

Chapter 14

TOPICS AND THE CONCEPTUAL INTERFACE

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14.1 PRESUPPOSITIONAL EFFECTS OF EXISTENTIAL NPs

14.1.1 Background: presuppositional effects inconsistent with logic

Existential presuppositions are commonly assumed for definite descriptions and proper names. In most semantic frameworks it is assumed that this presupposition is built into the semantics of the determiner. Thus, Barwise and Cooper (1981) take this line for the definite determiners, such as *the* and *both*. E.g. *the*, as defined in (1), is viewed as a universal quantifier, with a restriction on the cardinality of the N set. If the N set is empty, as e.g. is the case with (2), the truth value is undefined, rather than true or false.

(1) $\|the\|(N) = \|every\|(N)$ iff $|N| = 1$, *undefined*, otherwise.

(2) The Dutch astronaut landed on Venus.

We should note that in this case, putting the restriction on the N-set is motivated independently of the issue of presupposition, by the cardinality restriction that it contains exactly one member (or exactly two, in the case of *both*)¹.

However, in recent years, a growing attention has been directed to the fact that other types of NPs may also carry existential presuppositions. This is most striking in the case of strong quantifiers. Let us first examine this case, and then turn, in the next section to presuppositional effects of indefinite NPs.

Given classical logic, (3a), as logically represented in (3b), should be true. (Since there are no American kings, the antecedent is false, hence the implication is true). The fact of the matter is, however, that this is not how speakers judge it. It looks undefined, with the air of a presuppositional failure.

- (3) a. Every American king lived in New York
b. $(\forall x) (x \text{ is American king}) \rightarrow (x \text{ lived in NY})$.

¹Nevertheless, whether this type of presupposition should, indeed, be incorporated into the semantics, as Barwise and Cooper do, has been a topic of extensive debate. As we shall see, Strawson did not, in fact, take this line. But in view of the added cardinality restriction, the presuppositional approach has greater plausibility in this case, than in the other cases we consider.

Among the first to direct linguistic attention to this problem were De Jong and Verkuyl (1985). (Another line which I will mention again is Groenendijk and Stokhof's dissertation). De Jong and Verkuyl argued that since classical logic is inconsistent with speakers intuitions, this means that *every* in natural language is a different quantifier than in logic, carrying a presupposition of the non emptiness of its common noun set. I.e., they propose to extend the line that Barwise and Cooper took for definite determiners to all strong determiners. The denotation they assume for *every* is, thus, that given in (4).

$$(4) \llbracket \text{every} \rrbracket(N) = \{X \subseteq E \mid X \cap N = N\}, N \neq \emptyset, \text{ undefined otherwise.}$$

Since in (3) the N set is empty, (4) entails that the sentence is undefined, rather than true, which is consistent with speakers judgments. This analysis has become, by now, almost standard in certain circles. (E.g. Diesing (1992) takes it for granted that all strong determiners are presuppositional, and proceeds to argue that weak determiners may be that too.)

Still, there are some problems with this analysis. While (4) assumes that natural language *every* has a different semantics than its classical logic analysis, there are contexts where it appears to be used precisely under its logical analysis. Most well known (and noted also by de Jong and Verkuyl) is 'definitional' or 'law-like' contexts, as (5).²

- (5) a. Every unicorn has exactly one horn.
 b. All moving bodies not acted upon by external forces continue in a state of uniform motion in a straight line.
 c. All trespassers on this land will be prosecuted.

In such contexts, it is irrelevant whether the N set has any members. Thus, (5a) is judged true, even though there are no unicorns. While definitional contexts may require some special account in any case³, Lappin and Reinhart (1988) argue that the broader generalization is that *every* is used under its logical analysis whenever assessing whether the sentence is true or false does not involve an empirical assessment of the states of affairs in the (given) world. Another context they cite is tautologies or contradictions, as in (6).

- (6) a. Every unicorn is a unicorn.
 b. Every unicorn is not a unicorn.

Speakers usually judge (6a) as true and (6b) as false, as follows from classical logic. If natural language *every* is different from the logical one, and has the presuppositional analysis in (4), both should come out, equally, as undefined, and the judgments of (6) are a mystery.⁴

²(5b and c) are quoted in Diesing (1992) p. 96, attributed to Strawson, *Introduction to Logical Theory*, London: Mouton, 1952. (5a) is from Lappin and Reinhart (1988).

³E.g. one needs to explain why (5a) is true, while (i) is false, on its definitional use.

(i) Every unicorn has 3 legs.

By anything said here it is not obvious why (i) should not come out as true.

⁴Diesing (1992, p.95-96) surveys a reply proposed by Kratzer (class-notes) to the arguments in Lappin and Reinhart against the presuppositional analysis of strong determiners. It addresses only the problem of 'law-like', or definitional universal quantifiers, in (5), and the idea is that their special status can be derived from their generic nature: The N-restriction functions as a restriction on the necessity operator assumed to be active in generic interpretations, under Kratzer's analysis. (This can be 'law of nature' necessity, or 'legal' necessity, etc.). A sentence like (5), then, gets (in Diesing's summary) the representation (i), which if I understand correctly Diesing's explanation,

De Jong and Verkuyl's solution to this problem is to assume that there are, in fact, two entries for *every* in natural language. The presuppositional (4) is the standard, more common one. In addition, the classical logic *every* exists as what they call a 'marked' option. Although they actually discuss only contexts such as (5a), they say that the 'marked' -logical *every* is used in non contingent context, which would also apply to (6).

