Chapter 3: Information Structure

3.0 General Considerations

The final step in this preliminary phase of the exploration of the syntax, semantics and pragmatics interface is the characterization of the information (focus) structure of sentences. The issue of the distribution of information in clauses and sentences is one of the most important questions for linguists studying the interaction of form and function in language, and it has ramifications for all aspects of grammar. Research on this topic goes back at least to the work of Prague School linguists such as Mathesius in the 1920’s.¹

3.1 Topic and Focus

The approach taken here builds upon Lambrecht’s (1986, 1987, 1994, 2000) theory of information structure. In his theory, Lambrecht identifies **TOPIC** and **FOCUS** as the two primary information statuses that referring expressions may have in an utterance. These terms will be used as labels for discourse-pragmatic functions only and not for the structural positions in which they may be manifested. He adopts the definitions for topic and comment proposed in Gundel (1988).²

An entity, E, is the topic of a sentence, S, iff in using S the speaker intends to increase the addressee’s knowledge about, request information about, or otherwise get the addressee to act with respect to E. A predication, P, is the comment of a sentence S, iff in using S the speaker intends P to be assessed relative to the topic of S. (Gundel 1988:210)

The notion of ‘comment’ is related to that of focus, as will be seen below.

Two very important points are, first, not every utterance has a topic, and second, the topic element need not be the first element in a sentence. There is a direct and fundamental relationship between the element functioning as topic and the pragmatic presupposition associated with a sentence. Lambrecht characterizes it as follows:

What must be presupposed in the case of a topic is not the topic itself, nor its referent, but the status of the topic referent as a possible center of interest or matter of concern in the conversation...[T]he topic referent is active or accessible in the discourse... [T]he topic is contained in the pragmatic presupposition or is an element of the pragmatic presupposition.(1986:102)

²See Reinhart (1981) for a formal definition of pragmatic ‘aboutness’.
Lambrecht (1994) gives the following definitions of pragmatic presupposition and assertion:

**PRAGMATIC ASSERTION**: The proposition expressed by a sentence which the hearer is expected to know or believe or take for granted as a result of hearing the sentence uttered. (52)

**PRAGMATIC PRESUPPOSITION**: The set of propositions lexicogrammatically evoked in an utterance which the speaker assumes the hearer already knows or believes or is ready to take for granted at the time of speech. (52)

Lambrecht’s pragmatic assertion corresponds to Gundel’s notion of comment. The focus of an utterance is the part that is asserted in a declarative utterance or questioned in an interrogative utterance.

**FOCUS**, or **FOCUS OF THE ASSERTION**: The semantic component of a pragmatically structured proposition whereby the assertion differs from the presupposition. (213)

These distinctions will be exemplified in the next sections in the discussion of patterns of information distribution and their morphosyntactic realization in different languages.

### 3.2 Focus Structure and Focus Types

Information distribution in sentences is of concern to syntacticians only to the extent that it has morphosyntactic expression and ramifications. The grammatical system which serves to indicate the scope of the assertion in an utterance in contrast to the pragmatic presupposition is termed the **FOCUS STRUCTURE** by Lambrecht. He characterizes it as follows:

**FOCUS STRUCTURE**: The conventional association of a focus meaning [distribution of information] with a sentence form. (1994:222)

A major component of his theory of focus structure is a taxonomy of focus types. The fundamental contrast is between broad and narrow focus; in narrow focus the focus domain extends over only a single constituent, e.g. a NP, while in broad focus it encompasses more than one constituent. There are two kinds of broad focus, predicate focus and sentence focus.

Predicate focus is universally the unmarked type and coincides with the traditionally recognized ‘topic-comment’ organization of information in a sentence. Lambrecht (2000) gives the following definition.

**Predicate focus structure**: Sentence construction expressing a pragmatically structured proposition in which the subject is a topic (hence within the presupposition) and in which the predicate expresses new information about this topic. The focus domain is the predicate phrase (or part of it). (2000:615)

The following examples from English, Italian, French and Japanese illustrate predicate focus constructions; the focus constituent is in all caps.
(3.1) Q: How’s your car?
A: a. My car/it broke DOWN.  
    English
b. (La mia macchina) si è ROTTA.  
    Italian
c. (Ma voiture) elle est en PANNE.  
    French
d. (Kuruma wa) KOSHOO-shi-ta.  
    Japanese

In each of these examples, there is an NP functioning as topic; it is the subject NP in English and 
Italian, the detached NP in French, and the wa-marked NP in Japanese. The syntactic variation 
across these four languages highlights the problem with the term ‘subject’ in Lambrecht’s 
definition; as he himself notes, the term as used here should not be construed narrowly as referring 
to grammatical subjects only but must include detached NPs as in French and Japanese. The 
information structure of the English example can be represented as follows (Lambrecht 1994:226):

(3.2) Sentence: My car broke DOWN.
Presupposition: ‘Speaker’s car is available as a topic for comment x’
Assertion: ‘x = broke down’
Focus: ‘broke down’
Focus domain: verb plus remaining post-verbal core constituents

Sentence focus constructions differ strikingly from predicate focus constructions, in that they 
have no topical subject; the focus domain is the entire sentence. Lambrecht exemplifies this focus 
type with the following examples.

