

TOPIC, FOCUS, AND THE INTERPRETATION
OF BARE PLURALS*

In this paper we show that focus structure determines the interpretation of bare plurals in English: topic bare plurals are interpreted generically, focused bare plurals are interpreted existentially. When bare plurals are topics they must be specific, i.e. they refer to kinds. After type-shifting they introduce variables which can be bound by the generic quantifier, yielding characterizing generics. Existentially interpreted bare plurals are not variables, but denote properties that are incorporated into the predicate. The type of predicate determines the interpretation of its bare plural subject. The individual/stage-level distinction, though important, is not sufficient: since only arguments can be topics, only those stage-level predicates which have locative arguments can have existential bare plural subjects. Certain verbs (e.g., *hate*) fail to incorporate their bare plural objects; therefore no existential reading of the object is available. We provide a novel solution to this puzzle based on the following two claims: (i) incorporated bare plurals do not introduce discourse referents; (ii) nonincorporating verbs are presuppositional.

1. THE PROBLEM

Bare plurals (henceforth BPs) are known to be ambiguous between generic and existential readings. Consider the following examples:

- (1) a. Boys are brave.
- b. Boys are present.
- c. Boys are hungry.

The most plausible reading of (1a) is generic; it says that, in general, boys are brave. In contrast, the dominant reading of (1b) is existential; it says that some boys are present. It is not so easy to characterize the reading of (1c); the sentence appears to be ruled out, rather than receive a generic or existential interpretation.

BPs may be ambiguous in object position too:

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- (2) a. John hates lawyers.
 b. John knows lawyers.

Sentence (2a) is read generically, whereas the preferred reading of the BP in (2b) is existential.

In this paper we show that focus structure determines the interpretation of BPs in English: topic bare plurals are interpreted generically, focused bare plurals are interpreted existentially.

In section 2, we review several approaches to the problem and point out their empirical and theoretical weaknesses. In section 3, we define the necessary components of focus structure theory. Section 4 discusses the relevance of the distinction between I-level and S-level predicates to the interpretation of BPs. In section 5, we consider arguments against an analysis of the interpretation of bare plurals in terms of focus structure and reject them. Sections 6 and 7, respectively, show how generic and existential readings of bare plural subjects are generated. In section 8 we discuss the interpretation of bare plural objects. Section 9 is a brief conclusion.

2. WHAT ARE THE FACTS?

There have been many attempts to account for the various interpretations of BPs, some of which will be considered in this paper. Part of the problem in evaluating the variety of existing proposals is that there is disagreement over the data, as well as over the theory used to explain them. Different scholars have different intuitions regarding the meaning or acceptability of sentences such as those in (1), and, correspondingly, propose different theories to account for them.

Carlson (1977) draws a distinction between two types of predicate. Individual-level predicates (henceforth I-level), exemplified by *brave*, cause their subjects to be interpreted generically; whereas stage-level predicates (henceforth S-level), exemplified by *present* and *hungry*, force an existential interpretation of their BP subject. Note that according to Carlson, all and only I-level predicates force a generic reading of their BP subjects, and all and only S-level predicates force an existential reading of their BP subjects. Carlson's theory would therefore predict that (1b) cannot receive a generic interpretation, and that (1c) must be interpreted existentially.

While most scholars appear to agree with Carlson's judgments regarding I-level predicates, some of them dispute his judgments regarding S-level predicates. In particular, Diesing (1992) and Kratzer (1995) suggest that subjects of S-level predicates are not restricted to existential interpretations,

but are, in fact, ambiguous between existential and generic interpretations. Thus, they would predict that both (1b) and (1c) may be interpreted generically.

Still others have suggested that some S-level predicates, far from forcing an existential interpretation, do not even allow it. In all the following sentences, it is claimed, subjects of S-level predicates fail to be interpreted existentially:

- (3) a. Plates/children are dirty.
 b. Shirts are still damp.
 c. Committee members were bored.
 d. People in the office were in a good mood.
 e. Children are sick.
 f. During the class, farmers were hungry/tired/cheerful.
 g. Yesterday butter was old/fresh.¹

If subjects of S-level predicates are not necessarily interpreted existentially, the natural question is why? What is it that determines when the BP subject of an S-level predicate is interpreted existentially?

Kiss (1998) claims that only predicates of existence and those that express activity (as opposed to a state) license existential readings of their BP subjects. Her explanation is that BPs are variables, and their existential interpretation comes from being bound by an existential quantifier. This quantifier might be explicitly provided, as in the case of existential predicates, or might be implicit, as in the case of activity verbs, where an existential closure operator quantifies over the event variable.

While we agree with Kiss's judgments, we cannot accept her account. One reason is that, as we shall see in section 7 below, it is doubtful whether existential BPs are, indeed, variables. Moreover, Kiss's account of both existential predicates and predicates of activity leaves important questions open. In particular, she does not make it clear how to test for a predicate of existence (why, for example, is *visible* such a predicate?). Kiss also brings no argument to support the claim that activity verbs contain an existentially bound event variable. It seems to us that, in fact, the event variable of such verbs is contextually anaphoric rather than existentially bound. For example, (4) does not mean simply that there was a time when John ran, but rather that he ran at some time established by previous discourse.

¹ Sentence (3a) is from Kiss (1998); sentences (3b–d) are from McNally (1998); sentence (3e) is from de Smet (1997); sentences (3f–g) are from Dobrovie-Sorin and Laca (1996) and Dobrovie-Sorin (1997).

- (4) John ran.

Jäger (1999) claims that existential readings tend to be possible if the sentence denotes an event which is “in the local environment of the discourse situation” (p. 89). A similar proposal is made by Higginbotham and Ramchand (1997). They note a difference between the interpretations of the subjects of the predicates *nearby* and *far away*:

- (5) a. Firemen are nearby.
b. Firemen are far away.

Higginbotham and Ramchand claim that *firemen* is interpreted existentially in (5a), but generically in (5b). Since both predicates are S-level, they conclude that the S-level/I-level distinction is not relevant to the interpretation of BPs, and propose instead that the relevant criterion is “the spatiotemporal proximity of the subject to the speaker” (p. 66). When the subject is near the speaker, as in (5a), it is interpreted existentially; otherwise, it is interpreted generically.

We do not believe this generalization is empirically supported. Consider (6):

- (6) Firemen are on top of the Empire State Building.

The speaker and the Empire State Building can be rather far apart; they may be on different continents. And yet, regardless of the distance, the subject can only be interpreted existentially. Moreover, the reading of (5b) is not really generic, but universal: for (5b) to be true, *all* firemen, without exception, need to be far away. This contrasts with generic readings, which allow exceptions. We will explain this interpretation of (5b) in section 7.2 below.

Several other researchers have suggested that instead of the I-level/S-level distinction, the notion of *location* is relevant to understanding the various interpretations of BPs.

McNally (1998) denies that the S-level/I-level distinction is the relevant one, as far as the interpretation of BPs is concerned. What’s relevant, according to her, is whether the predicate denotes a property that is location independent, i.e. whether it holds of an object no matter where it is. In such cases generic readings are possible. Location independence clearly holds of I-level predicates – for example, a boy will remain brave no matter where he is; while he may behave differently in different places, his level of bravery will remain the same. In addition, some S-level predicates are also location independent; hence they do not allow existential interpretations. For example, *dirty* is such a predicate: a plate will remain dirty if we take it elsewhere.

A similar (though not equivalent) claim is made by Dobrovie-Sorin and Laca (1996) and Dobrovie-Sorin (1998), who propose that only localizable S-level predicates give rise to existential interpretations. For example, they claim that the subjects of the sentences in (7) can be interpreted existentially, and explain this by pointing out that the predicate of these sentences may be localized.

- (7) a. Farmers were sleeping/dancing in the street.
b. Butter was melting on a plate.

Glasbey (1998) goes one step further, and suggests that localization allows even BP subjects of I-level predicates to receive an existential interpretation:

- (8) Monkeys live in that tree.²

We believe that the insight that location plays an important role is on the right track. However, as these theories are presented, they are not sufficient to answer the question before us. Why does location have this effect specifically? Moreover, there are cases of existentially interpreted BPs where location seems not to play a role. For example:

- (9) a. Investors are interested.
b. Family members are proud of John.
c. Voters are undecided.
d. Guests are reluctant to confirm.

The predicates of the sentences in (9) are not localized; they are, in fact, location independent. What is the interpretation of the BPs in these sentences? It is clearly not generic. One way to see this is to note that generic readings are *lawlike* – among other properties, they support counterfactuals. Thus the truth of (1a) entails (10):

- (10) If I were a boy, I would (probably) be brave.

However, the sentences in (9) do not support counterfactuals. Sentence (9a) for example, does not entail (11):

- (11) If I were an investor, I would be interested.

