

Semantics of Focus

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Yoon, YoungEun. 1997. **Semantics of Focus.** *Language and Information*. This paper discusses several basic issues of the 'focus' phenomenon. One of them is the issue of the nature of focus, i.e., what constituent of the sentence gets focused. Another is the issue of to what aspect of meaning the focus contributes. The other is the issue of the functions of focus-sensitive operators. As for the first issue, it is observed that the basic function of focus is to mark all and only the new information of the sentence. But for the cases in which this principle is not observed, it is proposed that the focus in these cases in general plays a secondary function of triggering an additional emphatic scalar meaning. And yet, in these cases, the state of the matter is different between free focus and bound focus. It is also shown that contrary to the general belief that free focus contributes to the meaning only pragmatically, free focus could also contribute to the meaning semantically. Concerning focus-sensitive operators, we classify them into two groups, i.e., quantificational and scalar operators, and try to formalize their meanings in the framework of Pulman's (1997) 'higher order unification theory.'
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1. Introduction

It is well observed that according to the position of the intonation center, i.e., the position of the accent or stress, the same string of

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words might be acceptable in different circumstances, as the following examples show:

- (1) a. A: Who did you introduce to Burt yesterday?
 B: I introduced [CArol]_F to Burt yesterday.
- b. A: When did you introduce Carol to Burt?
 B: I introduced Carol to Burt [YESTerday]_F.
- c. A: What did you do to Burt yesterday?
 B: I [introduced CArol]_F to Burt yesterday.
- d. A: Who did you introduce to whom yesterday?
 B: I introduced [CArol]_F to [BURT]_F yesterday.

Many researchers have tried to define what the constituent that takes up the intonation center is and what contributions it makes to the semantics and pragmatics of the sentence that contains it. For example, Paul (1880) defined it as the psychological predicate and its complement, or the background, in the sentence as the psychological subject. Similarly, Ammann (1928) defined the former as the rheme while the latter as the theme. On the other hand, Halliday (1967) proposed that it represents the new information of the sentence while the background represents the given or old information. Chomsky (1971) and Jackendoff (1972) used the terms, 'focus' and 'presupposition.'

However, none of the above definitions both fully and straightforwardly explains the nature of focus and background. For instance, the concepts used by Paul and Ammann do not distinguish focus from background in a clear-cut way. Halliday's distinction between new and old information also seems problematic. Neither the first focus in (2B) nor the focus in (3B) indicates the new information of each of the sentences as

Halliday proposed:

- (2) A: You fed him the canned food with the fork, right?
 B: No, I didn't feed him the canned food [with the FORK]_F, but [with the CHOPsticks]_F.
- (3) A: Can John do anything about that?
 B: [JOHN]_F can't do anything.

As for the meaning of focus, it is generally accepted that there are two kinds of focus, one is 'free' focus and the other is 'bound' focus, and that the former contributes to the meaning only pragmatically while the latter semantically. Consider a couple of examples:²

- (4) A: What did you get for your birthday?
 B: I got [a comPUter]_F for my birthday.
 B':#I got a computer [for my BIRTHday]_F.
- (5) A: Who does Burt always take to the movies?
 B: Burt always takes [CArol]_F to the movies.
 B':#Burt always takes Carol [to the MOVies]_F.

The foci in (4B) and (4B') are examples of 'free' focus in the sense that they are not bound by any focus-sensitive operator while the foci in (5B) and (5B') are examples of 'bound' focus, which are bound by a focus-sensitive operator 'always.'

It is generally argued that (4B) and (4B'), which are answers to the question (4A), have the same truth conditions, and that

²In what follows I will use symbol # to indicate the unacceptability of the sentence without making a distinction between pragmatic infelicity and grammatical unacceptability.

they differ only in the felicity. On the other hand, (5B) and (5B'), which are answers to (5A), are said to have different truth conditions. For example, suppose that Burt takes Carol with him whenever he goes to the movies and he also takes her with him whenever he goes to a classical music concert. In this situation, (5B) is true while (5B') is false. Consequently, it is generally argued that focus doesn't have a meaning of its own, and that it is dependent on the focus-sensitive operator. But consider the following examples:

- (6) A1: Did you eat something?
 B: Yeah, I had a snack.
 A2: Did you eat [PIzza]_F for a snack?
- (7) A1: Where are you coming from?
 B: I went out to eat pizza.
 A2: Did you eat pizza [for a SNACK]_F?

For example, (6B') can be a direct answer to the question (6A2), but not to (7A2) while (7B') can be a direct answer to the question (7A2), but not to (6A2).

- (6B') No. I ate [TAcOs]_F for a snack.
 (7B') No. I ate pizza [for DInner]_F.

According to the meaning theories proposed by Hamblin (1973) and Karttunen (1977), the meaning of a question denotes the set of propositions that may count as possible answers to the question. Consequently, the claim that focus gets its meaning only when it is bound by a focus-sensitive operator does not seem to go through. As shown by (6) and (7), without the

existence of a focus-sensitive operator, focus makes a meaning difference semantically.

Consider a couple of more examples:

- (8) I even danced with [BURT]_F.
(9) A: Could you ask John to help us?
B: I only [know his SISTER a little]_F.

The two most-studied focus-sensitive operators, 'even' and 'only', are binding a focus in each of the two sentences (8) and (9B). 'Even' is generally known as a presuppositional expression and as a scalar focus-sensitive operator which affects the meaning only pragmatically, as proposed by Bennett (1982) and Francescotti (1995) among others. On the other hand, 'only' has been mostly studied as a focus-sensitive operator which affects the truth-conditional meaning. However, the 'only' in (9B) is another example of a scalar focus-sensitive operator, which affects the so-called felicity of the sentence.

All in all, the generalization that free focus does not make any semantic contribution while bound focus makes semantic contribution to the sentence doesn't seem to be correct. Furthermore, it will be shown later that a focus bound by the same focus-sensitive operator either makes or does not make semantic contribution to the sentence depending on the context. A variety of focus-sensitive operators including some scalar focus-sensitive operators will be discussed in detail in a later section.

In what follows, we intend to provide answers to the issues brought forth above. One is the issue of the nature of focus, that is, what constituent of the sentence gets focused. Another is the

issue of to what aspect of meaning the focus contributes. The other is the issue of the functions of focus-sensitive operators. Considerable parts of these issues are both very general and basic, especially at this point, when most of the researches on the focus phenomenon are concentrated on the formal representations of the findings of the phenomenon. However, it is also true that the most general and basic aspects of the phenomenon haven't been fully accounted for. In this context, it would be meaningful to explore these general and basic issues of the focus phenomenon, flowing backward against the current stream.