(3.3) Q: What happened?
    b. Mi si è rotta la MACCHINA.
    c. J’ai ma VOITURE qui est en PANNE.
    d. KURUMA ga koshoo-shi-ta.

The entire sentence is being asserted; there is no presupposed topic, as in (3.1). The most common 
use of this focus type is presentational constructions, as in (3.4).

(3.4) a. Once upon a time there was an old man and a dog.
    b. Then out from under the bed ran a mouse.
    c. There arose a violent storm.

These sentences lack an established topic, and they serve to introduce new participants into the 
discourse. The subject NP appears in the postverbal position normally reserved for objects, the 
unmarked focus constituent in a predicate focus construction. In Italian the subject must appear 
postverbally in this construction, while in French it appears after a kind of ‘dummy’ verb, due to the 
lack of the kind of subject-inversion construction found in Italian. In Japanese, the particle marking 
the subject changes from wa to ga. Lambrecht (2000) gives the following characterization of 
sentence focus constructions.

\[\text{See Lambrecht (2000) for a detailed discussion of the properties of sentence focus constructions cross-linguistically.}\]
Sentence focus structure: Sentence construction formally marked as expressing a pragmatically structured proposition in which both the subject and the predicate are in focus. The focus domain is the sentence, minus any topical non-subject arguments. (2000:617)

The analysis of the English sentence focus example in (3.3) may be laid out as in (3.5).

(3.5) Sentence: \textit{My CAR broke down}.
Presupposition: none
Assertion: ‘Speaker’s car broke down’
Focus: ‘Speaker’s car broke down’
Focus domain: Clause

The final focus type is narrow focus, in which the focus domain is a single constituent; it may be subject, object, an oblique, or even the verb.\textsuperscript{4} Examples from Lambrecht are given in (3.6).

(3.6) Q: I heard your motorcycle broke down?
A: a. My \textit{CAR} broke down./It was \textit{MY CAR} that broke down.
   b. Si è rotta la mia \textit{MACCHINA}./la mia \textit{MACCHINA} che si è rotta.
   c. C’est ma \textit{VOITURE} qui est en panne.
   d. KURUMA GA koshoo-shi-ta.

Here there is a definite presupposition associated with the sentence, ‘something broke down’, and the assertion is that it is the speaker’s car rather than something else. Hence the focus domain is restricted to the NP \textit{car}. In English the subject is stressed, and in Japanese the subject and the particle \textit{ga} are stressed. Italian and French can use cleft constructions here, which is also an option in English (\textit{It was my CAR that broke down}), and Italian also has the option of using an inverted subject.

(3.7) Sentence: \textit{My CAR broke down}.
Presupposition: ‘speaker’s x broke down’
Assertion: x = ‘car’
Focus: ‘car’
Focus domain: NP

Lambrecht (1986) distinguishes unmarked narrow focus from marked narrow focus, the difference being where the narrow focus falls: if it falls on the final constituent in the core in English, then it is unmarked, whereas if it falls to the left or to the right of that, it is marked. This is illustrated in (3.8).

(3.8) a. Leslie sent the book to DANA yesterday.
   b. Leslie sent the book to Dana YESTERDAY.
   c. Leslie sent \textit{THE BOOK} to Dana yesterday.
   d. Leslie \textit{SENT} the book to Dana yesterday.
   e. LESLIE sent the book to Dana yesterday.

\textsuperscript{4}Lambrecht (1994, 2000) refers to this focus type as ‘argument focus’; however, the term ‘narrow focus’, from Lambrecht (1986), will be used here, since it is possible to have narrow focus on arguments as well as adjuncts.
Thus narrow focus on an object is a case of unmarked narrow focus, while narrow focus on a subject is a case of marked narrow focus. In verb-final languages, the unmarked focus position is the immediate preverbal position (Kim 1988).\(^5\)

A very common example of a narrow focus sentence is a WH-question like *What did you buy?* and the answer *I bought ___*; the WH-word and the NP filling its slot in the reply are both unmarked narrow foci. Similarly, in a yes-no question like *Did JOHN leave?* and the response *No, FRED did, JOHN and Fred are marked narrow foci.*