As far as semantics is concerned, this line is not problematic. Adding a presupposition to a strong quantifier, the result is still a strong quantifier. (This is explained briefly in section 2.) So the important distinction between strong and weak determiners is maintained, and the issue at stake here is only semantic judgments of truth and entailments. Nevertheless, we should note that introducing an ambiguity is, often, not a real solution to a problem. Rather it may turn out just a different way to state the problem. In the given case, the problem is that universal quantifiers do not always behave in natural language as predicted by classical logic. The logical interpretation is found in non contingent contexts, while in the others, they appear to be presuppositional. Concluding that there are two entries for each of these contexts does not take us any further than noting that such two contexts exist. The question still remains what is the relation between the two uses of strong quantifiers, and how do speakers decide which one to apply.

The question is sharpened once we observe that it is not only strong NPs that can give rise to a presuppositional impression (an observation which is, by now, widely recognized, due to work by Diesing, Enc, Pesetsky, and many others). Unlike the case of strong determiners, speakers vary dramatically in judgment of sentences like (7), given in isolation.

- (7) a. No American king lived in NY
b. Two American kings lived in NY.

Given the classical logical analysis of these sentences, (7a) should come out true, and (7b) false. But in informal checking of these sentences in various classes, only about half the participants came up with this judgment. The others judged both as undefined, as would follow from a presuppositional analysis. How do we account for those who get the presupposition effect here?

Unlike the case of strong determiners, adding a non-emptiness restriction (presupposition) to a weak determiner is not a trivial move, since it turns it into a strong determiner. (This is shown

intends to mean that for any (relevant) world z , if this world contains unicorns, then every unicorn in z has exactly one horn. (So the presupposition is maintained in the standard way, for world z).

- (i) ([$\exists$]:there are unicorns) (every unicorn has exactly one horn)

This is an interesting line. Let us assume that (once fully spelled out) it is correct, as far as semantics is concerned. There are still some questions to be asked: First, it is not clear how such representations could be derived compositionally. Specifically, how does the *every* restriction get to be bound by the necessity operator. Standard unselective binding, which is applicable to indefinites and bare plurals is not available here, since the determiner is strong, hence, the N variable is 'closed' and unreachable by an external operator. (Had we allowed unselective binding into the N-set of strong determiners, we would not have a way to block donkey anaphora in, e.g. **Every/some man who owns every donkey_i feeds it_i.*) Next, to the extent that such an interpretation is permitted, it should be available for all generic contexts alike. But non definitional universal generics seem to show the same 'presuppositional air' as other universals. E.g. though (ii) is generic, it is not saved from the air of a presupposition failure.

- (ii) All unicorns in the park tend to wake up early.

This can, perhaps, be handled if not all generics involve a necessity operator, as in Diesing's summary, but only the 'low-like' ones. But, in any case, this analysis does not extend to the contexts in (6). If the generalization is indeed that the presupposition impression is absent in non empirical contexts, this analysis cannot capture it.

in detail in Lappin and Reinhart (1988), and will be summarized in footnote /9 (below (11).) One of the most fruitful distinctions ever discovered in semantic research is that between weak and strong determiners, which has proved to be relevant for the computational system in many contexts (*there* sentences, extraposition, donkey anaphora, headless relatives, and many others)⁵. So, we clearly do not want to lose this distinction. Of course, there is always a way out, if we allow ambiguities all over the place, and, indeed, Diesing (1992) argues that all indefinite (cardinal) determiners are ambiguous between the standard-weak and the strong-presuppositional interpretation. Under her analysis, the fact that judgments vary on (7), would follow from these sentences being ambiguous. As we shall see, making this work, requires non trivial complications of the computational system. I will return to this issue in detail, but keeping in mind that ambiguity should always be our last resort, let us see, first, what an alternative account could look like.

14.1.2 Interface approaches

Let us start with the problem of the apparent presuppositions of strong determiners, like *every*. The alternative approaches are based on the assumption that there is only one entry for *every*, –the standard universal quantifier. Its presuppositional effects should follow from its semantics at the interface. I.e. these effects are viewed as a problem of language use, rather than as a property encoded in the computational system (namely, encoded either in the syntax, or in the semantic definition of determiners). In the broader sense, this line follows Grice's position that when discrepancies are found between the logical meaning and natural language use, this does not necessarily justify postulating different semantics for natural language expressions, but rather it may follow from pragmatic conditions on the way sentences are actually used. Still, there are several possible executions of this broad idea.

In fact, a similar line was taken, even for the case of definite-descriptions, by Strawson (1964). Strawson is often cited as the source of the idea that presuppositions are encoded in the semantics of the determiners. However, in this less widely cited paper, he pursues, in fact, a completely different position. He argues that a presupposition cannot be a property of a linguistic expression, but it is a property of the use of expressions in context - "as and when used in a statement with the role of identifying reference" (p. 94⁶). Crucially, the question is not what is the presupposition of the expression, but under what circumstances identifying reference fails, to the extent of giving the impression of a presupposition failure (- a "deficiency so radical as to deprive [the statement] from being either true or false", (p. 90), or a 'truth-value gap' in Quine's terminology, which Strawson endorses here). This, according to Strawson, does not happen every time an expression fails to refer (or has an empty N-set, in our terms). Rather, it is directly related to the actual procedure of assessment of a sentence uttered in a given context.