This paper is organized as follows: In section 2 the most basic issue, namely the issue of what focus is, will be discussed, in section 3 the meaning of free focus will be considered, and in section 4 the meaning of bound focus will be discussed. In section 5 the issue of the meanings of a variety of focus-sensitive operators will be taken into consideration.

2. New Information as Default Focus

As discussed earlier, any of the above mentioned definitions of focus is incapable of well characterizing focus. In this section, we will propose that all new information in a sentence gets focused and the question of which syllable of the focus is accented is decided by some default accent rules. As for the obvious counterexamples to this generalization, that is, the cases where the constituent indicating the old information of the sentence gets focused, it will be proposed that it provides an additional emphatic meaning. In the following paragraphs, this proposal will be discussed in detail with some data.

First, consider the following examples:

- (10) A: With whom did you go to the museum yesterday?
 B: I went to the museum with [BURT]_F yesterday.
- (11) A: Where did you go with Burt yesterday?
 B: I went [to the muSEum]_F with him yesterday.
- (12) A: What did you do with Burt yesterday?
 B: I [went to the muSEum]_F with him yesterday.

In each of the above sentences (10B), (11B), and (12B), the constituent in brackets indicates all and only the new information of the sentence. But notice that focus marking by accent is relatively ambiguous, as illustrated by (11B) and (12B). Although the two sentences have different focused constituents, they end up having exactly the same accent position. As is well known, all the syllables of the focused constituent cannot get an accent, and there exist a certain set of rules to determine the accent locus. One obvious rule is that the accent is realized within the focus. Another rule, which was suggested by Chomsky and Halle (1968), is the so-called 'nuclear stress rule,' which stipulates that the accent is realized on the last word of a focus. Another rule suggested by Selkirk (1984) and Stechow and Uhmman (1986) stipulates that the accent is realized on the argument in predicate-argument structures, and on the head in modifier-head structures. (13) is an example where the 'nuclear stress rule' is applied while (14) is an example where the argument in a predicate-argument structure is accented:

- (13) A: What happened?
 B: [John flew to SeATTLE.]_F
- (14) A: What has happened?
 B: [The SCHOOL is on fire.]_F
 B': [The WAR broke out.]_F

Take a look at another pair of examples of the focus that indicates new information.

- (15) A: Where did you go with whom last night?
 B: I went [to a DISco]_F with [BURT]_F last night.
- (16) A: When did you go to the Sting concert with whom?
 B: I went to the concert with [BURT]_F [last SATurday]_F.

(15) and (16) are examples of sentences with multi foci. (15B) and (16B) contain a couple of foci each and all the focused constituents indicate all and only the new information.

All in all, it is proposed that all and only the new information of the sentence gets focused, and that the accent locus of the focused constituent is decided by a certain set of accent rules.³

Now consider the following conversation.

- (17) A: What happened?
 B: [John went out on a date with SYLVia.]_F
 B': [JOHN went out on a date with Sylvia.]_F
 B'': [John went out on a DATE with Sylvia.]_F

All three answers (17B), (17B'), and (17B'') to question (17A) contain the same string of words, all of which represent only new information, and consequently the whole sentences are in focus. According to the above generalization, the accent should fall on a specific position of the focus that is determined by the so-called default accent rules. However, the three acceptable answers have three different accent positions. Intuitively, the

³Concerning an exhaustive list of the accent rules, we will not get into the details of it here and just leave it for further research.

most neutral accent position of the sentence seems to be on 'Sylvia,' which is the last word of the focus. Given this, we propose that when the accent falls on a different position within the focus from the position assigned by the default accent rules, the accented constituent has an additional meaning of its own, which will be elaborated shortly.

First, consider (17B), whose accent position is the neutral one. (17B), all the constituents of which represent new information, contributes its meaning to the common ground to update it. For (17B'), which has an abnormal accent position, i.e., on 'John' instead of 'Sylvia,' it seems to have an additional emphatic scalar meaning. In other words, with an extra strong accent on 'John,' (17B') contributes an additional meaning that John's, but not any other person's, having gone out on a date with Sylvia is surprising. This additional meaning contribution by the abnormal accent placement seems to be roughly the same contribution by focus-sensitive operator 'even.' In line with Francescotti's proposal on the meaning of 'even,' we could argue that, for example, in (17B'), John's having gone out on a date with Sylvia is more surprising than most of other alternative persons' having gone out on a date with Sylvia. As for (17B''), John's having gone out on a date with Sylvia is more surprising than most of other alternative things done by John with Sylvia. When it comes to (17B), we propose that if the accent on 'Sylvia' is an extra strong one just as in (17B') and (17B''), it could also have an additional emphatic scalar meaning.

However, let's take a look at the following example, recited as (18) from the above example (3):

- (18) A: Can John do anything about that?
 B: [JOHN]_F can't do anything.

The 'John' in (18B) is not a piece of new information. In spite of this, 'John' is in focus. Have a look at another example:

- (19) A: What did John do last night?
 B: [JOHN]_F [went to a DISco]_F last night.
 B':#[JOHN]_F went to a disco last night.

In (19B), the first focus 'John' represents old information while the second focus 'went to a disco' indicates new information. But one interesting thing about (19) is what we can observe with (19B'). That is, in (19B') the new information 'went to a disco' is not focused while the old piece of information 'John' is in focus, which seems to lead to the unacceptability of the sentence. As for (18B), the sentence doesn't contain any new information.

Consequently, we could conclude that a piece of old information could get focused with the proviso that the new information of the sentence is also in focus, and that the condition that it is the new information of the sentence is not a necessary but a sufficient condition for a constituent of the sentence to get focused. And (19B') is an example in which the new information is not in focus but only the old information 'John' is in focus, which consequently results in the unacceptability of the sentence.

Back to (18B), which gets its focus on the old piece of information 'John,' with an extra strong accent on it, it also seems to get the same additional emphatic scalar meaning as in (17). That is, (18B) has an additional meaning such that John is a person who is less likely to be able to do anything about that

than most of the other persons in the context. As for (19B), it also receives an additional emphatic meaning that John's going to a disco is less likely to happen than most of other persons' going to a disco.

The following summarizes our observations on the nature of focus:

- (20) a. All the constituents of the sentence that represent new information get focused, and the accent locus in the focus is decided by some default accent rules.
- b. If the accent with an extra strong pitch contour falls on a different position in the focus from the position assigned by the default accent rules, the accented constituent gets an additional emphatic scalar meaning.
- c. If a constituent of the sentence that indicates a piece of old information gets focused with an extra strong accent, again an additional emphatic scalar meaning is assigned to it.