### 3.3 Morphosyntactic Marking of Focus Structure

As is clear from the examples in (3.1), (3.3) and (3.6), languages employ different grammatical means for indicating the various focus constructions; syntax, morphology and prosody are all used. English makes use of both prosodic and syntactic devices. The basic mechanism is accentuation, with the main sentence stress falling on the primary focal element, as noted in section 2.2 (see also Erteschik-Shir & Lappin 1983, Selkirk 1984). English allows the focal stress to fall on any constituent in a sentence, and consequently the contrasts among the three focus types can be signalled solely prosodically. However, there are syntactic ways to mark them as well. Inversion may play a role in the presentational sentence focus construction, as in (3.4), and an *it*-cleft can be used to express narrow focus, e.g. *it was my car that broke down* (cf. (3.6a)).

Focus structure affects the type of referring expression that is selected to fill a variable position in LS, because the kind of referring expression that is chosen reflects the status of the referent in the discourse context. This is captured in Figure 3.1, which is based on proposals from Givón (1983), Levinson (1987), Ariel (1990), Gundel et al. (1993), Lambrecht (1994) and Fretheim & Gundel (1996).

![Figure 3.1: Coding of referents in terms of possible functions](image)

Zero coding is the least marked coding for a topic referent, while realization as an indefinite NP is the least marked coding for a focal referent. While indefinite NPs can be topics under special contextual circumstances, it is impossible for a focal referent to be realized as zero.

Japanese uses primarily morphological means, the well-known particles *wa* and *ga*, to signal the different focus types. Kuno (1973) argues that (unstressed) *wa* is a topic marker, which accounts for its use in predicate focus constructions, and further that there are in fact two *ga* particles, neutral description *ga* (unstressed) and exhaustive listing *ga* (stressed). Neutral description *ga* is used in sentence focus constructions like (3.3d), as well as in predicate focus constructions in certain contexts (Shimojo 1995), while exhaustive listing *ga* is found in narrow focus constructions. In Huallaga Quechua (Weber 1989), there is a topic marker *-qa*, and

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\(^5\) In some languages it is necessary to distinguish unmarked fro marked predicate focus. Han (1999) shows that in Korean there is a distinction between unmarked predicate focus (i.e. the verb plus the immediate preverbal NP) and marked predicate focus, which includes more than one preverbal NP. See §5.4.2.
evidential clitics indicate the focus of the sentence. This is illustrated in (3.9).

(3.9) a. Machka papa-ta-shi qara-n wamra-ta-qa.
    mealy potato-ACC-EVID give-3sg child-ACC-TOP
    ‘She [the witch] gave [her] mealy potatoes, the child.’

    so mealy potato-ACC give-DS-3sg-TOP child-TOP grasp-DIR-3sg-EVID.
    ‘So when she gives [her] a mealy potato, the child, she grasps it.’

The NP in the preverbal position in (3.9a), machka papa ‘mealy potato’, bears the indirect evidence evidential clitic -shi, which along with its position, indicates that it is the focus of the sentence. In (b), the event in (a) is recapitulated as a topic-marked switch-reference clause, and the verb in the main clause, which is the focus, takes the evidential clitic. Thus morphological markers serve the same function as intonation and syntax in English in indicating the various focus constructions.

Italian and French both use syntactic means to distinguish among the three types, albeit differently, and in neither language is it possible to simply shift the focal stress to the preverbal subject position with no other change in the structure of the sentence, as is possible in English. Both employ the equivalent of it-clefts for narrow focus (3.6b,c), but sentence focus constructions are handled in distinct ways. In Italian the subject occurs immediately after the verb, as in (3.3b), while in French a bi-clausal construction is used in which the NP corresponding to the inverted subject in Italian is in the postverbal object position of the first clause and the substantive predicate of the sentence in the second clause, as in (3.3c).

In neither language may a focal NP occur in preverbal position (within the core), unlike English, and such a constraint is relatively common cross-linguistically. In Mandarin Chinese (LaPolla 1990) a preverbal referential NP must be part of the pragmatic presuppositions associated with the utterance. Thus a simple sentence like (3.10a) can only be interpreted as having a presupposed, specific subject; with an indefinite NP, the existential verb yǒu normally appears before the NP, rendering it postverbal, as in (3.10b).

(3.10)a. Rén zài nàr.
    person be.at there
    ‘The/*a man is there.’

b. Yǒu rén zài nàr.
    exists person be.at there
    ‘There’s a person/someone there.’

A similar constraint holds in Kinyarwanda (Kimenyi 1978) and in the Sotho languages of southern Africa (Demuth 1989); in this group of languages, there is ‘a constraint on subjects which restricts them to being highly topical, old, given information’(1989:67). The following examples are from Setswana, one of the Sotho languages (Demuth 1990).

