Non-novel Indefinites in Adverbial Quantification

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1. Introduction

Adverbial quantification is sensitive to accent. Take the following example that characterizes the headgear habits on an American campus (acute accent marks the location of the main accent, usually a high-fall.)

(1) a. A freshman usually wears a báseball cap.
        'Most freshmen wear a baseball cap.'
    b. A fréshman usually wears a baseball cap.
        'Most wearers of baseball caps are freshmen.'

This influence of accent has been taken as evidence that adverbial quantification is focus sensitive (cf. Rooth (1985)) or presupposition sensitive (cf. von Fintel (1994), Rooth (1995)). I will discuss a problem that has been identified by von Fintel and Rooth, the **requantifiation problem**. Roughly stated, standard accounts of indefinites as NPs that introduce new discourse referents are at odds with standard accounts of the focus sensitivity or presupposition sensitivity of (1), which force us to assume that indefinites may pick up existing discourse referents and "requantify" over them. I will argue for a special class of indefinites that pick up existing discourse referents, which I will call **non-novel indefinites**, to explain the nature

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of quantification in cases like (1). I will discuss other evidence for this class of indefinites, in particular the influence of accent on indefinite NPs in the protasis of conditionals, as in the following case discussed by Kadmon (1987) and Chierchia (1992):

(2)   a.   If a farmer owns a dónkey, he usually béats it.
            'Most farmers that own a donkey beat it.'
      b.   If a fármer owns a donkey, he usually béats it.
            'Most donkeys owned by a farmer are beaten by him.'

2. Standard Accounts of Adverbial Quantification

Rooth (1985) treats the impact of accent on the interpretation of adverbially quantified statements such as in (1) as an instance of **association with focus**. In his early work, Rooth did not deal with cases that contained indefinite NPs, and to illustrate the basic property of his analysis, I will also start with an example in which the introduction of discourse referents can be neglected.

(3)   a.   Mary usually took Jóhn to the movies.
            'Most of the time when M. took someone to the movies, it was J.'
      b.   Máry usually took John to the movies.
            'Most of the time when someone took J. to the movies, it was M.'

The adverbial quantifier *usually* is an operator that applies to a clause. An episodic clause like *Mary took John to the movies* is analyzed as a predicate of situations — the situations in which Mary took John to the movies. Accent marks the expression in focus. Focus, represented by a feature F, indicates that alternatives to the meaning of the expressions are to be considered (hence the term "Alternative Semantics"). We distinguish between the ordinary interpretation, $\llbracket\ \ \rrbracket$, and a set of alternatives, $\llbracket\ \ \rrbracket_A$.

(4)   a. $\llbracket$*Mary took Jóhn*$_F$ *to the movies*$\rrbracket$
            = {s | Mary took John to the movies in s}
      b. $\llbracket$*Mary took Jóhn*$_F$ *to the movies*$\rrbracket_A$
            = {{s | Mary took x to the movies in s} | x   ALT(John)}

ALT(John) is the set of contextually salient alternatives of John. If Bill is the only proper alternative to John, then ALT(John) = {John, Bill}. In this case (4.b) is a set that contains two sets of situations,

<div align="center">

{{s | Mary took John to the movies in s},

{s | Mary took Bill to the movies in s}}

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Focus-sensitive adverbial quantifiers make use of the alternative meanings introduced by focus. In Rooth's theory, the alternative meanings supply the domain of quantification, which is simply the union of the alternatives. Example

(6) illustrates this for *usually*, which is interpreted as the generalized quantifier MOST, cf. (5).

(5) $[\![usually]\!] = $ MOST$([\![\ ]\!]_A, [\![\ ]\!])$,
   where MOST(A, B) iff #(A ∩ B) > #(A — B)

(6) $[\![Mary\ usually\ took\ Jóhn_F\ to\ the\ movies]\!]$
   = MOST({{s | Mary took x to the movies in s} | x ∈ ALT(John)},
          {s | Mary took John to the movies in s})
   = MOST({s | ∃x ∈ ALT(John)[Mary took x to the movies in s]},
          {s | Mary took John to the movies in s})

If ALT(John) = {John, Bill}, this amounts to the following:

   = MOST({s | Mary took John or Bill to the movies in s},
          {s | Mary took John to the movies in s})

That is, in most cases in which Mary took John or Bill to the movies, she took John to the movies.

The generality of Rooth's solution of the influence of accent on quantification has been questioned, though. It has been argued that adverbial quantification is not sensitive to focus, but rather to **presuppositions**. Examples to that point have been adduced by Schubert & Pelletier (1989):

(7) a. Cats always land on their feet.
        'If a cat touches ground when falling, it always lands on its feet.'
     b. Robin Hood never misses.
        'If Robin Hood tries to hit something, he never misses (it).'

These sentences can be understood as quantifications over situations that satisfy their presuppositions. The relevant presuppositions are the lexical presuppositions of *land* and *miss*. For example, any situation in which the issue arises whether *land on its feet* can or cannot be applied to an entity is one in which this entity touches ground at the end of a fall. In non-falling situations it would be infelicitous to talk about landing on one's feet. - Kasper (1992) has observed a similar phenomenon with modals:

(8) Mary would have solved the problem.
     'If Mary were confronted with the problem, she would have solved it.'

The modal statement in (8) cannot be taken as absolute, but has to be relativized to certain conditions. These conditions are at least partly given by

the presuppositions of the sentence. In the case at hand, to solve a problem presupposes one's being confronted with it.

Hence the domain of an adverbial quantifier may be supplied by the presuppositions of a sentence, an idea proposed by Berman (1987) and von Fintel (1994). It can be motivated as follows: When a sentence is combined with an adverbial quantifier, the quantifier specifies to which extent the sentence is true (always, usually, sometimes or never). But the issue whether or not a sentence is true arises only when the presuppositions of the sentence are satisfied. This leads to the following schematic meaning rule for adverbial quantifiers, illustrated here for *usually*, where Pres( ) identifies the (conjunction of the) presuppositions of :

(9) 〚*usually* 〛 = MOST(Pres( ), 〚 〛)

We have the following analysis of (7.b), where NO(A, B) expresses that the sets A and B have an empty intersection.