² Diesing and Kratzer can, in fact, account for the interpretation of this sentence, based on the fact that *live* is an unaccusative verb, and that unaccusative subjects originate inside the VP as objects (see section 4.2 below for a brief discussion of their theories). It should be pointed out, however, that Diesing and Kratzer would be unable to predict the existential interpretation of BP subjects of I-level predicates that are not unaccusative, such as (12) below.

The reading of the BP is, therefore, the existential reading.³

As for I-level predicates, we do believe that some of them may allow their subjects to be interpreted existentially, but, again, this can occur even with predicates that are not localized:

- (12) a. Criminals own this club.
 b. Chapters of this book are interesting.

To conclude this section: Carlson's original claim, that all and only subjects of I-level predicates are interpreted generically, and all and only subjects of S-level predicates are interpreted existentially, is not empirically valid. Subjects of some S-level predicates cannot be interpreted existentially, whereas subjects of some I-level predicates can.

It appears, then, that the problem cannot be solved by relying on the lexical class of the predicate, and a different approach is necessary. We will propose just such an approach in this paper, based on the notions of topic and focus. Yet, this does not mean that the I-level/S-level distinction should be dispensed with; on the contrary, we will show that, when appropriately construed, the difference between I-level and S-level predicates can be seen as a special case of a more general principle determining the interpretation of BPs.

3. FOCUS STRUCTURE

In this paper we argue that the informational status of the BP, i.e. whether it is a topic or focus, determines its interpretation. The idea that focus structure affects the interpretation of BPs is not new. Laca (1990) claims that topic BPs are generic and that focus BPs are existential, but does not relate this claim to a quantificational analysis of genericity.

Kamp and Reyle (1993, pp. 359–360) show that intonation influences the interpretation of BPs. The interpretation of (13) (their (4.95)) depends on whether the subject or the object is stressed:

- (13) Weak men tend to drive strong cars.

According to Kamp and Reyle there is a tendency to interpret the subject BP generically and the object BP existentially. Thus, (13) means that, in

³ One may argue that the sentences in (9) imply stronger than simple existential claims, e.g. that (9b) implies that more than a handful of family members are proud of John. We do, in fact, agree with this intuition, but in our opinion this is an implicature, rather than part of the meaning of the sentences (Cohen 2000). Hence, this fact is not in contradiction with the claim that the BPs in these sentences are read existentially.

general, if x is a weak man, there is a strong car that he drives. However, with emphatic stress on the subject, the interpretation is reversed, and (13) is read as saying that, in general, if y is a strong car, there is a weak man who drives it. Kamp and Reyle suggest that the topic-comment distinction is at stake here, but conclude that due to our lack of understanding of these notions “we lack the means of analyzing the correlation between plural dependence and topic-comment structure.”

Krifka et al. (1995) also note that BPs in topic position must be kind-referring or generic. The authors add, however, that the theory governing the interpretation of BPs “stands in need of considerable refinement” (p. 74). We intend to show that an elaborated theory of topic and focus assignment and interpretation such as Erteschik-Shir’s (1997) focus structure theory provides the necessary framework to enable a natural account of BP interpretation.

3.1. *Topic and Focus*

Following Strawson (1964) and Reinhart (1981), Erteschik-Shir (1997) defines topics as the ‘address’ in the file system under which sentences are evaluated. That is to say, every sentence expresses some predication over the topic. Consequently, the Topic Constraint follows: every sentence must have a topic.

According to Erteschik-Shir, topics are selected from the set of referents previously introduced in the discourse. Topics are therefore necessarily specific: they identify an element in the common ground that the sentence is about. In particular, singular indefinites, not being specific, cannot be topics.⁴

Take, for example, sentence (14) with the indicated topic/focus assignment:

(14) John_{TOP} [is clever]_{FOC}

This sentence cannot be uttered out of the blue. It requires that *John* be introduced into the discourse first with a preceding sentence such as:

⁴ A putative counterexample to this generalization is the case of *specific indefinites*, as in the following examples:

- (i) A friend of mine is intelligent.
- (ii) A certain student likes linguistics.
- (iii) A man who was wearing a brown hat knew enough French to help us.

See Erteschik-Shir (1997) for an account of specific indefinites within a theory of topic and focus.

- (15) Tell me about John.⁵

What sorts of things may be topics? Subjects are often topics, but not always so. Objects may be topics too, as in (16), when it follows (15).

- (16) MARY loves John.

In contrast, it is hard to construe adjuncts as topics. Consider (17), for example, adapted from Radford (1988).

- (17) a. As for the problem, John will work on it.
b. ?As for the office, John will work there.

When *the problem* is an argument of the verb, as in (17a), there is no difficulty topicalizing it. But when it is an adjunct, as in (17b), topicalizing it is hard. To give another example (also adapted from Radford 1988), (18a) is ambiguous: it can mean either that John's decision involves the boat (argument) or that it will take place on the boat (adjunct). But when *the boat* is topicalized, as in (18b), only the first interpretation is available.

- (18) a. John will decide on the boat.
b. As for the boat, John will decide on it.

Adjuncts are bad topics because normally it is hard to construe a sentence as being about something that is, in a sense, secondary in importance. However, in the appropriate context, which makes it clear that the sentence is, indeed, about the adjunct, an adjunct may be a topic:

- (19) a. There is no need to put a bed in the office. John will sleep at home; as for the office, he will only work there.
b. You ask why the boat is in the harbor? Well, first of all, do not question my decisions. And, as for the boat, John will decide on it, so it has to be here.

Topics need not be individuals. For example, the italicized phrases in the sentences in (20) are locations that play the role of topic.

- (20) a. There was a nametag *near every plate*.
b. A flag was hanging *in front of every window*.

⁵ A more natural response to (15) would, of course, be this:

- (i) He_{TOP} [is clever]_{FOC}

Pronouns are therefore necessarily topics.

- c. A student guide took visitors to *two museums*.
- d. A spectator put contributions *in the hat*.⁶

Since the indefinite singulars in these sentences are not specific, they cannot be topics. Since, by the Topic Constraint, the sentences must have topics, the italicized locations must be topics.

Temporal locations can also function as topics:

- (21) a. A ghost appeared *at midnight*.
- b. A bus to Beer Sheva leaves *every 20 minutes/regularly*.
- c. A student arrived *during class*.

Such spatiotemporal topics are referred to as *stage topics* in Erteschik-Shir (1997). Stage topics need not be overt, as shown in (22).

- (22) a. sTOP_t [it is raining]_{FOC}
- b. sTOP_t [A policeman arrived]_{FOC}

The sentences in (22) are evaluated with respect to the here-and-now of the discourse, indicated by sTOP_t, a topic that is indexed by the current spatial (s) and temporal (t) locations. Such stage topics therefore meet the requirement on topics that they must be introduced in the discourse. In particular, although the subject of (22b) is an indefinite singular, and can therefore not be a topic, the Topic Constraint is satisfied by the existence of the stage topic.

As we have seen, topics are usually arguments rather than adjuncts. This holds of spatiotemporal locations as well: their occurrence as (stage) topics is restricted to cases in which they play the role of an argument. There are four types of predicate in which this is the case:

1. Weather verbs (e.g., (22a)).
2. Unaccusatives (e.g., (20b), (21), and (22b))
3. Existentials (e.g., (20a))
4. Verbs with locational goals (e.g., (20c,d))

Our interest here is to identify intransitive verbs whose subjects can be focused due to the presence of a locative argument (overt or implicit) which functions as a stage topic. We show below that BP subjects of such predicates can be interpreted existentially. Weather verbs will therefore not interest us here, since they do not occur with BPs. Concerning cases 2–3, the idea that these constructions select spatiotemporal or locative arguments is not new. First let us examine unaccusatives: Bresnan (1994), among

⁶ The examples in (20) are adapted from Chierchia and McConnell-Ginet (1990, p. 177).

others, argues that unaccusatives select a locative argument as well as a theme argument.⁷ According to Bresnan such verbs are characterized by their ability to undergo locative inversion as illustrated in (23) (Bresnan's (1)–(3)):

- (23) a. In the corner was a lamp.
 b. Among the guests was sitting my friend Rose.
 c. Back to the village came the tax collector.

The sentences in (23) illustrate that unaccusative verbs have the required argument structure, namely a theme and a locative. The locative inversion test distinguishes unaccusatives which describe a change of location from inchoatives which describe a change of state:

- (24) a. On the table appeared many wonderful delicacies.
 b.*On the table broke several precious glasses.

The unacceptability of (24b) shows that inchoatives such as *break* which select a theme argument do not select a locative. The locative in this case is an adjunct, and therefore locative inversion cannot occur. The test also shows that intransitive unergatives do not select locative arguments:

- (25) a. Several children cried in the morning.
 b.*In the morning cried several children.