(3.11)a. Monna o-bed-its-e mosimane.
    man 3sg-beat-PRFV-MOOD boy
    ‘The/*a man beat a/the boy.’

b. Mosimane o-bed-its-w-e ke monna.
    boy 3sg-beat-PRFV-PASS-MOOD by man
    ‘The/*a boy was beaten by a/the man, ’ or ‘A man hit the boy.’
The preverbal NPs in these sentences must be interpreted as presupposed, while the postverbal NP may or may not be presupposed. This constraint has the interesting result that because WH-words are always focal in a WH-question, it is impossible for them to appear in preverbal position, as the ungrammaticality of (3.12a) shows. Consequently, in order to formulate a WH-question in which the WH-word is interpreted as a ‘subject’, it is necessary to use a passive, as in (3.12b), or a cleft construction. These examples are from Sesotho (Demuth 1989).

(3.12)a. *Mang o-pheh-ile lijo?
   who 3sg-cook-PRFV food
   ‘Who cooked the food?’

b. Lijo  li-pheh-li-o-e ke mang?
   food 3sg-cook-PRFV-PASS-MOOD by who
   ‘The food was cooked by who?’, ‘Who cooked the food?’

This constraint brings out clearly the fact that where the focus may fall in a sentence varies across languages; in English it may be in any position within a clause, while in Italian, French, and Setswana/Sesotho it is restricted to postverbal position. Unlike the Sotho languages, WH-words may appear in the PrCS in Italian and French. This means that the constraint against focal prenuclear material applies within the core, not the clause as a whole. In Setswana, on the other hand, it holds in the clause, thereby preventing the prenuclear occurrence of WH-words. It is therefore necessary to talk about the POTENTIAL FOCUS DOMAIN [PFD], the syntactic domain in which focus elements may occur, when discussing focus structure in a language. It contrasts with the ACTUAL FOCUS DOMAIN [AFD], the part of the sentence that is actually in focus. In English, the PFD is the clause, whereas in these other languages the PFD does not include at least some preverbal positions. This notion will become extremely important in the discussion of the focus structure of complex sentences.

Some languages combine the morphological strategy of Japanese and Quechua with the syntactic strategy of French, Italian and the Bantu languages. Toura, a Mande language spoken in Ivory Coast (Bearth 1969, 1992), is just such a language. It exhibits relatively strict SOV order and has a number of means for expressing focus distinctions. The basic predicate-focus construction is exemplified in (3.13a), while two different types of focus marking are shown in (b)-(c).

(3.13) a. Tià ké gùlé lô’.
   PRDM peanuts buy
   ‘Tia bought PEANUTS.’

b. Q: Tià² mëc lô’ le?
   -PRDM what buy TM
   ‘WHAT did Tia buy?’
   A: Tià² gùlé le.
      -PRDM peanuts-FOC1 buy TM
      ‘Tia bought PEANUTS.’

b’. Q: Waa gùlé lô’ le?
   who peanuts buy TM
   ‘WHO bought peanuts?’
   A: Tià² gùlé lô’ le.
      -FOC1 peanuts buy TM
‘TIA bought peanuts.’

c. Tìà ké გღე-le ლლ’.

PRDM peanuts-FOC2 buy
’Tia bought PEANUTS.’

The focus marker in (b) is a tonal clitic (as is the predicate marker in many of these examples), while in (c) it is the same element that elsewhere is glossed ‘TM’. The difference between the two types of focus appears to concern the presuppositions involved; the type of (b) is non-contrastive, while that in (c) seems to have a more contrastive function. As in English, there is a PrCS and a LDP position in Toura; they are illustrated in (3.14).

(3.14) a. გღე-’ Tìà’ ლლ’ le.
    peanuts-FOC1 -PRDM buy TM
    ‘PEANUTS Tia bought’, or ‘It is PEANUTS (not potatoes) that Tia bought.’

b. გღე (ლლ’), Tìà ké ა ლლ’.
    peanuts (TOP) PRDM 3pl buy
    ‘As for peanuts, Tia bought them.’

The two positions differ in Toura just as they do in English and other languages that have them; there is no intonation break between the initial NP and the following material in (a), and there is no pronoun referring to the initial NP, whereas in (b) there is an intonation break between the initial NP and the following material and there is a resumptive pronoun referring to the initial NP. The NP in the PrCS in (a) carries a focus marker, while the NP in the LDP in (b) carries a topic marker. Thus, Toura presents an elaborated system of focus marking which employs both special positions (PrCS, LDP) as well as focus markers for core-internal elements.

