak relativization, while the c-command-based principle does not.

The operation of this principle in English can be illustrated with the simple examples

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7This is an example of a voice opposition with is PSA modulation only, since the actor remains a direct core argument.
introduced above, repeated in (5.17) with their logical structures.

(5.17)  
a. Suzy saw herself.
   a´.see´ (Suzyi, herselfi)

b. *Herself saw Suzy.
   b´.see´ (herselfi, Suzyj)

c. *Suzy’s brother saw herself.
   c´.see´ ([have.as.kin´ (Suzyi, brotheri)], herselfi)

In (a) Suzy is the actor and herself the undergoer, and the sentence is fine. In (b), on the other hand, herself is the actor and Suzy the undergoer, which violates the condition in (5.14). In (c), Suzy is neither actor nor undergoer; indeed, it is not an argument of see at all. Hence it is not a possible antecedent for herself. It would appear that there is an important unstated assumption in (5.14), namely, that both the antecedent and the reflexive must be semantic arguments of the verb. While this seems to work for (5.13a,b) and the examples in (5.17), it is too strong: in (5.13c), herself is not a semantic argument of get but rather an argument-adjunct, and yet the sentence is clearly grammatical. This aspect of the relationship between the reflexive and its antecedent will be further clarified below.

While this section is concerned with reflexives and not reciprocals, the semantic approach highlights an important difference between them. Consider the examples in (5.18).

(5.18)  
a. *The men were shaved by themselves.
   b. The men were shaved by each other.

Example (5.18a) is the passive of a sentence like (5.17b), and it clearly violates the Role Hierarchy Condition in (5.14). But (5.18b), which is structurally identical to (5.18a), is grammatical. What explains the difference in grammaticality between the two examples? The explanation lies in the different semantics of the two forms. Rough logical structure representations of the meanings of (5.18a,b) are given in (5.19a,b).

(5.19)  
a. do´ (mani, [shave´ (mani, manj)], i = j)
   b. do´ (mani, [shave´ (mani, manj)]) ∧ do´ (manj, [shave´ (manj, mani)])

In (5.18a) there are multiple men, and each one’s activity can be described by (5.19a); in (5.18a) themselves is manj, the actor, and the men is manj, the undergoer, and consequently this sentence violates the Role Hierarchy Condition. The situation is interestingly different in (5.19b); there could be multiple pairs of mani and manj, but this does not affect the analysis. If the same assignments were made in the first part of (5.19b), then each other is manj, the actor, and the men is manj, the undergoer, which, like (5.19a) would violate the Role Hierarchy Condition. But the second part does not violate it; there the men is manj, the actor, and each other is manj, the undergoer. Hence the men includes both mani and manj, which means that semantically it is both actor and undergoer, and likewise each other includes both mani and manj, which means that it too is both actor and undergoer semantically. The Role Hierarchy Conditions states that the reflexive or (in this case) reciprocal “must not be higher on (4.13)... than

8’∧’ is a connective meaning ‘and’.
9It should be noted that there are languages which express reciprocals in exactly this way, i.e. with two cores with the actor of the first being the undergoer of the second, and the undergoer of the first core being the actor of the second, e.g. Amele (Roberts 1987).
its antecedent”, and because both the men and each other are both actor and undergoer simultaneously, this condition is not violated, since each other is not higher on the hierarchy than the men, as the representations in (5.19b) make clear. Thus, the semantic approach to binding based on (5.14) can explain the difference between (5.18a) and (b).

Jackendoff’s second condition, presented in his 1992 paper, offers an alternative way of explaining the ungrammaticality of (5.17c). Since the system of semantic representation he employs differs from the one in RRG, the condition will be reformulated in terms of logical structures. The heads of the fillers of the variable positions in logical structure will be termed the primary arguments of the logical structure. In a simple logical structure like (5.17a´), both Suzy and herself are primary arguments. In (c´), however, brother and herself are the primary arguments; Suzy is not a primary argument, since brother is the head of the complex expression filling the x argument position in the logical structure. Jackendoff defines a notion which will be called logical structure superiority (or LS-superiority) as in (5.20a).

(5.20)a. Logical structure superiority (LS-superiority)
   A constituent P in logical structure is LS-superior to a constituent Q iff there is a constituent R in logical structure such that
   i. Q is a constituent of R, and
   ii. P and R are primary arguments of the same logical structure.

b. Superiority condition on reflexivization:
   A bound variable may not be LS-superior to its binder.

In (5.17c´) Suzy is a non-head constituent of have.as.kin´ (Suzy, brother), and therefore herself is LS-superior to Suzy, since herself is a primary argument of the logical structure. Jackendoff proposes the condition on reflexivization given in (5.20b). That is, a reflexive pronoun may not be LS-superior to its antecedent in logical structure. This condition rules out (5.17c) but not (b), while the principle in (5.14) rules out (b) but not (c). Thus both principles are needed to account for the examples in (5.17a-c).

Are two semantic principles, (5.14) and (5.20b), really necessary here? The answer is ‘yes’. Consider the contrast between German and Icelandic with respect to the equivalents of ‘she was told a story about herself’ in the two languages. The sentences are given in (5.21a,b).

(5.21)a. Henni var sög sag-a um sig. Icelandic
   3FsgDAT was.IMPER tell.PSTP.FsgNOM story-FsgNOM about SELF
   ‘She was told a story about herself.’

b.*Ihr wurde eine Geschichte über sich erzähl-t. German
   3FsgDAT became.IMPER a.FsgNOM story about 3.SELF tell-PSTP
   ‘She was told a story about herself.’