Strawson assumes (not unstandardly) that assessment is checking 'predication', where any expression in the sentence can be taken as the argument and the rest as predicate. Put in our terms, we may start assessment with any of the sets specified in the sentence. If assessment happens to start with checking an empty set, (or a definite description which fails to refer), we "get stuck" -which is what a "presupposition failure" means⁷. The question is, of course, how

⁵The role that the semantic properties of weak NPs play in deriving the distribution of 'extraposition'-structures and headless relatives is surveyed in Reinhart (1987), section 2).

⁶Page numbers for Strawson refer to the reprinted version in Steinberg and Jacobovits (1971).

⁷It should be obvious that I am not necessarily using here Strawson's own terminology. Strawson considers only definite descriptions, and coaches his analysis in the familiar terms of the truth-value gap theory: If we chose a non

the order of assessment (the set we start with) is determined.

Strawson discusses in this paper only definite descriptions, and his answer is that the decisive factor is what the sentence is taken to be about, in the given context, namely, assessment always starts with the topic expression, where what the topic is, is determined by the context. If *the king of France is bald* is used to assert something about the king of France (with *the king of France* as topic), then to assess the sentence we have to search whether that king has or does not have the baldness property. But since we cannot find the entity to apply this to, we cannot continue. However, if the sentence has another topic, there is another assessment option. E.g., if we have been talking about a certain exhibition, (8) may not raise any problem of a 'truth-value gap'.

(8) The exhibition was visited yesterday by the king of France. (<2>, p. 95).

This is so, since assessment may start with checking our knowledge about the exhibition. Since we will not find any visit by the king of France there, we judge the sentence as false. (Technically, Strawson says that in such cases the failing NP is absorbed into the predicate.) In this case, it could appear that it is simply the availability of a successfully referring expression which enables assessment, but this is not so in the context (9).

(9) A: What examples, if any, are there of famous contemporary figures who are bald?
B: The king of France is bald. (p. 96)

In such context, (9B) (with *the king of France* having a focus stress) is not an assertion about the king of France, but about the set of bald figures. Assessment will start with checking this set, and "since it is certainly false that [this] class... includes any such item as our answer claims it does, the answer can, without too much squeamishness, be simply marked as wrong", i.e. the sentence is simply false.⁸

A problem with Strawson's analysis is that it involves very subtle judgments, which were not, in fact, shared by many linguists. (E.g. they are challenged by Fodor (1979), and others in the same volume). It is extremely difficult to perceive any real difference in the presuppositional effects of the various contexts. The same is true also for the case of universal quantifiers that we are considering. If assessment is sensitive to topichood, we should get a contrast between (10a) and (10b): It should be easier to judge (10b) as true, than (10a). That this is not really the case is even easier to observe in these examples than in the case of definite descriptions (since the contrast involved is between a 'true' and 'untrue' judgment). The generalization seems to be as stated above - that this effect is found in all contexts involving an empirical assessment, regardless of whether the strong NP is used as topic.

(10) a. Every American king visited Utrecht
b. Utrecht was visited by every American king.

In Lappin and Reinhart (1988), we attempted an analysis of the presuppositional effects of strong determiners, which keeps the essence of Strawson's approach, but independently of

referring NP as the argument expression, there is no sense in asking whether the predicate, or its negation, apply to the denoted object, since there is no such object. Nevertheless, I believe that my description is consistent with the spirit of Strawson's analysis.

⁸That only topics carry presupposition was argued also in Gundel 1974, though along somewhat different lines.

topichood.⁹ We suggested that Strawson is right that we get a presupposition failure iff the empirical assessment of the sentence must go through an empty set. But whether checking the N set of a given NP can or cannot be avoided (in the procedure of assessment) follows from the semantic definition of the determiners. It is only when the semantics permits assessment without checking the N-set that topic considerations may play a role. (I will argue directly that Strawson's topic analysis is relevant for the problem of presuppositions with weak NPs). Since the analysis is available, I will not repeat the technical details, or attempt to be fully precise here, but rather summarize the intuition behind it.

Our starting point in the assessment, following Strawson, are all the sets denoted by expressions in the sentence. Suppose one of them is empty, the question is whether the truth value of the sentence can still be determined without discovering that fact, or having to know anything about the cardinality of that set. The crucial semantic difference between strong and weak determiners is that to determine the truth value of a sentence with a weak NP argument, it is not necessary to know the cardinality of the N-set. Though this is well known, it may be useful to review it here.

Following Keenan (1987) (and leaving *many* aside, for the time being), we assume that a determiner is weak iff it is existential, symmetrical and intersective, strong otherwise. (Keenan introduces existentiality, illustrated in (11i) as the defining property, but Barwise and Cooper prove in their appendix that the three properties are equivalent.) The properties are illustrated (rather than defined) below:

(11) i) **Existentiality** (Keenan)

- a. Two cats yawn $\leftrightarrow$ two cats that yawn exist.
- b. Every cat yawns $\sim \leftrightarrow$ Every cat that yawns exists.

ii) **Symmetry**

- a. Two cats yawn $\leftrightarrow$ Two yawners are cats
- b. Every cat yawns $\sim \leftrightarrow$ Every yawner is a cat.

iii) **Intersection**

- a. Two cats yawn $\leftrightarrow$ two cats that yawn yawn.
- b. Every cat yawns $\sim \leftrightarrow$ Every cat that yawns yawns.