This discussion raises an interesting typological point. In English word order is very constrained and focus placement very flexible, whereas in Italian word order is very flexible and focus placement is very constrained. This contrast could be characterized in terms of how syntax and focus structure adapt to each other: in English, the focus structure adapts to the rigidity of the word order by allowing free focus placement (i.e. focus can fall on any constituent within a simple clause), whereas in Italian, the syntax adapts to the rigid focus structure (i.e. non-WH focal elements must be postnuclear) by having constructions which allow focal elements which would normally be prenuclear to occur in a postnuclear position. Hence it seems that one dimension along which languages could be characterized typologically is in terms of how syntax and focus structure interact. Van Valin (1999a) explores this interaction and finds that all four possible combinations occur: rigid syntax, flexible focus structure (e.g. English, Toura); rigid syntax, rigid focus structure (e.g. French, Toba Batak); flexible syntax, flexible focus structure (e.g. Russian, Polish (Eschenberg 1999)); and flexible syntax, rigid focus structure (e.g. Sesotho, Italian).

3.4 Formal Representation of Focus Structure

It is necessary to integrate focus structure into the projection grammar representation of clause structure. Focus structure will be a separate projection from both the constituent and operator projections, but it is related to both. With respect to the constituent projection, predicates, arguments and peripheral PPs form the basic information units in focus structure; that is, the minimal focus domain is the nucleus, a core argument or a peripheral PP. With respect to the operator projection, the IF operator specifies the type of speech act that the sentence is in, and the
PFD must fall within the scope of this operator. It may be coextensive with it in simple clauses, as in English, or it may be subset of it, as in Italian and Setswana. Within each focus structure projection both the PFD and the AFD will be represented. This is illustrated in Figure 3.2.

![Figure 3.2: Predicate focus in English](image)

The speech act node, which is related to the IF operator, anchors the focus structure projection, and the potential and actual focus domains are represented within its scope. In these representations, the ‘ARG,’ ‘NUC’ and ‘ADV’ nodes are the basic information units in the focus structure projection; Lambrecht (1994) argues that the minimal information unit corresponds to the minimal phrasal category in syntax. Figure 3.2 is an example of predicate focus in English; the PFD is the whole clause, and the AFD is the nucleus plus the post-nuclear arguments. In Figure 3.3 two examples of narrow focus in English are given.
Mandarin, like Italian and French, differs from English with respect to the PFD in simple sentences, as noted above; in Figure 3.4, the structure of (3.15a) (predicate focus) and (3.15b) (sentence focus) are given.

(3.15)a. Che lái le.
   ‘The car is here.’

b. Lái che le.
   ‘There is a car coming.’
Unlike English, the PFD is not coextensive with the clause in Mandarin, and the prenuclear element in (3.15a) is outside the PFD.

All three projections may be combined into a single representation, as in Figure 3.5.

![Figure 3.5: Clause structure with constituent, operator and focus structure projections](image)

Each of these projections depicts information that is simultaneously present in the clause.

In addition to representing focus constructions in the LSC, the activation level of the referents of the NPs filling the argument positions in LSs will also be indicated. For simplicity’s sake, only three levels of activation will be coded: active, i.e. actively under consideration in the discourse by means of direct mention; accessible, i.e. not actively under consideration but readily recognized by the addressee due either to knowledge of the world or occurrence in the immediate environment of the speech situation; and inactive, i.e. not actively under consideration and not assumed by the speaker to be recognized by the addressee. In the dialogs in (3.1), for example, the speaker’s car is made active by the initial question and is treated as such in the responses to it. In (3.2) the speaker’s car is inactive, as it has not been mentioned in the previous discourse. An example of an accessible referent would be Bill Clinton, since a speaker of English could reasonably assume that their interlocutors would know who he is without being previously mentioned in the immediate context. The different activation statuses will be indicated in LSs as in the following example, which presupposes that the mayor of the city is already a topic referent established in the context.

(3.16)a. The mayor sent Bill Clinton a letter.

b. \[\text{do}^\prime \text{(mayor}_{\text{ACV}}, \emptyset)\] \text{CAUSE} \[\text{BECOME have}^\prime \text{(Bill Clinton}_{\text{ACS}}, \text{letter}_{\text{INA}})\]
The NP the mayor is activated, because its referent has already been mentioned, while the NP Bill Clinton is accessible, because its referent has not been mentioned but is assumed to be available to the interlocutors. Finally, the NP a letter is inactive, because its referent has not been mentioned and is not assumed to be available to the interlocutors. It will be shown in chapter 5 that different aspects of the linking algorithm are sensitive to the activation status of the referents of the NPs in LSs.