Both sentences would have the same logical structure, and it meets the LS-superiority condition, as the antecedent her (a primary argument) is LS-superior to the reflexive herself, which is not a primary argument since it is inside the NP ‘a story about X’. The LS-superiority condition cannot, therefore, account for the ungrammaticality of the German example. That is explained by the difference in the Role Hierarchy Condition in the two languages. German allows only macrorole arguments as privileged syntactic arguments, and therefore only macrorole arguments are possible controllers for reflexives. Hence ihr ‘3FsgDAT’, being a non-macrorole direct core argument, is
not a possible antecedent for a reflexive, and consequently the sentence is ungrammatical. In Icelandic, on the other hand, the hierarchy in (4.13) applies to direct core arguments, and therefore the possibility of controlling a reflexive is not restricted to macroroles. Hence henni ‘3FsgDAT’ is a possible antecedent, and because the reflexive is not higher on the hierarchy than its controller, the sentence is grammatical. Thus, the contrast in grammaticality between the German and Icelandic examples in (5.21) cannot be explained by the LS-superiority condition alone; rather, both principles are needed to explain this contrast.

The privileged syntactic argument selection principles in English includes macrorole and non-macrorole core arguments, and as mentioned above, this entails that both types of syntactic arguments can serve as reflexive controllers. This may be summarized as ‘actor > undergoer > other’, and if both the controller and the reflexive fall into the ‘other’ category, then (4.13) applies to them directly. An example of an undergoer controller in English is a sentence like Mary told Lloyd about himself, where the undergoer Lloyd is the antecedent. When both actor and undergoer are potential antecedents, as in Mary told Susan about herself, the actor is always a possible antecedent, and for many speakers both are. It is also possible to have a non-macrorole argument as an antecedent, as in Bob talked to Susan about herself. In this sentence, Susan outranks herself on the privileged syntactic argument selection hierarchy. Hence this sentence meets both conditions governing reflexivization in English.

Pollard & Sag (1992) present examples like those in (5.22) as counterexamples to Jackendoff’s (1972) thematic hierarchy condition and as problems for any thematic-relations-based theory of reflexivization.

(5.22) a. I pointed out Nicole to herself in the picture.
   b. I showed Nicole herself in the picture.

In (a) Nicole is theme and herself goal, in Jackendoff’s terms, whereas in (b) Nicole is goal and herself theme. Recall that Jackendoff’s hierarchy is agent > location, source, goal > theme, and while this predicts the grammaticality of (b), it incorrectly predicts the ungrammaticality of (a). It looks as if, in Jackendoff’s terms, the hierarchy is different for different constructions, an unhappy result. But in terms of the actor > undergoer > other hierarchy there is no problem, for in both sentences the undergoer is the antecedent and the reflexive is a non-macrorole core argument, which counts as ‘other’. Thus, English reflexivization is governed by the formulation in (5.14), not the thematic relations hierarchy proposed by Jackendoff.

At the beginning of this section the question of the syntactic domain in which reflexivization occurs in English was raised. It is usually assumed that the clause is the domain of reflexivization in English, but the examples in (5.13), repeated below, show that while the clause appears to be the domain of possible reflexivization in English, it is not the domain of obligatory reflexivization.

(5.13) a. The womani sent the book to herselfi/*heri.
   b. Nicolei saw a rat near heri/*herselfi.
   c. Suzyi got some Alfredo sauce on heri/herselfi.

If the clause were the domain of obligatory reflexivization, then all three sentences should have reflexive pronouns. There is a domain of obligatory reflexivization, as (a) shows; what is it? First, the domain of possible reflexivization in English appears to be the core, not the clause, in simple sentences. All of these PPs are within the core. The fact that the domain is the core, not the clause, will become crucial in the discussion of reflexivization in complex sentences in chapter 7. Second,
reflexivization is obligatory among semantic co-arguments within the core; crucially, it is not obligatory when the coreferring element is in an argument-adjunct PP. In both (5.13b) and (c) the PPs are argument-adjuncts, whereas in (a) it is an argument PP, and reflexivization is obligatory in (a) and only optional in (c). However, there are sentences like Who injured herself? which show that this constraint is too strong. In this sentence, the controller is a syntactic argument in the precore slot, which is outside of the core. Hence it must be the clause, not the core, as the proper domain. This may be formulated as the Domain of Obligatory Reflexivization Constraint, stated in (5.23).

(5.23) Domain of Obligatory Reflexivization Constraint:
Within a simple clause, one of two coreferring NPs which are semantic co-arguments must be realized as a reflexive, while one of two coreferring NPs which are not semantic co-arguments may be realized as a reflexive.

‘Semantic co-arguments’ are semantic arguments of the same logical structure. ‘Within a simple clause’ means a clause that contains a single core and possibly a precore slot; the situation is rather different in clauses composed of multiple cores, as will be shown in chapter 7. ‘Two coreferring NPs which are not semantic co-arguments’ are NPs within the same simple clause which are not semantic arguments of the same logical structure; this is the case with the NP in argument-adjunct PPs, as it is the semantic argument of a predicative preposition and not directly a semantic argument of the logical structure of the verb. This constraint, combined with the Role Hierarchy and LS-Superiority Conditions, provides an explanation for the examples in (5.13); the logical structures in (5.24) are for the examples in (5.13).