- (26) a. Two couples danced in the kitchen.
 b.*In the kitchen danced two couples.⁸

Turning now to existentials, Freeze (1992) argues that (crosslinguistically) existentials are formed on predicates which select locative arguments. He compares the locative unaccusative in (27a) to “unaccusative verbs which do NOT subcategorize a locative argument” (p. 566) in (27b) and (27c) (Freeze's (19b) and (20)):⁹

- (27) a. There arrived a stagecoach at the station.
 b.*There dried up puddles (in the street).
 c.*There melted lots of ice cream (in the street).

⁷ According to Bresnan (1994), this generalization was first observed for locative inversion in English by Levin (1985).

⁸ Compare the same verb with a locative goal:

- (i) Into the kitchen danced two couples.

The fact that verbs of motion with locative goals behave like unaccusatives has been widely discussed (e.g., Levin and Rappaport Hovav 1995).

⁹ Freeze uses the term ‘unaccusative’ to refer to all intransitives with theme subjects (i.e., unergatives).

The question arises why, if unaccusatives and existentials require locative arguments, these arguments do not always appear overtly, as illustrated in (28).

- (28) a. There is a God.
 b. There is someone sick.
 c. A man arrived.

The reason is that in these cases the locative argument is a stage topic, and stage topics which refer to the here-and-now of the discourse may remain implicit.

Concerning verbs with locational goals (4, above), Bresnan's locative inversion test does not apply since it only distinguishes locative arguments for intransitives like those in (29) (Bresnan's (9)–(12)):

- (29) a.* Among the guests of honor seated my mother my friend Rose.
 b.* In this rainforest can find the reclusive lyrebird a lucky hiker.
 c.* On the table has placed a tarte Tatin Susan.

That such goals are arguments rather than adjuncts is uncontroversial in view of the fact that they are thematically required by the verb.

The following illustrates that locative arguments can be (stage) topics, hence topicalized, whereas locational adjuncts cannot:

- (30) a. As for the party, John appeared at it.
 b.??As for the party, the glass broke at it.

Since *appear* is an unaccusative verb, the location *the party* is its argument, and may be a topic, as in (30a). In contrast, *the party* is not an argument of *break*, hence it may not be a topic, and this is why (30b) is odd.

As we indicated in section 2, the fact that locations interact with the interpretation of BPs has been observed before. Here we show that the necessary distinction is whether the location can play the role of a stage topic. As just indicated, adjuncts are hard to construe as topics. It follows that only locations that are arguments can be topics.

3.2. Contrastive Topics

As noted above, we follow Strawson (1964) in saying that “the statement is assessed as putative information about its topic” (p. 97). Strawson's innovation was that for him the topic was not necessarily associated with the grammatical subject of the sentence (or with any other structural position). Rather, it is chosen in accordance with the context as illustrated in (31) and (32):

- (31) a. The King of France is bald.
 b. What is the King of France like?
 c. What bald notables are there?
- (32) The exhibition was visited by the King of France.

According to Strawson, in the context of the question in (31b), (31a) has no truth value since the sentence cannot be verified. It cannot be *about* a nonexistent king. Sentence (32), however, has a possible focus structure in which *the exhibition* is chosen as the topic. This sentence will be assessed as false if the King of France is not among the visitors at the exhibition. Similarly, (31a), in the context of (31c), is simply false. The context-dependent choice of topic thus determines the assignment of truth value.

Now examine the following interchange:

- (33) A: Is the Queen of France bald?
 B: No, the KING of France is bald.

B's answer in (33) has no truth value, indicating that *the King of France* is taken to be the topic of this sentence in spite of the stress on the subject (indicated by capital letters). Note that the stress and intonation used by B is only appropriate in a contrastive context in which B is refuting A's assumption.

In a contrastive context the contrasted set, in this case {*the Queen of France, the King of France*}, must be contextually available. Since contrast involves the partitioning of a set available in discourse, a contrastive element is always specific; hence it may always play the role of topic.

3.3. Focus Tests

The traditional test for foci is to examine whether the tested constituent is acceptable as the answer to a wh-question, as in:

- (34) A: Who loves Mary?
 B: JOHN loves Mary.

Now note that the answer in (35B) is not an appropriate answer to the question in (35A):

- (35) A: Who is bald?
 B: LOUIS is bald.

In fact, the question itself is odd; we can therefore conclude that in (35) *LOUIS* is a contrastive topic, rather than a focus.

Note, in contrast, that the following exchange is fine:

- (36) A: Which one of your friends, Louis or Philippe, is bald?
 B: LOUIS is bald.

The exchange in (36) shows that if the contrastive context is built into the *wh*-question, the focus test works, and LOUIS is diagnosed as a contrastive focus rather than topic.

3.4. *Focus Structure and Quantification*

The idea that topic-focus structure affects interpretation, introduced into current theory by Reinhart (1981) (following Strawson 1964), became popular in the early 1990s as an explanation for a variety of phenomena. In particular, it is widely held that topic-focus structure affects, or even determines, the domain of quantification of adverbs of quantification. Thus Partee (1991, 1994) argues that the topic-focus distinction parallels the distinction between the restrictor and the nuclear scope. Chierchia (1992) argues that quantification is over topics, thus accounting for asymmetric readings of donkey sentences. Krifka (1992) addresses the same issue as Chierchia but suggests that it is the background (the complement of the focus) which is bound by the quantifier, rather than only the topic.

While differing in their details, all these approaches point in the same direction: foci go to the nuclear scope, topics go to the restrictor. In this paper we apply this observation to the interpretation of BPs.

4. THE INTERPRETATIVE OF BPS

4.1. *Individual-level and Stage-level Predicates*

Let us now return to the problem of how the predicate determines the interpretation of the BP. Our starting point will be, once again, the I-level/S-level distinction. What is the difference between the two types of predicate?

Kratzer (1995) proposes that the difference between S-level and I-level predicates is due to their argument structure. S-level predicates have an additional “Davidsonian” argument, indicating a spatiotemporal location; I-level predicates lack such an argument.¹⁰

¹⁰ Of course, this claim does not, in itself, imply that I-level predicates express properties which hold throughout all time; analogously, the fact that heat may affect the length of objects does not require that the predicate *long* have a temperature argument.

Evidence for this claim comes from minimal pairs such as the following:

- (37) a. When Mary speaks French, she speaks it well.
 b. Mary often speaks French.
 c.*When Mary knows French, she knows it well.
 d.*Mary often knows French.

The claim is that these sentences express quantification over a spatio-temporal variable. In (37a–b) this variable is provided by the S-level verb *speak*, hence the sentences are fine. In contrast, the sentences in (37c–d) contain an I-level verb, *know*, which does not provide a spatio-temporal variable. Hence, these are cases of vacuous quantification, which is prohibited by the grammar.

Kratzer's claim has not been without its challengers. De Swart (1991) considers what she calls 'once only' S-level predicates. She points out that they, too, cannot be modified by a *when*-clause or an adverb:

- (38) a.*When Marie built the house of Jacques, she always built it well.
 b.*When Anil died, his wife usually killed herself.

De Swart makes the point that the sentences in (38) are bad because the Q-adverb requires a multitude of events to quantify over. But there can normally be only one event of Mary's building Jacques's house, and only one event of Anil's dying, hence the unacceptability of the sentences in (38). De Swart proposes that this principle is sufficient to explain the distinction between S-level and I-level predicates. She concludes that I-level and S-level predicates have the same argument structure: both have a spatio-temporal variable. The only difference is that, in the case of I-level predicates, this variable is restricted to one (very long) event.

This conclusion does not actually follow. There are differences between I-level and 'once only' predicates that cannot be accounted for by this principle. For example, the adverb *never* can occur with 'once only' predicates, but not with I-level predicates:

- (39) a. Marie never built the house of Jacques.
 b. Anil will never die.

- (40) a.*Mary never knows French.
 b.*Mary is never brave.

Additionally, there are other operators, besides *when*-clauses and adverbs of quantification, that require an event variable. Many of these operators are possible with 'once only' predicates, but not with I-level ones:

- (41) a. Marie built the house of Jacques yesterday/quickly/in three hours.
 b. Anil will die tomorrow/quickly/in three hours.
 c.*Mary will know French tomorrow/quickly/in three hours.
 d.*Mary will be brave tomorrow/quickly/in three hours.

We therefore conclude that de Swart's objection fails, and that there is, in fact, a distinction in argument structure between I-level and S-level predicates.

Chierchia (1995) also claims that both S-level and I-level predicates have an event variable. The difference between them is that I-level predicates require the generic operator to bind this variable. This operator also binds the variable introduced by the BP, resulting in generic readings for the subjects of I-level predicates.

This theory requires Chierchia to regard a simple predicative sentence, such as (42), as generic, since *tall*, being I-level, requires the generic operator to bind the spatiotemporal variable it introduces.

- (42) John is tall.

This view is problematic, because there are differences between a sentence such as (42) and a real generic (habitual), such as (43).

- (43) John spends his birthdays at home.

The generic (43) allows exceptions; it may be that on some rare occasions, John goes out on his birthday. But (42) does not: if John is tall, he is always tall.

