Focus: A Case Study on the Semantics/Pragmatics Boundary*

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Focus is the term linguists use to describe a kind of *prominence* in a sentence, usually marked by stress on a particular word or phrase. For instance, *Greek* is focused in:

(1) He spoke GREEK.

Philosophers coming to language from the tradition of logical semantics have sometimes been inclined to discount this sort of phenomenon. It makes no difference to the truth conditions of this particular sentence, and may appear merely to be an aspect of the vocal realization of the sentence—of interest to phonologists, and perhaps to socio-linguists, but not of much importance to fundamental philosophical questions about semantics and pragmatics. This appearance is deceptive. In fact, as we will see below, focus is a locus of interaction between semantics and pragmatics. Understanding this innocent-looking phenomenon is important to understanding how semantics and pragmatics relate to one-another.

Much of the recent philosophical debate over the semantics/pragmatics distinction has focused the question of how much underlying syntactic structure is responsible for determining what is said by an utterance, and how much what is said is determined by autonomous pragmatic processes such as 'free enrichment'. The debate has centered on a family of examples like:

(2) a. I have had breakfast.

b. Ralph drinks.

These present cases in which what we intuitively see as the truth conditions of an utterance is determined by more than we see in the surface linguistic structure of the sentences, raising the question of whether the truth conditions are fixed by richer underlying syntactic structure, or by purely pragmatic processes.[1]

One reason for studying focus is that it provides a very different set of examples. More so than the examples in (2), I believe, focus provides examples of how semantics and pragmatics *interact.* Understanding this interaction is a good way to come to understand the two sides of the semantics/pragmatics boundary. Indeed, it turns out that focus provides us with some very hard cases of semantic/pragmatics interaction. Studying hard cases cannot resolve all issues, and in this case, it will not resolve the debate over the nature of semantics and pragmatics. But hard cases do serve to set some parameters for theorizing. In this way, looking at focus will lead to several morals for the debate. Three seem to me to be especially important. First, the appearance that something is pragmatic can be deceptive. We will see good reason to take focus to be a semantic phenomenon, realized in logical form. But second, the fact that something is realized in a linguistic structure like logical form does not preclude its semantics triggering extremely complex pragmatic processes. For instance, a demonstrative, overtly present in the surface form of a sentence, triggers a pragmatic process of reference fixing. In the case of focus, I shall argue, a far more complex kind of pragmatic process is triggered: one of regulating the flow of information in a discourse.[2] As the reference-fixing process determines the value of a demonstrative, so the discourse-regulating process fixes the semantic contribution of focus. The semantic contribution of focus is thus heavily context-dependent. Finally, third, the kind of context-dependence involved is different than the model of the demonstrative might lead us to expect. Though I take focus to be realized in logical form, its semantic contribution is not well-characterized as simply the value of a parameter in

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[1]The former view is advocated by King and Stanley (2004), Stanley (2000), Stanley (2002), and Stanley and Szabó (2000). The latter view is defended by a number of authors, including Bach (1994), Carston (1988, forthcoming), Recanati (1993), and Sperber and Wilson (1986). Of course, there are important theoretical difference between all of these authors.

[2]The phrase is borrowed from Kadmon (2001).

logical form, and the pragmatic processes that affect its semantic contribution are not much like the processes that fix demonstrative or indexical reference.

These conclusions are not enough to resolve the debate over semantics/pragmatics distinction. Both sides may take heart from some of them. But on balance, I am inclined to think they favor the side which sees what is said as determined primarily by linguistic structure, and the context dependence of elements in that structure. Focus shows us cases where unexpected structure can be found, which triggers processes which may well have looked purely pragmatic.

My discussion of focus is divided into six sections. In Section (I), I examine the pragmatic effects of focus, and sketch a simple pragmatic theory. In Section (II), I review arguments that focus has significant semantic effects, and must be marked in the appropriate syntactic structure. Then in Section (III), I outline a provisional approach to the semantics of focus, and show how it relates to the pragmatic theory of Section (I). In Section (IV) I turn to arguments which show this pragmatic theory to be inadequate. These arguments indicate that a much richer pragmatic theory is needed, based on the structure of *discourse* and the pragmatic processes that regulate felicity in discourse. In Section (V) I investigate how such a theory might proceed (borrowing from work of Roberts, 1996 and Büring, 2003). I also consider what it tells us about the semantics of focus and how the semantics and pragmatics of focus interact. Finally, I conclude in Section (VI) by returning to the general question of the semantics/pragmatics boundary.

I   A Purely Pragmatic Phenomenon?

Any utterance conveys a huge range of information, much of it well beyond what is *meant* by the utterance. Among the sources of extra information are features of the way the sentence is pronounced. For instance, the volume and tone of voice of the speaker will reveal a great deal about her to a sensitive hearer, much of which will be beyond what the speaker intends to convey in making the utterance.

One of the features of the way an utterance is pronounced that has been of great interest

to linguists is that of *intonational prominence*. Any sentence will have some parts that are intonationally more prominent than others. For instance, consider:

(3) John kissed JANE.

The prominence of the last phrase *Jane* is indicated by capitals. This is what is sometimes called 'stress' or 'focal stress'. However, many phonologists insist on a difference between *stress*, pertaining to prominence in a rhythmic pattern, and *pitch accent* (or just *accent*) pertaining to prominence within an 'intonation contour' or 'tune'. One of the ways *Jane* is marked as prominent is by a high tone or pitch accent in the intonation contour of the sentence. For most of what follows, the phonology of how *Jane* is marked as prominent in (3) will not matter, and we can take a theoretically unreflective stance towards whatever the capitals indicate. However, at a couple of points, we will have to distinguish different ways of marking, by different intonation contours, so I will follow those who talk about pitch accent rather than stress.[3]

Let us say that a constituent marked by pitch accent as prominent is *focused*. (Below, this definition will be refined somewhat, as we will come to see focus as a phenomenon which is normally realized by accent.) It is easy to observe that focus has some effect on the information conveyed in an utterance. But what is the effect? We will see several options. In this section, I will restrict attention to purely pragmatic options. More semantically driven options will be addressed later.

I.1   The Pessimistic View

One natural idea is that focus is simply a way of highlighting some part of a sentence. It is a kind of phonological 'pointing'. What follows from this is only what may be rendered salient by such highlighting, but is otherwise unconstrained. This pessimistic view is nicely summed up by the title of Bolinger (1972), "Accent is predictable (if you're a mind reader)."[4]

The pessimistic view is too weak. The pragmatics of focus is more constrained than it allows. Consider a pair like:

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[3]For some surveys of relevant aspects of phonology, see Kadmon (2001), Ladd (1996), and Pierrehumbert and Hirschberg (1990).

[4]Bolinger's real interest is in arguing that accent placement cannot be predicted by phonological rules.

(4)   a.   John likes JANE.

      b.   JOHN likes Jane.

There is a uniform difference between these examples. In each, the focus indicates some kind of *contrast.* In (4a), it is indicated that John likes Jane, as opposed to, say, Sue or Mary. In the second, it is indicated that it is John who likes Jane, as opposed to, say, Bill or Fred.[5]

   In some cases, the indication of contrast can be central to the meaning of an utterance. A nice example is given by Francis Ford Coppola's film "The Conversation." In it, a professional eavesdropper records someone saying to another:

(5)   He'd kill us if he got the chance.

The eavesdropper is then faced with many worries about the safety of the people he spied upon. A plot twist leads to their committing a murder. Going back over the tape, the eavesdropper realizes the message is in fact:

(6)   HE'd kill US if he got the chance.

   Exactly what the contrast involved in focus is, and how it is determined, remains to be seen. But we can already observe that it is not merely a matter of unconstrained highlighting. We cannot hear the sentences in (4) any other way than indicating different contrasts. If the function of focus were mere highlighting, it should be possible to see the highlighting as not mattering, or indicating something having nothing to do with contrast. Moreover, the close relation of focus to what is meant by an utterance displayed in (6) is left unexplained by the pessimistic view.

   It is worth pausing to note that in insisting that there is some more specific pragmatic effect of focus, I still allow that it may have further pragmatic effects of all sorts. For instance, it is known that focus often helps determine *scalar implicatures.* Consider two sentences:

(7)   a.   I PASSED. (Focus on *passed.*)

      b.   I passed. (Focus on *I.*)

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[5]This aspect of focus is discussed in Dretske (1972).

In many contexts, these sentences will trigger scalar implicatures, and what implicature is triggered will depend on the focus. (7a) is likely to trigger the implicature that I did not do any better than passing. (7b) is likely to trigger the implicature that other members of my study-group did not pass.

However, focus effects are not uniformly associated with scalar implicatures. In many contexts, any of (3), (4), and (6) may not display any scalar implicature of this sort at all. Furthermore, when we do see scalar implicatures, the cancellation does not void the pragmatic effects of focus. Consider:

(8)   Well, I PASSED. That is what I really needed to stay in school. In fact, I think I probably did pretty well.

The implicature is explicitly canceled, but there remains some effect of contrast triggered by focus on *passed*.[6]

Finally, one more pragmatic aspect of focus, which will be crucial in what follows, highlights the constrained nature of focus. Focus helps determine *question-answer congruence*. Compare:

(9)   a.   Who does John like?

    i.   John likes JANE.

    ii.   # JOHN likes Jane.

    b.   Who likes Jane?

    i.   JOHN likes Jane.

    ii.   # John likes JANE.