(10) a. 〚*Robin Hood misses*〛 = {s | Robin Hood misses in s}
   b. Pres(*Robin Hood misses*) = {s | RH. tries to hit something in s}
   c. 〚*Robin Hood never misses*〛
      = NO({s |RH tries to hit something in s}, {s |RH misses (it) in s})

We have now two distinct rules for adverbial quantifiers: Rules of type (5) that treat them as sensitive to focus, and rules of type (9) that treat them as sensitive to presuppositions. This is not a desirable state of affairs: That adverbial quantifiers in English show both types of sensitivity would be a quirk of the English language, and we should expect that in other languages there are some quantifiers that are presupposition sensitive, and others that are focus-sensitive. This has never been reported. It is thus an appealing idea to conflate presupposition-sensitivity and focus-sensitivity of adverbial quantification and analyze it as one and the same phenomenon. This could be done in two ways: Either we reduce presupposition-sensitivity to focus-sensitivity, or we reduce focus-sensitivity to presupposition-sensitivity.

The first strategy, reduction to focus-sensitivity, would imply that instances that appear to be presupposition-sensitive expressions actually are focus-sensitive. This is convincing in some cases. For example, (7.a) is naturally read with main accent on *feet*, which is compatible with focus on *on their feet*. The alternatives on the level of the VP meaning then would be 'land on their feet', 'land on their back', etc. The sentence then would express that, in situations in which cats land on their feet or land on their back etc., they land on their feet. We get this type of interpretation if (7.a) is an answer to a question like *On what do cats land?* However, (7.a) can also answer a general question about the properties of a cat, e.g., *What properties do cats have?* This suggests that the whole VP, *land on their feet*, is in fo-

cus, and we cannot appeal to focus as the force that partitions a domain into a restrictor and a nuclear scope. Also, this strategy is not particularly convincing for (7.b). It is quite unnatural to assume that this sentence has to be read with a focus on *misses* that would introduce alternatives such as *hits*.

The other strategy is to assume that focalization leads to a presupposition, so that cases like (3.a,b), analyzed as focus sensitive before, actually can be seen as instances of presupposition sensitivity. The obvious candidate for a presupposition is an **existential** presupposition. If sentence (3.a) would generate the presupposition that Mary took *someone* to the movies, we would arrive at the same result as before, but now under the interpretation of *usually* as a presupposition-sensitive operator as in (9):

(11) a. ⟦*Mary took Jóhn$_F$ to the movies*⟧
     = {s | Mary took John to the movies in s}

b. Pres(*Mary took Jóhn$_F$ to the movies*)
     = {s | ∃x[Mary took x to the movies in s]}

c. ⟦*Mary usually took Jóhn to the movies*⟧
     = MOST({s | ∃x[Mary took x to the movies in s]},
            {s | Mary took John to the movies in s})

There is quite convincing evidence for focus as a device that introduces existential presuppositions. It comes from one of the primary uses of focus, namely, as a device to identify felicitous answers to questions. The question-answer pairs in (12.a,b) are felicitous, but notice that (12.a.B) could not answer (12.b.A), and neither could (12.b.B) answer (12.a.A).

(12) a. A: Who did Mary take to the movies?
        B: Mary took Jóhn$_F$ to the movies.
     b. A: Who took John to the movies?
        B: Máry$_F$ took John to the movies.

Now, constituent questions have often been analyzed as introducing an existence presupposition. For example, (12.a.A) can be seen as presupposing that Mary took someone to the movies. A speaker that is in doubt about this has no business in asking such a question. So we may assume that the answers to such questions have the same existential presupposition: A sentence like (12.a.B) presupposes that Mary took someone to the movies, just like the question, and supplies as new information that it was John.

However, there is an apparent problem with this. The questions of (12) can be reformulated in a way that they don't have an existential presupposition, e.g. *Who, if anyone, did Mary take to the movies?* Consequently, the answers should not come with an existential presupposition either. Furthermore, answers like *Mary didn't take anyone to the movies* are possible answers to the original question, (12.a.A). But we may apply some dialectic

reasoning in this case and take negative quantifiers as possible alternatives of an expression in focus, a move that was suggested by Rooth (1994). This has consequences on the case considered here, sentences with adverbial quantifiers. For if we assume that *nobody* is an alternative to *John*, the paraphrase of (3.a) would be inadequate, and should rather be 'Most of the time, if Mary went to the movies, she took John with her'. The sentence, under the indicated accent, appears to have this interpretation. We can ascribe this to the fact that the range of alternatives is open to contextual influences; if it happens to include the negative quantifier, then we get the interpretation discussed here.

There are other ways to reconcile the apparent focus-sensitivity and the presupposition-sensitivity of adverbial quantifiers. Rooth (1992) and von Fintel (1994) develop a theory in which focus-sensitive operators are dependent on a domain C, which in turn depends on the focus of the expression in the scope of the operator. C is not fully determined by focus, but is subject to additional restrictions. It is natural to assume that C can also be constrained by the presuppositions of that expression.

3. Standard Account of Indefinites in Quantification

So far we have considered instances of adverbial quantification in which indefinite NPs don't play any role. Our examples consisted of an adverbial quantifier combined with an episodic sentence that was analyzed as a predicate over situations; the quantifier quantified over such situations. But there are cases in which the variable over which the quantifier ranges is supplied by an indefinite NP. Consider our initial examples (1); in (1.a) we have a quantification over freshmen, and in (1.b), over (wearers of) baseball caps. Such cases clearly require a theory of indefinites that shows how they introduce variables that can be quantified over. This type of theory was conceived by Karttunen (1976) and further developed in Kamp (1981), which initiated Discourse Representation Theory, and Heim (1982), especially chapter III, which developed into models of direct dynamic interpretation.