(5.24) a. [do´ (woman_i, Ø)] CAUSE [BECOME have´ (herself_i, book)]
a´.[do´ (woman_i, Ø)] CAUSE [BECOME have´ (her_i/j, book)]
b. see´ (Nicole_i, [be-near´ (her_i/herself_i, rat)])
c. [do´ (Suzy_i, Ø)] CAUSE [BECOME be-on´ (her_i/herself_i, Alfredo sauce)]

The logical structure in (5.24a) meets all three conditions: woman and herself are arguments of the same logical structure, woman (actor) is higher on the role hierarchy than herself (either undergoer or other, depending on the linking), and herself is not LS-superior to woman. In the logical structure in (a´), on the other hand, the Domain of Obligatory Reflexivization Constraint is violated, if the pronoun her is coindexed with woman, since they are semantic co-arguments. In both the (b) and (c) logical structures, the coreferential NP functions as an argument-adjunct in the core, not as a semantic co-argument, because it is the object of a predicative preposition. In (5.24b) the predicative preposition be-near´ expresses the location of the rat and is unrelated to the main verb see. The verb get in (c) has the same type of logical structure as verbs like put, i.e. [do´ (x, Ø)] CAUSE [BECOME be-LOC´ (y, z)], and because a number of different locative prepositions can occur in the be-LOC´ slot in the logical structure, each adding its semantics to the clause (cf. (1.14)), the prepositions are predicative and their objects are argument-adjuncts. Hence Suzy and her/herself in (c) are not semantic co-arguments. Consequently, the condition for optional reflexivization in (5.23) is met, and therefore in principle either a pronoun or a reflexive is possible; the other two conditions are also met.

Why is the reflexive possible with (c) but not with (b) in (5.24)? Kuno (1987) suggests the difference lies in the degree of affectedness of the argument; the more affected the argument, the more acceptable the reflexive form is. The actor of see in (5.24a) is not affected by seeing something. On the other hand, Suzy is affected by getting Alfredo sauce on her clothes or body,
and the choice of the plain form or the reflexive reflects the speaker’s assessment of how affected she is. If the sentence is changed to *Suzy got some Alfredo sauce all over herself/her, the all over signals greater affectedness, and herself becomes the preferred form for many speakers. Argument-adjunct PPs are within the core, hence within the domain of possible reflexivization, and if the NP head of the PP is highly affected by the action of the verb, a reflexive may be used if the conditions in (5.14), (5.20) and (5.23) are met.

The constructional template for English reflexivization is presented in Table 5.6.

<table>
<thead>
<tr>
<th>CONSTRUCTION: English reflexivization</th>
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<tbody>
<tr>
<td>SYNTAX:</td>
</tr>
<tr>
<td>Template(s): (5.2)</td>
</tr>
<tr>
<td>PSA: Semantic controller = Actor &gt; Undergoer &gt; Other</td>
</tr>
<tr>
<td>Linking: Controller = core argument</td>
</tr>
<tr>
<td>Domain: clause</td>
</tr>
<tr>
<td>If controller and coreferential NP are semantic co-arguments, reflexivization is obligatory.</td>
</tr>
<tr>
<td>If controller and coreferential NP are not semantic co-arguments, reflexivization is optional.</td>
</tr>
<tr>
<td>MORPHOLOGY:</td>
</tr>
<tr>
<td>Reflexive: accusative pronoun + self</td>
</tr>
<tr>
<td>SEMANTICS:</td>
</tr>
<tr>
<td>Actor and reflexive pronoun are obligatorily coreferential within the clause</td>
</tr>
<tr>
<td>Subject to Role Hierarchy and LS-Superiority Conditions</td>
</tr>
<tr>
<td>PRAGMATICS:</td>
</tr>
<tr>
<td>Illocutionary force: Unspecified</td>
</tr>
<tr>
<td>Focus structure: Unspecified</td>
</tr>
</tbody>
</table>

Table 5.6: Constructional template for English reflexivization

There is one more important example to be analyzed; it is given in (5.25).

(5.25) *Herself was seen by Suzy.

The first thing to note about this sentence is that it has the same logical structure as *Suzy saw herself in (5.17a), i.e. see’ (Suzy, herself), and therefore it meets the conditions in (5.14) and (5.20). It might be suggested that this is ungrammatical because ‘backwards reflexivization’ is impossible, but this explanation is incorrect, as the sentences in (5.26) show.

(5.26) a. Suzy bought nothing for herself.
   a’. For HERSELF Suzy bought nothing.
   b. Jim likes himself; he can’t stand other people.
   b’. HIMSELF Jim likes; it’s OTHER PEOPLE he can’t stand.

Small caps signal narrow (in this case, contrastive) focus in (5.26a´, b´). Both (a´) and (b´) involve backwards reflexivization, and yet both are grammatical. Hence the ungrammaticality of (5.25) cannot be explained in terms of the impossibility of backwards reflexivization. As in the (a) and (b) examples, both (a´) and (b´) meet the conditions in (5.14) and (5.20). The problem in (5.25) is the controller is an adjunct. Reflexivization in English has a semantic controller for a privileged syntactic argument, and privileged syntactic arguments, regardless of whether they are syntactic or
semantic in nature, must be syntactic arguments and cannot be adjuncts. This is stated in the constructional templates for reflexivization in both Sama and English. This can be construed as a kind of domain constraint: within the syntactic domain of reflexivization, the controller must be in either the PrCS or the core; it cannot be in the periphery. This means that the Role Hierarchy and LS-Superiority Conditions apply to the output of step 3 of the semantics-to-syntax algorithm in (5.5) and likewise to the output of step 3 of the syntax-to-semantics algorithm in (5.9), being sensitive to whether the controller is an argument in the syntax or not. Thus the RRG account of coreference reflexivization involves both semantic constraints on the relationship between the controller and the reflexive element and a syntactic constraint on the domain in which they must both occur.