In each case, the answer to the question is infelicitous if the focus is in the wrong place.[7] These judgments are quite strong. It is not that the inappropriate answers are somehow less helpful—they are simply infelicitous.

I conclude that the pessimistic view under-appreciates the function of focus. Though it may be that phonological prominence can trigger a number of pragmatic effects, it has some

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[6]This example is from Rooth (1992), which works out the scale for (7b) in some detail. The example from "The Conversation" is mentioned in Rooth (1996a).

[7]I mark infelicity by '#'. Ungrammaticality, as usual, will be marked by '*'.

that are regularly associated with it which are fundamental to interpreting an utterance. The appearance of contrast, felicity in question-answer congruence, and relevance to what is meant, all must be explained by any theory of focus, pragmatic or semantic.

I.2 An Initial Pragmatic Theory

The striking data of question-answer congruence, as well as of indications of contrast, suggest a more complete pragmatic account of focus. I shall sketch a version of this which seems to capture the nature of focus nicely in terms of familiar pragmatic ideas. This sort of theory is well-known to require significant modification, but it is a good starting-place.

Question-answer congruence examples like (9) invite an explanation in terms of the providing of information in a discourse. The question can be seen as a request for information, while the answer provides it. The felicity of an answer has something to do with whether or not it properly provides information that answers the question.

It has been a widespread idea to explain the effects of focus in terms of the distinction between *given* and *new* information. Very roughly, the focused constituent of a sentence marks the part of the sentence that provides new information; while the non-focused part provides given information. Question-answer congruence is the result of whether the new information answers the question asked.

To flesh out this approach, we need an analysis of the notions of given and new. This can be done in neo-Gricean terms. One of the core observations of pragmatics in the Gricean tradition is that utterances take place against a background of information, and of principles governing the exchange of information in discourse. What background information is relevant to a conversation? Ideally, that which is held in common among all participants in a conversation, and which all participants recognize to be held in common. This is what Stalnaker (1978) calls *common ground* and Schiffer (1972) calls *mutual knowledge.* We might take what is *given* at a particular point in a conversation to be what is common ground at that point. What is new is what is not given.

As Stalnaker (1978) stressed (building on work of Grice, 1975), cooperative communication

is sensitive to given and new information so understood. First of all, cooperative utterances must provide some new information. Moreover, in many cases, cooperative utterances rely upon given information to fix, for instance, the referents of indexicals and demonstratives. Thus, cooperative utterances must respect the status of given and new. It was suggested (e.g. by Clark and Haviland, 1977), that furthermore cooperative utterances should mark what they take to be given and what they take to be new, in a way that itself will be common ground in the conversation. (This is what Clark and Haviland call the "given-new contract."[8]) The role of focus, this theory holds, is primarily to mark what is *new* in an utterance from what is given.

By marking constituents, focus partitions a sentence. Let us call the unfocused part of a sentence the *ground*. The pragmatic theory then proposes that there is a mapping between focus and new information, and between ground and given information. This should explain the phenomenon of question-answer congruence. Asking a question creates elements of common ground. A felicitous answer should add new information relevant to that background. It should also explain the effects on interpretation we saw in (6). The significance of an utterance, irrespective of its truth conditions, is determined in part by what it takes to be common ground, and what information it adds to that ground. The effect of contrast noted in (4) remains a little more elusive on this theory. But there is a sense in which new information contrasts with given information, and that might be used to explain the contrast present in these examples. At least, for instance, (4a) contrasts *Jane* to *John*, in marking *Jane* as providing new information. (A more promising line is that the focus implicitly defines a contrast set. But this explanation will take us towards a theory of a very different sort, as we will see below in Section (V) .)

There are a number of open questions about this sort of theory. One important one is how the mapping of parts of sentences to given and new information is to be achieved. In cases with focused noun phrases like (4), it is not clear how the focus corresponds to new information, nor how what is left of the sentence corresponds to given information.

One traditional answer to this question has been in terms of *focal presuppositions*. In a case

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[8]Clark and Haviland are more sensitive to speaker-hearer asymmetry than I have been. The contract requires speakers to mark as given what they think hearers already know.

like (4a), for instance, the informational correlates of the sentence appear to be something like:

(10)   There is someone whom John likes, and it is JANE.

To specify this idea a little further, take the focal presupposition of the sentence to be the proposition resulting from replacing the focus of a sentence with a variable and existentially quantifying it. The focal presupposition is the given information. The new information is the proposition that the focus satisfies the ground. So we have:

(11)   John likes JANE.

    a.   Focal presupposition: $\exists x \mathbf{likes}(\mathbf{n}, x)$.

    b.   New information: $\mathbf{likes}(\mathbf{n}, \mathbf{j})$.

The term 'focal presupposition' fits well with the pragmatic approach to presupposition of Stalnaker (1974). On that view, common ground or given information just is presupposition. So the theory tells us that among the presuppositions of a sentence is its focal presupposition. This presupposition characterizes the question to which the sentence is a felicitous answer.[9]

Appealing to focal presupposition is quite controversial, and I shall question it in Section (IV). But without something like it, the notions of given and new information do not suffice. For instance, the status of the referent of a noun phrase as given or new does not explain the difference between focus and ground. As Reinhart (1981) notes:

(12)   a.   Who did Felix praise?

    b.   Felix praised HIMSELF.

The referent of the focused constituent *himself* is already salient in the discourse, and so certainly counts as given rather than new. This is not peculiar to the reciprocal. We likewise have:

(13)   a.   Who does Dick Cheney love?

    b.   Dick Cheney loves DICK CHENEY.

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[9]This notion of focal presupposition is quite common. It is explicit in Chomsky (1971). It may be similar to the notion of *open proposition* used by Prince and her co-workers (e.g. Prince, 1981a), though her view may be closer to that of Jackendoff (1972).

In each of (12) and (13), the referent of the focused noun phrase is already given. To get a mapping from focus to new and ground to given information, we need to make use of the sort of focal presupposition and new information structure sketched in (11). This makes the given information in (13) $\exists x \mathbf{love}(\mathbf{c}, x)$ and the new information $\mathbf{love}(\mathbf{c}, \mathbf{c})$.[10]

Aside from the status of focal presupposition, another open question is how the partition of a sentence into focus and ground, which for all we have said so far is simply a matter of phonological prominence, gets associated with given and new information. Clark and Haviland (1977) propose a Gricean explanation, subsuming the focus-new/ground-given association under the maxim of manner. However, there is some reason to doubt that manner implicatures alone explain the association. In most cases, for instance, the maxims of manner involved are not violated when we see the effect of contrast, as in (4a). Indeed, we expect all sentences to contain some pitch accent, so we have no reason to think that the mere presence of a pitch accent (indicating focus) would be enough to trigger a manner implicature.[11] Moreover, manner implicatures should be cancellable, while many of the effects of focus we are trying to explain do not seem to be. We saw an example of this in (8). It is thus tempting to see the mapping of focus to new information as conventional.[12]

We now have an initial proposal for a purely pragmatic explanation of focus. It has some well-known problems, but it goes far enough to make the view that focus is a purely pragmatic phenomenon plausible. I shall now turn to some observations that support the opposing view,

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[10]There are a number of different notions of given and new information to be found in the literature, and discussions of focus have used several of them, as Prince (1981b) has discussed. For instance, the characterization of focus as what is new found in Halliday (1967) relies on the notion of what is given as linguistic material that is recoverable from previous discourse. In a theoretically quite different setting, a notion of givenness along similar lines is used in Schwarzschild (1999). Chafe (1976) goes out of his way to insist that the contrast involved in focus in not a matter of what he calls new information. But Chafe's notion of newness is one of psychological saliency, in the sense of being currently in consciousness.

[11]As has often been noted, manner implicatures are triggered by suitably marked constructions. (See Horn (1989) and Levinson (2000) for further discussion.) That each sentence contains some pitch accent does not preclude an entire sentence being a focus. This is due to the phenomenon of focus projection, discussed in Section (II.2).

[12]A more recent, and much more phonologically nuanced, version of the idea that focus marks new information is given by Pierrehumbert and Hirschberg (1990). A relevance-based account is given by Sperber and Wilson (1986). They pick up on the idea that focus marks constituents as prominent, and explain the difference between focus and ground in terms of what they call the background and foreground implications, and their effects on relevance. Though some of the differences are significant, I believe this is a spelling out in relevance-theoretic terms of the same basic idea that drives the more classically Gricean picture I have been sketching here.

that focus is primarily a semantic phenomenon.

II Semantic Aspects of Focus

Concentrating on examples like (4), it might be tempting to conclude the focus is entirely a pragmatic phenomenon. The neo-Gricean given/new analysis seems to support this conclusion. However, there are a number of well-documented *semantic* aspects of focus, and other grammatical aspects of it as well. I shall present a few of these here.[13]

II.1 Association with Focus

Among the more striking of the semantic effects of focus is its relation to so-called focusing operators, such as *only*. Following Rooth (1985), consider:

(14)   a.   John only introduced Bill to SUE.

   b.   John only introduced BILL to Sue.