Let me outline here a simple framework for dynamic interpretation. It is a fairly standard account that just takes care of the change of the available discourse referents and the way they are anchored to entities. It suppresses the encoding of other factual information, for which we would have to include sets of possible worlds in the notion of a context.

Discourse referents are represented as natural numbers; I will use variables i, i etc. **Assignments** are partial functions from discourse referents to entities. I will use variables g, h, k etc. Instead of g(i), I will write g_i, and say that the discourse referent i is **anchored** by g to the individual g_i. DOM(g) is the domain of assignment g. **Contexts** (common grounds)

are sets of assignments, for which I will use variables like c, c′ etc. One requirement for contexts is that their assignments all have the same domain; I write DOM(c) for the domain of the assignments of c. **Clause meanings** are **context-change potentials**, that is, functions from an **input context** to an **output context.** I will use variables like φ, ψ etc. for context-change potentials. For the **update** of a context c by a clause meaning φ I write $c + φ$, instead of $φ(c)$. The definition of an **extension** of an assignment g for a particular index i resulting in an assignment h is given in (13). That is, h differs from g insofar as it assigns an entity to the discourse referent i.

(13) $g <_i h$ iff $g \subseteq h$ and
$\quad\quad\quad$ $DOM(h) = DOM(g) \cup \{i\}$ (where g, h are assignments)

Consider now the treatment of a simple sentence with an indefinite and the interpretation of a text consisting of two sentences. I take as the input of interpretation a level of Logical Form in which NPs are scoped and coindexed with their traces.

(14) a. *A man came in.*
$\quad$ b. LF: $[a\ man]_1\ [t_1\ came\ in]$
$\quad$ c. Interpretation with respect to an input context c_0:
$\quad\quad$ $c_0 + [\![a\ man_1]\!] + [\![t_1\ came\ in]\!]$
$\quad\quad$ $= c_0 + \lambda c\{h \mid \exists g \in c[g <_1 h \wedge MN(h_1)]\} + \lambda c\{g \in c \mid CI(g_1)\}$
$\quad\quad$ $= \{h \mid \exists g \in c_0[g <_1 h \wedge MN(h_1)]\} + \lambda c\{g \in c \mid CI(g_1)\}$
$\quad\quad$ $= \{g \in \{h \mid \exists g \in c_0[g <_1 h \wedge MN(h_1)]\} \mid CI(g_1)\}$
$\quad\quad$ $= \{h \mid \exists g \in c_0[g <_1 h \wedge MN(h_1) \wedge CI(h_1)]\}$

That is, the LF $[a\ man]_1\ [t_1\ came\ in]$ is a context-change potential that, when applied to an input context c_0, changes it to an output context that contains the set of assignments h that are like an assignment g in c_0, except that h maps the discourse referent 1 to an entity that is a man and to an entity that came in. The condition $g <_1 h$ enforces that the discourse referent 1 is neither in the domain of g nor, as all the assignments in a context have the same domain, in the domain of the input context c_0. That is, the condition expresses that the discourse referent is **novel**.

Consider now an small text. Notice that pronouns pick up an index.

(15) a. *A man came in. He smoked a cigar.*
$\quad$ b. LF: $[a\ man]_1\ [t_1\ came\ in]\ [a\ cigar]_2\ [he_1\ smoked\ t_2]$
$\quad$ c. $c_0 + [\![a\ man_1]\!] + [\![t_1\ came\ in]\!] + [\![a\ cigar_2]\!] + [\![he_1\ smoked\ t_2]\!]$
$\quad\quad$ $= \{h \mid \exists g \in c_0[g <_1 h \wedge MN(h_1) \wedge CI(h_1)]\}$
$\quad\quad$ $+ \lambda c\{h \mid \exists g \in c[g <_2 h \wedge CG(h_2)]\} + \lambda c\{g \in c \mid SM(g_1,g_2)\}$
$\quad\quad$ $= \{h \mid \exists g \in c_0[g <_{1,2} h \wedge MN(h_1) \wedge CI(h_1) \wedge CG(h_2) \wedge SM(h_1,h_2)]\}$

Here, $g <_{1,2} h$ abbreviates $\exists k[g <_1 k \wedge k <_2 h]$. We get as output context the set of assignments h that extend the assignments g in the input context c_0 insofar as they map the discourse referents 1 and 2 to entities, where 1 is mapped to a man that came in, and 2 is mapped to a cigar that 1 smoked.

This treatment of indefinites pays off not only for intersentential anaphora, but also for indefinites in sentences with adverbial or nominal quantifiers. Let me show this with the following example:

(16) Always, if a man came in, he smoked a cigar.
     'Every man that came in smoked a cigar.'

This is the classical interpretation of adverbial quantifiers in Kamp (1981) and Heim (1982):

(17) ALWAYS(,) = c{g ∈ c | ∀h[h ∈ {g}+ → ∃k[k ∈ {h}+]]}

The quantifier takes a context-change potential as restrictor, and another one as nuclear scope. It says that every way h of extending an assignment g of the input context c with the restrictor can be extended further to an assignment k that also satisfies the nuclear scope. As I defined updates with respect to contexts and not to single assignments, we have to write $\{g\}+$ instead of $g+$ here. Take a look at an example:

(18) c_0 + ⟦*always* [*a man*₁ [t₁ *came in*]] [*a cigar*₂ [*he*₁ *smoked* t₂]]⟧
     = c_0 + ALWAYS(⟦*a man*₁ [t₁ *came in*]⟧, ⟦*a cigar*₂ [*he*₁ *smoked* t₂]⟧)
     = {g ∈ c_0| ∀h[h ∈ {g}+⟦*a man*₁ [t₁ *came in*]⟧
                    → ∃k[k ∈ {h}+⟦*a cigar*₂ [*he*₁ *smoked* t₂]⟧]]}
     = {g ∈ c_0| ∀h[g <₁ h ∧ MN(h₁) ∧ CI(h₁)
                    → ∃k[h <₂ k ∧ CG(k₂) ∧ SM(k₁,k₂)]]}

This formula accepts input contexts c_0 whose assignments g have the following property: Whenever g is extended to h which differs from g insofar as h maps a new discourse referent 1 to a man that came in, then h can be extended further to a k that differs from h insofar as k maps a new discourse referent 2 to a cigar that 1 smoke.