3. The Meaning of Free Focus

In this section, we will try to answer the question of what meaning contribution a focus makes. As mentioned earlier in section 1, it is generally argued that a focus specifies the piece of information that is most relevant at the current point, and that sentences with different foci differ only in their pragmatics, not in their semantics. Only when a focus is bound by a focus-sensitive operator, it gets its own semantic meaning.

Let's consider the following two conversations:

- (21) A: What did you do with Burt yesterday?
 B: I [went to a MUSical]_F with him yesterday.
 B':#I went to a musical with him [YESTerday]_F.
- (22) A: Who do you usually go to the movies with?
 B: I usually go to the movies with [CARol]_F.
 B':#I usually go [to the MOvies]_F with Carol.

(21B') is inappropriate as an answer to (21A) in the sense that the accented constituent 'yesterday' is not the piece of information that is most relevant at the current point, i.e., all and only the new information. As for (22B'), which contains a bound focus, again the accented constituent 'to the movies' does not represent the most relevant piece of information at the current point. According to the generally accepted view, (21B') is infelicitous while (22B') is grammatically unacceptable, in the sense that (21B) and (21B') differ only in their pragmatic felicitousness, while (22B) and (22B') differ in their truth conditions.

For (21) suppose a situation in which the speaker went to a musical with Burt twice recently, say, last Saturday and yesterday, and went to a disco with him after the musical yesterday. In this situation, although 'going to a musical' is not the only thing the speaker did with Burt yesterday and 'yesterday' is not the only time the speaker went to a musical with Burt, both (21B) and (21B') could be true. On the other hand, as for (22) suppose a situation in which the place the speaker usually goes to with Carol is an art gallery, but if he goes to the movies he usually takes Carol with him. Given this, (22B) is true while (22B') is false.

All in all, based on this, it is argued that (21B'), which does not have a different truth value from that of (21B), is less bad

than (22B'), which has a different truth value from that of (22B). However, intuitively it seems difficult to judge which is worse than the other as an answer to the question.

Consider an example similar to (22):

- (23) A: What do you usually do on a Saturday night?
 B: I usually [go to the MOvies with my wife]_F on a Saturday night.
 B': I usually [go to the movies with my WIFE]_F on a Saturday night.
 B'':#I usually go to the movies with my wife [on a SAaturday night]_F.

In (23), either (23B) or (23B') seems appropriate as an answer to (23A), but (23B'') seems inappropriate since the accent is not on a piece of new information but on an old piece of information 'on a Saturday night.' The fact that both (23B) and (23B') are possible answers to (23A) indicates the flexibility of the accent locus within a focus. But this flexibility seems to cause a problem, in addition to the general observation that focus marking by sentence accent is relatively ambiguous. Have a look at a couple of examples:

- (24) A: Where did you go last week?
 B: I went to [SeATTLE]_F last week.
 (25) A: What did you do last week?
 B: I [went to SeATTLE]_F last week.

The two answers (24B) and (25B) to the two different questions (24A) and (25A) are made up of the same string of words with

an accent on the same position, which illustrates the ambiguity of the focus marking. Although the two sentences have different foci, the same word is accented in both of them.

Now compare the following examples with (23).

(26) A: Where do you usually go with your wife on a Saturday night?

B: I usually go [to the MOVIES]_F with my wife on a Saturday night.

(27) A: Who do you usually go to the movies with on a Saturday night?

B: I usually go to the movies with [my WIFE]_F on a Saturday night.

(26B) and (23B) have the same string of words with the same accent position, but they have different foci. Consequently, the focus-sensitive operator 'usually' in the two sentences binds two different foci and they have two different truth conditions. (27B) and (23B') also have the same string of words with an accent on the same position, but they have different foci and different truth conditions. (26B) and (27B), which have two different foci with two different accent positions, clearly have two different truth conditions.

Despite this complicating situation in focus marking, we can observe in (23) that the language user, without making any mistake, accepts (23B) and (23B') as appropriate answers to the question (23), but does not accept (23B'') as an appropriate answer. This seems to indicate that there is no difference in the degree of unacceptability between (21B') and (22B'). In other words, as mentioned above, the general argument that (22B') is

much worse than (21B') as an answer since the former has a different truth-conditional meaning from the correct answer (22B) while the latter has the same truth-conditional meaning as that of (21B) but differs only in its pragmatic felicity, does not seem to go through. The reason why the language user regards (21B') and (22B') as inappropriate answers seems to be that in both (21B') and (22B'), the accent is on a piece of old information not on a piece of new information within the focus, and the language user does not really have the capacity to tell the difference between the two answers in the degree of inappropriateness.

As for the question of why the language user has no difficulty in judging both (23B) and (23B') as acceptable, despite their different accent positions, we suggest that the question (23A) already marks the focus part for its answer by the *wh*-word, so that as long as the accent position is inside the focus, the language user interprets the focus-sensitive operator binds the whole focus in the answer. In other words, in order for an answer to (23A) to be an acceptable one, its focused part should be made up of all and only new information with a part of which is accented.

Let us compare (23) with the following examples from Herburger (1997):

- (28) Did you know this? [Many [ScandiNAvians]_F have won the Nobel Prize in literature.]_F
- (29) Did you know this? [Many Scandinavians have won the Nobel Prize [in Lliterature]_F.]_F

Different from (23B) and (23B'), which are interpreted as having exactly the same meaning with the same truth value, the second

sentence in (28) and that of (29) are interpreted to have different truth conditions. The quantificational focus-sensitive operator 'many' binds different constituents inside the same wide focus, i.e., the whole sentence. One difference between (23B, 23B') and (28, 29) is that in the former the focus-sensitive operator 'usually' binds the same wide focus despite the fact that the sentences have different accent positions while in the latter 'many' binds different foci inside the same wide focus. This seems to be possible due to the fact that in the former the focus of each of the sentences is predetermined by the question sentence and the relation between the binding operator and the bindee is also predetermined by the phrasing of the question. On the other hand, in (28) and (29) the whole sentences are neutral descriptions and the relation between the binder and the bindee is not in any way predetermined. What the second sentence of (28) means is that among the recipients of the Nobel Prize in literature many of them are Scandinavians while the second sentence of (29) means that among the Scandinavian recipients of the Nobel Prize in all fields many of them have won the Nobel Prize in the field of literature.

In sum, what we can observe with examples (23) and (28, 29) is that when the focus of a sentence is predetermined by a previous sentence such as a question sentence, the bindee of the focus-sensitive operator is also predetermined. Therefore, the meaning of the focus in this case is not different in any way from the meaning of a free focus, namely, as a context change potential, which will be elaborated later. However, as for cases like (28) and (29), in which no predetermination of the focus is made by a previous sentence, another narrow focus inside the wide focus is construed as the bindee of the focus-sensitive

operator. Furthermore, depending on which constituent is construed as the bindee of the operator, the truth-value of the sentence varies.