In addition, the claim that I-level predicates always require the presence of the generic operator is not empirically adequate. If the sentence contains an indefinite, I-level predicates are also compatible with an adverb of quantification:

- (44) A Texan is often tall.

One might propose amending the account, so as to state that I-level predicates simply require that their spatiotemporal variable be bound by *some* operator, be it the generic operator or an adverb of quantification. But then we would predict, erroneously, that (45) is fine.

- (45) *John is often tall.

We therefore conclude that there is, indeed, as Kratzer claims, a difference between S-level and I-level predicates in that the former, but not the latter, introduce a spatiotemporal variable.

4.2. *Predicate Type and Interpretation*

Kratzer uses this claim to account for the interpretation of BPs by syntactic means. She follows Diesing's (1992) Mapping Hypothesis, according to which variables in the VP are mapped onto the nuclear scope and are subject to existential closure, whereas variables outside the VP are mapped onto the restrictor and are bound by the generic quantifier. Kratzer claims that the spatiotemporal variable is necessarily the external argument, hence the subject of an S-level predicate is not the external argument and originates inside the VP. In contrast, the subject of an I-level predicate, where there is no external spatiotemporal argument, originates outside the VP, as the specifier of the IP.¹¹ Since the subjects of I-level predicates originate in [Spec,IP], only generic readings are assigned to them. Subjects of S-level predicates originate in [Spec,VP], to which position they may be optionally lowered at LF, hence both generic and existential readings are possible.

We do not accept Diesing and Kratzer's syntactic account, for both theoretical and empirical reasons. Theoretically, while there are some good arguments to the effect that subjects originate inside the VP, these arguments apply equally well to I-level as to S-level predicates (see Chierchia (1995) for an elaboration of this point). Moreover, as we have seen, the interpretations predicted by Kratzer's and Diesing's theories are simply wrong: not all S-level predicates allow for existential readings of their BP subjects.

Instead of Diesing and Kratzer's syntactic criterion, we propose the independently motivated mapping criterion based on focus structure discussed in section 3.4: material in the focus gets mapped onto the nuclear scope, whereas material in the topic gets mapped onto the restrictor.

We can now account for the various readings of BPs exhibited in (1), repeated here:

- (46) a. Boys are brave.
 b. Boys are present.
 c. Boys are hungry.

In (46a) there is no stage topic, since the predicate, *brave*, is I-level. Hence, since the sentence must have a topic, *boys* is necessarily the topic and must therefore be specific. The only way for this to be satisfied is if *boys* refers to the kind \uparrow *boy*, a specific individual in the world. This results

¹¹ Compare Diesing (1992), who reaches the same conclusion without positing a difference in argument structure between I-level and S-level predicates.

in a generic reading for (46a). We will elaborate on the generic reading of BPs in section 6 below.

Sentence (46b) contains the predicate *present*, which is S-level. This predicate introduces a spatiotemporal variable, which may be a stage topic. In this case the subject may be a topic as before, but does not have to be. When the subject is a topic, it is interpreted generically; when it is in focus, it is interpreted existentially (we will return to existential interpretations in section 7 below). Hence, the sentence is ambiguous and both generic and existential readings are available (cf. Jäger 1999). In fact, it is hard to get the generic reading, and the existential reading is much preferred. The reason is that generics cannot express predication of a temporary property (Cohen 1999). If the property *present* is perceived to be such a temporary property, with a boy being present at some times and absent at others, the generic will be unacceptable. If, on the other hand, being present is perceived to be a property that is expected to hold well into the future, a generic reading is possible, as in (47).

(47) Penguins are present in Antarctica.

What about (46c), though? The generic reading is hard to get, for the same reason it is hard with (46b). But why is it hard to get an existential interpretation of the BP subject? In order to answer this question, we need to take a closer look at the difference between the argument structure of predicates such as *present* and predicates such as *hungry*.

While, as we have said above, we agree with Kratzer that both, being S-level predicates, introduce a spatiotemporal variable, we disagree with her claim that, in both cases, this variable is an argument. In fact, the spatiotemporal variable is an argument in the case of *present*, but an adjunct in the case of *hungry*. Note, for example, the following minimal pair:

(48) a. In the dining room, John was hungry.
 b. ?In the dining room, John was present.

Since adjuncts can occur sentence initially but arguments cannot (unless they are topicalized), the distribution in (48) is explained by the proposal that the location *in the dining room* is an adjunct of *hungry*, but an argument of *present*.

Recall that we have seen that adjuncts are typically not topics. Hence, in (46c) it is hard to construe the spatiotemporal variable as a topic, and therefore the BP cannot get an existential reading. In order to satisfy the topic constraint, the BP itself must be the topic. In principle, this should make a generic reading available, provided the property is not temporary:

- (49) That's what I hate about little boys: no matter how much they eat, little boys are hungry.

Now, consider the sentences in (3), repeated in (50):

- (50) a. Plates/children are dirty.
 b. Shirts are still damp.
 c. Committee members were bored.
 d. People in the office were in a good mood.
 e. Children are sick.
 f. During the class, farmers were hungry/tired/cheerful.
 g. Yesterday butter was old/fresh.

In all these sentences, the spatiotemporal variable introduced by the S-level predicate is not an argument. It is for this reason that it cannot be a topic, and, therefore, the BP must be a topic and cannot be interpreted existentially.

Recall that we have said that it is generally hard to make an adjunct a topic, but that in the appropriate context, where it is clear that the sentence makes some sort of statement *about* the adjunct, it may be construed as a topic. Hence, we predict that, in such a context, existential readings should be possible for the BPs in the sentences in (50). This prediction is, in fact, borne out:

- (51) a. This is an awful kitchen – plates are dirty and glasses are broken!
 b. It is a very humid day – shirts are still damp.
 c. This was a terrible lecture – even committee members were bored.
 d. What a happy day! Strangers greeted each other on the street, and people in the office were in a good mood.
 e. Mr. President, you must declare an emergency! Children are sick, and this is a very dangerous situation!
 f. The farm manager drove his workers too hard. After a hard day's work, farmers were tired.
 g. Yesterday was a particularly bad day for the shopkeeper. Bread was stale and butter was old.

Sentence (51a) is about the time and place of its utterance (the kitchen), hence the spatiotemporal variable may be a topic and the BP may be interpreted existentially; (51b) is about the day in which it is uttered, hence the spatiotemporal variable may be a topic and the BP *shirts* is free to be interpreted existentially; and so on.

Predicates with spatiotemporal arguments, rather than adjuncts, allow

existential interpretation of their BPs. Recall that in section 3.1 above we have identified three groups of such predicates (excluding weather verbs, which do not occur with BPs): existentials, unaccusatives, and verbs with locational goals. Indeed, all of these types of predicate induce existential interpretations of their BP subjects.

The BPs in existentials such as the sentences in (52) receive existential interpretations, and cannot be generic.

- (52) a. There were nametags near every plate.
 b. There were unicorns in the garden.
 c. There were firemen in the blazing inferno.

To account for this fact, we need not assume the existence of some existential operator introduced by the existential construction. Rather, it follows directly from the account of existentials as predicating a property of a stage topic. Since the spatiotemporal variable can – in fact must – be a stage topic, the BP must be interpreted existentially.

As mentioned above, unaccusative verbs also select locative arguments. It follows that BP subjects of intransitive unaccusatives can get existential readings when this argument is a topic, as in (53a, b).

- (53) a. POLICEMEN appeared/arrived (at the scene of the crime).
 b. GUESTS left (because of the weather).

In contrast, the spatiotemporal variable introduced by S-level unergative verbs is an adjunct, hence it normally cannot be a topic. However, an unergative verb can, in an appropriate context, be construed as indicating a change of state, i.e. as predicating of some state the property of undergoing some change. In such contexts the state (or, rather, the spatiotemporal variable referring to it) can be construed as the topic of the sentence, freeing a BP, if present, to receive an existential interpretation, just as with unaccusatives.¹²

- (54) A: What happened during the earthquake?
 B: CHILDREN cried, PEOPLE yelled, and DOGS barked.

The account of predicates with locational goal arguments also follows from our mapping hypothesis. The locative argument may be a topic, leaving the BP subject in focus to receive an existential interpretation.

¹² For the ‘unaccusative’ function of unergative verbs, see Erteschik-Shir and Rapoport (2000).

- (55) a. Student guides took visitors to two museums.
 b. Spectators put contributions in the hat.

The additional argument does not have to be a location in order to be a topic and allow the BP to be interpreted existentially. This fact is exemplified by the sentences in (9a, c, d). In (9a) investors are interested *in something*; in (9c) voters are undecided *about some issue*; and in (9d), guests are reluctant to confirm *attendance of some event*. In all these cases, the italicized implicit argument can function as a topic, thus the BP may be interpreted existentially.