The (a) pairs, with a weak NP are equivalent. But the (b) pairs, with a strong one are not. (In (ib), if it is true that every cat that yawns exists, it is not entailed that every cat yawns. Similarly, in (iiib), that every cat that yawns yawns, does not entail that every cat yawns.)¹⁰

⁹This was proposed only for the non definite strong determiners. For the definite determiners, we assumed that the restriction on the N-set is built into the semantics, as in Barwise and Cooper. This is independently needed, for capturing the cardinality restriction on this set (uniqueness).

¹⁰Given symmetry, it is easy to show that adding a restriction on the N-set (presupposition) of weak determiners turns them into strong ones. If we do that, then $D(A)$ is defined iff A is not empty. Let A be non-empty, and B be empty. Then $\|B \subset D(A)\|$ is defined, but $\|A \subset D(B)\|$ is not. Hence they are not equivalent. Hence, D is not symmetrical. Since the three properties above are equivalent, D is not existential, not intersective. I.e. it is strong.

E.g. if *two* is presuppositional, i.e. undefined when its N set is empty, the sentences in (i) below are not equivalent: (ia) is false, but (ib) is undefined.

- i) a) Two redheaded are American kings.
- b) Two American kings are redheaded.

Hence, *two* is strong, just like *every* in (11).

The symmetry property of weak determiners is crucial for the assessment account: it entails that with weak NPs, we can always start assessment with the predicate set.

(7) Two American kings lived in NY

To assess (7), repeated, we may either check the set of American kings and see if it contains two NY residents, or, by symmetry, we may check the set of NY residents, to see if two of them are American kings. Given Strawson's analysis, if we choose the first line, assessment gets stalled, and we get the impression of a presupposition failure. But if we choose the second, the sentence will be judged as false, (since the predicate *American king* does not apply to any of its members). Indeed, as we saw, both judgments were found in informal checking of this sentence.

But strong determiners are not symmetrical. Crucially, to assess a predication involving a strong NP, it is not sufficient to know the cardinality of the predicate set or of the intersection of the N and the predicate sets, but we need to know the cardinality of the N-set. To know whether *most, or all, cats yawned* is true, it is not sufficient to know how many cats yawned, but we need to know how many cats there are.

Assuming, as we have, that in (3), repeated in (12), the sets relevant for assessment are the N set of American kings and the VP set of NY residents, it follows that it is impossible to assess the sentence without accessing the set of American kings. But this set is empty, so assessment cannot proceed.

(12) Every American king lived in NY.

Since this is a semantic property of strong determiners, it does not matter whether another (topic) expression is available for assessment. In any case, the assessment must also go through the empty set.

If this analysis can be maintained, we answer all the problems posed so far: Presupposition effects always show up with strong determiners in empirical contexts, since their semantics requires that their common noun set be checked. This happens only in empirical contexts, since it is only there that the sentence is subject to the procedure of assessment (checking knowledge of the given world). With weak NPs, by contrast, assessment is not constrained by the semantics, hence we get the presupposition effect only if the option of checking the N set was selected.

Although I believe that this analysis gives the right results for weak determiners - a point I will return to - there are still some loose ends regarding the way it applies to the very case of strong determiners, for which it was proposed.¹¹ I should mention, therefore, that an alternative

¹¹ A problem for Lappin and Reinhart's (1988) analysis is that if the procedure of assessment is taken to be the standard logical 'verification', there is always a way to assess a sentence with a universal quantifier by checking the complement set of the predicate. E.g. we can assess (i) by checking whether the set of non-NY residents contains any American kings, which will turn the sentence true, with no apparent presupposition failure.

(i) All American kings were residents of New York.

(ii) All American kings were not residents of New York.

Our answer was that economy considerations determine selecting the given predicate set rather than its complement set, since the former is usually smaller, hence requires less processing effort. This answer was mistaken: With negative predicates, as in (ii), it is often the case that the complement set is smaller than the given set (-there are more people who are not NY residents than people who are). Still, there is no difference in the assessment or presuppositional air of (i) and (ii).

It was probably a mistake to assume that the concept of assessment here is identical to logical verification and

line exists for this problem (of strong determiners), which also views it as an interface problem, but in a different way.

Groenendijk and Stokhof (1984) propose to view the presuppositional effects under consideration as an instance of what Grice called generalized conversational implicatures. (The analysis is also summarized in Gamut (1991, chapter 6). The general pattern of such implicatures is that a strong proposition (a) exists, which entails a weaker one (b). Use of (b), rather than (a), then, implicates the negation of (a). This is exemplified in the famous cases of (13).

- (13) a. Alfred is a pianist and a linguist $\rightarrow$
 b. Alfred is a pianist or a linguist.
 c. *Implicature of (b)*: Alfred is not both.
- (14) a. Lucie has more than three cats $\rightarrow$
 b. Lucie has three cats.
 c. *Implicature of (b)*: Lucie has exactly/ (no more than) three cats.

G&S' analysis of *every* rests on the fact that $\sim \text{Ex } P(x)$ entails $\text{Ax } (P(x) \rightarrow Q(x))$. E.g. (15a) entails (15b).

- (15) a. There are no American kings $\rightarrow$
 b. All American kings live in NY.