Now let's consider some yes-no questions:⁴

- (30) A1: Did you go to the movies last night?
 B1: Yeah, I went to the movies last night.
 A2: Did you go to the movies [with SYLVia]_F?
 B2: #I [had DInner]_F with Sylvia.
- (31) A1: Did you go out with Sylvia last night?
 B1: Yeah, I went out with Sylvia last night.
 A2: Did you go [to the MOVies]_F with Sylvia?
 B2: #I went to the movies [with MARtha]_F.

If we compare (30A2) and (31A2) with each other, it is observed that these two questions are asking two quite different things. If we interpret the meanings of the two questions based on the question meaning theories by Hamblin (1973) and Karttunen (1977), which look at the meaning of a question as the set of propositions that may count as possible answers to the question, what we get is the following meanings for (30A2) and (31A2):⁵

- (30A2') $\lambda p[p = \lambda r[\text{went}(h, \text{to-the-movies}, r)](\text{with-Sylvia}) \vee$
 $p = \lambda r[\text{went}(h, \text{to-the-movies}, r)](\neg \text{with-Sylvia})]$
- (31A2') $\lambda p[p = \lambda r[\text{went}(h, r, \text{with-Sylvia})](\text{to-the-movies}) \vee$
 $p = \lambda r[\text{went}(h, r, \text{with-Sylvia})](\neg \text{to-the-movies})]$

⁴In fact, it could be argued that both (30B2) and (31B2) are possible answers to (30A2) and (31A2) respectively. However, the point we are trying to make here is that neither (30B2) nor (31B2) is a direct answer to the question.

⁵Both of the negations in (30A2') and (31A2') are of type $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$, $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$.

As shown in (30A2') and (31A2'), the meanings of (30A2) and (31A2) are different, and different answers are expected for them. For both (30A2) and (31A2), each of their given answers (30B2) and (31B2) respectively is not one of the propositions counted as possible answers, so that it is not considered as an acceptable direct answer for the question. But if we change (30) and (31) to (32) and (33) respectively, the answers to the questions (30A2) and (31A2) are changed to acceptable direct answers, i.e., (32B2) and (33B2), to the questions, as the following:

- (32) A1: Did you go to the movies last night?
 B1: Yeah, I went to the movies last night.
 A2: Did you go to the movies [with SYLVia]_F?
 B2: No, I went [aLONE]. But I [had DInner]_F with Sylvia later.
- (33) A1: Did you go out with Sylvia last night?
 B1: Yeah, I went out with Sylvia last night.
 A2: Did you go [to the MOvies]_F with Sylvia?
 B2: No, I went to [a CONcert]_F with Sylvia. But I went to the movies [with MARtha]_F later on.

All in all, the function of focus could be said to mark the 'highlight' of the sentence, from which the terminology 'focus' probably came. One most plausible candidate for this so-called 'highlight' part of the sentence is the 'new information' part of the sentence, which is the so-called 'default' focus. Another candidate for the 'highlight' part is the part which the speaker wants to put an emphasis on or/and to give an additional meaning to although it is not the new information part of the sentence, which is the so-called 'secondary' focus.

Focus in general is both a real and a psychological concept. On the one hand, it is real in the sense that it contributes to the meaning of the sentence both semantically and pragmatically. On the other hand, it is psychological in the sense that its marking is not always straightforward due to its ambiguity.

To summarize this section, we have seen that there are two kinds of free focus, one of which has the primary function of marking new information and the other has the secondary function of indicating additional emphatic scalar information. Furthermore, we have seen that free focus contributes to the meaning semantically as well as pragmatically, contrary to the general belief that it contributes only to the pragmatic meaning of the sentence.

In the following section, we will take bound focus and some focus-sensitive operators into consideration, and see what meaning contributions they make and what differences exist between free focus and bound focus.

4. The Meaning of Bound Focus

First, let's consider some examples in which all and only the new information of the sentence is focused and bound by a focus-sensitive operator:

- (34) A: Where do you usually go with Sue on Friday?
 B: I usually go [to a CONcert]_F with Sue on Friday.
- (35) A: When do you usually go to a concert with Sue?
 B: I usually go to a concert with Sue [on Friday]_F.
- (36) A: How do you usually spend a Friday?
 B: I usually [go to a concert with SUE]_F on Friday.

- (37) A: How do you usually spend a Friday?
 B: I usually [go to a CONcert with Sue]_F on Friday.

In all the above question sentences and their answer sentences, the focused constituent indicates the new information of each of the sentences and this focus marking plays a role of disambiguating the meaning of the sentence. That is, the following sentence without any focus marking is at least seven-way ambiguous, depending on which constituent(s) the adverbial quantifier 'usually' is construed to bind.

- (38) I usually go to a concert with Sue on Friday.

Back to the above examples, for instance, what (34B) means is such that in most of the instances where the speaker goes somewhere with Sue on Friday, it is to a concert that he or she goes with Sue on Friday while what (35B) means is such that in most of the instances where the speaker goes to a concert with Sue, it is on Friday that he or she goes to a concert with Sue. To generalize, in each sentence of (34-37), the events described by the complement of the focus are applied to the focus.

The following are examples of bound focus within focus:

- (39) I heard about an interesting custom in your country.
 I heard that in your country [[OFficers]_F always escort ballerinas]_F.
- (40) I heard about an interesting custom in your country.
 I heard that in your country [officers always escort [balleRInas]_F]_F.

The narrow foci 'officers' and 'ballerinas' in (39) and (40) respectively are within the wide foci that indicate all and only the new information of the sentences. And yet, as discussed earlier, different from free focus within focus, bound focus within focus as in the above examples does not trigger the so-called additional emphatic scalar meaning. Depending on where the accent is placed, the sentence receives different truth-conditional meanings. Different from the above examples (34-37), (39) and (40) are examples of bound focus that make genuine truth-conditional differences.

The following is another example of bound focus within focus:

- (41) A: I heard that Kurt had a birthday party yesterday.
 B: [Kurt even got [a new comPUter]_F from his father.]_F
 B':[Kurt even got a new computer [from his FAtHer]_F.]_F

(41B) and (41B') differ from (39) and (40) in that in the former the narrow foci are bound by a scalar focus-sensitive operator while in the latter the narrow foci are bound by a quantificational focus-sensitive operator.

As mentioned above, according to Francescotti's (1995) analysis, the operator 'even' assigns a scalar emphatic meaning to the focus that it binds. In (41B), the wide-focused sentence means that Kurt got a new computer from his father and Kurt's getting a new computer from his father is surprising than his getting most of other alternative presents from his father. On the other hand, the wide-focused sentence in (41B') means that Kurt got a new computer from his father and Kurt's getting a new computer from his father is surprising than his getting a new computer from most of other people.