Sentence (9b) is particularly interesting, since it involves an I-level predicate, and yet the BP is interpreted existentially. The same holds of (8) and (12a), all of which are repeated below:

- (56) a. Monkeys live in that tree.
 b. Family members are proud of John.
 c. Criminals own this club.

The same type of reasoning explains the existential reading of the BPs in these sentences. If an I-level predicate denotes a two (or more) place relation, its subject may be in focus, i.e. receive an existential interpretation. This is because one of the other arguments may be a topic, and the subject may be focused. Thus, the topic of (56a) is *that tree*; hence the subject *monkeys* may receive an existential interpretation. Similarly, the topics of (56b) and (56c) are *John* and *this club* respectively; hence their BP subjects may be interpreted existentially.

5. PUTATIVE COUNTERARGUMENTS

Intonation is the primary device that indicates the focus structure of an utterance. However, one should use caution, since not every stressed expression is focused. In this section we consider two phenomena that are used in the literature to argue against the sort of approach proposed here: stressed subjects and stressed objects. We argue that once the contribution of intonation is made clear, the validity of these counterarguments disappears.

5.1. Stressed Subjects

Diesing (1992) and Kratzer (1995) agree that focus affects the interpretation of BPs, but deny that BP interpretation is fully determined by focus, whereas we claim that it is. In particular, Diesing and Kratzer agree that stress facilitates existential readings of BPs; the examples in (57) are due to Kratzer (1995).

- (57) a. She thinks that COUNTEREXAMPLES are known to us.
 b. PONDS belong to this lot.
 c. POLICEMEN arrived at the scene of the crime.

They claim, however, that this is only the case for passive and unaccusatives, whose subjects originate inside the VP, hence are subject to existential closure. As a counterexample to the claim that focus structure fully determines the interpretation of BPs, Kratzer points out that stressing the subject in (58) still results in a generic reading, rather than the existential reading that would be expected of a focus:

- (58) FIREMEN are altruistic.

Note, however, that the subject of (58) is a contrastive topic, rather than a focus; hence its generic reading is, in fact, predicted by our approach. Sentence (58) could only be said in a context in which firemen are contrasted with police officers, say.

The wh-question test for foci shows that the stressed subjects in (57), but not in (58), are indeed focused. For example, (59a) questions the subject of (57a) felicitously, but (59b), which questions the subject of (58), is bad:

- (59) a. What does she think is known to us (about this matter)?
 b. #Who is altruistic?

Question (59b) is acceptable only in a context in which a set of alternatives is available. Thus this question would be acceptable if addressed to a given group of individuals, or if a contrast set is available. The discourse in (60), for example, is felicitous:

- (60) I wonder whether I should encourage firemen, paramedics, or police officers to take part in charity activities. Who is altruistic?

The answer to the question selects a member of this topic set. The subject is therefore licensed as a topic. Such a context is not required for the sentences in (57), indicating that the BP plays the role of a genuine, non-contrastive focus. Since the subject of (58) constitutes a contrastive topic, and not a focus, its topichood forces the generic reading.

The reason why *firemen* must be a topic is that *altruistic* is an intransitive I-level predicate. Since I-level predicates do not have a stage topic, the only possible topic is the subject. When a stage topic is present, BP subjects may be (noncontrastively) focused and receive an existential reading:

- (61) a. FIREMEN are present.
 b. sTOP_t [Firemen are present]_{FOC}

The spatiotemporal variable introduced by *present* is an argument, as can be evidenced by the unacceptability of (62).

(62) * In the kitchen, firemen are present.¹³

Hence, it may be a stage topic, and this stage topic in (61) allows the stressed subject to be noncontrastively construed. Here *firemen* is in focus, and it does not have to (though it may) be a topic.

As we have seen above, a stressed BP subject may, in fact, receive an existential interpretation with an I-level predicate, provided that the predicate is transitive, so that another argument may be the topic, as in (63).

(63) CRIMINALS own this club.

The status of the stressed subject in (58) thus differs from that of the subjects of (61) and (63) in that, in the former sentence, the only available topic is the subject, hence an existential reading is ruled out; in the latter two examples, other potential topics are available, and existential readings are possible. Note that in these cases, the wh-question test shows that the BPs are, indeed, foci:

(64) A: Who is available?
B: FIREMEN are available.

(65) A: Who owns this club?
B: CRIMINALS own this club.

5.2. Stressed Objects

Link (1995) agrees with our view about all BP topics being generic; however, he denies that all BP foci are existential. Link claims that, whereas the object of (66a) is existential, the object of (66b) is interpreted generically.

(66) a. Cowboys carry GUNS.
b. Frogs catch FLIES.

In contrast, we claim that the objects of both sentences are interpreted existentially. Indeed, the monotonicity test confirms this; the sentences in (67) entail their counterparts in (66):

¹³ Such sentences are improved in a contrastive context:

(i) There's nobody in the bedroom, but in the KITCHEN, firemen are already present.

- (67) a. Cowboys carry large guns.
 b. Frogs catch fruit flies.

Link's argument for the generic reading of FLIES is that the object in (66a) is interpreted differently from that of the object in (66b). According to Link, the interpretation of (66a) is roughly:

- (68) In general, if x is a cowboy, there is a gun y s.t. x carries y .

Link notes that the corresponding paraphrase of (66b) is not the intended meaning:

- (69) In general, if x is a frog, there is a fly y s.t. x catches y .

He concludes that the interpretation of FLIES is not existential and must therefore be generic. The meaning of (66b), according to Link, ought to be something like (70):

- (70) In general, if x is a frog and y is a fly and y is around x , x catches y .

However, if this were really the meaning of (66b), sentence (67b) would not entail it – but, in fact, it does. Note that *catch* is an S-level predicate. Consequently, on our view, it introduces a spatiotemporal variable, which, in this case, is bound by the quantifier. Hence, the correct interpretation of (66b) is actually (71):

- (71) In general, if x is a frog and s is a stage, there is a fly y s.t. x catches y on stage s .¹⁴

We thus conclude that Link's argument fails, and that, in accordance with our thesis, object foci are existential.

6. GENERIC READINGS

We argued above that topic BPs receive a generic interpretation, whereas focused BPs are interpreted existentially. We will now explain how these readings are generated. In this section we will deal with the generic readings; the next section will be devoted to the existential interpretation.

In our framework, topics are always referential; they identify an element

¹⁴ In fact, *carry* is S-level too, so the correct interpretation of (66a) is:

- (i) In general, if x is a cowboy and s is a stage, there is a gun y s.t. x catches y on stage s .

in the common ground that the sentence is about. Like all topics, topic BPs must also be referential; in this case, we suggest, they refer to kinds.

Carlson (1977) proposes that all generic BPs refer to kinds.¹⁵ This is clearly the case with generics that express *direct kind predication*:

(72) Dinosaurs are extinct.

Sentence (72) predicates a property directly of the kind *dinosaur*, rather than of individual dinosaurs.

More controversial is the case of *characterizing generics*:

(73) Dinosaurs used to be very large.

Some researchers (see Farkas and Sugioka 1983; Wilkinson 1991; Diesing 1992; Gerstner and Krifka 1993; Kratzer 1995, among others) claim that in such cases the BPs are not interpreted as kinds, but as variables that are bound by the generic quantifier.

This view is problematic, as the denotation of the BP seems to be the same in both characterizing and kind generics. This can be seen by the following examples (cf. Heyer 1990):

- (74) a. Dinosaurs, which used to be very large, are extinct.
 b. Dinosaurs, which are extinct, used to be very large.
 c. Dinosaurs used to be very large and are now extinct.
 d. Dinosaurs are extinct. They used to be very large.

We assume what Schubert and Pelletier (1987) call *semantic innocence*, namely that “whatever contribution [an expression] makes, it makes that contribution once and for all in the sentence” (p. 391). Now note that in all the sentences in (74), the BP *dinosaurs* occurs once, but it is modified by two predicates: one which applies directly to the kind, and one which applies to individual dinosaurs. It follows that the BP has the same denotation in both characterizing and kind generics.

We claim, therefore, that in both types of generic the BP denotes a kind. For example, the logical form of (72) is (75), where, following the notation of Link (1995), \uparrow **dinosaur** is the kind *dinosaur*.

(75) **extinct**(\uparrow **dinosaur**)

Similarly, the grammar generates (76b) as the logical form of (76a):

¹⁵ Indeed, he proposes that *all* occurrences of BPs, existential as well as generic, refer to kinds. We will return to this issue in section 7.4.

- (76) a. Birds fly.
 b. **fly**(\uparrow **bird**)

Although this reading is generated by the grammar, it is ruled out on pragmatic grounds: the kind \uparrow **bird** is not the sort of thing that can fly – only individual birds can.