Consider a circumstance where John introduced Bill to Sue and to Mary, and did no other introducing. In this case, (14a) is false, while (14b) is true.

   Similar examples can be found with adverbs of quantification (also following Rooth, 1985):

(15)   a.   In Saint Petersburg, OFFICERS always escorted ballerinas.

   b.   In Saint Petersburg, officers always escorted BALLERINAS.

Finding a hapless officer escorting an opera singer falsifies (15b) but not (15a).

   Other sorts of examples like this are easy to find, including modals and generics.[14] Picking up on terminology of Jackendoff (1972), Rooth (1985) dubs the phenomenon of truth-conditional effects of focus *association with focus*.

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[13]The current discussion of focus tends to begin with Chomsky (1971) and Jackendoff (1972). Important later work on focus in generative grammar includes Rochemont (1986). Important earlier work comes from the Prague school (e.g. Daneš, 1968; Firbas, 1964).

[14]Surveys of these phenomena can be found in Kadmon (2001), Rooth (1996a), and von Stechow (1991). A number of authors have taken up the idea that there is something in common across these examples, as each of them in some way involves restricted quantification (e.g. von Fintel, 1994; Hajičová *et al.*, 1998; Krifka, 1992; Partee, 1991).

Association with focus shows that focus is in part a semantic phenomenon. First and foremost, it demonstrates *truth-conditional* effects of the placement of focus within a sentence. The effect, generally, is on the semantic structure of the sentence. In the adverbs of quantification cases, for instance, it is an effect on what constitutes the adverb's semantic *restrictor*. Something similar appears to be happening in the *only* examples as well. Furthermore, different placements of focus can generate *incompatible* truth conditions. This does not appear to be something readily accounted for by purely pragmatic means. First, without a focus, it is not clear if the restrictors on these sorts of operators or adverbs are well-defined at all, making it unclear if there is any sense to be made of propositions for these cases in the absence of focus. Thus, it is hard to see how the effects of association with focus could be the results of Gricean implicatures.

Second, it seems doubtful that the kind of process of *free enrichment* discussed by relevance theorists (e.g. Carston, 1988; forthcoming; Sperber and Wilson, 1986; or related ideas of Bach, 1994) can address this phenomenon. This is usually described as a *strengthening* of a fragmentary representation of a thought (an incomplete logical form), or of a proposition too weak to be pragmatically relevant. But the effect of association with focus is not simply to strengthen a proposition or a fragmentary logical form. This is shown by appeal to the incompatible truth conditions generated by different placements of focus. So, for instance, if we were to assume that a default, unenriched proposition corresponds to the right-most focus (not an unreasonable assumption, given the phonology of English), we find the focus assigned in (14b) not to be a strengthening of that proposition, but incompatible with it. Alternatively, if we were to start with a fragmentary logical form or representation corresponding to a sentence like (15) without any focus, it cannot be that both (15a) and (15b) result from enriching it by adding material. They cannot both be the result of enrichment, because each winds up with different material *already* present being mapped to the restrictor of the adverbial quantifier *always*. In cases like this, we get incompatible truth conditions from association with focus in part because focus does not merely add to something to a logical form or a thought; rather, it induces a semantically significant *re-arrangement* of the material we might have thought went

into such a fragmentary logical form.[15]

This is not to deny that focus has pragmatic effects. Nor is it to deny that focus is heavily context-dependent. It is.[16] My point so far is only that association with focus appears to uncover a genuine semantic aspect of focus as well.

II.2 Grammar and Focus

In the last subsection, I described the semantic phenomenon of association with focus, and argued that the sorts of pragmatic processes commonly appealed to are not able to explain it. I shall now pursue this point a little further. There are some good reasons, independent of the truth-conditional effects of association with focus, for seeing focus as represented in the underlying grammar of sentences. Hence, there is even less motivation for seeking a purely pragmatic explanation of it.

First, some more on phonology. So far, we have taken focus to correspond to an accented constituent of a sentence. However, there is good reason to take focus to correspond to a feature represented in syntax, of which accenting is a phonological reflex.

Question-answer congruence is sensitive to accent, but it is not sensitive to accent in an entirely straightforward way. Consider:

(16)   a. What did John do?

       b. John drank BEER.

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[15]As I mentioned in footnote (12), Sperber and Wilson (1986) propose a theory of focus in terms of foreground and background—in particular, in terms of a scale of foreground and background implications. To be clear, they do not claim that free enrichment or a similar process should explain focus. But like other purely pragmatic theories of the sort I discussed in Section (I), they do not take into account phenomena like association with focus at all. My suggestion here is that the only sort of mechanism they have at their disposal that might address this phenomenon is enrichment, but it is not able to do the job.

More generally, Sperber and Wilson's own proposals aside, the recent debate over semantics and pragmatics has concentrated on examples like (2), for which free enrichment or related mechanisms have been proposed. My point here is as much to draw attention to other sorts of examples, for which this mechanism is not well-suited, as to criticize the concept of enrichment itself.

[16]I have discussed this at length in my (2002). The arguments I have given here show that association with focus cannot be construed as a purely pragmatic phenomenon of a Gricean or relevance-theoretic sort. But they do not show the extent to which the semantics or the pragmatics of focus explains such phenomena as association with focus. We will return to this issue in Section (V). It has been discussed by a number of authors (e.g. Beaver *et al.*, 2002; Partee, 1999; Roberts, 1996; Rooth, 1992, 1996b).

This is entirely felicitous. However, the question-answer congruence indicates that the focus is the verb phrase *drank beer.*

This is the phenomenon known as *focus projection*, in which an accent can indicate a larger phrase as focused. This requires that focus be marked in some other way than simply by the phonology. Cases like this point out that focus projection appears to be sensitive to *syntax.* (Generally, there is a preference for putting the accent on the internal argument of the phrase (*beer*) rather than the head (*drank*).) The precise story about how focus projects will not matter here. All that matters is that focus is more abstract than accent placement, and it must be represented somehow that gives the semantics access to it. Conversely, it is often argued that phonological rules must have access to focus features. Focus must thus be marked in a way that is sensitive syntax, and is an input to semantics and to phonology. In the traditional GB-framework, this lead to the conclusion that focus is a syntactic feature at the level of S-structure (minimalist versions will view the matter somewhat differently).[17]

Further evidence that focus is independent of its realization by pitch accent might be gleaned from the phenomenon of *second occurrence focus.* Partee (1991) gives the example:

(17)   a. Eva only gave xerox copies to the GRADUATE STUDENTS.

        b. (No,) PETR only gave xerox copies to the graduate students.

The association of *only* with focus indicates that in (17b), *graduate students* is still in focus, even though it does not appear to carry an accent.

The conclusion that projection and second occurrence focus both indicate is that focus, as it appears in question-answer congruence and in association with focus, is a feature of constituents available for semantic interpretation (and maybe for other linguistic processes as well). We may assume it is syntactic feature available at *logical form* (LF), which I take to be the syntactic input to semantic interpretation. We can thus assume we have available constituents marked with the feature $[\alpha]_F$. This feature is usually realized by pitch accent in English.[18] In

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[17]There is not universal agreement on how focus projection works, or even whether it is an independent phenomenon. For discussion, see Kadmon (2001), Schwarzschild (1999), and Selkirk (1995).

[18]As I mention in footnote (19), there may be other phonetic realizations of focus in English, though the issue is still controversial. Are there other syntactic or morphological realizations? Probably not in English (though the final word on this matter has certainly not been said). It is sometimes suggested that the cleft construction

fact, it is commonly held that focus is realized by a particular pitch accent: a high tone aligned to a stressed syllable, usually written H*.[19]

There appear to be roles for focus-marking beyond the semantic effects of association with focus, and the pragmatic effects surveyed in Section (I). For one, it appears that focus placement can affect grammaticality. Jackendoff (1972) noted:

(18) a. John only gave his DAUGHTER a new bicycle.

b. * JOHN only gave his daughter a new bicycle.

The apparent generalization here is that *only* must have a focus within its scope.[20]

Another grammatical effect of focus is in ellipsis (Rooth, 1992):

(19) a. She beats ME more often than Sue (= than she beats Sue).

b. SHE beats me more often than Sue (= than Sue beats me).

Consideration of other language may offer additional evidence of the grammatical realization of focus.[21]

These sorts of examples give us reason to think that the positing of an *F* feature at LF is not simply a matter of loading up LF to reflect everything that may look at first blush to be

in English (e.g. *It is Bill who solved the problem*) is a syntactic realization of focus. However, it has been argued by number of authors (e.g. Kiss, 1998; Roberts, 1998; Rooth, 1999) that the cleft construction has a distinct, stronger semantics than intonational focus, marked by pitch accent, in English. Clefts imply exhaustiveness (e.g. that no one other than Bill solved the problem), whereas focus does not. Furthermore, clefts carry genuine existential presuppositions, whereas focus does not, as I discuss in Section (IV.1). (However, there are important interactions between clefts and focus, as has been discussed by Delin (1992) and Prince (1978).)