All in all, what we can observe with bound focus within focus is that the cases where a quantificational focus-sensitive operator is involved make truth-conditional meaning differences with different foci while the cases where a scalar focus-sensitive operator is involved make only pragmatic meaning differences with different foci.

Now let us consider some examples that involve an old-information focus.

- (42) A: What does John usually do on Friday?
 B: [JOHN]_F usually [goes to a muSEum]_F on Friday.
 B': John usually [goes to a muSEum]_F [on FRIday]_F.

(42B) and (42B') contain two foci each. However, it is not the case that both of the two foci in each of the sentences indicate new information. In (42B), the first focus is a piece of old information while the second is the new information of the sentence. In (42B'), the first focus is the new information while the second is a piece of old information. Here we can observe that only the new-information focus is bound by the focus-sensitive operator in each case, and that the old-information focus seems to get the so-called scalar emphatic meaning, which is in line with our earlier generalization about the free old-information focus. Therefore, for example, what (42B') means is such that most of the events of John's doing something on Friday are the events of his going to a museum and his going to a museum on Friday is surprising than his going to a museum on most of other days of the week.

Have a look at several more examples of a bound focus that indicates old information:

- (43) A: I heard that John introduced Bill to Sue.
 B: Did he only introduce [BILL]_F to Sue?
 B': Did he only introduce Bill to [SUE]_F?
- (44) A: I heard that Fred asked Bill for money again.
 B: Does he always ask [BILL]_F for money?
 B': Does he always ask Bill [for MOney]_F?

Each of the foci in (43B, B') and (44B, B') indicates a piece of old information. What meaning contribution each of these foci makes depends on its binder, i.e., the focus-sensitive operator, just as in cases where the bound focus indicates the new information of the sentence. This is another difference between free focus and bound focus. As observed above, concerning free focus, the meaning contribution it makes when it indicates the new information of the sentence and the meaning contribution it makes when it indicates a piece of old information differ from each other.

Lastly, take a look at another example of bound focus, which involves focus-sensitive operator 'not':

- (45) A: You fed the baby the canned food with the fork, right?
 B: No, I didn't feed the baby [the CANNED food]_F, but [the BOTTLED food]_F.
 B': No, I didn't feed the baby [with the FORK]_F, but [with the CHOPsticks]_F.

The first focus of both (45B) and (45B') is a focus bound by focus-sensitive operator 'not' while the second focus is a free focus, which is the new information of the sentence. The operator

'not' functions as an information state corrector and the following free focus fills in the information gap generated by the previous focus bound by 'not.' In other words, the first clause of (45B) with a focus bound by the focus-sensitive operator 'not' is uttered to correct the information state of A while the second clause of (45B) with a free focus is to provide a piece of new information to replace the wrong piece of information believed by A. The examples of focus in both (45B) and (45B') are the so-called 'contrastive' focus, in the sense that in each of (45B) and (45B'), the first focus and the second focus are contrasted.

To summarize this section, we have seen above that if the focus-sensitive operator is a part of the old information of the sentence and the sentence contains new information, then the operator is interpreted to bind the new-information constituent and the meaning of the sentence is affected by the relation between the focus and its binder. Also for focus within new-information focus, the operator contained in the wide focus is interpreted to bind the narrow focus within the wide focus and the meaning of the wide focus is again affected by the relation between the narrow focus and the operator. In this case, contrary to free focus, it does not have an additional emphatic scalar meaning. When it comes to multiple new-information focus within a sentence, the focus-sensitive operator is interpreted to bind all the new-information foci and to affect all of them semantically. When a sentence contains both an accented new-information constituent and an accented old-information constituent, the focus-sensitive operator binds only the new-information constituent and the old-information constituent is interpreted as a free focus, which is interpreted to have an additional emphatic scalar meaning. As for cases that contain

only an accented old-information focus, the focus-sensitive operator binds this focus. But again contrary to old-information free focus, it does not get an emphatic scalar meaning.

We have discussed above the meaning contributions of bound focus and its binding focus-sensitive operator with some examples. From this, we could classify focus-sensitive operators into two groups depending on the nature of their meaning contributions. One group is quantificational focus-sensitive operators such as 'always' and 'usually,' and the other group is scalar focus-sensitive operators such as 'even' and 'only.'⁶ The former group of operators are generally argued to make truth-conditional meaning contributions while the latter group of operators are to make emphatic scalar meaning contributions. In the following section, we will discuss the meaning contributions of these two groups of operators in detail.

5. Focus-Sensitive Operators

As pointed out above, in general all the focus-sensitive operators that do not have any quantificational force seem to be safely regarded as scalar focus-sensitive operators that order the alternative elements of the focus on a scale. In what follows in this section, we will discuss these scalar focus-sensitive operators in detail after we consider the other group of operators, namely, quantificational focus-sensitive operators in short. However, since our analyses on these two groups of focus-

⁶It will be discussed later that there are two kinds of focus-sensitive operator 'only,' as observed by Hoeksema and Zwarts (1990). One is quantificational focus-sensitive operator 'only' and the other is scalar focus-sensitive operator 'only.'

sensitive operators are based on Pulman's (1997) 'higher order unification' theory, which is one of several current approaches to the interpretation of focus, it seems to be appropriate to briefly discuss his theory in the following subsection before we get to our main discussions in this section.

5.1. Pulman's 'Higher Order Unification Theory'

Pulman's (1997) 'higher order unification' theory is argued to be superior to three current approaches to the interpretation of focus, namely, Krifka's (1991, 1992), Steedman's (1990, 1991, 1993), and Rooth's (1985, 1992) theories of focus.

It is argued by Stechow (1991) and Krifka (1992) that a focus theory based on the structured meanings is better than Rooth's focus theory based on the alternative semantics in the sense that many of the analyses of the latter theory can be all recast in the former framework but not vice versa. Another thing is that the latter provides only access to the focus semantic value of the constituent containing the focus, but not access to the meaning of the focused item.

It is further argued in Pulman (1997) that both the alternative semantics theory and the structured meaning theory assume focus as a property of syntactic constituents so that neither of the theories can explain cases in which focus appears on a non-constituent. He proposes that his higher order unification theory based on the categorial grammar is better than the strongest opponent, the structured meaning theory, for example, in explaining non-constituent focus, linguistically unmarked focus, and interactions between focus and ellipsis. Although his theory is also not without problems, he argues that it is currently the best focus theory.