3.5 Focus structure and the notion of VP

It was noted in section 1.2 that there is no analog in the LSC to the VP grouping which is basic to X-bar analyses of clause structure. However, a glance at the predicate focus constructions in Figures 3.2 and 3.4 reveals that the focus domain in these constructions corresponds to what would be a VP in an X-bar analysis. Moreover, narrow focus constructions with subject focus, as in the English example in Figure 3.3, also isolate a VP-like grouping. This is no accident. VPs, to the extent that they exist in languages, are the grammaticalization of focus structure; they are not primitive categories in clause structure. All languages have predicate and narrow focus constructions, but the same cannot be said for VPs. (Cf. e.g. Van Valin 1987a, Mohannan 1982.) Lambrecht (2000) also shows that there is no evidence for an NP-VP bipartite structure in sentence focus constructions cross-linguistically. The clearest syntactic evidence for a VP-like category in English comes from imperatives, ‘VP fronting’, ‘VP deletion’ and ‘VP anaphora’, as in (3.17).

(3.17)a. Open the door!
   b. I expected to find someone mowing the lawn, and mowing the lawn was DANA.
   c. Chris is having a tall latte, and Pat is, too.
   d. Q: Who mowed the lawn?
      A: DANA did.

In an imperative the subject is omitted, leaving the verb plus its object, a VP-like grouping. In information structure terms, unless there is contrastive stress on one of the elements, the whole utterance is in the AFD of the utterance, and it corresponds to the the AFD of a predicate focus construction. In the other constructions, the ‘VP’ is overtly established in the discourse as topical; in (3.17b) the ‘VP’ is fronted in a sentence-focus presentational construction, while in (3.17c) it is omitted in the second clause. (3.17d) in a narrow focus construction with a focal subject and topical ‘VP’. (cf. Figure 3.3). In order to describe these constructions in RRG, the postulation of a VP-like category in the LSC is unnecessary; the focus structure projection imposes these groupings on the constituent projection, and these constructions are sensitive to the pragmatically-motivated bracketings of the syntactic structure. The projection grammar representation of the LSC plus focus structure provides the basis for an explanatory representation.6

3.6 Focus structure and the interpretation of quantifier scope

The issue of the interpretation of sentences containing multiple quantifiers has long been an important topic in the study of syntax and semantics. Consider the following well-known example from English.

6See §7.1 for an account of ‘VP’ ellipsis which does not use the notion of VP.
(3.18) a. Every girl kissed a boy.
   b. (i) Each girl kissed a different boy (‘for each girl there is a boy such that the girl kissed the boy’, i.e. \( \forall x, \exists y (\text{kiss}´ x, y) \), where \( x = \text{girl} \) and \( y = \text{boy} \))
   (ii) Each girl kissed the same boy (‘there is a boy such that for each girl, the girl kissed the boy’, i.e. \( \exists y, \forall x (\text{kiss}´ x, y) \), where \( x = \text{girl} \) and \( y = \text{boy} \))
   c. A boy was kissed by every girl. (= (bii), (bi))

Sentence (3.18a) is ambiguous in English, and the two interpretations are given in (3.18b). A number of linguists (e.g. Šgall, Hajicová & Panevová 1986, Kuno 1991, Kuno et al. 1999, Van Valin & LaPolla 1997) have proposed that focus structure strongly affects the interpretation of quantifiers. The principle they propose can be formulated as in (3.19).

(3.19) Principle affecting quantifier scope interpretation: topical Q > focal Q\(^7\)
   a. Every girl KISSED A BOY. (= (3.18b(i)))
   b. EVERY GIRL kissed a boy. (= (3.18b(ii)))

This principle states that (everything else being equal) a topical quantifier will have wide scope over a focal quantifier. This predicts that in a sentence like (3.18a), the default interpretation should correlate with the default focus structure, predicate focus, depicted in (3.19a). Since the universal quantifier is topical and the existential quantifier focal in (3.19a), the preferred reading should be that in (3.18b(i)), which is correct. In order to get the secondary reading in (3.18b(ii)), it is necessary to interpret (3.18a) as if it were a narrow focus construction, as in (3.19b). In this case, the existential quantifier is topical and the universal quantifier focal, and consequently the former will have wide scope, yielding the interpretation in (3.18b(ii)). This contrast is represented in Figure 3.6.

\[\text{Figure 3.6: Predicate focus vs. narrow focus in the interpretation of quantifiers}\]

While this analysis can account for (3.18), is there any reason to prefer it over a purely syntactic

\(^7\) There are additional factors which may play a role (Kuno 1991, 1999, Ioup 1975); see Van Valin & LaPolla (1997), §5.5, for detailed discussion.
analysis? Does it make any significant predictions? The principle in (3.19), together with the theory of focus structure in section 2, makes interesting predictions about the interpretation of quantifiers in Italian, Japanese and Mandarin. Consider the Italian equivalents of (3.18a,c) in (3.20), taken from Melinger (1996).