Hence the general pattern of such implicatures is met (avoiding (15a) implicates its negation, namely that there are American kings). While in the better studied scalar implicatures, the implicature is sensitive to the maxim of manner ((a) and (b) should be equal with respect to manner), G&S propose that the maxim operative in our case is that of relevance. If the stronger proposition is relevant, this is the one that should be used, and avoiding it implicates its negation. Computing relevance is based on forming a question for which, in the given context, the utterance of the given proposition is an answer. In their example (16), the question is given.

- (16) Child: Can I have a cookie?

Mother: You can have every cookie in the box.

If the mother knows that there are no cookies in the box, then that information is the most relevant one. Using the weaker answer in (16) would be a violation of the relevance maxim. Hence the child (assuming that no maxim is violated) can infer that the negation of the stronger proposition is true, namely that the common noun set is not empty, which is what we called an existential presupposition.

Turning to the problem I discussed here of why these presuppositions appear only in empirical contexts, we may assume that in non-empirical contexts, such as definitions, whether the

that all members of the equivalence set are equally available to the processor. Strawson himself was careful to allow assessment to consider only sets which are directly expressed in the sentence, or have been "antecedently introduced" (p. 96). If this is so, then we can not resort to complement sets here regardless of their size.

What is involved here has been a subject of much discussion in the philosophical literature regarding the concept of aboutness. Under the standard logical definition, assumed, e.g. by Putnam (1958) and Goodman (1972), "what the sentence is about is independent of which of its various equivalent formulations is employed" (Putnam, 1958:125). But it does not seem realistic that this concept of aboutness is what speakers assume when actually processing a sentence. This is discussed in Reinhart (1981), where I propose to use a pragmatic definition, which follows that of Strawson.

N-set has any members is not relevant. E.g. if the child asks, seeing a picture of a bull “Is this a unicorn?”, and the mother answers, “No, all unicorns have just one horn”, the existence of unicorns is not relevant to the conversation, hence nothing is inferred about it from the mother’s utterance.

Obviously, an account resting on the concept of relevance is bound to leave many questions open as well. I will leave these questions untouched, since my major concern here is weak-existential NPs. At worst, we may conclude that the presuppositional effects of strong determiners are still a problem. However, the problem remains precisely the same if we encode it in the computational system and declare strong determiners ambiguous. Whether they are ambiguous or not, the question in which contexts they are used with presuppositional effects and in which not, is still an interface problem.

14.1.3 Topics and the assessment of existential NPs

The area where a Strawson based approach seems most profitable and unproblematic is that of weak determiners. It is a solid conclusion that the semantics of weak determiners does not restrict their assessment in any way, so further restrictions may be posed by discourse considerations.

So far we considered sentences like (7), repeated in (17), and assumed that given no context, speakers chose arbitrarily how to assess them. Consequently, about half the class-participants the sentences were checked with judged (a) as true and (b) as false; the others judged both as undefined.

- (17) a. No American king lived in NY
b. Two American kings lived in NY.
- (18) a. There were no American kings in NY
b. There were two American kings in NY

But, interestingly, the situation is quite different in (18). Here there was no variation in judgments, and all participants judged (18a) as true and (18b) as false, in accordance with their logical analysis. How can this be explained within the interface (assessment) approach?

Recall that Strawson’s original account assumed that the order of assessment is determined by topic considerations: Assessment always starts with the expression that is viewed as the topic in the given discourse. In the case of strong determiners, we saw that the judgments did not conform with this analysis, and there must be an independent factor that determines that the N-set cannot be skipped, when the sentence is subject to empirical assessment. However, no such factors force assessing the N-set with weak determiners. So, it is in this area that the predictions of Strawson can be checked. Even in view of the massive varieties of opinions regarding what topics are, (3) is the one context all studies agree upon: The NP in *there* sentences can never be topic. (These are the structures that the Prague functionalists, and others, like Kuno, called ‘presentational’.)

So if assessment starts with the topic, it could never start with the existential in (18).

In (17), by contrast, there is nothing inherent in the sentence that can tell us whether the existential subject is topic or not. Here, the theoretical analysis of what topics are plays a greater role. The traditional studies of topic (like the Prague-school) assumed that the defining property of topics is familiarity (being ‘old information’). If this view is right, then, by definition, the ‘new information’ subjects in (17) cannot be topics. But in Reinhart (1981) I argue in detail that

the familiarity approach to topics is mistaken. It is, of course, true that the majority of expressions identified as topics in actual discourse represent a 'given' entity (i.e. an entity already in the context set), or a familiar one. But this does not mean much, since it is equally true of all expressions in actual discourse. (Typically, a sentence in actual, recorded or written, discourse refers to several given entities, only one of which is the topic.) So, familiarity cannot be a sufficient condition for topichood. Furthermore, based on both textual analysis and a survey of a large body of studies of topics, I argued that it is also not a necessary condition. It is true that the common way to introduce new entities into the discourse is in focus position, or by use of presentational sentences, but an existing alternative is introducing them as (indefinite) topics. This is particularly common at the beginning of a new segment, or following a semantic connective. (This is argued and exemplified in detail in that paper, so I will not repeat the discussion here.)¹²

The difference between (17) and (18), then, is that in (17) the subject can be a topic, in an appropriate context, though it does not have to be. But in (18), it cannot be a topic in any context. Given that the sentences were checked in isolation, the decision whether to view the subject of (17) as topic or not, is arbitrary. Speakers who chose the topic interpretation, namely started assessment with this NP, came up with the undefined judgment.