Instead of (76b), the characterizing reading is accommodated. How is it obtained? In such cases, the phonologically null generic quantifier, **gen**, is accommodated. As we claimed above, the topic is mapped onto the restrictor of the quantifier. However, a kind is an individual, which is not the right type: what we need in the restrictor is a variable with a restrictive predicate. Therefore, a type mismatch occurs. In order to resolve it, the kind \uparrow **bird** is type-shifted to the open formula $C(x, \uparrow$ **bird**) (cf. ter Meulen 1995). This formula indicates that x is a representative of the kind \uparrow **bird**.¹⁶ The variable x is bound by the generic quantifier.

We use the following notation: (77) indicates a tripartite form. Q is the quantifier, ψ is the restrictor, and ϕ is the nuclear scope. The quantifier binds the variables to the left of the semicolon (x in this case), and variables to the right of the semicolon (y) are bound by existential closure.

$$(77) \quad Q_{x,y}[\psi][\phi]$$

Using this notation, the logical form of (76a) is:

$$(78) \quad \mathbf{gen}_x[C(x, \uparrow\mathbf{bird})][\mathbf{fly}(x)]$$

This formula means that, in general, if x is a representative of the kind \uparrow **bird**, x flies.

The formula (78) does not violate the requirement that topics must be referential; this is because semantic evaluation takes place only after the topic and focus of the sentence have been identified (Erteschik-Shir 1997). Since at that stage, prior to type-shifting, the topic *birds* is, indeed, referential, the requirement is satisfied and the sentence is fine.¹⁷

We believe that both types of reading are generated by the grammar for every generic sentence involving BPs, and that the choice between them is made pragmatically, based on world knowledge. Only the kind

¹⁶ C is a modified version of Carlson's (1997) *representation relation*; see Cohen (1996) for details.

¹⁷ Note that, according to our account, the generic use of indefinite singulars is derived by different means than that of BPs, since indefinite singulars are not referential. Indeed, Lawler (1973) has shown that the distribution of generic indefinite singulars is different from that of BP generics. See Cohen (2001) for a discussion of indefinite singular generics, and an account of the differences in interpretation between them and BP generics.

\uparrow **dinosaur**, but not individual dinosaurs, is the sort of thing that may be extinct; on the other hand, only individual birds, but not the kind \uparrow **bird**, can be said to fly. This is why the preferred logical forms of (72) and (76a) are (75) and (78), respectively.

We claim, then, that when BPs are topics, they are interpreted generically: either as direct kind predication, or, if this reading is ruled out, the generic quantifier is accommodated, the denotation of the BP is type-shifted, and a characterizing generic results.

7. EXISTENTIAL READINGS

Topic BPs, then, receive generic readings. What about focused BPs? They may still denote kinds, in which case we get direct kind predication, as in (79):

- (79) A: What sort of animal is Angeline studying?
 B: Angeline is studying [birds]_{FOC}

Unlike the case of topics, the kind reading of focused BPs does not lead to a type mismatch even in the presence of **gen**,¹⁸ hence, a characterizing generic is not accommodated. For example, (80b) is the logical form of (80a).

- (80) a. Ornithologists study birds.
 b. $\text{gen}_{x_i}[\text{C}(x, \uparrow\text{ornithologist})][\text{study}(x, \uparrow\text{bird})]$

We have seen, however, that focused BPs may also be interpreted existentially. How are existential readings obtained? One possible approach is that existential BPs are variables, subject to existential closure. This view is usually held together with the claim that generically interpreted BPs are also variables. We argued above that generic BPs are not variables. Now we will argue that existential BPs are not variables either.

7.1. BPs Are Not Variables

Kamp (1981) and Heim (1982) have argued that indefinites are interpreted as variables. If that is so, and if BPs are indefinite, it might be reasonable to assume that BPs, too, are interpreted as variables. Such a proposal, however, is problematic, as there are a number of differences between

¹⁸ Though, of course, the resulting interpretation may be pragmatically unacceptable.

BPs and run-of-the-mill indefinites. The following arguments and examples are due to Carlson (1977).

BPs may receive narrow scope only. Sentence (81a) is ambiguous: it may mean either that for everyone there is a book on giraffes that he or she read, or that there is one specific book on giraffes which everyone read. Sentence (81b), in contrast, can only receive the first reading:

- (81) a. Everyone read a book on giraffes.
 b. Everyone read books on giraffes.

Similarly, while (82a) may mean either that John saw no spots on the floor, or that there is one spot that he didn't see, (82b) only has the narrow scope reading of *spots*:

- (82) a. John didn't see a spot on the floor.
 b. John didn't see spots on the floor.

Another difference is that BPs are not ambiguous between *de re* and *de dicto* readings; in opaque contexts they may only be read *de dicto*. Thus, while (83a) may mean either that any honest politician will satisfy John, or that there is some honest politician whom he is seeking, (83b) can only receive the first interpretation.

- (83) a. John is seeking an honest politician.
 b. John is seeking honest politicians.

7.2. Semantic Incorporation

To account for these differences, Carlson proposes that BP objects are incorporated into the verb. This proposal has been developed further by Van Geenhoven (1996).¹⁹ According to Van Geenhoven, nongeneric BPs denote properties. Most verbs have an incorporating and a nonincorporating version. For example, the verb *see* has a nonincorporating version, (84a), whose arguments are individuals, as well as an incorporating version, (84b), whose arguments are an individual and a property.

- (84) a. $\lambda y.\lambda x.\text{see}(x,y)$
 b. $\lambda P.\lambda x.\exists y:P(y)\wedge\text{see}(x,y)$

Since the denotation of the BP *spots* is the property $\lambda x.\text{spot}(x)$, the logical form of (85a), ignoring tense, is (85b).

¹⁹ See also McNally (1998), Dobrovie-Sorin and Laca (1996), and Dobrovie-Sorin (1997).

- (85) a. John saw spots.
 b. $\exists y:\mathbf{spot}(y)\wedge\mathbf{see}(j,y)$

Note that the existential interpretation of the BP is provided lexically by the verb. Therefore, any operator that scopes over the verb will have scope over the BP; hence BPs receive narrow scope only.

We agree with Van Geenhoven's position, and we would like to show that it follows from a general semantic principle. While Van Geenhoven does not specify the relation between incorporating and nonincorporating versions of verbs, we suggest that one is derived from the other by means of type-shifting. Most verbs select individual arguments as usual. When any of the arguments denotes a property, the verb is type-shifted to provide an existential quantifier (cf. Partee 1987). Thus the basic meaning of *see*, for example, is a relation between two individuals:

- (86) $\lambda y.\lambda x.\mathbf{see}(x,y)$

However, when its object is a BP, and therefore denotes a property, the verb is type-shifted to (87):

- (87) $\lambda P.\lambda x.\exists y:P(y)\wedge\mathbf{see}(x,y)$

This is how (84b) is obtained. We thus provide a principled relation between incorporating and nonincorporating versions of verbs.

The proposed account of existentially interpreted BPs predicts that it should be impossible to get an existential reading with a negated property, since negation will necessarily take scope over the BP. For example, (88) cannot mean that *some* boys are not present; rather, it means that *no* boys are present.

- (88) In the dining room, boys are not present right now.

This is because *boys* is incorporated into the predicate, hence it must be inside the scope of negation. That is to say, the logical form of (88), after incorporation and type-shifting, is (89a) rather than (89b).

- (89) a. $\neg\exists x:\mathbf{boy}(x)\wedge\mathbf{present}(x)$
 b. $\exists x:\mathbf{boy}(x)\wedge\neg\mathbf{present}(x)$

We can now solve the puzzle posed by Higginbotham and Ramchand (1997), illustrated in (5) and (6), repeated here:

- (90) a. Firemen are nearby.
 b. Firemen are far away.
 c. Firemen are on top of the Empire State Building.

We saw above that while the subject of (90a) receives an existential interpretation, (90b) is neither existential nor generic, but universal: for it to be true, all firemen, without exception, need to be far away. We can now account for these readings.

The topic of (90a) is a (contextually) well-defined stage, in the proximity of the speaker. The sentence predicates of that stage that there are firemen in it. Hence the existential interpretation of *firemen*. However, the topic of (90b) cannot be taken to be a stage that is far away from the speaker, since being far from the speaker does not define a specific topic. Sentence (90c), in contrast, has a specific topic, the top of the Empire State Building, and its subject can be interpreted existentially.

Sentence (90b), therefore, must be interpreted as predicating of a stage, defined by the proximity of the speaker, that there are *no* firemen in it. That is to say, *far away* is interpreted as the negation of *nearby*; and since negation must take scope over the BP, we get the reading where no firemen exist on the stage near the speaker.

7.3. BPs and Discourse Referents

Novel variables introduce discourse referents (Heim 1982). Elements that are not variables, e.g. properties, do not. BPs are interesting in this regard, since they are first translated as properties, and only after type-shifting do they become existentially quantified variables. The question is, then: do they, or do they not, introduce discourse variables?

The question can be put more generally: at which stage of the interpretation are discourse referents determined? If they are determined after type-shifting, then BPs introduce discourse referents; if prior to type-shifting, then they do not.