Higher order unification, which is originated from Huet (1975), is defined on pairs of higher order terms of a typed lambda calculus. These terms have to be in a normal form, in which the types of functional terms are made explicit via lambda variables. However, the precise details of this normal form and of the unification algorithm are too complex to be presented here, as pointed out by Pulman (1997), that instead of explaining the basic principles and workings of higher order unification in detail, let us present several examples to give you an idea for the concept.

$$(46) P(\text{john})=\text{sleeps}(X) \rightarrow \{P=\text{sleeps}, X=\text{john}\}$$

$$(47) \text{ a. } P(\text{john})=\text{likes}(\text{john}, \text{mary}) \rightarrow \{P= \lambda x.\text{likes}(x, \text{mary})\}$$

$$\text{ b. } P(x)=\text{likes}(\text{john}, \text{mary}) \rightarrow \{P= \lambda y.\text{likes}(y, \text{mary}), x=\text{john}\} \\ \rightarrow \{P= \lambda y.\text{likes}(\text{john}, y), x=\text{mary}\}$$

First, as in (46), in higher order logic, variables of any type are allowed unlike in first order logic. Second, while the notion of a unifying substitution is almost the same as for the first order logic, the notion of identity is not. As illustrated in (47b), higher order unification is not deterministic in the sense that there could be multiple solutions. Third, higher order unification is not decidable. If there is no solution, an algorithm implementating higher order unification may not terminate. However, higher order matching is decidable up to third order.

One clear advantage of higher order unification is that "it provides a clear logical (and computational) interpretation of one particular notion of 'combination of information' in a way which is much less tied to the precise syntax of the expressions involved than other types of information combining operations such as those based on pattern matching, or indeed, those using

first order unification." (Pulman 1997: 89)

To illustrate the use of higher order unification, let us give an example. In order to build up meaning representations, Pulman makes several assumptions. First, he assumes the existence of QLF, namely, 'quasi-logical forms' in a similar line with Alshawi and Crouch (1992), which are produced by the syntax-driven meaning composition process and require further contextual processing to determine their truth-conditions when they contain contextually dependent constructs such as 'qadv,' 'even', 'only', and 'ellipsis.' According to him, these QLF constructs, whose meaning is determined depending on the context, are interpreted via 'conditional equivalences.'

Consider the following example:

- (48) A: What happened to Kurt?
 B: [SU_{San} DUMPED]_F him.

First, the following is an equivalence that provides an interpretation for the functor 'assert':

- (49) $\text{assert}(F, S) \Leftrightarrow S$
 if $B(F)=S$ & $\text{context}(C)$ & $P(A)=C$ & $\text{parallel}(B \cdot F, P \cdot A)$

What (49) means is that asserting S with focus F is equivalent to S if S can be structured into a background B and a focus F ; where some proposition C is salient, and can also be structured into components P and A such that P and B , and A and F , are parallel. In such a context the felicity condition that the background could have been informatively predicated of something other than the focus will be met. If we give an

analysis for (48B) based on (49) and several assumed rules, we get:

(50) <u>phrase</u>	<u>meaning</u>	<u>focus</u>
SUsan	$\lambda P.P(s)$	$\lambda P.P(s)$
DUMPED Kurt	$\lambda x.dump(x, k)$	$\lambda O. \lambda y.O(\lambda z.dump(y, z))$
S DUMPED K	$dump(s, k)$	$[\lambda P.P(s)] \cdot [\lambda O. \lambda y.O(\lambda z.dump(y, z))]=Foci$
S DUMPED K	$assert(Foci, dump(s, k))$	

First, if we solve the equation of the form $B(F1 \cdot F2)=S$, we get:

$$(51) B([\lambda P.P(s)] \cdot [\lambda O. \lambda y.O(\lambda z.dump(y, z))])=dump(s, k)$$

Consequently, we get $B = \lambda S. \lambda V.S(V(\lambda Q.Q(k)))$, where V is of the type of transitive verbs. As for the context variable C , we could assume that it is instantiated to the previous question represented as ' $\exists x.happen(x, k)$.' If we solve the second equation, we get:

$$(52) P(A1 \cdot A2) = \exists x.happen(x, k)$$

$$P = \lambda S. \lambda V.S(V(\lambda Q.Q(k)))$$

$$A1 = \lambda P. \exists x.P(x)$$

$$A2 = \lambda O. \lambda y.O(\lambda z.happen(y, z))$$

Given this, we could assume that the solution meets the required conditions on parallelism. The meaning can be glossed as 'Kurt had the property of being dumped by Susan, as opposed to having any other property.'

In sum, as shown above, the higher unification theory can give meaning representations to cases of non-constituent focus without the need of further mechanisms, unlike other approaches, which is one of the advantages of this theory that Pulman points out.

5.2. The Meanings of Focus-Sensitive Operators

We have seen in the previous section that the meaning of focus bound by a quantificational focus-sensitive operator can be explained in terms of event semantics. That is, the portion, which is specified by the quantificational operator, of the events represented by the complement formula of the focus applies to the focus. For example, (53a) means that in most of the events of Kurt's asking someone for money Bill is the one that Kurt asks for money while (53b) means that in most of the events of Kurt's asking Bill for something money is the one that Kurt asks Bill for.

- (53) a. Kurt usually asks [BILL]_F for money.
 b. Kurt usually asks Bill [for MOney]_F.

The meaning of this kind of focus bound by a quantificational focus-sensitive operator has been studied by quite a few linguists including Krifka (1991, 1992, 1993), Rooth (1985, 1992), and Pulman (1997) among others. If we give a formal representation to the above sentences following Pulman's (1997) 'higher order unification' theory, we get the following (53a') and (53b') based on the equivalence (54):⁷

⁷Pulman (1997) assumes that the QLF representation of quantificational adverbs and the interpretation of the QLF construct 'qadv' by an equivalence is of the form given in (54).

- (54) $qadv(F, QAdv, S) \Leftrightarrow QAdv(Restr, S)$
 if *Restr* is contextually determined,
 or $B(F)=S$, and $Restr = \lambda e. \exists f. B(f)(e)$,
 where *qadv* is a QLF construct, *F* means focus, *B*
 means background, *S* means sentence, *Restr* means the
 restriction of the tripartite structure of a quantified
 sentence, *QAdv* means quantificational adverb, *e* and *f*
 are event or situation variables.

By solving the equation and substituting into the right hand side of the equivalence, we get the following meaning representations (53a') and (53b') for (53a) and (53b) respectively:

(53a) Kurt usually asks [BILL]_F for money.