The rule for ALWAYS given in (17) needs to be refined, as rules of this type will not work for most other quantifiers. The following interpretation rule (19), illustrated with the quantifier *usually*, is based on the fact that natural language quantifiers are conservative, that is, we have Q(A, B) ↔ Q(A, A ∩ B) for natural-language quantifiers Q (cf. Krifka (1992) and Chierchia (1992)):

(19) USUALLY(,)
     = c{g ∈ c | MOST({h | {g} + = {g&h}}, {h | {g&h} + })}

Where "g&h" stands for the **increment** of g with h, defined as the union of the assignments g and h, provided that their domains do not overlap:

(20) $g\&h = g \cup h$, if $\text{DOM}(g) \cap \text{DOM}(h) = \emptyset$, undefined else.

Expressions of the form $c + \phi$ mean that the context c supports the context-change potential ϕ in the sense that there is a non-empty context c' with $c + \phi = c'$.

To see the meaning rule of *usually* at work in a case in which the restrictor and the nuclear scope are given explicitly, consider the following:

(21) Usually, if a man came in, he smoked a cigar.

$c_0 + [\![usually\ [a\ man_1\ [t_1\ came\ in]]\ [a\ cigar_2\ [he_1\ smoked\ t_2]]]\!]$

$= c_0 + \text{USUALLY}([\![a\ man_1\ [t_1\ came\ in]]\!], [\![a\ cigar_2\ [he_1\ smoked\ t_2]]\!])$

$= \{g \in c_0 \mid \text{MOST}(\{h \mid \{g\} + [\![a\ man_1\ [t_1\ came\ in]]\!] = \{g\&h\}\},$
$\{h \mid \{g\&h\} + [\![a\ cigar_2\ [he_1\ smoked\ t_2]]\!] \neq \emptyset\})\}$

$= \{g \in c_0 \mid \text{MOST}(\{h \mid g <_1 g\&h \wedge \text{MN}(g\&h_1) \wedge \text{CI}(g\&h_1)\},$
$\{h \mid \exists k[\{g\&h\} <_2 k \wedge \text{CG}(k_2) \wedge \text{SM}(k_1, k_2)]\})\}$

This says that the resulting context contains those assignments g of the input context c_0 such that most increments h that extend g insofar as they map the index 1 to a man that came in are also increments that can be extended to an assignment k that map the index 2 to a cigar such that 1 smoked 2. This gives us, effectively, a quantification over incoming men.

4. The Requantification Problem

We are now ready to discuss the treatment of indefinites in sentences with adverbial quantifiers that are sensitive to accent variations, such as in (1). Let us start with a somewhat simpler sentence:

(22) A green-eyed dog is usually intélligent.
'Most green-eyed dogs are intelligent.'

Let me first analyze this sentence as an instance of focus-sensitive quantification. Combining alternative semantics with dynamic interpretation as in Rooth (1995), we get the following analysis:

(23) a. $[\![a\ dog_1\ [t_1\ [is\ intélligent]_F]]\!]$
$= \lambda c\{h \mid \exists g \in c[g <_1 h \wedge \text{DG}(h_1) \wedge \text{IN}(h_1)]\}$

   b. $[\![a\ dog\ [t_1\ [is\ intélligent]_F]]\!]_A$
$= \{\lambda c\{h \mid \exists g \in c[g <_1 h \wedge \text{DG}(h_1) \wedge \text{P}(h_1)]\} \mid P \in \text{ALT}(\text{IN})\}$

Here, (23.a) is the ordinary meaning, and (b) is the set of alternatives. The ordinary meaning is a context-change potential that changes an input context c to the set of all assignments h that differ from assignments g in c insofar as they map the new discourse referent 1 to a dog that is intelligent. The

alternatives are a set of such context-change potentials; they all change an input context c to the set of all assignments h that differ from assignments g in c insofar as they map the new discourse referent 1 to a dog that has some property P, where P is an alternative to the property of being intelligent.[2] Assume that the only alternative to being intelligent is being dumb (DU); then the alternative meaning is the following set of two context-change potentials:

(23) c. If $ALT(IN) = \{IN, DU\}$:
$$= \{\ c\{h \mid \exists g\ c[g <_1 h\ \wedge\ DG(h_1)\ \wedge\ IN(h_1)]\}\ ,$$
$$c\{h \mid \exists g\ c[g <_1 h\ \wedge\ DG(h_1)\ \wedge\ DU(h_1)]\}\}$$

Adverbial quantifiers are interpreted just as in the static model, as quantification over the union of the alternatives (cf. (5) for *usually*). But what is the union of a set of context-change potentials? We expect it to be a context-change potential as well, but note that this is not guaranteed if we see context-change potentials as functions. The set-theoretic union

$$\{\ \langle c_0, c_0 \rangle\ ,\ \langle c_1, c_1 \rangle\ \}\ \cup\ \{\ \langle c_0, c_0 \rangle\ ,\ \langle c_1, c_1 \rangle\ \}$$
$$= \{\ \langle c_0, c_0 \rangle\ ,\ \langle c_1, c_1 \rangle\ ,\ \langle c_0, c_0 \rangle\ ,\ \langle c_1, c_1 \rangle\ \}$$

is not a function, as it violates right-uniqueness. Rather, we want the set

$$\{\ \langle c_0, c_0 \cup c_0 \rangle\ ,\ \langle c_1, c_1 \cup c_1 \rangle\ \},$$

which can be obtained by the pointwise union of the values of the original context-change potential. Let us define this notion of union as follows:

(24) If A is a set of context-change potentials that have the same domain (input contexts),
then $\cup A = \{\ \langle c, c' \rangle \mid c \in DOM(A)\ \wedge\ c' = \cup\{c + \alpha \mid \alpha \in A\}\}$

For example, we have

$$(23.c) = \ c\{h \mid \exists g\ c[g <_1 h\ \wedge\ DG(h_1)\ \wedge\ [IN(h_1)\ \vee\ DU(h_1)]]\},$$

which maps input contexts c to sets of assignments h that extend assignments g in c insofar as they assign the index 1 to an entity and express that h_1 is a dog that is either intelligent or dumb.