(3.20)a. Ogni ragazza ha baciato un ragazzo.
   Every girl has kissed a boy
   ‘Every girl kissed a boy.’ = (3.18b(i)), ≠ (3.18b(ii))

b. Un ragazzo è stato baciato da ogni ragazza.
   a boy is been kissed by every girl
   ‘A boy was kissed by every girl.’ = (3.18b(ii)), ≠ (3.18b(i))

The sentence in (3.20a) is the Italian translation of (3.18a), and (3.20b) is the translation of (3.18c). Unlike their English counterparts, these sentences are unambiguous: (3.20a) can only have the reading of (3.18b(i)), while (3.20b) can only have the reading of (3.18b(ii)). The lack of ambiguity is predicted by the principle in (3.19), given the analysis of the PFD in Italian based on the examples in (3.3b) and (3.6b). It was pointed out in §3.3 that in Italian, a focal core argument cannot be preverbal; in particular, a focal subject cannot occur preverbally but must be in a postverbal position. This precludes the possibility of narrow focus on a preverbal subject, which, as we argued with respect to (3.19b), is what is required to derive the (3.18b(ii)) interpretation from (3.18a). Hence (3.20a) must be unambiguous, with the only possible reading being the one with the universal quantifier (ogni) having wide scope. For the same reason (3.20b) must also be unambiguous, and the only possible reading is the one with the existential quantifier (un) having wide scope. The RRG representations for (3.20a) and (3.20b) are given in Figure 3.7.

Figure 3.7: Italian focus structure and the scope of quantifiers

The critical difference between the English structures in Figure 3.6 and the Italian ones in Figure 3.7 is the PFD: it includes the subject in English but not in Italian. This difference, together with the principle in (3.19), correctly predicts the ambiguity in the English sentences and the lack of
ambiguity in their Italian counterparts.

Whether a Japanese subject is marked with *wa* vs. *ga* has implications for the interpretation of quantifiers, following (3.19). *Wa* marks topics, as in (3.1d), but *ga* can mark both focal and topical subjects. Its use with focal subjects is illustrated in (3.3d) and (3.6d). Shimojo (1995) shows that when both the subject referent and the content of the proposition are established in discourse, i.e. neither is focal, then *ga* is the preferred marker for the subject. Following on the principle in (3.19), it may be predicted that the Japanese analogs of sentences like (3.18a) will be unambiguous, if the subject NP containing a quantifier is marked by *wa*, and will be ambiguous, if the subject NP is marked by *ga*. This is the case, as the sentences in (3.21) show (Watanabe 1995).

(3.21) a. Subete no hito ga dareka wo aisiteiru.
   every GEN person NOM someone ACC loves
   ‘Everyone loves someone.’
   = (3.18b(i)), (3.18b(ii))

   b. Subete no hito wa dareka wo aisiteiru.
      every GEN person TOP someone ACC loves
   ‘Everyone loves someone.’
   = (3.18b(i)), ≠ (3.18b(ii))

When the quantified subject is marked by *ga*, as in (3.21a), it may be construed as topical or focal, and consequently either quantifier may be interpreted as having wide scope. When it marked by *wa*, as in (3.21b), it must be topical, and as Shimojo (1995) shows, the remainder of the clause must be focal in the classic topic-comment (predicate focus) structure. Hence (3.21b) can have only the (3.18b(i)) reading with the subject quantifier having wide scope.

The RRG account also provides an answer to an intriguing puzzle involving quantifier scope in Mandarin Chinese; the relevant examples are given below (Huang 1982, Aoun & Li 1993).

(3.22) a. Měi ge rén dōu xiānguăn yì ge nǚ rén.
   every CL person all like one CL woman
   ‘Everyone likes a woman.’ (= ‘everyone likes a different woman’, ≠ ‘everyone likes the same woman’)

   b. Měi ge rén dōu běi yì ge nǚ rén dǎi-le.
      every CL person all by one CL woman beat.die-PRFV
   ‘Everyone was killed by a woman.’ (= ‘everyone was killed by a different woman’,
   ‘everyone was killed by the same woman’)

In the English active-passive pair in (3.18a,c), both are ambiguous, and in the Italian active-passive pair in (3.20), both are unambiguous. The Mandarin sentences in (3.22) are also an active-passive pair, and curiously, they differ in their readings: the active sentence is unambiguous, with the only possibility being wide scope for the subject quantifier, whereas the passive sentence is ambiguous, with either quantifier having wide scope. Why should this be the case? The answer lies in the PFD in Mandarin and a feature of the Mandarin passive that is quite different from its English and Italian counterparts. As shown in §3.3, the PFD is restricted to the verb and postverbal constituents in Mandarin as in Italian (see (3.10), (3.15) and Figure 3.4).8