This can be explained in a more precise way, given the full analysis of sentence topics in Reinhart (1981), which I will only sketch here. Each sentence is associated with a set of what I called there Possible Pragmatic Assertions (the PPA set). The members of this set are, first the bare proposition (in case there is no topic), and then, all possible pairs of an entity and the proposition (similarly to the cards of DRT). The set is restricted by sentence level considerations: While a normal SVO sentence has three members in its PPA set (SVO, S/SVO, O/SVO), there are structures where only some of the construals are possible. E.g. *there* sentences do not have a PPA with the subject as a topic. Passive sentences allow only (the bare proposition and) the subject as a topic. Left dislocation sentences mark the topic explicitly, hence have only one member, etc. In actual context, one member of the PPA set is selected, relative to that context¹³.

The PPA sets of (17a) and (18a), are, then, illustrated, roughly, in (19)-(20)

(19) PPA set of (17b):

- { a. Two American kings lived in New York
- b. Two American kings(x) \ x lived in New York
- c. New York (y) \ Two American kings lived in y }

¹² Among the ways to assess this claim is checking backward anaphora in actual discourse. Typically, this is possible only when the antecedent is a topic (as argued by Kuno). But contrary to the common arm-chair beliefs that linguists tend to impose on discourse, backwards anaphora is easily found in actual discourse with new entities, including indefinites. Many such examples are listed in the corpus of Carden (1982). E.g.

- i) "Because they wanted to know more about the ocean's current, students in the science club at Mark Twain Junior High School of Coney Island gave ten bottles with return address card inside to crewmen of the NYC city's sludge barges" (The New York Times)
- ii) "When she was five years old, a child of my acquaintance announced a theory that she was acquainted by rabbits". (New York Times)

¹³ The selection function, which is also defined in that paper, prefers, e.g. a pair the topic of which is familiar, unless the sentence begins a new segment. If there are further choices, the subject is preferred over the object, etc. Obviously, the selection function, which is a real discourse procedure, is less easy to define than the PPA set. Nevertheless, I believe that a lot more can be said even about this procedure than is commonly assumed.

(20) PPA set of (18b):

- { a. There were two American kings in New York
- b. New York (x) \ There were two American kings in x. }

In the absence of context, any member of the PPA set can be arbitrarily selected. There is only one selection which will lead to the impression of presupposition failure, namely (19b), where assessment will start with the empty set of *American kings*. It is, thus, only in the case of (17) that such an effect was noted, and only by an arbitrary number of speakers who selected this option.

When attempting to extend this analysis to other cases, we should note that this should be done with great care. It is extremely difficult to decide what are the facts in this area of presuppositions. In the particular examples that I discuss, the fact that there is a real issue of difference in truth intuitions was checked with a sample of speakers¹⁴. In most discussions of such effects (most notably, by Diesing (1992)), the authors just declare their feelings regarding the presuppositional status, and no way to actually verify these feelings is offered. Let me just exemplify here one context which was claimed to be relevant.

Diesing (1992) argues that subject scrambling in German can distinguish the presuppositional and non presuppositional interpretation of indefinites. I will return to the syntactic details of these structures in section 2, but the basic claim is that (21), which according to Diesing is ambiguous in English, can be disambiguated in German: (22a) with the VP subject is only “existential”, while (22b), with an IP subject, is only presuppositional.

(21) Two cellists have indeed taken rooms in this hotel.

- (22) a. ... weil ja doch zwei Cellisten in disem Hotel abgestiegen sind.
- b. ... weil zwei Cellisten ja doch in disem Hotel abgestiegen sind.

Diesing does not provide any evidence for her feelings regarding these sentences. (Her description of her intuitions is surveyed in detail in a footnote in section 2.) But, given the method used here, her intuitions could be checked by replacing *two cellists* with an NP with an empty N set, like *two/no American kings*, and then subjecting them to some empirical testing with German speakers (which I have not done). If she is right, we should get a true/false judgment on (22a), and an undefined judgment on (22b).

If, indeed, there is a distinction here, it may correlate with the possibility that the ‘scrambled’ IP position of the subject in (22b) is a topic position, namely, that the motivation for choosing (22b), rather than (22a) is to signal the topic status of the subject. This too should be checked with great care, since there are only very few known structures where a position is obligatorily topic or obligatorily non-topic. (In most cases, this is just a matter of preference). *There* sentences have been shown again and again not to allow their subjects to serve as topics. It is not necessarily true for other VP internal subjects. Although I did not discuss this here, there are tests to decide when a position is necessarily topical. Several tests are discussed in Reinhart

¹⁴For the present problem, it is particularly important to do this rather than rely only on introspection. particularly since in the standard cases judgments vary. The difference between the two contexts here (17) and (18) could not have been found by introspection, since for each individual speaker (17a) will not be perceived as ambiguous, and it would be judged as either true or undefined.

(1981), but the most decisive test is provided by accessibility theory, which I discuss in section 3, below¹⁵.

Finally, in case the assessment account sounds cumbersome, let me mention another way that could, perhaps, be developed to describe the intuition behind it. The generalization is that in the case of weak determiners, we get a presupposition impression iff the NP is construed as topic. NP topics are, intuitively, the entities we are talking about. It is a tendency of conversation not to indulge in discussions about empty sets. So we assume that in a felicitous discourse our topic entities exist, and we get confused when they turn out not to. We may, then, label this reaction 'an impression of a presupposition failure'.