Now we can give a dynamic meaning rule for *usually*, which corresponds to the static rule of (5) (cf. Rooth 1995: p. 296 for a corresponding rule for *always*, based on the simpler rule given in (17)).

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[2] We must ensure that the alternatives are dynamically closed, that is, that they do not introduce discourse referents (cf. Rooth 1995: 295). This issue does not arise with focus on an adjective as in the present case, as adjectives, nouns and verbs are dynamically closed anyway. But focus may be on a constituent that includes, say, an indefinite NP, as in *Mary usually takes* [*a friend*]$_F$ *to the movies*, and therefore we must build an operation of dynamic closure into the interpretation rule for focused expression. See Krifka (1993) and Rooth (1995) for details of the compositional derivation of dynamic meanings of focused expressions in two different approaches.

(25) ⟦*usually* ⟧ = USUALLY(⟦ ⟧$_A$, ⟦ ⟧)

Example (22) will get the following interpretation:

(26) ⟦*usually* [*a dog*$_1$ [t$_1$ [*is intelligent*]$_F$]]⟧
     If ALT(IN) = {IN, DU}:
     = USUALLY({ c{h | g c[g <$_1$ h DG(h$_1$) [IN(h$_1$) DU(h$_1$)]]]},
               { c{h | g c[g <$_1$ h DG(h$_1$) IN(h$_1$)]})

Is this the interpretation we want? No, there is a problem when we interpret USUALLY as in (19), as this will give us the following result:

(27) c{g c |
     MOST({h | {g} + c{h | g c[g <$_1$ h DG(h$_1$)
               [IN(h$_1$) DU(h$_1$)]] = {g&h}},
         {h | {g&h} + c{h | g c[g <$_1$ h DG(h$_1$) IN(h$_1$)]} })}
     = c{g c |
     MOST({h | **g <$_1$ g&h** DG(g&h$_1$) [IN(g&h$_1$) DU(g&h$_1$)]},
         {h | k[**g&h <$_1$ k** DG(k$_1$) IN(k$_1$)]})}

The problem is that g <$_1$ g&h and g&h <$_1$ k cannot hold both: One condition says that 1 DOM(g&h), but the other requires that 1 DOM(g&h). We cannot requantify over the same index. I will call this the **requantification problem**, following von Fintel (1994).

The problem of requantification was observed in Rooth (1995) (the first version of which was circulated in 1991). Rooth's proposal to deal with it, which he calls the **domain regulator theory**, consists in the following: We should give up the novelty condition for indefinites, which we incorporated in the definition of g <$_i$ h (see (13)), and assume that the index of indefinites may be new or old. All that an indefinite does is to guarantee that its index will be in the output context. Hence the interpretation of an indefinite is not based on the extension relation < defined in (13), but rather on the relation defined in (28) below:

(28) a. g $_i$ h iff g h and i DOM(h)
     b. ⟦[*a dog*]$_i$⟧ = c{h | g c[g $_1$ h DG(h$_1$)]}

This would of course allow for an analysis along the lines of (27), as the formula g&h $_1$ k does not presuppose anymore that the discourse referent 1 is not an element of the domain of k.

There is an obvious problem with this. Once we give up the novelty condition for indefinites, they can pick up existing discourse referents. Coindexations like the one in (29.a) would become possible, with the same interpretation as in (29.b)

(29) a. A man$_1$ came in. A man$_1$ sat down.
    b. A man$_1$ came in. He$_1$ sat down.

Perhaps we can exclude (29.a) by independent principles. The prospects for this actually look quite good. The difference between indefinite NPs on the one hand and pronouns and definite NPs on the other appears to be as follows: Indefinite NPs leave it open whether their index exists in the domain of the input context, whereas pronouns and definite NPs presuppose that it exists. Hence the following pragmatic division of labor arises: Whenever the speaker wants to pick up an existing discourse referent, she will choose a definite NP or a pronoun, because these expressions presuppose the existence of an index. And whenever the speaker wants to introduce a new index, she will use an indefinite NP, knowing that the hearer will conclude from the fact that the speaker avoided the more specific form of a pronoun or a definite NP that these types of NPs are not applicable. This is a classical instance of a **quantity implicature**.

Notice that it is not excluded that indefinite NPs pick up existing indices, just as with standard examples of quantity implicatures, which can be canceled. Cases like (22) are precisely of this form: Indefiniteness is motivated because the quantification should not re-use an existing index, thus enforcing coreference to an accessible discourse referent. But if the way focus-sensitive quantification is interpreted requires coreference, and if the sentence itself does not provide any other NP to perform that job, an indefinite NP with an old index can be employed.[3]

Von Fintel's proposal to deal with the requantification problem starts with a redefinition of the semantics of adverbial quantifiers (cf. von Fintel 1994: 63ff, von Fintel 1997). He interprets adverbial quantification as quantifications over situations, following Berman (1987). A sentence like (16) would be interpreted as: Every minimal situation s in which there is a man that came in can be extended to a situation s in which he smoked a cigar. This leads to the requantification problem when we combine it with Rooth's analysis of focus-sensitive quantification: A sentence like (22) would receive the interpretation: Most minimal situations s that contain a green-eyed dog can be extended to a situation s that contains a green-eyed dog that is intelligent. But notice that this does not guarantee that the second occurrence of *green-eyed dog* in this paraphrase refers to the same dog as the first occurrence. In a sense, if we assume that every situation can be extended to the