[19]An early explicit argument for positing a focus feature may be found in Jackendoff (1972). It is worth pausing to point out that a great deal of what is at issue here is highly controversial. I already noted that how focus projects is still debated. Whether or not there is a second focus in (17b) is debated at well. Some authors (e.g. Vallduví and Zacharski, 1994) challenge whether there is a focus at all (and claim that the restrictor effect is not a matter of focus). Beaver *et al.* (2002) and Rooth (1996b) argue that there is a marked focus, though with a distinct phonetic realization from the usual one. The idea that only the particular accent H* marks focus is quite common (e.g. Steedman, 2000; Vallduví and Zacharski, 1994), but has been challenged by Kanerva and Gabriele (1995).

[20]Of course, issues related to second occurrence focus, discussed above and in footnote (19), complicate this generalization.

[21]Vallduví and Engdahl (1996) offer an extensive cross-linguistic discussion of focus and related notions. These cross-linguistic comparisons are often quite delicate. To take one well-known example, it has been suggested by a number of authors (e.g. Kiss, 1981; Szabolcsi, 1981; Vallduví and Engdahl, 1996) that Hungarian has a syntactically realized focus position. But it has also been argued (often by these very same authors) that the focus position in Hungarian differs in important respects from the focus marked by pitch accent in English (e.g. Kiss, 1998; Roberts, 1998; Szabolcsi, 1981; Vallduví and Vilkuna, 1998). In particular, as Kiss (1998) shows in some detail, the Hungarian position has a semantics closer to that of clefts in English (discussed in footnote 18).

semantic. There are good reasons to see the feature there. Once it is there, we may use it to help explain the effects of focus, including the semantic effects of association with focus. (Hence, for instance, in examples like (14) the two focus placements (14a) and (14b) correspond to two distinct logical forms. They are 'two different sentences'.)

We may conclude that focus is a semantic matter in these (rather limited) respects: it is represented at LF, and focus features at LF have an effect on the truth conditions of sentences.

III   The Structure + Pragmatics Approach

We now have seen evidence that focus has semantic aspects as well as pragmatic ones. The question then becomes how these relate. One common idea is to make them substantially separate. Focus, the idea proposes, has structural reflexes which explain its semantic effects, but leave the pragmatic explanations we considered in Section (I) substantially intact.

I shall argue in Section (IV) that this is not an adequate account of either the semantics or the pragmatics of focus, but it will be useful to consider what such a story would look like.

Much of the research on focus, especially that oriented towards solving the semantic problems of association with focus, has worked with the idea that focus induces a kind of structuring, either of the logical form of a sentence, or its propositional content.

Let us look again at the *only* case (14). The truth-conditional difference between (14a) and (14b) appears to be a difference in what *only* operates on. In (14a), the relevant property is that of being someone John introduced Bill to, and the claim is that the only such person is Sue. In contrast, in (14b) the relevant property is being someone whom John introduced to Sue, and the claim is that the only such person is Bill.

We can introduce some notation to mark these differences. I shall present this in terms of a *structured meaning* approach. Not much that I say will depend on whether we really make use of the apparatus of structured meaning, as opposed to any of the other ways we might mark the relevant structural differences. We can describe (14a) and (14b) as:

(14a′)   **only**$\langle \lambda x.\mathbf{introduce}(\mathbf{j}, \mathbf{b}, x), \mathbf{s} \rangle$

(14b′) **only**$\langle \lambda x.\textbf{introduce}(\textbf{j}, x, \textbf{s}), \textbf{b}\rangle$

Only requires a semantics such that **only**$\langle \textbf{P}, \textbf{a}\rangle \longleftrightarrow \textbf{P}(\textbf{a}) \wedge \forall x(\textbf{P}(x) \longrightarrow x = \textbf{a})$. With this, the difference in structure indicated by the difference in focus explains why the two sentences have different truth conditions.

There are a number of questions about whether this sort of approach or another in its vein fully explains the semantic aspects of focus. For the moment, however, I want to consider what we would conclude if in fact it did explain all there is to explain about association with focus.[22]

One point to observe immediately is that it does not explain the pragmatic effects of focus at all. Neither the pragmatic indication of contrast nor question-answer congruence is explained by introducing *F*-marking or a semantic or syntactic partition of a sentence.

It is an appealing position that these can be explained independently of the semantic aspects of focus, by the pragmatic theory sketched in Section (I). If anything, the pragmatic theory will be strengthened, as the availability of *F*-marking should more accurately reflect the given-new correspondence required.

We already in Section (I) considered a mapping of focus to new information, and ground to given information. The structured proposition theory allows this mapping to be defined directly on structured propositions. Lets look again at (4a). This sentence maps to a structured proposition like:

(4a′) $\langle \lambda x.\textbf{likes}(\textbf{n}, x), \textbf{j}\rangle$

The given proposition—the focal presupposition—is simply the existential generalization of the first constituent: $\exists x\textbf{likes}(\textbf{n}, x)$. This expresses the basis of the contrast. The new information is the proposition resulting in applying the ground property to the focus: **likes**$(\textbf{n}, \textbf{j})$. More generally, when we have a structured proposition $\langle \textbf{P}, \textbf{a}\rangle$, the focal presupposition is $\exists x\textbf{P}(x)$

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[22]Structured proposition theories like this are developed by Krifka (1991) and von Stechow (1991). There are other structure-based approaches, such as movement theories (see Kratzer (1991) for a survey), and a theory based on Davidsonian event quantification (Herburger, 2000). I have not said anything about how the structured proposition approach derives these propositions from LFs. The view sketched in von Stechow (1991) relies on focus movement, while the one given in Krifka (1991) does not.

and the new proposition is $\mathbf{P}(\mathbf{a})$.[23]

If the pragmatic theory were good, this would appear to solve all our problems. Association with focus and related grammatical aspects of focus would be explained by the semantics, while the pragmatic aspects would be explained by the pragmatics. A nice division of labor. In the next section, however, I shall argue that the pragmatics are not well explained, and even the additional semantic structure does not indicate a good explanation of them. This will point towards a quite different treatment of both the semantic and pragmatic aspects of focus.

IV   Problems for the Pragmatics

In this section, I shall sketch a few problems for the pragmatic theory of Section (I). Many of these are well-established in the literature. I shall then go on to suggest that together, they call for far-reaching revision of the pragmatic story of Section (I).

We have already seen one problem for the pragmatic theory of Section (I). It has not offered a very good explanation of the effect of *contrast* observed in examples like (4). I asked there if the contrast between given and new would suffice to explain the effect. But it does not really look like it does. The effect in (4a) that John kissed Jane *as opposed to Sue or Mary* is not captured by the mere given/new contrast.

IV.1   Focal Presuppositions?

There is another well-known family of problems. The focal presupposition around which the pragmatic theory was based in some cases appears to be too strong. Jackendoff (1972) famously considered:

 (20)   NOBODY likes Bill.

This should not presuppose that someone likes Bill, as the Section (I) required.

Jackendoff proposed that the focal presupposition be weakened to the claim that the property $\lambda x.\mathbf{ground}(x)$ is "well-defined in the present discourse" or "under discussion" (1972, p.

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[23]Though she works with a different framework from structured propositions, the "quantifier structure and aboutness principle" of Herburger (2000) is a nice statement of this kind of idea.

246). There has been a great deal of discussion of this over the years. It has been observed (e.g. Rooth, 1999) that if the variable existentially bound in the focal presupposition of (20) is of quantifier-type, then the presupposition is trivial. On the other hand, Herburger (2000) argues that if we take Jackendoff's suggestion at face value, we lose the explanation of why simple examples like (3) with proper names do appear to carry existential presuppositions.

I want to side with Jackendoff and Rooth on this matter. Even in cases with proper names, presupposition is too strong. Recall, presupposition requires a proposition presupposed to be in the common ground. But less is required to license focus. Consider:

(21) a. Did John kiss anyone?

  b. John kissed JANE.

(22) a. Suppose John kissed someone.

  b. (Then) John must have kissed JANE.

These contrast with cases of *clefts*, which do appear to carry genuine existential presuppositions (cf. Rooth, 1999):

(23) a. Did John kiss anyone?

  b. # It is Jane who John kissed.

It appears that the force of whatever goes with these cases is not quite presupposition, in the sense of taking to be part of the conversational common ground or background. It is enough that the material be part of a conversationally backgrounded *supposition*, of the sort that can be discharged or otherwise canceled later. This is not the way pragmatic presuppositions work. Jackendoff's idea of some property being 'under discussion' seems to reasonably well capture what happens with supposition, and so may be on the right track.

However, there are problems with this proposal as it stands. The talk of 'properties under discussion' is still just a metaphor—it does not really explain much. And more seriously, the pragmatic analysis we considered in Section (I) does not show us any way to flesh out the metaphor. The analysis of common ground or given information yielded the notion of

presupposition. The dual of that is what is new. This apparatus does not suggest what it is to be under discussion, beyond what is common ground in a discourse, and so does not really help us to build a theory. (I am not here arguing that the basic ideas of common ground and cooperative principles need to be abandoned—only that they do not explain what we need!)

IV.2 Topics and Aboutness

We have thus seen that the pragmatic theory I sketched in Section (I) is not refined enough to explain the status of focus and ground. I shall now argue that in fact the situation is worse. The given/new division, even if we were to get the status of givenness right, is not enough to explain the question-answer congruence properties of focus.