5.3 Focus Structure and Linking

In this section aspects of the interaction of focus structure with linking will be discussed. In Van Valin & LaPolla (1997), §7.6.2, it is shown that every step in the semantics-to-syntax linking algorithm in (5.5) can involve discourse-pragmatics, and examples from different languages illustrating each possibility are given there.

The linking information can be added to the RRG triple projection of the clause to yield the following representation.

Three issues related to the interaction of focus structure and linking will be addressed here: linearization in Italian, case spreading and stacking in Korean, and questions in Lakhota and English.
5.3.1 Focus Structure and Linearization

It has long been known that in some languages discourse-pragmatics can strongly affect word order, and in chapter 3 numerous examples of the interaction of focus structure and word order were presented. The differential activation status of NPs is not a major factor in determining the word order of English sentences, but it is in Italian, as focus structure considerations can have a profound effect on the order of elements in an Italian utterance. This was shown in the contrast between the (S)V predicate focus construction in (3.1b) and the VS sentence focus construction in (3.3b); they are repeated in (5.27).

(5.27)a. (La mia macchina) si è ROTTA. (=3.1b)
b. Mi si è rotta la MACCHINA. (=3.3b)
   ‘My car broke down.’

Since prenuclear core-internal elements are necessarily topical in Italian and core-internal focal elements must be postnuclear, the activation status of an argument crucially determines its position in a clause, if it is to appear overtly: an activated argument would normally occur in a prenuclear position in the core, as in (5.27a), while an inactive one functioning as focus would have to occur in a postnuclear position, as in (5.27b).

A more subtle and interesting interaction of linking and focus structure involves the clitic pronoun *ne*. It has figured prominently in discussions of split intransitivity (so-called ‘unaccusativity’) in Italian, because it pronominalizes quantified ‘direct objects’ of transitive verbs and the inverted ‘subjects’ of a certain class of intransitive verbs. This is illustrated in (5.28)-(5.30) (some of the examples are from Centineo 1996).

(5.28)a. Maria ha
     compra-to
due chili di frutta.
   ‘Maria bought two kilos of fruit.’
b. Maria ne ha comprati due.
   ‘Maria bought two of them.’
c. Molte ragazze hanno comprato il libro.
   ‘Many girls have bought the book.’
d.*Molte ne hanno comprato il libro.
   ‘Many of them bought the book.’
e.*Ne hanno comprato il libro, molte.
   ‘Many of them bought the book.’

(5.29)a. Molte ragazze sono
     arriva-t-e.
   ‘Many girls arrived.’
b.*Molte ne sono arrivate.
   ‘Many of them arrived.’
c. Sono arrivate molte ragazze.
   ‘Many girls arrived.’
d. Ne sono arrivate molte.
‘Many of them arrived.’

(5.30)a. Molte ragazze hanno telefona-to.
   many girls have.3pl telephone-PSTP
   ‘Many girls telephoned.’

b. *Molte ne hanno telefonato.
   ‘Many of them telephoned.’

c. Hanno telefonato molte ragazze.
   ‘Many girls telephoned.’

d. *Ne hanno telefonato molte.
   ‘Many of them telephoned.’

The facts in (5.28)-(5.30) show that both semantic and pragmatic factors are involved in the analysis of ne. Not all arguments of a verb can be pronominalized with ne; actors of transitive (5.28) and intransitive (5.30) verbs are excluded. In Centineo (1986 [1996]) and Van Valin (1990b) it is shown that ne is restricted to state, achievement and accomplishment verbs (cf. fn. 9 in Chapter 2) and that it realizes the lowest ranking argument (in terms of the actor-undergoer hierarchy) of the state predicate in the logical structure of the predicate in the clause. This explains the restrictions on the arguments which can be realized by ne, but it does not account for the contrast between (5.29b) and (d). However, given what has been shown about the interaction of word order and focus structure in Italian, an obvious hypothesis suggests itself: ne realizes the head of a quantified NP in which the quantifier must be focal. Since it is a third-person pronoun, it must be topical, and therefore it must occur preverbally; the quantifier, on the other hand, is focal and therefore must be postverbal. The split topic-focus properties of this NP can be seen clearly in (5.31).

(5.31)Q: Quanti student-i sono venu-t-i alla festa?
   how.many student-PL be.3pl come-PSTP-3Mpl to.the party
   ‘How many students came to the party?’

A: Ne sono venu-t-i ventiquattro.
   ne be.3pl come-PSTP-3Mpl twenty-four
   ‘Twenty four of them came.’

The question in (5.31) establishes studenti ‘students’ as topical, and the element in the answer corresponding to the WH-word in the question must be focal. Ne instantiates the topical head noun, while the focal quantifier appears, as predicted, in immediately postverbal position. Thus a complete statement of the semantic and pragmatic conditions on ne would be as in (5.32).