(53a') $QLF = qadv(b, \text{usually}, \lambda e. ask(e, k, b, m))$

$B(F) = \lambda e. ask(e, k, b, m) \rightarrow B = \lambda ze. ask(e, k, z, m)$

$rhs = \text{usually}(\lambda e. \exists a. [\lambda zf. ask(f, k, z, m)](a))(e)$,

$\lambda e. ask(e, k, b, m)$

$= \text{usually}(\lambda e. \exists a. ask(e, k, a, m), \lambda e. ask(e, k, b, m))$,

where *e, f* are event or situation variables, *a, z*
 are variables of type *e*, *rhs* indicates the right
 hand side of the equivalence.

(53b) Kurt usually asks Bill [for MOneY]_F.

(53b') $QLF = qadv(m, \text{usually}, \lambda e. ask(e, k, b, m))$

$B(F) = \lambda e. ask(e, k, b, m) \rightarrow B = \lambda re. ask(e, k, b, r)$

$rhs = \text{usually}(\lambda e. \exists q. [\lambda rf. ask(f, k, b, r)](q))(e)$,

$\lambda e. ask(e, k, b, m)$

$= \text{usually}(\lambda e. \exists q. ask(e, k, b, q), \lambda e. ask(e, k, b, m))$,

where *r, q* are variables of type $\langle\langle e, t \rangle\rangle, \langle e, t \rangle\rangle$.

As discussed earlier, the meaning contribution made by a focus bound by a quantificational focus-sensitive operator is to determine the meaning of the sentence, without which the meaning of the sentence would be multi-ambiguous depending on how many arguments are available that could be bound by the quantificational operator.

On the other hand, the meaning contribution made by a scalar focus-sensitive operator is to give an additional emphatic scalar meaning to the focus it binds. In the remainder of this section we will consider some examples of these scalar focus-sensitive operators and their meaning contributions. First, let us consider one of the most studied focus-sensitive operator 'only':

- (55) A: Did you introduce [JOHN]_F to Mary?
 B: No. I only introduced [BILL]_F to Mary.
- (56) A: Did you introduce Bill to [SUE]_F?
 B: No. I only introduced Bill to [MARY]_F.

According to Horn's (1969, 1996) analysis of 'only,' what is asserted by (55B) is that the speaker introduced Bill to Mary and what is presupposed by it is that the speaker didn't introduce any person other than Bill to Mary. In the same way, (56B) asserts that the speaker introduced Bill to Mary, which is in fact the same assertion as that of (55B), and it presupposes that the speaker didn't introduce Bill to any person other than Mary.

Pulman's (1997) focus theory gives the following equivalence to interpret 'only':

¹I will represent this kind of 'only' in the formalization as 'only₁' and the other kind of 'only,' which will be discussed shortly, as 'only₂.'

- (57) $\text{only}_1(F, S) \Leftrightarrow \text{no } X.X \approx F \ \& \ B(X)$
 if $\text{context}(S) \ \& \ B(F)=S$.

In (57), ' $X \approx F$ ' means ' $\text{parallel}(X, F) \ \& \ X \neq F$,' and ' $\text{context}(S)$ ' means proposition S is salient. What (57) amounts to is that ' $\text{only}_1(F, S)$ ' is equivalent to 'there is no alternative X of F such that $B(X)$ ' if S can be structured into a background B and a focus F where proposition S is salient.

However, consider the following examples:

- (58) What can I do? [I'm only [a HOUSEwife]_F.]_F
 (59) How can we trust Kurt? [He is only [a PART-time worker]_F.]_F
 (60) A: Could you ask John to do that for us?
 B: I only [know his SISTER a little]_F.
 B':#I only [know him VERY well]_F.
 (61) A: I told you not to eat anything on the table.
 B: We only [nibbled some hors D'OEUVRES]_F.
 B':#We only [ate the CAKE]_F.

None of the 'only's in (58-61) seems to get the kind of interpretation (57). For example, (58) does not mean that the speaker does not have any alternative property of the focus other than the focus itself in the context. (59) neither means that Kurt does not have any alternative property of the focus other than the focus itself in the context. The 'only' in (58-61) triggers an emphatic scalar meaning. That is, the 'only' orders alternatives of the focus on a pragmatic scale and the bound focus takes up a point on the lower half of the scale that is sufficiently low toward the lowest endpoint.

For example, in (60B), the 'only' will order alternatives of the focus from the highest influencing property to persuade 'John' to do the thing for them to the lowest influencing property, and the focused element should be a sufficiently low influencing property. The focused element in (60B) 'know his sister a little' takes up a sufficiently low point of the scale so that it conforms to the meaning of the scalar operator 'only' and the sentence is acceptable. On the other hand, the focused element in (60B') 'know him very well' takes up, on the contrary, a sufficiently high point of the scale, so that it contradicts the meaning of the 'only' and the sentence is unacceptable.

Here the concept 'a sufficiently low point of a scale' could be interpreted to mean that the closer it is to the lowest endpoint of the scale, the more emphatic and more felicitous the statement containing the 'only' is accepted to be. A formal representation of the scalar focus-sensitive operator 'only' in the framework of the higher order unification theory follows:

$$(62) \text{ only}_2(F, S) \Leftrightarrow S \\ \text{if } B(F)=S \ \& \ \text{MOSTX}(X \approx F)(B(X) >_{\min/\max} B(F))$$

In (62), an operator $>_{\min/\max}$ is interpreted to represent the minimality/maximality of a proposition on a scale. Hence an expression like 'p $>_{\min/\max}$ q' means 'proposition p is closer to the maximality than proposition q' or 'q is closer to the minimality than p.' In other words, 'p is closer to the maximal point of a pragmatic scale than q' or 'q is closer to the minimal point of the scale than p.' The equivalence in (62) says that 'only₂(F, S)' is equivalent to S if S can be structured into B and F, and for most of the parallel but non-identical alternatives X to

the focus F , $B(F)$ takes up a lower point of a scale than $B(X)$.

Before we move on to another focus-sensitive operator, let's have a look at a couple of more examples of 'only':

- (63) A: I told you not to talk to anyone about that.
 But you talked to Bill about that, right?
 B: Yes, I did. But I only talked to [BILL]_F. He won't say anything.
- (64) A: Did you introduce all the boys to Mary?
 B: No. I only introduced [BILL]_F to Mary.
 B': No. I only introduced [SOME of them]_F to her.
 B'': No. #I only introduced [MOST of them]_F to her.

First, the second sentence in (63B) is an interesting example in the sense that the 'only' in the sentence seems to get both (57) and (62) interpretations at the same time. What the sentence means is that the speaker didn't talk to any person other than 'Bill' and 'Bill' is a kind of person who is less likely to talk to people about the thing than most of other people in the context.