The idea which is supposed to relate given/new to question-answer congruence is that what is given maps to the question—what we are talking about—while new maps to the answer— what we say about it. This is reflected in Jackendoff's idea that the focal presupposition is 'what is under discussion'. But I shall argue that the notion of 'aboutness' relevant to question-answer congruence is more fine-grained than this, and is not well-captured by the binary given/new model.

To see that the notion of aboutness indicated by question-answer congruence is more fine-grained than the given/new or focus/ground division of Section (I), let us first consider (modifying Dahl, 1974):

(24)   a. I wonder what people drink? What about John?

       b. John drinks BEER.

There is a sense in which this utterance is about John. This sense is brought out by question-answer congruence, in:

(25)   What about John?

       a. As for John, he drinks BEER.

       b.   # As for what John drinks, it is BEER.

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This already points to an aspect of question-answer congruence which the binary given/new distinction cannot explain. The infelicity of (25b) is not simply a matter of what is given, in the sense which corresponds to *ground* in a sentence. Rather, it is a matter of a further feature of the ground, which singles out the constituent *John* as the *topic*: what the sentence is about.

If this is right, we cannot identify the non-focused material in the sentence with what it is about, in whatever sense of 'aboutness' is captured by this sort of question-answer congruence test. Moreover, we need to capture this notion of aboutness to explain question-answer congruence. More generally, the idea that ground is mapped to what is 'under discussion' or 'what we are talking about' proves too loose to explain congruence. Hence, even if we resolve the question of focal presuppositions, we still do not have an explanation of congruence by appeal to the simple given/new distinction.

This sort of worry is driven home by the phenomenon of *contrastive topics*. In examples like (24), though we have a problem of how to characterize aboutness, it is plausible that what the utterance is about is closely related to the common ground. But with contrastive topics, this is not so. Krifka (1991) gives:

(26) a. What did Bill's siblings do?

     b. Bill's SISTER [kissed JOHN]$_F$.

The sentence is intuitively 'about' Bill's sister, as reflected by 'as-for' congruence:

(27) a. What did Bill's siblings do?

     b. As for [Bill's SISTER], she [kissed JOHN]$_F$.

But note, nothing about Bill's sister needs to be in the common ground for this to be acceptable. She can be totally new to the conversation. Though she is an instance of Bill's siblings, it need not be common ground that Bill has a sister. Hence, the identification of ground with givenness is called into question again.

Another example of this phenomenon is given by Büring (1999):

(28) a. What did the pop stars wear?

     b. The FEMALE pop stars wore [CAFTANS]$_F$.

Again, the utterance seems to be about the female pop stars, and nothing in the common ground makes them under discussion *per se.* Again, though they are instances of the more general category pop star, this wold be felicitous in the benighted context which does not presuppose any of them are female.

These examples raise a number of very subtle questions. According to the 'as for' congruence test, we find (26) to be about *Bill's sister*, and (28) to be about *the female pop stars.* It will be useful to mark topic as detected by this test, by a feature T.[24] The topics in (26) and (28) carry some further implication of contrast, marked by the pitch accent on *sister* and on *female.* This is brought out by examples like:

(29) a. What did the Female pop stars wear?

     b. # [The FEMALE pop stars]$_T$ wore [CAFTANS]$_F$.

It appears that we have infelicity when we have an accented topic, and have the topic explicitly mentioned in the question. But this data is not robust. Jackendoff (1972) noted:

(30) a. What about Fred? What did he eat?

     b. [FRED]$_T$ ate [BEANS]$_F$.

Yet still seem to have:

(31) a. What did Fred eat?

     b. # [FRED]$_T$ ate [BEANS]$_F$.

I shall discuss in Section (V) an attempt by Büring (2003) to explain these cases. For now, we may still observe that contrastive topic may depart from what is common ground or given, though we yet lack an explanation of how.

These sorts of cases are sometimes described as cases of 'focus in topic' (e.g. von Fintel, 1994). In pragmatic terms, we seem to have a topic which invokes a contrast similar to that of focus. This makes the problem vivid. The original topic examples like (24) showed that

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[24]A battery of arguments for positing T-marking as well as F-marking are given by von Fintel (1994) and Vallduví (1990).

ground—the complement of focus—does not correspond to aboutness in question-answer congruence. But the contrastive cases show more. In whatever sense in which *topics* map to what is given or common ground, we can still have within topics a contrast that our theory wants to explain as *new*. This requires that we have a status like 'new-given'. On the pragmatic model of given/new we have considered, based on common ground, this makes no sense. Something cannot be common ground and not common ground—it cannot be new and given.

The description as 'focus-in-topic' is vivid, but it misses an important point. Starting with Jackendoff (1972), it has been observed that examples like (28) are only felicitous if the accented part of the topic is given a particular pitch accent. On the felicitous reading of (28), *female* gets a kind of 'fall-rise' tune (usually written L + H*). This is different from the tune given to the focus *caftans*, which is accented by a simple high tone (usually written H*). Jackendoff dubbed the former the B-accent, and the latter the A-accent. It appears to be the A-accent that marks focus, while the B-accent is specific to topics. Just as the A-accent marks focus, the B-accent marks a topic feature.[25] To indicate the difference, we may write a *C*-feature for what is marked by B-accent (*C* for contrast):

(32)   [The [FEMALE]$_C$ pop stars]$_T$ wore [CAFTANS]$_F$.

Furthermore, observe that changing the accents in (28) generates infelicity:

(33)   a.   What did the pop stars wear?

       b.   # The [FEMALE]$_F$ pop stars wore [CAFTANS]$_C$.

There is much more to say about topics. But this is enough to show that notions of question-answer congruence and of aboutness must take contrastive topics into account.[26]

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[25]The role of the B-accent is also discussed at length in Steedman (2000) and Vallduví and Zacharski (1994). Topic accenting is not nearly so thoroughly investigated as focus accenting, and there remain some difficult questions about the relation between the B-accent and the 'as for' congruence test.

[26]Much of the recent impetus for attention to notions of topic comes from Vallduví (1990). The general issue of topic and aboutness is much more messy than my observations about contrastive topics may make it seem. There are a number of different devices, over and above B-accenting, which are involved in marking phrases as topics. I used an *as for* construction above. Fronting constructions like topicalization and left dislocation also tend to mark topics. In some cases, there appear to be unmarked topics. How fronting constructions interact with accent is also a complex matter, as Prince (1981a, 1997) has stressed. Surveys of ideas about topic can be found in McNally (1998) and Vallduví (1990).

The problem with contrastive topics is that they do not map onto given or presupposed information. Hence, the explanation of question-answer congruence by given/new information that was basic to the pragmatics of focus of Section (I) does not appear to be adequate. It might be replied that contrastive topics are simply cases of *accommodation*. The accent triggers an update of the common ground to include the needed 'given' information. But there are reasons to doubt this is right. In some cases, allowable contrastive topics are quite diverse, as in:

(34)   a. Do you think Fritz would buy this suite?

       i. Well, [I]$_C$ certainly [WOULDN'T]$_F$.

      ii. Well, [FRED ASTAIRE]$_C$ certainly [WOULDN'T]$_F$.

(First case is from Büring, 1999.) But there are limits on allowable contrastive topics. Compare:

(35)   a. What did the pop stars wear?

    b.   # [[BILL CLINTON]$_C$]$_T$ wore [a SUIT]$_F$.

The problem here is that we have no trouble accommodating propositions about Bill Clinton into the common ground. But we still cannot have *Bill Clinton* as a contrastive topic.

We have seen that contrastive topics, as contrast-within-topic (focus within topic) configurations, challenge the given/new pragmatic account of focus. I believe we can see the same sort of problem in some focus-only cases, particularly those of *nested focus*. Sentences can contain multiple foci. This is brought out most clearly by the presence of focusing operators, as in (Krifka, 1991):

(36)   John even$_1$ [only$_2$ [drank WATER]$_{F_2}$]$_{F_1}$.

(John is usually wild at parties, but at yesterday's party, not only was he restrained, he even only drank water.)

It is a virtue of the kind of rich semantic theory we are considering that it has little trouble handling nested foci. Propositional structure simply nests accordingly. The important parts of the semantic value of this sentence may look something like:

(37)   a. [drank water]$_F$: $\langle \lambda P(P), \lambda x \exists y (\mathbf{drank}(x, y) \wedge \mathbf{water}(y)) \rangle$ (= ω)

b. [only [drank water]$_F$]$_F$: $\langle \lambda P(P), \mathbf{only}(\omega) \rangle$

Though solutions to the problems of the semantics of nested foci are ready to hand, the pragmatics is another matter. Just as contrastive topics seemed to call for a status of 'new-given', nested foci appear to call for a status of 'given-given'.

These cases are difficult in a number of ways. Though the presence of focusing operators makes clear that we can have nested foci when it comes to semantics, it is less clear what their pragmatic status is. It is unclear if we hear a 'nested contrast' in them. In a related matter, it is unclear if we can have nested focus without focusing operators. I am inclined to think we can. Consider:

(38) a. (John rarely drinks at parties. But when he does, he usually drinks wine.) What did John do at the party?

b. John [DRANK [**WATER**]$_{F_2}$]$_{F_1}$.