(5.32) Ne-cliticization: ne realizes the topical head of an NP with a focal quantifier, and this NP must be the lowest ranking argument (in terms of the actor-undergoer hierarchy) of the state predicate in the logical structure of the predicate in the clause.10

10Ne cannot, however, realize the quantified single argument of attributive/identificational essere ‘be’, which otherwise behaves like an ‘unaccusative’ verb, and this follows from the RRG analysis; see Van Valin (1990b), Schwartz (1993). See Bentley (2002) for a detailed analysis of a wider range of uses of ne which shows that (5.30) is applicable to all of them.

11The semantic representation for the NP containing ne would be <DEF − <NEG − <QNT due<INA <NUM pl <NASP
Steps 1 through 3 are collapsed in this representation. The most significant step is step 5, the mapping of the arguments into the syntactic template. *Ne* adds a special wrinkle: it is topical, but it must cooccur with a *focal* quantifier. Hence the NP must be split into pronominal head and quantifier, and each must be assigned a different position in the clause, because of the contraints on the potential focus domain in Italian discussed in chapter 3; the clitic pronoun must occur before it, while the focal quantifier appears in the immediate post-nuclear primary focus position. This yields another example of discontinuous constituency of the kind discussed in §1.6, and as in the Dyribal discontinuous NPs in Figure 1.18, the quantifier and the pronoun are related via the operator projection of the NP.

![Diagram](image)

**Figure 5.25:** Linking from semantics to syntax in *ne*-cliticization

*Ne* appears to be subject to a curious set of semantic and pragmatic restrictions; on the one hand, it occurs only with a restricted class of verbs and then only with a specific type of argument, and this argument must be partially focal. These seemingly disparate restrictions do, however, relate to each other in a principled way. In the first place, the ‘direct object’ of transitive verbs and inverted ‘subjects’ of intransitive verbs all occur in the immediate post-nuclear focus position; ‘subjects’ of transitive verbs cannot appear there and are consequently not potential foci. But why should *ne* be restricted to some intransitive verbs and not others, i.e. to non-activity verbs? The answer lies in the the semantics of the constructions in which inverted ‘subjects’ tend strongly to occur in Italian. As discussed in §3.2, the prototypical case involving inverted word order is the sentence focus construction, as in (5.27b), and the most common kind of sentence focus constructions is presentational, as in the English examples in (3.4). It is here that the restrictions on verb classes emerge. Lambrecht (1987) comments on the verbs that typically occur in sentence focus constructions.

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COUNT (ne\textsubscript{ACV})\\ \cdots . See Van Valin & LaPolla (1997), §4.7.5.
Another argument in favor of the interpretation of SF [sentence focus-RVV] structures as presentational in a broad sense can be seen in the constraints imposed in many languages on the kinds of predicates which SF structures may contain. The predicates most commonly permitted in SF sentences involve ‘presenting’ verbs, i.e. intransitive verbs expressing appearance or disappearance of some referent in the internal or external discourse setting, or the beginning or end of some state involving the referent. (373)

The verbs which Lambrecht describes are the prototypical ‘unaccusative’ verbs in Italian, and thus there is a fundamental relationship between verb type, on the one hand, and sentence focus constructions, on the other; Kuno (1972a) makes a similar argument. Since the prototypical cases of inverted word order are sentence focus constructions, the restriction to intransitive achievement and accomplishment verbs follows naturally.  

5.3.2 Focus Structure and Case Assignment

Case assignment is typically viewed as being syntactically or semantically motivated, but Korean gives evidence that focus structure can motivate case assignment in some instances. Korean exhibits the unusual phenomena of case spreading and case stacking; Park (1995) and Han (1999) present RRG analyses of them. An example of case spreading with an intransitive verb is given in (5.33), and examples of case spreading and case stacking with a transitive verb are given in (5.34).

(5.33)a. Thoyoil-ey kongcang-eyse pwul-i na-ass-ta. Basic form
    Saturday-LOC factory-LOC fire-NOM break.out-PAST-DEC
    ‘Fire broke out in the factory on Saturday.’

b. Thoyoil-i kongcang-i pwul-i na-ass-ta. Case spreading
    Saturday-NOM factory-NOM fire-NOM break.out-PAST-DEC
    ‘Fire broke out in the factory on Saturday.’

    Chelswu-NOM Yenghi-DAT flower-ACC give-PAST-DEC
    ‘Chelswu gave a flower to Yenghi.’

    Chelswu-NOM Yenghi-ACC flower-ACC give-PAST-DEC
    ‘Chelswu gave Yenghi a flower.’

    Chelswu-NOM Yenghi-DAT-ACC flower-ACC give-PAST-DEC
    ‘Chelswu gave a flower to Yenghi.’

Case spreading occurs when the nominative case occurs on more than just the privileged syntactic argument in a clause with an intransitive verb, as in (5.33b) or when the accusative appears on more than just the undergoer in a clause with a ditransitive verb, as in (5.34b). All three NPs in (5.33b) are in the nominative case, which is rather unusual from a cross-linguistic perspective and raises

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12 It was noted in fn. 10 that ne does not occur with attributive/identificational essere ‘be’ (see Schwartz 1993), an otherwise ‘unaccusative’ verb, and there are clear pragmatic reasons for it: attributive/identificational ‘be’ does not function as a presentational verb, in Lambrecht’s sense (1987:374). But, as Schwartz shows, locative and existential uses of essere do allow ne-cliticization, and this is predicted by the semantic analysis in Van Valin (1990b) and by this pragmatic analysis. This reinforces the semantic explanation for the non-occurrence of ne presented in Van Valin (1990b).
important questions about the nature of Korean case marking. In (5.34b) there are two accusative NPs, the undergoer and the recipient, whereas in the basic form in (a), the undergoer is in the accusative case and the recipient is in the dative, following the usual case marking rules for accusative languages in (4.40). In (5.34c), the recipient NP, Yenghi, carries two cases, dative and accusative; this is case stacking. In case spreading, one case replaces another, whereas in case stacking, the accusative case is added as a second case marker on certain NPs. Both case spreading and case stacking are very unusual cross-linguistically, and it is even more striking that both occur in the same language. In (5.34b) and (c) there are two accusative NPs; what is the difference between the two forms?