According to Erteschik-Shir (1997), the introduction of discourse referents is triggered by focus. The roles of focus and topic, according to this theory, are to trigger rules that apply to a dynamic structure of discourse referents (similar to Heim's file card metaphor), adding elements to it or locating existing elements on it. Only after the topic and focus of the sentence are identified, and the corresponding rules apply, can semantic evaluation take place. Since type-shifting is triggered by a semantic type mismatch, it can only occur at the stage of semantic evaluation, hence after focus, topic, and the discourse referents introduced by the sentence are determined. Therefore, we predict that incorporated BPs do not introduce discourse referents. In contrast, Van Geenhoven's existential operator is dynamic, resulting in discourse referents.

This is an empirical question, not to be settled *a priori*. We claim that

our prediction is, in fact, borne out; there are a number of phenomena that demonstrate this fact. One such phenomenon is the observation that BPs support maximal anaphora only: (91a) and (91b) leave open the possibility that there were other men who came in but did not sit down. This is to be expected if the subject introduces a discourse referent, which serves as the antecedent of the pronoun. In contrast, the truth of (91c) requires that *all* men who came in sat down.

- (91) a. A man came into the bar. He sat down.
 b. Some men came into the bar. They sat down.
 c. Men came into the bar. They sat down.

Since *men* does not introduce a discourse referent, the only possible interpretation of *they* is as an E-type pronoun, paraphraseable as *the men who came in*; hence the maximal interpretation of the BP.

Another relevant phenomenon is Szabolcsi's (1997) "other" test.²⁰ B's answer in (92) is quite felicitous:

- (92) A: $\left\{ \begin{array}{l} \text{A student} \\ \text{Some students} \end{array} \right\}$ misunderstood the question.
 B: Maybe you will find others, too.

This is explained by the claim that the subject introduces a discourse referent; *others* is anaphoric to this referent, and refers to individuals, which are not included in it. B's answer in (93), however, is bad:

- (93) A: Students misunderstood the question.
 B: *Maybe you will find others, too.

This is because here there is no discourse referent that serves as the antecedent of *others*.

Another test suggested by Szabolcsi (1997) involves specificity. She claims that discourse referents may be interpreted as referring to a specific individual or set. Thus, for example, (94a) has an interpretation where a specific teacher checked that a specific boy was present; similarly, (94b) may be interpreted as a statement about a specific set of teachers and a specific set of boys.

- (94) a. Yesterday, a teacher checked that a boy was present.
 b. Yesterday, some teachers checked that some boys were present.

²⁰ Szabolcsi applies this and the following test to various types of Hungarian NP; however, she makes no claim about BPs.

However, no such reading is available for (95), where no discourse referents are introduced.

- (95) Yesterday, teachers checked that boys were present.

We therefore conclude that, as we have predicted, the existential quantifier is static, and existential BPs do not introduce discourse referents.

Our proposal can explain why BPs do not get *de re* readings in opaque contexts, and the explanation is compatible with both main theories of opacity. Montague (1973) claims that the *de re/de dicto* ambiguity is a matter of scope: wide scope NPs are interpreted *de re*, narrow scope NPs are interpreted *de dicto*. Since BPs receive narrow scope only, the unavailability of *de re* readings is explained.

Alternatively, we could follow Zimmermann (1993), who claims that the ambiguity hinges on different interpretations of the NP: if the NP is interpreted as a property, we get *de dicto* readings, whereas when the NP introduces a discourse referent, we get *de re* readings. Since existential BPs denote properties and do not introduce discourse referents, the opacity phenomena are explained.

One might argue that type-shifting may result in *de re* readings anyway. This is because a verb like *seek* may take two individuals as its arguments: $\lambda y.\lambda x.\mathbf{seek}(x,y)$. When its object is a property, why can't it be type-shifted to $\lambda P.\lambda x.\exists y:P(y)\wedge\mathbf{seek}(x,y)$, resulting, in effect, in the *de re* reading? The answer is that type-shifting does not occur freely, but is only triggered in a case of type mismatch. In this case, there is no mismatch, since *seek* may also apply to a property. Hence type-shifting does not take place, and the *de re* reading is not obtained.

7.4. Reference to Kinds

We have chosen to follow, with some modifications, Van Geenhoven's (1996) account of incorporation, rather than Carlson's (1977) original one. According to the latter, existential BPs denote kinds, rather than properties. This theory has been defended more recently in Chierchia (1998). We will not discuss here the arguments against (and for) the idea that existential BPs denote kinds; see Krifka et al. (1996, pp. 114–122) and the references therein for discussion. There is, however, one argument in favor of Carlson's and Chierchia's approaches that is particularly relevant here, in that it poses a challenge to the account we propose in this section.

Carlson and Chierchia claim that some BPs do not denote kinds; therefore, they should behave like regular indefinites. In particular, they ought to exhibit scope and *de re/de dicto* ambiguities. BPs like *parts of that*

machine and *people in the next room*, it is argued, do not denote kinds, hence the marginality of the following sentences:

- (96) a.??Parts of that machine are widespread.
 b.??People in the next room come in three sizes.

In accordance with Carlson's and Chierchia's predictions, (97a) is ambiguous; it could mean either that John saw no parts of that machine, or that there are some parts that John didn't see. Sentence (97b) is ambiguous too: it may either mean that there are specific parts of that machine that John is looking for, or that any parts will do.

- (97) a. John didn't see parts of that machine.
 b. John is looking for parts of that machine.

The ambiguity of the sentences in (97), then, appears to support Carlson's and Chierchia's views, and to contradict the view we propose here.

Before parrying this attack, we should note that the same observation does not hold for all examples of BPs that do not denote kinds; e.g. it does not hold for *people in the next room*. Sentence (98a) can only mean that John saw no people in the next room, not that there were some that he missed; sentence (98b) can only mean that John is looking for any people in the next room, not that there are some specific people he is trying to find.

- (98) a. John didn't see people in the next room.
 b. John is looking for people in the next room.

Therefore, whatever the reason for the ambiguities exemplified by the sentence in (97), it cannot rely on whether or not the BP denotes a kind, since then we would expect the same ambiguities for the sentences in (98). What, then, is the explanation for the ambiguities of the sentences in (97)?

We suggest that in this case, the BP *parts*, just like other existential BPs, denotes a property and gets incorporated. However, it is not incorporated by the verb, but rather by the preposition *of*. Therefore, operators that have scope over the verb, such as negation, do not obligatorily take scope over the BP; only operators that have scope over the PP do.

Some evidence that the BP is not incorporated by the verb comes from the possibility of getting an existential interpretation with nonincorporating verbs. For example, we have seen in (2), repeated below, that the BP object of *hate*, in contrast with e.g. *know*, may not be interpreted existentially.

- (99) a. John hates lawyers.
 b. John knows lawyers.

In our terms, this means that *hate* may not incorporate its object.²¹ However, the object of *hate* in (100) is clearly interpreted existentially.

(100) John hates parts of the constitution.

Our explanation is that here, as in (97), the BP is incorporated by the preposition, rather than the verb.

To give another example, we have seen that the BP in (12b), repeated below, is interpreted existentially although it occurs with an intransitive I-level predicate.

(101) Chapters of this book are interesting.

Our explanation is that the topic of this sentence is *this book*, and the BP is incorporated by the preposition *of*, hence its existential reading.

Note that the BP *parts* need not have narrow scope with respect to negation, but it does have to have narrow scope with respect to operators that have scope over the PP. Thus, (102a) is ambiguous: it can mean either that John doesn't hate any part of the constitution, or that there are some parts that he doesn't hate. In contrast, *parts* in (102b) can only receive narrow scope: the sentence cannot mean that there are some parts common to all constitutions that John hates; it cannot, for example, be followed by ". . . namely the rule of law and the coercive power of the state." Contrast (102b) with (102c), which does have this interpretation; *a part*, being a singular indefinite, does not get incorporated.

- (102) a. John doesn't hate parts of the constitution.
 b. John hates parts of every constitution.
 c. John hates a part of every constitution (namely the rule of law).

Even when the context strongly favors a wide scope reading of the BP with respect to the PP, such a reading is impossible. Sentence (103a) can only mean that in every voluntary committee there are some members who are extremely busy; (103b), on the other hand, has a reading under which there is a person who is a member of every voluntary organization, and this person is extremely busy.

- (103) a. Members of every voluntary organization are extremely busy.
 b. A member of every voluntary organization is extremely busy.

²¹ An account of this fact will be given in the next section.

Once *parts* is incorporated into the preposition, the result is an existentially quantified variable, which can freely interact with other operators. It is for this reason, and not because of its failure to denote a kind, that *parts of that machine* exhibits the ambiguities that it does.

8. THE PROBLEM OF OBJECT BPs

Let us now turn to the question of why objects of verbs such as *hate* cannot get existential readings, whereas the objects of verbs such as *know* can. What distinguishes *know*-type verbs from *hate*-type verbs in this respect?