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[3] This reasoning is reminiscent of the explanation of the distribution of pronominal forms in Horn (1984) and Levinson (1987, 1991). For example, Levinson argues that Binding Principle B, which prohibits binding of pronouns within a clause, is superfluous: In typical cases, reflexives will occupy this semantic niche, thus leaving pronouns for cases in which the binding is from outside the clause.

whole world of that situation, the existence of a single intelligent green-eyed dog would be sufficient to make sentence (22) true. Von Fintel proposes a change in the meaning rule of quantifiers that would give us the following truth condition for (22): Most minimal situations that contain a green-eyed dog are part of a **minimal** situation that contain a green-eyed dog that is intelligent. This enforces that the two occurrences of *a green-eyed dog* refer to the same dog.

However, von Fintel points out a problem with this solution: It would imply that a sentence like

(30) Usually, if a cat is hungry, a cat cries

means the same as 'Usually, if a cat is hungry, it cries'. We would have to impose some sort of novelty condition for indefinites over and above the situation-based semantics given by von Fintel. This also means that we have to prevent the application of the novelty condition in cases in which the double occurrence of the NP just arises due to the interpretation rule of focus-sensitive adverbial quantifiers. It is unclear what we have gained with the reformulation of the meaning rule for adverbial quantifiers, and so I will not dicuss this line of argumentation any further.

A radical solution to the requantification problem has been proposed by Percus (1997, 1998). Percus argues that indefinites have a uniqueness pre-supposition. This is how Percus analyzes (22):

(31) A green-eyed dog is usually intelligent.
      'For most situations s, *the unique green-eyed dog* in s is intelligent.'

The sentence expresses a quantification over situations. The domain of quantification can be accommodated. The uniqueness condition that comes with indefinites will enforce a domain of quantification over situations in which each situation contains one, and only one, green-eyed dog. By this one-to-one mapping between green-eyed dogs and situations in the domain of quantification, the quantification over situations is truth-conditionally equivalent to a quantification over green-eyed dogs.

There are at least two problems with this account, both acknowledged by Percus. First, there are cases where uniqueness is clearly absent:

(32) A bìshop usually agrées with a bìshop.
      'For most situations s that contain a bishop *and another bishop* s, the first bishop agrees with the second.'

The second problem is that it is unclear what the difference between definite NPs and indefinite NPs should be if both come with a uniqueness presupposition.

We have discussed the problem of requantification on the background of the assumption that adverbial quantifiers as focus sensitive. In section 2 we have considered evidence that leads to a different theory, namely, that the domain of adverbial quantifiers is determined by the presuppositions of a sentence, and that focus only has an indirect effect by triggering an existential presupposition. The question then arises whether we can circumvent the requantification problem by following this latter analysis.

It is difficult to see how this could be the case. The reason is that adverbial quantifiers, analyzed as focus-sensitive or as sensitive to existential presuppositions triggered by focus, have very similar properties; only the mechanics of how the focus information is used makes a difference. The existential presupposition triggered by the focus in an expression   is simply the union of the alternative meanings, $[\![\ ]\!]_A$. Hence the only change between the two formats is how the pieces are glued together:

(33) a. Focus-sensitive quantification:
$[\![usually\quad]\!] = \text{USUALLY}(\ [\![\ ]\!]_A, [\![\ ]\!]\ )$

b. Presupposition-sensitive quantification,
where the presupposition is triggered by focus:
$[\![usually\quad]\!] = \text{USUALLY}(\text{Pres}(\ ), [\![\ ]\!]\ )$, where $\text{Pres}(\ ) = \ [\![\ ]\!]_A$.

In the next section I will develop an alternative solution that assumes that adverbial quantification is presupposition-sensitive. However, I will propose that the presupposition in question is not an existential presupposition introduced by focus, but rather a givenness presupposition introduced by indefinite NPs that are outside of the focus.

5. Non-novel Indefinites and their Accommodation

Let us assume that the accent distribution is not (necessarily) due to focus assignment, but to assignment of a **non-novelty** feature NN. The effect of non-novelty is that it prevents an item from receiving the main accent. This means that accent has to be realized elsewhere, an instance of **default accent** as discussed in Ladd (1980). The NP with the feature NN is deaccented or has a secondary accent realized as low-rise, which I will mark with a grave accent. The stress pattern that we observe in these examples then comes out as follows:

(34) Usually, [a green-eyed dòg]$_{NN}$ is intélligent.

(35) a. [A frèshman]$_{NN}$ usually wears a báseball cap.
   'Most freshmen wear a baseball cap.'
   b. A fréshman usually wears [a bàseball cap]$_{NN}$.
   'Most baseball caps are worn by freshmen',
   'Most baseball cap wearers are freshmen'

In (34) the NP *a green-eyed dog* is non-novel and gets destressed. This means that the complement expression, *is intelligent*, is accented. In (35.a), the phrase *a freshman* is non-novel, receiving secondary accent and deflecting the main accent on the complement expression, where it ends up on *a baseball cap*. The situation is just the reverse in (35.b).

This is not to say that focus plays no role in accentuation. If we take the accent of answers to constituent questions as indicative for focus, then we must assume that focus accent can be superimposed on the accentuation introduced by non-novelty. This is well-known from cases in which pronouns, which normally are deaccented, are in focus:

(36) A: Who do you like best, him or her?
   B: I like [hér$_{NN}$]$_F$ best.

The same phenomenon can be observed with focus in quantified sentences. While the accentuation of (37) is similar to (35.b), its interpretation is rather the one of (35.a).

(37) A: Who wears usually a báseball cap on this campus?
   B: [[A fréshman]$_{NN}$]$_F$ usually wears a bàseball cap.