In (3.22a), the active sentence, there is NP-V-NP word order, and given the restriction on the

8 It should be noted that both languages make exceptions for WH-words in questions. WH-words are always focal in questions. In Italian WH-words occur at the beginning of the sentence, just as they do in English. In Mandarin, on the other hand, WH-words occur in situ, and subject WH-words appear in the normal subject position before the verb. The restrictions discussed in this paper apply to non-WH-elements in these two languages.
PFD in Mandarin and the principle in (3.19), we would predict that a preverbal subject quantifier would always have wide scope, and this is in fact the case. In the passive sentence in (3.22b), on the other hand, the word order is NP-PP-V; crucially, the Mandarin equivalent of the passive ‘by-phrase’ occurs before the verb, and consequently both quantified NPs are preverbal. This means that there is no inherent topic-focus asymmetry between them, as in SVO sentences; either NP may be considered the main topic, and consequently either can have wide scope.

Thus, the theory of focus structure presented in this chapter and the principle in (3.19) together provide an explanatory account for the facts regarding quantifier scope interpretation in the English, Italian, Japanese and Mandarin data presented in this section.

3.7 Appendix: Foundations of a theory of information structure

In order for the concepts of topic and focus to have any substance, they must be grounded in a general theory of pragmatics. The pragmatic theory of Kempson (1975) will be employed here to provide such a theoretical foundation. Kempson provides definitions of presupposition and assertion that are derived from her reformulation of Grice’s maxim of quantity (‘Make your contribution as informative as required (for the current purposes of the exchange)’ (Grice 1975:45)). She begins by defining ‘the Pragmatic Universe of Discourse’, the ‘set of propositions which constitute [the speaker and hearer’s] shared knowledge—knowledge which they believe they share.’(167) It is delineated as follows.

(3.23) Pragmatic Universe of Discourse
   a. S believes P₁.
   b. S believes H knows P₁.
   c. S believes H knows S believes P₁.
   d. S believes H knows S believes H knows P₁.

She then presents the reformulation of the quantity maxim in (3.24).

(3.24) For any proposition p whose truth is minimally guaranteed by n conditions, and any mood operator ‘*ψ’, only say ‘*ψp’ if ≤ n-1 of those conditions are members of the Pragmatic Universe of Discourse.(170)

(The mood operator ‘*ψ’ is the same as the IF operator posited in RRG.) An utterance thus counts as informative only if some aspect of it is not an accepted part of the Pragmatic Universe of Discourse, i.e. not presumed to be known to both speaker and hearer. Kempson relates this maxim to the notions of presupposition and assertion as follows.

The speaker believes the hearer knows (and knows that the speaker knows) a certain body of propositions (i.e. that there is a Pragmatic Universe of Discourse) and in making a certain utterance ‘*ψp’ he believes that the hearer, knowing the conventions of the language and hence the conditions for the truth of the proposition in question, will recognize a subset of those conditions as being part of that Pragmatic Universe of Discourse and hence neither assertable, deniable or queriable (without violating the quantity maxim), and a second mutually exclusive subset of

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9 There are several other pragmatic theories which could also serve this function, e.g. the Atlas & Levinson (1981) principle of informativeness or the Sperber & Wilson (1986) theory of relevance.
the conditions as being outside the Pragmatic Universe of Discourse. This latter set, he will interpret as being asserted, denied, commanded or queried.(190)

The pragmatic presuppositions associated with a sentence are the propositions relating to its interpretation that are part of the Pragmatic Universe of Discourse; the part of the sentence which is not associated with propositions in the Pragmatic Universe of Discourse is the non-presupposed, i.e. focal (asserted, questioned, etc.) part. The definitions she arrives at are very close to the characterizations of these notions assumed by Lambrecht.

This contrast relates directly to Lambrecht's distinction between topic and focus. The topic element is a part of one or more propositions in the Pragmatic Universe of Discourse; it is one of the most, if not the most, salient elements in it. The focus, on the other hand, is the non-presupposed part of the utterance. The close correspondence between Lambrecht’s notion of focus and Kempson’s characterization of the non-presupposed part of a sentence can be seen with regard to the question of stress in English. Lambrecht notes that the primary indication of focus in English is the prosodic prominence of the focal element(s). Kempson formulates the following rule of stress assignment for English: ‘For any utterance ‘*ψp’, only assign stress within that syntactic construct which corresponds to conditions for the truth of *p which are not in the Pragmatic Universe of Discourse.’(192-3). Thus Lambrecht's concept of focus is the same thing as Kempson’s ‘syntactic construct which corresponds to conditions for the truth of *p which are not in the Pragmatic Universe of Discourse’. Hence Lambrecht’s theory of information structure rests on a Gricean foundation.