Diesing and Kratzer suggest that objects of some verbs optionally scramble out of the VP at LF, to be bound by the generic quantifier. They do not, however, explain why some verbs behave in this manner, and others do not. Moreover, scrambling, according to Diesing and Kratzer, is optional; they would therefore predict that existential readings of objects should always be available. Yet verbs like *hate* do not allow existential readings at all, a fact unexplained by Diesing and Kratzer.²²

Dobrovie-Sorin (1998) claims that nongeneric readings require that the BP be spatially localized. For example, the object of *own* receives existential readings because it can be localized:

- (104) John owns apartments (in Venice).

It is not clear, however, in what sense the object of *know*, and of other verbs which allow existential readings, is spatially localized, especially in light of examples such as the following:

- (105) a. John knows philosophical theories.
 b. John has ideals.
 c. John believes falsehoods.

Perhaps it could be claimed that the object is localized in some metaphorical sense, given examples such as (106a); but then why can't the object of *hate* also be considered metaphorically localized in (106b)?

- (106) a. John knows theories in linguistics.
 b. John hates scholars in linguistics.

²² Diesing (1992, pp. 112–115) proposes that scrambling of objects of experiencer predicates, such as *hate*, is preferred and claims that this follows from the I-level status of such predicates. She fails to explain, however, why this is not the case for I-level predicates such as *know*.

Moreover, a verb such as *recognize* allows nonmetaphorical localization of its object, and yet does not allow it to be read existentially:

(107) John recognizes people (in his village).

Laca (1990) proposes that *hate*-type verbs require their objects to be topics. Since Laca proposes, just like we do, that topic BPs are generically interpreted, the unavailability of an existential interpretation follows. Laca does not, however, explain why *hate*-type verbs have this requirement. Moreover, it is far from clear that Laca's generalization is empirically correct. The following exchange sounds quite natural, indicating that the object of *hate* may be a focus, and is not obligatorily a topic:

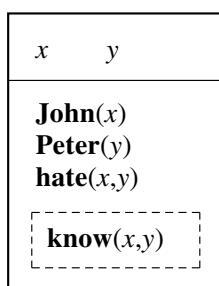
(108) A: Whom does John hate?
B: John hates [PETER]_{FOC}.

Therefore, we do not believe that the object of *hate* is necessarily a topic. However, there is a sense in which it is *topic-like*; it is presupposed. If we say that John hates or doesn't hate Peter, we presuppose that he knows Peter. If John and Peter are total strangers, it makes no sense to say that John doesn't hate Peter. In contrast, when we say that John knows Peter, we do not presuppose any relation between the two. For any two people, either they know each other or they do not.

To see the significance of this fact, we will assume van der Sandt's (1992) theory of presupposition as anaphora. Van der Sandt uses DRT to represent presupposition. Consider, for example, (109):

(109) John hates Peter.

Here is how this sentence would be represented in his system:²³



²³ Or, to be more precise, this is how the sentence would be presented after accommodating the referents of the names *John* and *Peter*.

The dotted frame around **know**(x,y) indicates that it is a presupposition, i.e. it needs to be verified in some accessible context; in this case, globally. If the accommodation is successful, the presupposition is satisfied and the sentence can be evaluated.

Now let us look at (110):

(110) John hates some lawyers.

This sentence asserts the existence of a set of lawyers whom John hates, and presupposes that he knows them. Here is the DRS corresponding to this sentence:

x	Y
John (x) lawyers (Y) hate (x,Y)	
<div style="border: 1px dashed black; padding: 5px; display: inline-block;"> know(x,Y) </div>	

In order to evaluate this DRS, i.e. in order for the presupposition to be satisfied, we need to be able to verify the condition **know**(x,Y) for some group of lawyers. Then, the DRS asserts that these lawyers are hated by John. Note that it is not required that all lawyers known by John are hated by him, but it *is* required that he know all the lawyers he hates.

Now let us consider (111):

(111) John knows lawyers.

This sentence has no presupposition, so its DRT representation is as follows:

x
John (x) know-lawyers (x)

Note that the BP *lawyers* does not introduce a discourse referent, and the only discourse referent is the one corresponding to *John*. The condition **know-lawyers**(x) represents the fact that the BP is incorporated by the verb. After type-shifting, an existential quantifier is introduced, and the DRS becomes

x
John (x) $\exists Y(\mathbf{lawyers}(Y) \wedge \mathbf{know}(x, Y))$

Note that the existential quantifier that is provided by incorporation is static, and does not introduce a discourse referent, so there is still no discourse referent corresponding to *lawyers*.

Now, at last, we can analyze (112):

(112) John hates lawyers.

Here, we argue, it is impossible to construct a DRS corresponding to an existential interpretation of the BP. Suppose there were such a DRS. What would it look like? Sentence (112) is very similar to (111), except that, since its verb is *hate*, it induces a presupposition. We may attempt to represent it as follows:

x
John (x) hate-lawyers (x) $\exists Y(\mathbf{lawyers}(Y) \wedge \mathbf{know}(x, Y))$

After type-shifting, this DRS becomes:

x
John (x) $\exists Y(\mathbf{lawyers}(Y) \wedge \mathbf{hate}(x, Y))$ $\exists Y(\mathbf{lawyers}(Y) \wedge \mathbf{know}(x, Y))$

This DRS asserts that there are lawyers whom John hates, and presupposes that there are lawyers whom he knows. However, this is not quite the meaning of (112). We want the same hated lawyers to be known, not just that there are some lawyers known to John. This DRS may be verified even if John does not know the lawyers he hates, so long as he

knows some lawyers, and this is clearly a nonsensical possibility. In contrast, any lawyer that verifies the DRS for (110) is presupposed to be known by John, as desired. The reason is that *some lawyers* introduces a discourse referent, but *lawyers* does not.

Thus, a combination of two factors results in the lack of existential interpretation for BP objects of *hate*. One factor is the presuppositional nature of *hate*, as opposed to *know*; the other is the fact that BPs, unlike explicitly quantified indefinites, do not introduce discourse referents. The result of these two factors is the impossibility of constructing a DRS to represent the meaning of (112) under the existential reading of the object. Hence, this interpretation is ruled out.

In general, presuppositions are dependent on context. Thus, in a context where *hate* does not presuppose that its two arguments know each other, existential readings of the BP object should be possible. For example, let us suppose that John has composed a list of all the people he hates, and we are checking various individuals to see whether they are on the list or not. We may utter (112) truthfully even if only a few of the individuals on the list are lawyers.²⁴ But note that, in this context, for every individual x , x is either on the list or not on the list, and no relation between John and x is presupposed. Hence, in this context, *hate* does not induce a presupposition, and an existential reading is possible.

Our explanation, then, is that existential readings are impossible for BPs of presuppositional verbs. For example, *like* is presuppositional, since A's liking (or disliking) B presupposes that A knows B. Similarly, *recognize* is presuppositional, since A's recognition of B presupposes that A sees B. In contrast, *own* is not presuppositional: John either owns this boat, or he does not – no relation is presupposed between the two.²⁵ Similarly, *be near* is not presuppositional, since A is either near B or it is not, and no other relation between A and B is presupposed by this relation.

Therefore, we would expect that the objects of *own* and *be near*, but not of *like* and *recognize*, may be interpreted existentially. This prediction is, indeed, borne out:

- (113) a. John owns boats.
 b. This house is near lakes.
- (114) a. John likes honest lawyers.
 b. John recognizes crooked lawyers.

²⁴ We are indebted to Fred Landman for this example.

²⁵ Properties, rather than relations, may be presupposed; for example, the owner is presupposed to be human.

9. CONCLUSION

We have argued that the interpretation of BPs follows from whether they play the role of topic or focus: BP topics are specific, refer to kinds, and may be type-shifted to introduce variables which are mapped onto the restrictor of the generic quantifier. BP foci cannot be mapped onto the restrictor: when they denote kinds they can only be interpreted as direct kind predication; otherwise, they denote properties, are incorporated into the predicate, and receive existential readings.

Concerning the interpretation of BP subjects, we differ both from those who claim that the S-level/I-level distinction determines the interpretation of BP subjects and those who dismiss this distinction as irrelevant. We take the middle ground in claiming that only those S-level predicates whose spatiotemporal variable is an argument allow an existential reading of their BP subjects.

As for BP objects, we have shown that their interpretation is also dependent on information structure, though in a slightly different way: presuppositional verbs do not incorporate their BP objects, hence their existential reading is excluded.

Although others have suggested that focus-structure affects the interpretation of BPs, and yet others have suggested that existential BPs are incorporated into the predicate, our approach is innovative in three respects:

1. We argue that focus structure completely determines the interpretation of BPs.
2. We integrate a theory of focus structure with an account of existential BPs as properties incorporated into the predicate.
3. We provide a novel classification of predicates which predicts the interpretation of their BP arguments.

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