I think this would be pronounced with higher prominence on *water*, but also high pitch accent on *drank*. I am inclined to think the foci are as marked, though as I said, it is not obvious, and the intonation could be taken to simply mark *drank water* with one focus.

Assuming there are nested foci here, we do not seem to have an explanation of the kind of 'contrast' that it presents. Our theory would require *drank* to map to given and to new, or *water* to map to a kind of 'double-given' status. As with contrastive topics, our pragmatics does not provide for this kind of status. As I said, the structured proposition semantics of association with focus has no problem with this sort of example, but the mapping from semantics to pragmatics fails to provide an adequate explanation of the pragmatic effects they generate.

Let me review where we have been. We have now seen that focus is a hot-spot in semantics/pragmatics interaction. How is this to be explained? We began by considering a relatively straightforward pragmatic account of focus. We then looked at semantic effects of focus, and considered a semantic theory able to explain them. We then set about to considering how the semantics and pragmatics interact. It appeared there was a simple relation, leaving their functions autonomous but regularly mapped to each-other.

In this section, we have seen that the pragmatic theory with which we began will not suffice. That theory relied on the two-fold distinction between common ground or given information and new information, and used it to explain such phenomena as question-answer congruence and contrast. But we have seen that none of these are really explained very well. More importantly, we have seen that question-answer congruence is a more complex phenomenon than the two-fold distinction can address. The idea that what is given is 'what we are talking about' which is then answered by the focus fails to take into account contrastive topics and the nesting of focus.[27]

The semantic component of the theory is not directly challenged by these problems. But the relation between semantics and pragmatics we examined in Section (III) is challenged. That relation embodied the mapping of focus to new, and ground to given. Though the semantic structures corresponding to focus and ground can nest, their pragmatic reflexes cannot. Without the mapping to pragmatics, we lose any explanation of, e.g. question-answer congruence. Hence, though the structured meaning theory I sketched in Section (III) was never meant to be a theory of topics as well, it fails to be a sufficiently explanatory theory of focus.

In the next section, I will investigate some ways of improving both the semantics and the

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[27]Many of these points apply to the theory of Sperber and Wilson (1986), discussed in footnotes (12) and (15), as well. Particularly, like the neo-Gricean given/new theory, theirs does not offer a very robust explanation of the effect of contrast.

There are some points on which their theory might fare better. They might be able to explain some aspects of question-answer congruence (and might explain them better than the neo-Gricean theory), as there is a close relation between background implications and questions. This might provide resources for explaining the status of focal presupposition as well. Furthermore, as Sperber and Wilson point out, their theory indicates a *scale* for foreground and background, rather than a simple given/new distinction. This might provide some resources for explaining nested focus examples (if indeed they have nested pragmatic effects). As I have some reservations about the apparatus of relevance theory, I have some reservations about how successful these explanations might be; but full discussion of this would require a discussion of relevance theory which would take us far from focus, so I shall leave the matter unresolved. (As I mentioned in Section (II), phenomena like association with focus seem to undermine any purely pragmatic theory, neo-Gricean or relevance-theoretic.)

Even if Sperber and Wilson's theory can explain some aspects of question-answer congruence, I do not see see how it can address the cases of contrastive topics I have discussed here. Contrastive topics do not involve a scale of more or less foreground (new) and background (given); rather, they involve the embedding of foreground *inside* background—they involve what would appear to be 'new-given'. I do not see how a scale of foreground and background can explain this. If anything, it would require inverting the scale, or mapping one end into the other.

The sort of pragmatic and semantic theory I think can explain this, to be discussed in Section (V), certainly invokes some ideas about strategies for answering questions which might be re-cast in relevance-theoretic terms. But as I shall discuss there, it is the way this account combines semantic and pragmatic aspects that I believe offers our primary moral for understanding the semantics/pragmatics boundary.

pragmatics, to provide a better semantics/pragmatics mapping. Indeed, the pragmatic problems we have seen in this section suggest a place to look for a better theory. The source of the problems seems to be the need for *iterated* discourse status, corresponding to categories like 'new-given' or 'new-new'. Such iterated structure, I noted, is not found in the pragmatics of common ground. But it is easy to observe in the structure of the discourses in which utterances appear. Questions and answers, for instance, can appear in nested structures. We will see in the next section that exploiting this gives us a more readily applicable account of the pragmatics, and the semantics, of focus.

V   A Discourse-Based Approach

Discourse clearly has complex structure. Most importantly to us, it has the kind of structure that allows for the nesting of notions like aboutness and new information. This is made more clear if we think about the role of question-answer structure in a discourse. We see, in many cases, a nested structure of questions and sub-questions. For instance, a discourse might look like:

(39)   How was dinner?

a.   How was the food?

Great.

b.   How was the service?

i.   Was the waiter attentive?

Yes.

c.   Was it easy to find the place?

This can be thought of as a tree-structure, in which dominating nodes are either a super-question of a sub-question, or a question dominating an answer.

There are many constraints on what well-formed discourse must look like, and many of them are constraints on what moves in a tree of questions and answers may be like. Furthermore, we must observe that even discourses that are not explicitly in question-answer form

have an implicit question-answer structures. Assertions in a discourse are made against the background of a *discourse topic*. The discourse topic may be taken to be the relevant question which is being answered. In some cases, this is marked explicitly by the asking of a question; while in some cases, it is fixed by other pragmatic mechanisms.[28]

V.1 Focus Effects

The as we saw with the simpler pragmatic approach, the real complexity of discourse structure will only become crucial when we turn to examples like contrastive topics and nested foci. But let us start by seeing how appeal to the question-answer structure of a discourse explains the basic aspects of focus.

Following the tradition in intensional semantics (e.g. Groenendijk and Stokhof, 1984; Hamblin, 1973; Karttunen, 1977), we may very roughly take the semantic value of a question to be the set of propositions that constitute answers to it. This is hardly to present a full-fledged semantics of questions, but it is enough to facilitate the comparison we need. Consider the question *Who does John like?* The semantic value of this will be the set $\{\mathbf{likes}(\mathbf{n}, x) \mid x \in D_e\}$. (Actually, as usual, we should probably expect a contextual restriction on x. But for present purposes, we may suppress this.)

That there is some similarity between this value and the semantic of focus should be clear. Replacing with a variable the *wh*-word in the question (or perhaps, deleting the *wh*-word and leaving the trace it binds), and replacing with a variable the focused constituent in the answer, give the same structure: $\mathbf{likes}(\mathbf{n}, x)$. The difference between the semantic value of the question $\{\mathbf{likes}(\mathbf{n}, x) \mid x \in D_e\}$ and the ground constituent in the structured proposition $\lambda x.\mathbf{likes}(\mathbf{n}, x)$ is then almost trivial. The latter is a function, the former is the range of values the function can take.

In frameworks not relying on structured propositions, the question value is the more useful construction. When derived from the declarative via its focused constituent, this set is usually

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[28]For more on discourse topics and questions, see von Fintel (1994), van Kuppevelt (1995), McNally (1998), my (2002), as well as the works of Büring (1999, 2003) and Roberts (1996) which are central to my presentation here. A well-developed, DRT-based approach to questions and related issues of discourse structure is given by Asher and Lascarides (1998, 2003).

known as the *alternative set* or *focus semantic value*. It was a fundamental observation of Rooth (1985) that these can be assigned compositionally, and that they provide an elegant solution to many of the problems of association with focus. For a sentence of the form $S(F)$ with focused constituent F, the focus semantic value $[\![S(F)]\!]^f = \{\mathbf{S}(x) \mid x \in D_F\}$ for appropriate type D_F.

To see how this explains question-answer congruence, compare:

(40)   a. Who does John like? Semantic value: $\{\mathbf{likes}(\mathbf{n}, x) \mid x \in D_e\}$.

   b. John likes JANE. Alternative set: $\{\mathbf{likes}(\mathbf{n}, x) \mid x \in D_e\}$.

The two values are identical, and we have congruence. But consider:

(41)   a. Who does John like? Semantic value: $\{\mathbf{likes}(\mathbf{n}, x) \mid x \in D_e\}$.

   b.   # JOHN likes Jane. Alternative set: $\{\mathbf{likes}(x, \mathbf{j}) \mid x \in D_e\}$.

These are not matching, and we lack congruence.

So, we have an account of the role of focus in question-answer congruence. Focus determines a focus-semantic value, and congruence is explained as identify between this value and the value of the question.

Other pragmatic effects of focus are explained by this view as well. Focal presuppositions, which seemed difficult on the previous approach, are simple here. With Jackendoff, we supposed the idea was that somehow that the ground property $\lambda x.\mathbf{ground}(x)$ is 'under discussion'. We saw problems with how to understand this without making the presupposition existential, and I also complained that this is not really a theory, but just a metaphor. But both problems can be addressed in the current framework. The ground property, as we have seen, is more or less the alternative set of the sentence, which is the same as the semantic value of the question to which it is congruent. The idea of being 'under discussion' can then be glossed as being the question answered by a sentence, either as an explicit question, or an implicit discourse topic. Of course, a full theory here requires a more substantial theory of discourse topics. But this is enough explain why we have more than a metaphor.