14.2 DIESING'S ALTERNATIVE OF SYNTACTIC ENCODING OF INDEFINITE PRESUPPOSITION

My account for the apparent presuppositions of weak NPs following Strawson's insight, rests crucially on the notion of topic, which is a discourse notion. As Strawson showed, what the topic of the sentence is, in the sense relevant to our problem, can be determined only in context. Whether the analysis can be made fully explicit, then, depends on whether we could have an explicit theory of identifying the topic. Although I believe that the answer is far less vague and circular than standardly assumed in current syntactic literature, it is still the case that discourse notions are bound to never be as explicit and formal as the notions of a (good) syntactic theory can be. For this reason, many syntacticians (and semanticists) prefer to avoid working with discourse notions.

I believe that it is this worry about the vagueness of discourse theory that has been leading many syntacticians, recently, to attempt syntactic (or semantic) solutions to the 'specificity' problem of indefinites, which was previously considered a discourse problem. Notable recent examples are de Hoop (1992), and Diesing (1992). Diesing addresses specifically the problem of presuppositions of weak determiners, and argues that this is, in fact, a syntactic problem, which is governed by a rich mechanism encoded into the computational system.

Under Diesing's analysis the examples discussed in this section should follow from what she calls 'the mapping hypothesis.' (The details of her analysis are provided directly). Briefly, existential presuppositions are possible in her analysis only when the N occurs in the restrictive term of an operator, and this is possible only if it is in an IP position. *There* sentences allow only for existential closure of the indefinites, since, more generally, the domain of existential closure is the VP¹⁶.

It is important to note that what Diesing offers is a novel syntactic theory, and it should, therefore, be evaluated not only by how well it captures the discourse behavior of indefinites, but

¹⁵There are other options regarding what to expect of (22). It seems to me more realistic that the lower subject in (22a) can be either topic or not. Hence, it is similar, in this respect, to the English structure (21) and (17), rather than to *there* sentences. Hence we should get variation of judgments here. But it could still be the case that in (22b) there is only topic interpretation, so we could get a majority of 'undefined' feelings. Generally, I should add, it would not be realistic to find an undefined judgment unanimously in any structure, since knowledge of logic may interfere at least for some speakers.

¹⁶The fact of the matter is that although the lack of presuppositional effects in *there* contexts is considered the strongest evidence for Diesing's analysis, she herself does not explain anywhere how this fact follows. E.g. what prevents the existential subject from moving, at LF, to IP, replacing the expletive? That this happens at LF is very commonly assumed in syntactic theory. Since Diesing assumes that in English the mapping hypothesis applies at LF, it is not obvious to me how this basic fact is derived. But let us assume here it is.

by its syntactic plausibility. A central claim of her analysis is that parametric variations between languages can be stated at LF. Specifically, that while in English NPs can lower or raise at LF, in German, they essentially cannot. (That this is indeed what Diesing is assuming will be shown in the next section). This claim stands in sharp contrast to the most fundamental assumptions of current syntax, in which LF is taken to be universal. In the minimalist program, this assumption is the basis for accounting for word-order variations: The operations deriving LFs are universal, and languages differ only in where, during the derivation, phonetic spell out applies. But even in previous stages of the theory, LF was never considered the level at which parametric variations can be stated.

For a syntactician, then, the question whether Diesing's account can be adopted, as stated, does not even arise. One does not abandon the foundations of the theory every time a new problem (like presuppositional effects in German) is discovered, unless it is shown that the alternative theory can account for everything the present theory can, and not just for the one new problem.

Nevertheless, this could be viewed as just a matter of implementation. The serious question brought up by Diesing's work is whether the presuppositional effects of indefinites should be syntactically encoded. If this is so, an analysis more consistent with current syntax could, perhaps, be sought. I would like, therefore, to examine here in detail the empirical aspects of Diesing's claim, abstracting away from an evaluation of her syntax. The question will be whether she provides any evidence that presuppositional effects correspond to syntactic ambiguity.

14.2.1 Diesing's mapping hypothesis

Recall that we examined two approaches to the issue of presupposition. The one is encoding them into the semantics of the determiners. This line which was assumed by Barwise and Cooper only for the definite determiner, has been extended, e.g. by de Jong and Verkuyl (1985), to all strong determiners. The denotation they subsequently, assumed for *every*, is repeated in (1).

- (1) $\llbracket \text{every } N \rrbracket = \{X \subseteq E \mid X \cap N = N\}$, $N \neq \emptyset$, undefined otherwise.

The alternative view is based on Strawson's (1964), for whom presupposition, to begin with, cannot be determined by the semantics of the determiner in isolation, but is a property of the use of NPs to refer, in context. Whenever assessment of a given sentence must start with checking the common Noun set of a given NP, if that N is empty, assessment "gets stuck" - which is what a "presupposition failure" means. Strawson assumes that what NP assessment starts with is determined by the context, and it is the NP linguists call 'sentence topic'. Whether this is true for all NPs, including definite and strong NPs, as Strawson argued, has been a subject of debate. However, we saw that this analysis is most suitable for weak (indefinite) NPs. The sentences which best illustrate this are repeated below. (In (2) truth judgments vary, since the subject can be taken as a topic, or not. But in (3), where it cannot be a topic, the truth judgment is as predicted by logic.)