Let’s look at case spreading first and examine the accusative case. A clue to its function in these sentences can be found in the following examples involving verbs of motion, which do not normally take an accusative argument.

(5.35)a. Chelswu-ka san-ey kan-ess-ta. Basic form
    Chelswu-NOM mountain-LOC go-PAST-DEC
    ‘Chelswu went to(wards) the mountain.’

    Chelswu-NOM mountain-LOC go-PAST-but he-TOP arrive-CLM NEG-PAST-DEC
    ‘Chelswu went to(wards) the mountain, but he did not arrive.’

   b. Chelswu-ka san-lul kan-ess-ta. Accusative form
    Chelswu-NOM mountain-ACC go-PAST-DEC
    ‘Chelswu went to the mountain.’

    Chelswu-NOM mountain-ACC go-PAST-but he-TOP arrive-CLM NEG-PAST-DEC
    ‘Chelswu went to the mountain, but he did not arrive.’

In (5.35b) the accusative case has replaced the locative case on san ‘mountain’, the goal of the motion verb kan ‘go’, and this signals an important semantic contrast. As (5.35a´) shows, (5.35a) does not necessarily entail that Chelswu reached the mountain, whereas in the accusative version in (b), it is entailed that Chelswu reached the mountain, as the contradiction in (b´) shows. Thus (5.35b) must be interpreted as an active accomplishment, while (5.35a) can be interpreted as an activity. This difference in required telicity is signalled by the replacement of the locative case by the accusative in (5.35b). Is there a comparable contrast between (5.34a) and (5.34b)? These sentences are subjected to the same test in (5.36).

(5.36)a. Chelswu-ka Yenghi-eykey kktot-ul cwu-ess-ciman, Basic form
    Chelswu-NOM Yenghi-DAT flower-ACC give-PAST-but
    Yenghi-nun pat-ci an-ass-ta.
    Yenghi-TOP have-CLM NEG-PAST-DEC
    ‘Chelswu gave a flower to Yenghi, but Yenghi did not have it.’

   b. *Chelswu-ka Yenghi-ul kktot-ul cwu-ess-ciman, Case spreading
    Chelswu-NOM Yenghi-ACC flower-ACC give-PAST-but
    Yenghi-nun pat-ci an-ass-ta.
    Yenghi-TOP have-CLM NEG-PAST-DEC
    ‘Chelswu gave Yenghi a flower, but Yenghi did not have it.’

The contrast between the two sentences in (5.36) parallels that between (5.35a´) and (b´): (5.36a)
does not necessarily entail that Yenghi received the flower, while (5.36b) does entail completion of the transfer. Here again the replacement of the case on the ‘goal’ argument by the accusative signals completion. It appears, then, that the ‘spreading’ of the accusative case is semantically motivated and signals that an action is telic and completed; it will henceforth be referred to as ‘accusative substitution’.

What about the nominative spreading in (5.33b)? In the basic form in (5.33a), the undergoer, the highest ranking macrorole is assigned nominative case by (4.40a), and the other two NPs are adjuncts carrying variants of the locative case. In (5.33b), on the other hand, all three NPs are in the nominative case. What motivates this? The answer can be found in the contexts in which the different forms are used, as shown in (5.37).

(5.37)a. Mwusenil-i ilena-ess-ni?
    what-NOM happen-PAST-Q
    ‘What happened?’
a’.Thoyoil-i kongcang-i pwul-i na-ess-ta
    Saturday-NOM factory-NOM fire-NOM break.out-PAST-DEC
    ‘Fire broke out in the factory on Saturday.’
b. Thoyoil-ey mwusenil-i ilena-ess-ni?
    Saturday-on what-NOM happen-PAST-Q
    ‘What happened on Saturday?’
b’.Thoyoil-ey/*i kongcang-i pwul-i na-ess-ta
    Saturday-LOC/NOM factory-NOM fire-NOM break.out-PAST-DEC
    ‘Fire broke out in the factory on Saturday.’
c. Thoyoil-ey kongcang-eye se mwusenil-i ilena-ess-ni?
    Saturday-LOC factory-LOC what-NOM happen-PAST-Q
    ‘What happened at the factory on Saturday?’
c’.Thoyoil-ey/*i kongcang-eye/*i pwul-i na-ess-ta
    Saturday-LOC/NOM factory-LOC/NOM fire-NOM break.out-PAST-DEC
    ‘Fire broke out in the factory on Saturday.’

The question in (5.37a) is the same one used in (3.3) to create the context for a sentence focus construction, and it is in this context that all three NPs appear in the nominative case. When the question establishes a topic, as in (5.38b) and (c), then the NP mentioned in the question cannot occur in the nominative case in the answer. Thus it would appear that the ‘extra’ nominative case signals that the NP is part of the actual focus domain; in other words, it indicates that an NP is focal.