The appearance of 'contrast' is also nicely addressed by the question-answer congruence

approach. The alternative set of a sentence (when appropriately contextually restricted) is exactly its set of contrasting values. In the original example (3), we noted that there appears to be a contrast in the sense that it says John kissed Jane, as opposed to Mary or Sue. This contrast is represented by an alternative set. Again, we see that that a sentence is felicitous only if its alternative set is the value of the question it answers (either as an explicit question or an implicit discourse topic). Hence, the range of contrasting options—the semantic value of the question—must be in the discourse for the sentence to be felicitous.

This is as much as we should want for the status of 'contrast'. In particular, we do not want contrast to imply uniqueness (unless the sentence contains *only*). We can have:

(42) a. Who did John kiss?

b. John kissed JANE. In fact he also kissed SUE.

A felicitous sentence in effect asserts one of the members of its corresponding contrast class, but it does not assert it is the unique element of that class to hold.

It thus appears that question-answer congruence, explained via alternative sets, gives us an elegant account of the pragmatic aspects of focus. We now must ask what the *semantics* of focus is, and how it maps to this pragmatics.

We still take it as established that focus is marked at LF. The important semantic construction is no longer a structured proposition, but an alternative set derived recursively from the focus-marked LF.[29] The mapping from semantics to pragmatics is given by a rule of felicity:

(43) A sentence is felicitous if the semantic value of its discourse topic (an explicit or implicit question) is identical to its alternative set.

(This will have to be modified to account for topics, as we will see below.)

What of the semantic effects of association with focus? There are two options for explaining them. One is to follow the original theory of Rooth (1985) and write alternative sets directly into the semantic of expressions like *only*. *John only introduced Bill to SUE* is true if and

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[29]One of the original motivations for alternative semantics in Rooth (1985) was that it assigns semantic values to focus *in situ*, unlike movement theories.

only if John introduced Bill to Sue, and this is is the unique proposition in the alternative set $\{\textbf{introduced}(\textbf{j}, \textbf{b}, x) \mid x \in D_e\}$.

This gets the semantics right. But more recent discussions of focus have suggested it is not a sufficient explanation. This theory simply posits a specific rule for *only*, another for *even*, another for adverbs of quantification, etc.[30] A generalization seems to be in order. Focusing operators all appear to have a context-dependent restrictor. The alternative set provides the value for this restrictor. (More accurately, it constrains its value.) We then attempt to account for the value of the restrictor as a context-dependent domain restriction. Context sets its value.

How is this done? Roberts (1996) argues that the rule of question-answer congruence suffices (along with Gricean principles). If the restrictor is not set to the alternative set, we fail to get congruence with the appropriate implicit question.[31]

I shall not go into the details of Roberts' derivation. Rather, I shall pause to examine what the theory so far tells us about the semantics/pragmatics relation. As I mentioned, focus-marking is present at LF. The main role of this feature of LF is to set up a felicity condition along the lines of (43). The felicity condition is given in terms of focus semantic values (alternative sets) derived compositionally. There may be other rules that make reference to these values, but if Roberts (1996) is right, the situation is rather that many lexical items have parameters whose values are set by Gricean processes triggered by the felicity condition.

In light of this, let us return to the debate over the semantics/pragmatics interface which I mentioned at the beginning of the paper. In certain key respects, focus conforms to the pattern of pragmatic effects being driven by linguistic elements—elements of LF—as opposed to purely pragmatic processes like free enrichment. Focus is marked at LF; we saw independent reasons to hold that. And the pragmatic effects of focus are controlled by what appears at LF, in this

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[30]An objection like this is raised in Rooth (1996a), but against the alternative semantics of Rooth (1985) and structured meaning theories of the sort we considered in Section (III).

[31]This is discussed further in Kadmon (2001). Rooth (1992) proposes a different explanation, based on a kind of anaphora on alternative sets. Rooth's theory is extended to cover some topic phenomena in von Fintel (1994). Space precludes a thorough comparison of this approach with Roberts'. They are in many ways in the same spirit. But it is worth noting that in its current form, Rooth and von Fintel's theories are not integrated into a theory of nested discourse structure, and so are not well-suited to handle the sorts of pragmatic phenomena related to contrastive topics I have been concerned with here, without some significant modification.

case by way of focus semantic values. As with the paradigm of demonstratives, the semantic values derived from LF need to be supplemented by pragmatic processes. In the demonstrative case, the map from semantics to pragmatics is something like, 'pragmatically determine the value of a variable at LF'. Here, the the mapping is rather, 'pragmatically determine felicity based on the focus semantic value derived from LF, the felicity rule (43), and other (Gricean?) pragmatic processes. It is plausible that the felicity rule (43) itself follows from the Gricean cooperative principle, as it is an instance of relevance: make your utterance coordinate on the current discourse topic. We need the focus semantic value derived from LF to work this out, much as we usually need semantic information to determine if and how Gricean maxims are satisfied.

It thus appears that we have a linguistically controlled triggering of pragmatic processes, rather than anything like free enrichment. The same can be said of association with focus effects. If they are specifically encoded, this is obvious. But it remains so if they are encoded in LF as general domain restrictions, whose values are pragmatically set to associate with focus.

On the other hand, there are ways in which the picture deriving from Stanley (2000) may be too narrow to account for this. First of all, there is no reason I know of to think focus features behave like variables in LF. I know of no reason to think they are bindable, and there is generally reason to doubt that features marking constituents are bindable, unless the constituents themselves are. Focus can occur on too wide a range of constituents to make this likely. Focus is a genuine aspect of LF, and triggers an interaction with context, but not of the sort Stanley assumes. On the pragmatic side, though I argued that we may think of the felicity condition as falling under the Gricean cooperative principle, it should still be noted that (43) is not much like a rule for pragmatically fixing the value of a variable. Even if Gricean, felicity constraints seem to be fundamentally different in effect.

V.2   Topics Revisited

We now have an account of the basic semantic and pragmatic effects of focus. I have suggested it is in some ways more satisfying than the account I sketched in Section (III). But the primary

reasons I offered for abandoning that account were the problems of contrastive topics and nested foci I presented in Section (IV). We have yet to see how these might be handled by the current theory. At the same time, though we have made much of question-answer pairs, we have yet to exploit the nested structure of discourse topics I mentioned at the beginning of this section. It is this structure which enables us to handle the problem cases of topic and focus.

An account of question-answer congruence for contrastive topics in the Roberts-style framework I have sketched has been developed by Büring (2003). As contrastive topics are complex, so is his theory. I shall sketch enough of it to make good on my claim that the nesting of discourse topics can shed light on the pragmatics of contrastive topics. This should, I hope, justify my claim that the current framework offers a more complete pragmatic theory. I shall leave out as much detail as I can, and refer readers to Büring's own elegant presentation.

The basic idea is that contrastive topics invoke a more complicated felicity condition. Not only must a sentence with a contrastive topic be a congruent answer to the question which is its discourse topic; it must do so as part of a particular kind of *strategy* of investigation. A strategy, in this sense, is a pattern of questions and sub-questions, organized to address some overarching question. Like focus, contrastive topic triggers a felicity condition, but this one makes more use of the complexity of discourse structure.

The patterns of felicity we saw above suggest what sort of strategy contrastive topics trigger. Examples like (26) and (28) suggest that a contrastive topic must narrow down the discourse topic. It should correspond to a sub-question, an answer to which at least partially answers a super-question. The infelicity in (29) supports this. On the the other hand, the contrast between (30) and (31) suggests that in some cases, when appropriate other options are available, a contrastive topic sentence may not have to narrow down a discourse topic. Furthermore, (34) and (35) suggest that in narrowing down a current discourse topic, attention needs to be paid to how this effects relevance for the rest of the discourse.

These observations suggest two conditions. First, if the topic is narrowed, the result must be part of a larger strategy for answering some prevailing super-question. Moreover, the

specific question the contrastive-topic sentence answers, the implicitly or explicitly narrowed topic, must be part of a non-trivial range of sub-questions which address the super-question. Hence, we require either the narrowing of an explicit question, or the presence of other contrasting questions, as our examples suggested.

Let us look more closely at an example. Büring considers the familiar:

(44)   [FRED]$_C$ ate [the BEANS]$_F$.

This appears appropriate to answer a general question:

(45)   a. Who ate what?

       b. [FRED]$_C$ ate [the BEANS]$_F$.

On the other hand, suppressing contrastive topic, the felicity conditions on focus appear to require a question-answer pair like:

(46)   a. What did Fred eat?

       b.   # [FRED]$_C$ ate [the BEANS]$_F$.

This, we have seen, is infelicitous. On the other hand, we have seen it becomes acceptable in:

(47)   a. Who ate what?

       b. What did Fred eat? What did Mary eat? What did Jane eat? . . .

       c. [FRED]$_C$ ate [the BEANS]$_F$.

The felicity of a contrastive-topic sentence can be explained by the rule (43), so long as the question to which it is congruent is part of a sequence of sub-questions which all address a standing super-question.