What then is the effect of non-novel indefinites? I suggest that they come with the presupposition that their **index is presupposed**, that is, it exists in the input context. In addition, the descriptive part of the indefinite is presupposed as well.[4] I furthermore suggest that this presupposition is typically **accommodated**.

I follow here the account of accomodation developed in Karttunen (1974) and Stalnaker (1974). If a context c cannot be updated with a context-change potential   because   has a presupposition that is not satisfied in   (technically, c +   would result in the empty context,   ), c can be changed minimally to a c   such that c   can be updated with   , provided the informational difference between c and c   is uncontroversial.

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[4] A related but different notion has been proposed by Condoravdi (1992, 1994) under the term **weakly novel indefinites**. These are indefinites whose indices are new, but which come with a presupposition that the enitites they refer to exist. Condoravdi treats *students* in the following text as a weakly novel indefinite: *In 1985 there was a serial killer haunting the campus. Students were aware of the danger*. Here, *students* is understood as 'the students of the campus'. In contrast, the notion of non-novel indefinites assumes that the index is old.

Non-novel indefinites can be analyzed as in (38). The NP $[a\ dog]_{1,NN}$ expresses the requirement that the index 1 is in the domain of the input context, and is anchored to some dog or other.

(38) $[[a\ dog]_{1,NN}] = \lambda c\{g \in c \mid g \in c[DG(g_1)]\}$

We must of course define what a minimal change is. This is captured by the notion of a proper extension of a context, defined below.

(39) a. c' **extends** c, **satisfying** (the presuppositions of) ϕ, iff
    — $c' + \phi = \phi$
    — $\forall h \in c' \exists g \in c[g \leq h]$
  b. c' **extends** c **minimally**, **satisfying** ϕ, iff
    — c' extends c, satisfying ϕ,
    — there is no c'', $c' \subset c''$, such that
        c'' extends c, satisfying ϕ, and
        c' extends c'', satisfying ϕ.
  c. c' **extends** c **properly**, **satisfying** ϕ (rendered as $c' \in c[\phi]$)
    iff $c' = \bigcup\{c'' \mid c''$ extends c minimally, satisfying $\phi\}$

That is, if $c + \phi = \phi$ and $c' \in c[\phi]$, then c' is the most conservative change of c that satisfies the presuppositions of ϕ. In particular, c' contains what is necessary to satisfy the presuppositions of ϕ (39.a), but does not contain any excess information. This means that it does not introduce any unnecessary indices (39.b), and it does not make any unnecessarily specific claims about how the indices are anchored (39.c). We have the following fact:[5]

(40) If $1 \notin DOM(c)$ and $c' \in c[[[a\ dog]_{1,NN}]]$, then $c' = c + [[a\ dog]_1]$

That is, if the discourse referent 1 is not in the domain of c, and if c' extends c properly, satisfying $[[a\ dog]_{1,NN}]$, then c' is the update of c with the simple indefinite, $[[a\ dog]_1]$.

We can now formulate the interpretation of an adverbial quantifier Q along the following scheme:

(41) $c + Q(\phi, \psi)$
    $= c +$ Q-many ways in which c can be accommodated
          to satisfy the presuppositions of ϕ
        are also ways that support the truth of ψ

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[5] Proof: If $1 \notin DOM(c)$ and $c' \in c[[[a\ dog]_{1,NN}]]$, then c' must satisfy the following requirements: First, $1 \in DOM(c')$ and $\forall g \in c'[DG(g_1)]$, due to the first condition of (39.a). Second, no other index is introduced, that is, $DOM(c') = DOM(c) \cup \{1\}$, due to (39.b). Third, every assignment h in c' is an extension of an assignment g in c, with $g <_1 h$ and $DG(h_1)$, due to the second condition of (39.a). Fourth, c' contains all extensions h of g that satisfy the condition that there is a g in c and $g <_1 h \wedge DG(h_1)$, due to (39.c). But this is exactly the c' that we get by updating c with $[[a\ dog]_1]$, namely $\{h \mid \exists g \in c[g <_1 h \wedge DG(h_1)]\}$.

More precisely, for the interpretation of *usually*:

(42) USUALLY( ) = c{g c | MOST({h | {g} {g&h}[ ]},
$$\{h \mid \{g\&h\} + \quad\})$$

The condition $\{g\&h\} +$ amounts to: $k[k \quad \{g\&h\}+]$. Let me illustrate this rule with example (35.a).

(43) a. $[[a\ baseball\ cap]_2\ [t_1\ wears\ t_2]]$
   = c{h | g c[g $<_2$ h   CP(h_2)   WR(h_1, h_2)]}
   $[[a\ freshman]_{1,NN}] =$ c{g c | g c[FM(g_1)]}
   $[[a\ freshman]_{1,NN}\ [a\ baseball\ cap]_2\ [t_1\ wears\ t_2]]$
   = c{h | g c[FM(g_1)]   g c[g $<_2$ h   CP(h_2)   WR(h_1, h_2)]}
   = ⓪

   b. $[usually\ [a\ freshman]_{1,NN}\ [a\ baseball\ cap]_2\ [t_1\ wears\ t_2]]$
   = USUALLY(⓪)
   = c{g c| MOST({h | {g}   {g&h}[⓪]}, {h | k[k   {g&h}+⓪]})

   c. If 1   DOM({g}):
   {g}   {g&h}[⓪] if, and only if, g $<_1$ g&h   FM(h_1)

   d. If g $<_1$ g&h   FM(h_1):
   {g&h} + ⓪
   = {k|$\forall$**g′**∈**{g&h}**[**FM(g′₁)**]   g&h $<_2$ k   CP(k_2)   WR(k_1, k_2)}

The boldfaced condition is now redundant, as it is guaranteed to be satisfied in {g&h}. Hence (d) can be simplified to:

   d′. If g $<_1$ g&h   FM(h_1):
   {g&h} + ⓪ = {k | g&h $<_2$ k   CP(k_2)   WR(k_1, k_2)}

Putting things together and assuming that 1, 2   DOM(c):

   e. USUALLY(⓪)
   = c{g c | MOST({h | g $<_1$ g&h   FM(h_1)},
   {h | k[{g&h} $<_2$ k   CP(k_2)   WR(k_1, k_2)]})}

This gives us the right interpretation. When applied to an input context c_0, we will get back c_0 if most increments h of assignments g of c_0 where 1 is anchored to a freshman are such that they in turn can be extended to a k that contains the new discourse referent 2 in its domain such that k_2 is a baseball cap, and k_1 (= h_1) wears k_2.