One interesting thing we can observe with (64) is that the focus bound by 'only' cannot be a set of individuals or properties which takes up a large portion of the whole set of individuals or properties available in the context. In (64B, B'), the two foci 'Bill' and 'some of them' each occupies only a small part of the whole set 'the boys' while the focus 'most of them' in (64B'') takes up a big portion of the set, i.e., more than a half of the set. Consequently, (64B) and (64B') are acceptable while (64B'') is unacceptable. This observation could be explained by the scalar implication in the 'only.' That is, even 'only₁' seems to have the emphatic scalar meaning as in (62) in addition to the meaning in

(57). Furthermore, the scalar meaning of 'only₁' is such that the focus bound by it should occupy a sufficiently low point of a 'quantity' scale.

Now, consider a couple of examples of another most-studied focus-sensitive operator 'even':

- (65) A: What happened at the party?
 B: [Sue even danced with [BILL]_F.]_F
- (66) A: Was Sylvia happy last night?
 B: She was delighted. [She even kissed [BILL]_F.]_F

As for (65B), following Francescotti's (1995) 'implicature-based' analysis, what (65B) means is such that Sue danced with Bill and this proposition is surprising than most of other alternative propositions. Also for (66B), the second sentence means that Sylvia kissed Bill and this proposition is surprising than most of other alternative propositions. If we give a formal representation for 'even' again in the framework of the higher order unification theory, we get:

- (67) $\text{even}(F, S) \Leftrightarrow S$
 if $B(F)=S$ & $\text{MOST}X(X \approx F)(B(X) >_p B(F))$

In (67) the operator $>_p$ is used as a subjective probability operator in the sense of Krifka (1991, 1993) and Pulman (1997), and the expression ' $B(X) >_p B(F)$ ' means 'B(X) is believed more probable than B(F).' The equivalence relation indicates that 'even(F, S)' is equivalent to S if S can be structured into B and F, and for most of the parallel but non-identical alternatives X to the focus F, B(F) is believed less probable than B(X).

Have a look at a couple of examples of another focus-sensitive operator 'also':

- (68) A1: I introduced [BILL]_F to Mary last week.
 B: Did you introduce only [BILL]_F to Mary?
 A2: No. I also introduced [MIKE]_F to her.
- (69) A: What did the villains do to them?
 B: They [beat the WomEn]_F and they also [beat the CHILDren]_F.
 B':#They [beat the CHILDren]_F and they also [beat the WomEn]_F.

What (68A2) means is such that the speaker introduced Mike to Mary and there exists some alternative other than Mike whom the speaker introduced to Mary. The meaning of this quantificational 'also' can be represented as the following:⁹

- (70) $\text{also}_1(F, S) \Leftrightarrow \exists X.X \approx F \ \& \ B(X)$
 if $\text{context}(S) \ \& \ B(F)=S$.

(70) represents that 'also₁(F, S)' is equivalent to 'there is some parallel but non-identical alternative X other than F such that B(X)' if S can be structured into a background B and a focus F where proposition S is salient.

On the other hand, in (69B), what the second clause means is such that the villains beat the children and there exists some alternative other than the children that the villains beat. In addition to this meaning, the clause also could mean that the

⁹I will represent this quantificational 'also' as 'also₁' and the scalar 'also,' which will be discussed shortly, as 'also₂'.

villains' beating the children is more surprising and/or less probable than beating some alternative other than the children, which is presupposed. This use of 'also' seems to be utilized by the language user to give a greater effect or/and to emphasize his or her statement by the way the statement is presented. There is a similar expression that functions in the same way as this kind of 'also', as illustrated in the following:

- (71) A: Who came to the party?
 B: Not only [the VICE President]_F but also [the PREsident]_F came to the party.
 B':#Not only [the PREsident]_F but also [the VICE President]_F came to the party.

In (71) it can be observed that the focus after 'but also' takes up a lower point of a 'probability' scale than the one after 'not only.' The president's coming to the party is more surprising and/or less probable than the vice president's coming to the party. This additional meaning contribution of the other kind of 'also' can be formally represented as follows:

- (72) $\text{also}_2(F, S) \Leftrightarrow S$
 if $B(F)=S$ & $\exists X.X \approx F$ & $B(X) >_p B(F)$

The equivalence relation indicates that ' $\text{also}_2(F, S)$ ' is equivalent to S if S can be structured into B and F , and there is some parallel but non-identical alternative X to the focus F that B would be more likely to be true of.

The meaning postulate of 'also₂' given in (72) happens to be identical to the meaning of 'even' proposed by Pulman (1997). In

fact, this is not entirely accidental in the sense that both 'even' and 'also₂' impose an additional emphatic scalar meaning on the focus that they bind.

However, Pulman's meaning postulate of 'even,' which is following Krifka's (1991) and Bennett's (1982) analyses, has the same problem as the problem of Bennett's that was pointed out by Francescotti (1995). Francescotti explains that the problem of Bennett's analysis comes from the fact that the meaning of 'even' is too weak, and he proposes a new analysis. Based on this new analysis, we have given a formal representation of the meaning of 'even,' which is different from Pulman's. Furthermore, the meaning of the second kind of 'also' is the sum of (70) and (72).

Lastly, when it comes to other focus-sensitive operators, of which I won't go into the details in this paper, for example, adverbs such as 'quickly,' 'surprisingly,' 'regrettably,' and aspectual operators such as 'still,' 'yet,' 'already,' and 'anymore,' most of them could be regarded as scalar focus-sensitive operators so that they are accountable in terms of a pragmatic scale. For instance, Israel (1996) analyzed 'still' in terms of a scale of 'lateness' and 'already' in terms of a scale of 'earliness.'¹⁰

6. Conclusions

We have observed above that the basic function of focus is to mark all and only the new information of the sentence. As for the cases in which this principle is not observed, we have explained that the focus in these cases plays a secondary function of

¹⁰Israel's (1996) analysis on these adverbs does not focus on the semantics of focus, but on the semantics of polarity sensitive items, though.

generating an additional emphatic scalar meaning.

We have also observed that the state of the matter is a little different between free focus and bound focus. When the basic principle of focus marking is violated, the meaning contributions of free focus and bound focus differ from each other.

As for focus-sensitive operators, we have classified them into two groups, namely, quantificational operators and scalar operators. We have seen that the meaning of the former can be accounted for in terms of event semantics while that of the latter can be accounted for in terms of a pragmatic scale.

To summarize, in this paper we have tried to present a general picture of the focus phenomenon. In doing that, we have asked and tried to answer several both quite general and basic questions such as 'what is focus?' and 'what contribution does focus make semantically?' Due to the transient characteristic and ambiguity of the focus marking, the focus phenomenon is something that is hard to be clearly and fully accounted for. Despite these shortcomings, we have tried to uncover some regularities in the phenomenon.

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