This leads Büring to define a *strategy*. A strategy is a part of a discourse structure of questions and answers rooted at a question. It is a way of investigating the root question. A sentence S (really an utterance of S, in context) *indicates a strategy around S in a question-answer structure D* if there is a non-singleton set of questions Q' in D such that each $Q \in Q'$ either immediately dominates S or is a sister of the node that immediately dominates S, and each Q is congruent with S. We still need to define congruence for contrastive-topic sentences. But

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the sense in which contrastive topics require appropriate strategies of questions and answers is given by a new felicity condition:

(48) A sentence S with a contrastive topic is felicitous if it indicates a strategy around S.

This is a supplement to (43), as we will see once we define congruence.

Congruence is defined in two steps, corresponding to the two levels in the strategy that makes S felicitous. Again, looking at our example define:

(49) $[\![[\text{FRED}]_C \text{ ate } [\text{the BEANS}]_F]\!]^{tf} = \{\{\mathbf{ate}(x, y) \mid y \in D_e\}^f \mid x \in D_e\}^t$

Each inner set is a corresponding focus semantic value (alternative set). These are indexed by topics, and correspond to the specific questions *What did Fred eat?, What did Mary eat?, ...* (I have put superscripts on the sets to make clear what they do—they play no theoretical role.) With this, we can fill in the notion of congruence involved in the felicity condition (48). It reduces to the same one we used for non-topic cases in (43). For each $Q \in Q'$, we require $Q \in [\![S]\!]^{tf}$.

As I said, I shall leave the details to Büring (2003). But let me try to make the main idea clearer. By the time we get down to a specific question Q, we are looking for question-answer congruence basically as we explained it in the focus cases. Among the Qs will be the question *What did Fred eat?* which is answered by *Fred ate the BEANS* (suppressing topic). The role of topic is to trigger the felicity condition (48), which requires that this question be part of a larger strategy, which has a super-question *Who ate what?* and a non-singleton range of sub-questions including this one, but also having others like *What did Mary eat?*. The semantic side of this requirement is given by the value $[\![S]\!]^{tf}$, which collects together the sub-questions of this strategy.

In some cases, like (47), the strategy in which the contrastive topic figures is explicitly stated. In these, we see that there is an explicit question to which the non-topic-marked sentence is congruent, but also other questions. In most occurrences of contrastive topics, like (28), we do not see such an explicit question structure. This gives rise to the appearance that contrastive topics introduce new topics. They do so in the sense that to be felicitous,

there must be an implicit strategy: an expanded tree of questions and answers, which contains the question-answer pair explicitly given. In many cases, the strategy will add a sequence of sub-questions between the explicit question and its answer.

When I originally presented the problem of contrastive topics, I posed it as one about the pragmatic status of 'focus in topic' or 'new-given' information. We have now seen that contrastive topics really do make use of the nested structure of discourse topics in a discourse: the structure of explicit or implicit questions and their answers.

This is enough to shed light on the pragmatic status of contrastive topics. According to Büring's theory, a felicitous contrastive topic falls under a nested structure of a super-question and a sequence of sub-questions. Roughly, we can say that the contrastive-topic marked material is 'given' relative to the appropriate sub-question. Suppressing topic marking, it is congruent in a way fixed only by focus-ground structure. But it is 'new' relative to the super-question, in that the C-marked material indicates one of many partial answer to the super-question. Hence, the nesting of sub and super-questions indicates a nesting of 'focus in topic': what we infelicitously tried to gloss before as 'new-given'. Indeed, Büring's analysis of contrastive topics indicates an even more refined status. Insofar as a strategy for a contrastive topic requires multiple sub-questions, we might be tempted to offer the gloss 'new-given-partial'. It is not vital to my claims here that the details of Büring's analysis prove accurate. Contrastive topics are not as well understood as we would like, and however appealing his analysis is, we should grant that the future may hold surprises. What is important is that it is based on nested discourse structure. It is that which allows us to explain the pragmatic status of contrastive topics, whether or not we have the details right.

To close this section, I shall return to the issue of nested focus I mentioned in Section (IV). There I gave an example (38) which appeared to indicate pragmatic effects of nested foci. As I said there, I am uncertain what the right description of this case is. But on the assumption there are such pragmatic effects, I shall offer some speculative remarks on how they might work. Above, I presented the sentence as answering the question *What did John do at the party?*, with the prior gloss that he rarely drinks, but when he does, he usually drinks wine.

Thinking about discourse structure, we might suppose the implicit question structure is more like:

(50)   What did John do?

    a. What did he drink?

        i. John [DRANK [**WATER**]$_{F_2}$]$_{F_1}$.

As with the topic cases, we can appeal to question-structure to explain the appearance of 'new-new' status for the embedded focus. It is new—establishes congruence—relative to the lower question, while the wider focus does so for the higher question. 'New-new' is an answer to a question and a sub-question. Thus, as with topics, appeal to discourse structure can give us better versions of the pragmatic status of these cases.

This still leaves the rules for congruence in these cases unexplained. F_1 makes the answer congruous with the super-question; while F_2 makes it congruous with the sub-question. Normally, we expect an answer to be congruous with the question immediately dominating it. We expect a felicitous answer to be about the *current* discourse topic. But that would indicate focus only on *water*. With the accents as I described above, this does not appear to be an option. There must be focus on the whole phrase *drank wanter*. Moreover, an answer to the sub-question, with focus on *water*, would entail an answer to the super-question. So we do not need this odd accenting to keep relevance within the discourse as a whole.

To speculate. It may be that there is something else that needs to be done with the focus here. In particular, given the way I described the case, the wide focus triggers a *scalar implicature.* The context includes information about John's behavior patters, which form a scale with not drinking anything at one end, then drinking wine, then drinking water. It may be that this provides a reason to place the accent on *drank*.

What does this say about the foci? It may be that in spite of the general rule that an answer is congruent with its immediately dominating question, this accent makes the answer congruent with both questions at once. It simultaneously but directly answer them both (rather than answering the super-question via the sub-question). Does this mean the proper accents allow an answer to reach back and select prior questions? Or is this just an appearance generated

by a scalar implicature? I am not sure.

VI Conclusion

What morals can we draw from focus for the nature of the semantics/pragmatics boundary? As I mentioned at the outset, it provides us with a very different set of examples than the sort I mentioned in (2). In those examples, the intuitive truth conditions and surface syntactic structures are relatively clear, and the issue becomes whether it is something linguistic—logical form—or something pragmatic—free enrichment—which mediates between the two. In contrast, focus presents us with cases where the relation between semantics and pragmatics must be more complex. First of all, it provides cases where what appears to be surface syntax is not a good guide to underlying linguistic form. This lesson has been learned before, but focus shows that what is on the surface but appears to be merely pragmatic can turn out to indicate underlying syntactic structure. Association with focus shows that this structure can be semantically significant. The first moral of focus is that the appearance of being merely pragmatic can drastically deceive.

Identifying a syntactic feature marking focus does not get us very far. We still need to explain its semantic and pragmatic effects. Here I think the differences with examples like those in (2) come to the forefront. These examples call for supplementation which could be realized on surface in a different sentence, as in *I have had breakfast* versus *I have had breakfast today*. If it is true that these examples already involve covert variables in LF, the pragmatics still simply provides values for these variables.

The semantics and pragmatics of focus do not work this way, as the discourse-based view of Section (V) shows. The mapping between focus semantics and pragmatics is not one of filling in meaning. In particular, it is not simply a matter of setting a value for the F-feature. Rather, a much more complex process, in which semantics and pragmatics interact, is triggered. First, the focus feature is used to derive a focus semantic value (an alternative set $[\![S(F)]\!]^f$, or $[\![S(C,F)]\!]^{tf}$ if a contrastive topic is involved). This is basically a semantic process. The alternative set is then contextually restricted by the appropriate pragmatic process of

domain restriction. This pragmatically restricted semantic value is then fed into a felicity condition (43, or if a contrastive topic is involved, 48). This condition regulates the discourse (and I suggested, might itself follow from Gricean principles). It also triggers the pragmatic effects of question-answer congruence, contrast, and the appropriately weakened focal 'presupposition'. But at the same time, this pragmatic condition can *require* particular focus placement, so in a way, the pragmatics can trigger the semantics. Furthermore, with association with focus, we have the semantic values on which the felicity condition (43/48) is based affecting the truth conditions of an utterance. If Roberts is right about association with focus, this is the result of the felicity condition pragmatically fixing the value of a restrictor to be the alternative set. If association with focus is more semantically encoded, it is the result of the semantics of expressions like *only* requiring access to alternative sets which determine felicity. Either way, focus reveals significant *interactions* between semantics and pragmatics, far more than we see in cases like (2).

As I said in Section (V), the semantics and pragmatics my discussion here has indicated seems to be in line with the view generally opposed to free enrichment, which insists on pragmatics always being mediated by logical form. Focus is marked at LF, and it appears to be a linguistic control on the pragmatic process to which it maps. But as I said there, the result is still quite a bit different from what the debate over (2) indicates. Focus does appear at LF, but not as a variable whose value is to be filled in by a pragmatic process. Rather, it is a trigger of an extremely rich discourse-based pragmatic process, which in turn interacts with the semantics of the sentence that triggered it. Focus shows the semantics/pragmatics boundary to be a complex and dynamic one.

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