Is there any comparable means of signalling the actual focus domain by means of case in clauses with transitive verbs? Yes, there is: by means of case stacking. The accusative case added to the dative NP Yenghi-eykey ‘to Yenghi’ in (5.34c) highlights that this NP is focal. What kind of evidence is there that the stacked accusative is focus-related? Two pieces of evidence can be found in Korean questions. WH-questions are narrow focus constructions, with the WH-word being the focussed element. Consequently, it should be impossible to have case stacking in a WH-question, because this would lead to a conflict regarding which NP is the focus of the sentence. This is correct, as (5.38b) shows.
(5.38)a. Chelswu-ka Yenghi-eykey mwuet-ul cwu-ess-ni?
   Chelswu-NOM Yenghi-DAT what-ACC give-PAST-Q
   ‘What did Chelswu give to Yenghi?’

   Chelswu-NOM Yenghi-DAT-ACC what-ACC give-PAST-Q
   ‘What did Chelswu give to Yenghi?’

A similar problem arises with negation. As has long been known (e.g. Russell 1905, Jackendoff 1972, Sgall, et al. 1986), the scope of negation in a sentence correlates with focus; in other words, in a sentence with a negative, its scope is the actual focus domain. Consider the following question-answers pairs; small caps indicates focal stress.

(5.39)a. Chelswu-ka Yenghi-eykey kkot-ul CWU-ESS-NI?
   Chelswu-NOM Yenghi-DAT flower-ACC give-PAST-Q
   ‘Did Chelswu GIVE a flower to Yenghi?’

b. Ani, Chelswu-ka Yenghi-eykey kkot-ul an-CWU-ESS-TA. Basic form
   no Chelswu-NOM Yenghi-DAT flower-ACC NEG-give-PAST-DEC
   ‘No, Chelswu did not GIVE a flower to Yenghi.’

c.*Ani, Chelswu-ka Yenghi-eykey-lul kkot-ul an-CWU-ESS-TA. Case stacking
   no Chelswu-NOM Yenghi-DAT-ACC flower-ACC NEG-give-PAST-DEC
   ‘No, Chelswu did not GIVE a flower to Yenghi.’

The question in (5.39a) has narrow focus on the verb, and in the reply in (b), the scope of the negative an- is just the verb. In (c), on the other hand, there is a conflict between the stacked accusative on Yenghi-eykey ‘to Yenghi’, which highlights that it is focal, and the prefixal negative plus focal stress on the verb, which indicates that it is the focussed element in the clause. The result is an unacceptable response to (5.39a). If Yenghi-eykey had been the focus of the question and hence the focus of the response, then (5.39c) would be fine. The data in (5.38) and (5.39) support the analysis of stacked accusative case as a focus marker.

Thus, accusative case substitution and case stacking have different functions in Korean; they are not simply morphological variants of each other. This can be seen clearly in the contrast between (5.35b’) and (5.36b) with accusative substitution, on the one hand, and the comparable sentence with case stacking in (5.40) and (5.41).

(5.40)a. Chelswu-ka san-ey-lul kan-ess-ta. Case stacking
   Chelswu-NOM mountain-LOC-ACC go-PAST-DEC
   ‘Chelswu went to the mountain.’

   Chelswu-NOM mountain-LOC-ACC go-PAST-but he-TOP arrive-CLMNEG-PAST-DEC
   ‘Chelswu went to the mountain, but he did not arrive.’

   Chelswu-NOM Yenghi-DAT flower-ACC give-PAST-DEC
   ‘Chelswu gave a flower to Yenghi.’

13 According to Han (1999), prefixal negation like this normally has nuclear scope; hence it is a clear example of negation as a nuclear operator.
b. Chelswu-ka Yenghi-eykey-lul kkot-ul cwu-ess-ciman,
Chelswu-NOM Yenghi-DAT-ACC flower-ACC give-PAST-but
Yenghi-nun pat-ci an-ass-ta.
Yenghi-TOP have-CLM NEG-PAST-DEC
‘Chelswu gave a flower to Yenghi, but Yenghi did not have it.’

Adding the accusative case on top of the locative or the dative does not entail completion or telicity, as the acceptability of the (b) examples shows. Hence replacing the dative or locative by the accusative has different semantic consequences from stacking the accusative case on them.

The Korean case phenomena in this section have illustrated two important points: first, case assignment can be motivated by focus structure considerations, as in nominative spreading and accusativestacking, and second, it can be motivated by semantic concerns such as telicity, as in accusative substitution. For a language like Korean, case rules like the ones in (4.44) cover only the basic syntactic uses of the cases; additional rules would be required to handle the phenomena in this section, and Han (1999) formulates such rules.

5.3.3 Focus Structure and Questions

An important area of the interaction of focus structure and linking is the formation of questions, especially WH-questions, and in this section question formation in simple sentences in Lakhota and the conditions on preposition stranding in English will be examined.

Question formation in Lakhota involves no change in the syntactic form of clauses, unlike in English; rather, questions are signalled by the addition of the particle he to the end of the clause, as illustrated in (5.42).

(5.42)a. Șůka ki igmū wə yaxtāke.
   dog the cat a  bite
   ‘The dog bit a cat.’
b. Șůka ki igmū wə yaxtāka he?
   ‘Did the dog bite a cat?’
c. Șůka ki tāku yaxtāke
   what/something
   ‘The dog bit something.’
d. Șůka ki tāku yaxtāka he?
   ‘What did the dog bite?’, or ‘Did the dog bite something?’