- (2) a. No American king lived in NY
 b. Two American kings lived in NY.
- (3) a. There were no American kings in NY
 b. There were two American kings in NY

An alternative approach, closer to the first view, is taken by Diesing (1992). She argues that presuppositions are encoded in the computational system. In the case of indefinites, they are

all ambiguous between the standard weak reading and a strong, presuppositional, reading. Each of these corresponds to a specific syntactic position. In (2), syntax allows both structures, hence the sentences are ambiguous. But in (3), the structure associated with strong NPs is disallowed. Let us review her basic assumptions and machinery.

The LF of (4) is standardly assumed to be (4b), which is isomorphic to its representation in classical logic, in (4c). (An operation deriving (4c) syntactically from (4b) by raising the determiner is proposed in Heim (1982).)

- (4) a. Every cat sneezed
 b. [Every cat]_i [e_i sneezed]
 c. ($\forall x$) (cat (x)) $\rightarrow$ (sneezed (x))
- (5) a. Some cat sneezed
 b. [Some cat]_i [e_i sneezed]
 c. ($\exists x$) (cat (x)) & (sneezed (x))

Following Heim, the first constituent in (4b) corresponds to the restrictive term, and the second -to the nuclear scope. Technically, the same can be said about the parallel structure with an indefinite NP in (5), except that here these terms do not mean much, given standard logic. Unlike the case of (4), the two clauses here are interpreted as a conjunction, and the order of the conjuncts could not possibly matter. (This is the symmetry property of weak determiners.) However, Diesing's point (following a growing consensus in DRT) is that this is not always so. In fact, a sentence like (5a) can receive two interpretations, corresponding to two distinct LFs. The standard conjunction interpretation (5c) is obtained only when the subject is VP-internal at LF. If an LF like (5b) is derived (or the subject occurs at SPEC IP at LF), the NP forms a restrictive term. The interpretation Diesing gives to this notion is that non emptiness of the N set is presupposed. Though Diesing does not formally represent the reading she intends, it appears that the intended reading can be represented in (6)¹⁷. (The indefinite is not bound here by any other operator, hence it must be closed by a discourse existential.)

- (6) ($\exists x$) (cat (x)) & (sneezed (x))
 undefined if {cats} = 0.

The variation of judgment regarding (2a) will be explained in this approach by the fact that the sentence is ambiguous. In the presuppositional reading, (7a), it turns out undefined, while in the existential reading (7b) it is true.

- (7) a. ($\sim \exists x$) (x is an American king & x lived in NY),
 undefined if {American kings} = 0
 b. ($\sim \exists x$) (x is an American king & x lived in NY)

Whether the Strawsonian line or the line of syntactic encoding are correct for presuppositions, depends, of course, on how well the syntactic account is independently motivated. Let us examine, therefore some further details of Diesing's motivation.

¹⁷See Diesing p. 62 for the semantics she is assuming for presuppositions.

14.2.2 The hypotheses Diesing is using are summarized below:¹⁸

(8) a. **The restrictive term is presuppositional:**

Non emptiness of the N set is presupposed iff it occurs in the restrictive term (of a tripartite tree, or formula).

b. **The mapping hypothesis**

Material from VP is mapped into the nuclear scope

Material from IP is mapped into a restrictive clause.

How do these assumptions generate the two readings Diesing assumes for the sentence we considered, repeated in (9)? As is standard, subjects (of stage -level predicates) are assumed to be base generated in SPEC VP, and surface, in English, in SPEC IP. From the latter position, they can lower, or reconstruct at LF back to their VP position. It follows that in the standard cases indefinite subjects always correspond to the two LFs illustrated in (9).

(9) No American kings lived in NY

a. [^{IP} No American kings [^{VP} e lived in NY]

b. [^{IP} e [^{VP} No American kings lived in NY]

The mapping hypothesis (8b) now determines that in the structure (a) the indefinite is translated as the restrictive term. Combined with (8a), it must, then, be presuppositional, so it gets the interpretation (7a). In (9b), the mapping hypothesis determines that the indefinite is included in the nuclear scope. Hence, by (8a) it cannot be presuppositional, and it gets the standard existential interpretation in (7b). (It also follows from (8a) that NPs with strong determiners, like *every* can never lower back to the VP, since they are always presuppositional, hence they are interpretable only when attached to IP).

In the examples so far, the issue seems purely conceptual, and there is no way to assess the claim that the subject reconstruction correlates with any semantic distinction between the two structures. Diesing does provide massive empirical evidence for her analysis. However, a closer examination reveals that the evidence evolves around a different ambiguity than the one we have been considering so far -that between generic and existential readings of bare plurals, illustrated in (10)

(10) a. Firemen are available

b. Firemen are brave.

(10a) has two interpretations. The existential one is that (at the given moment of utterance) there are firemen available (not necessarily at any other time). The generic interpretation is a statement about a defining property of firemen, namely that they are always available. (10b), on the other hand, has only one interpretation - the generic one. The semantic distinction here is clear and solid, and Diesing derives it as follows:

Kratzer (1989) has argued that the subjects of individual-level predicates must be base generated in SPEC IP (rather than SPEC VP, where subjects of stage level predicates are generated).

¹⁸While the mapping hypothesis (8b) is explicitly formulated by Diesing (e.g. p. 10), the correlation between restrictive terms and presupposition (which is the crucial point for the present discussion) is only stated informally. However, that Diesing intends something like the strong iff condition in (8a) is obvious from various points in the discussion, e.g. p. 62-23, 69.