WH-words in Lakhota occur in situ, as (5.42d) show; Lakhota instantiates option (5a1) in the semantics-to-syntax linking algorithm in (5.5). Such in situ WH-questions present no special problems for the syntax-to-semantics linking algorithm, since the WH-word appears in the position appropriate for its interpretation, just like a non-WH NP.

Lakhota WH-words are ambiguous between a question word and an indefinite pronoun interpretation, as the contrast between (5.42c,d) exemplifies. He overtly instantiates the IF operator over the clause, and the element questioned must be focal. In (5.42d), the actual focus domain may be either Șůka ki ‘the dog’, tāku ‘what/something’, or yaxtāka ‘bite’ (or combinations thereof), and where the focus falls determines the interpretation of the question; if it is on tāku, then it is

14 The Siberian Ugric language Khanty has case stacking but not spreading (Koshkaryova 2000), and as in Korean it seems to be pragmatically motivated.
interpreted as a WH-question, whereas if the focus falls on either ūkka ki or yaxtāka (or both), then it is construed as a yes-no question. The contrast in focus structure between two of the possible readings of (5.42d) is represented in Figure 5.26. (Lakhota is a head-marking language; see §1.5, Van Valin 1985, 1987a.)

![Figure 5.26: Focus structure contrasts in Lakhota WH- and yes-no questions](image)

Preposition stranding of the kind found in English is a rare phenomenon cross-linguistically, and it raises certain problems for the linking algorithm. The statement of the semantics-to-syntax linking algorithm in (5.5) specifies simply that a WH-word appears in the PrCS, and this is the case for unmarked WH-questions in English. A WH-word is always a narrow focus in a question, regardless of whether it occurs in situ or in the PrCS. It was stated in §3.4 that the basic information units in the information structure of the clause are predicates, arguments (NPs, PPs, clauses) and peripheral PPs and adverbials, and the various WH-words in the language reflect this, e.g. what, who = NP, where, when = PP, adverbial. The internal components of these basic information units cannot be questioned directly using a simple WH-word, as the impossibility of the question-answer pairs in (5.43a,b) shows.

(5.43)a. *Q: Who did Chris see a tall?  
   A: Stock car driver.

b. *Q: What/what kind of/which did Chris see a stock car driver?  
   A: Tall.

This is also shown by the inability to question a single NP in a conjoined NP, e.g. *Who did you see and Dana?; here too an element of the internal structure of a basic information unit is being questioned, yielding an ungrammatical question.

This raises interesting issues regarding preposition stranding in English, in which it appears that a basic information unit, the PP, is being broken up and the head stranded. This is not possible in all cases, however, as (5.44c) shows.
(5.44)a. Who did Pat give the book to?
   b. What did Pat put the letter in?
   c. *What did Pat eat breakfast in?
   d. Where did Pat eat breakfast?

The difference between (5.44a,b) and (5.44c) is that to and in these examples are non-predicative, while in in (5.44c) is predicative (see §1.6). The non-predicative ones are predictable from the meaning of the verb, and consequently in non-predicative PPs the primary information resides in the NP object. This is reflected in the structural representation of non-predicative PPs in Figure 1.12a, in which the preposition is not treated as a semantic predicate contributing anything semantically to the core. This contrasts sharply with the structure of predicative PPs in Figure 1.12b, in which the preposition is not licensed by the verb and functions as a predicate in its own right (hence the name), licensing its own argument. In this case both the preposition and its object are unrecoverable and therefore are high in information content; they function as a single complex information unit and cannot be broken up under normal circumstances, as the ungrammaticality of (5.44c) indicates.

It is possible to strand a predicative preposition, but the pragmatic restrictions on it are very different from those governing the sentences in (5.44). First, the neutral WH-word for NPs, what, cannot be used; this is shown by the ungrammaticality of the unstranded version of (5.44c), *In what did Pat eat breakfast? Rather, only the NP-modifier WH-word which is possible, as in (5.45a), and stranding is possible, as in (5.45b).

(5.45)a. In which room did Pat eat breakfast?
   b. Which room did Pat eat breakfast in?

A question like (5.44d) requires no special context, whereas one like (5.45b) requires a context in which the locations of Pat’s activities are being discussed, so that what is presupposed is ‘Pat does specific activities in specific rooms’; in this context, the preposition is presupposed and therefore recoverable, just like a non-predicative preposition. Hence whether or not preposition stranding in a WH-question is possible is not simply a matter of syntax; it is, rather, an issue of recoverability of information, either from lexical information or from context.15

5.4.4 The pervasive role of discourse-pragmatics in grammar

From an RRG perspective, discourse-pragmatics literally permeates grammar, as it can play a role in virtually every aspect of grammar. Numerous examples of this have been given in this chapter and chapter 3. This can be summarized as in Figure 5.27.

15 For a detailed discussion of preposition stranding, see Takami (1988), Suzuki (1991), and Whaley (1993).
From the lexicon to the syntactic inventory and to the different steps in the linking algorithm that relates them, discourse-pragmatics can influence every aspect of grammar, and a major claim of RRG is that an important source of cross-linguistic variation is the differences in this interaction. Several examples were given in earlier chapters: whether focus structure is grammaticalized into a VP, whether a language has pragmatically influenced variable pivots and controllers, how focus structure and clause structure interact, and whether focus structure influences case assignment and linearization.