A condition for this analysis is that the input context c_0 does not contain the index 1. We can assume that non-novel indefinites in general are not used to pick up an existing discourse referent, for pragmatic reasons similar to the one that explained why coindexations as in (29.a) should be impossi-

ble. That is, definite NPs are better suited for this job, and therefore the use of an indefinite will implicate that the NP does not pick up an existing index. To substantiate that, let us discuss how definite NPs are interpreted. I cannot deliver here a full-fledged discussion of definite NPs; all that I can hope for is to make this pragmatic story reasonably plausible.

As a first try, definite NPs can be interpreted as in (44.b), in contrast to non-novel definites in (44.a):

(44) a. $[[a\,dog]_{1,NN}] =$ c{g c | g c[DG(g_1)]}
   b. $[[the\,dog]_1]$
      = c{g c | g c[DG(g_1) i DOM(g)[DG(g_i) g_i = g_1]]}

A non-novel indefinite NP presupposes that its discourse referent is introduced and satisfies the description. A definite NP comes with this presupposition as well, but in addition presupposes that the input context contains the reference to a unique entity under the given description. That is, all discourse referents i that are anchored to a dog by an assignment g are anchored by g to the same dog. Which means that only one dog is referenced by g, and this will naturally be satisfied if only one such discourse referent was introduced.

Notice that definite NPs are more specific than non-novel indefinites under this description; they express a tighter restriction on suitable input contexts. Also, definite NPs are better suited to pick out a particular existing discourse referent. To see this, consider the fact that indices are not part of the surface structure or the phonological form; they don't get "pronounced" publicly in a conversation. Rather, speaker and hearer have to supply indices (and consequently, discourse referents) on their own, following certain principles that guarantee the coherence of the semantic representation of a text. The mental models of the information contained in a text that arise for the speaker and for the hearer therefore are never exact copies; they will be alphabetical variants, identical up to the choice of indices and discourse referents. For example, the information state that represents the common ground of the hearer and of the speaker after the text (45) may be as follows (here, c_A is the common ground in the perspective of the speaker, and c_B is the common ground in the perspective of the hearer):

(45) a. A, to B: *A man went in. And then a man came out.*[6]
   b. c_A = {h| g $c_A[g<_{38,39}h$ MN(h_{38}) WI(h_{38}) MN(h_{39}) CO(h_{39})]}
   c. c_B = {h | g $c_B[g<_{74,75}h$ MN(h_{74}) WI(h_{74}) MN(h_{75}) CO(h_{75})]}

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[6] In this example the second occurrence of *a man* is naturally deaccented. This does not have to be interpreted as a sign for non-novelty, though. Deaccenting can affect an expression simply because the same expression was used in the immediately preceding context.

If the speaker now wants to refer to the man that went in, the non-novel NP [*a man*]$_{NN}$ obviously would not suffice. It would be acceptable, but there is no guarantee that it picks out the right man. Even the definite NP [*the man*]$_{NN}$ would not be acceptable in this situation, as its uniqueness condition would result in a presupposition violation for any index. The non-novel indefinite NP [*a man that went in*]$_{NN}$ would perhaps be sufficient, but just by accident, because it happens to be the case that no other man that went in was mentioned. The definite NP *the man that went in* would certainly be the best choice because it explicitly **requires** that only one man that went in was introduced, that is, that all the indices in an assignment g that satisfy this description refer to the same entity. If speaker and hearer want to satisfy this requirement, they would have to choose this index, or one of these indices. Hence if the speaker wants the hearer to pick up the right index, a definite NP with an appropriate description is clearly the best choice. Consequently, whenever a speaker uses a non-novel indefinite NP, it will be implicated that the NP is not meant to pick out an index that actually has been introduced before.

This is just the beginning of an in-depth comparison of the relation between non-novel indefinites and definites. One important qualification is that not all definites are anaphoric. There are definites like *the oldest living person* that are motivated because their predicate applies to a unique entity. It should be possible to generalize the uniqueness condition so that it can either apply to entities in the world or to indices, under a given description. I think that this can be done, but I will not attempt to do it here.

6. A Comparison of Theories and New Evidence

We now have discussed two ways to circumvent the requantification problem in sentences with adverbial quantifiers. In sections 2 and 3 I have treated adverbial quantification as focus sensitive, or alternatively as sensitive to existential presuppositions that are introduced by focus. I will call this the **focus theory**. In section 5 I have treated adverbial quantification as sensitive to non-novelty, that is, to constituents that presuppose the existence of their discourse referent. I will call this the **non-novelty theory**.

The two theories have certain features in common. In particular, the domain regulator theory within the focus theory, which says that the discourse referent of indefinites may be new or old, predicts that indefinite NPs can be used to pick up an existing discourse referent, just like the non-novelty theory. Both theories have to tell the same pragmatic story why indefinite NPs are normally not used for this purpose; namely, definite NPs are better in performing this task.

One important difference between the two theories lies in the way they explain the accent facts in our examples. The focus theory assumes that accent is motivated by focusing. It does not make use of any deaccenting rules, but is of course compatible with such rules. The non-novelty theory, on the other hand, makes crucial use of deaccenting rules, as it says that non-novel indefinites are deaccented. But again, it is compatible with accent rules for the purpose of focusing. In both cases, we can assume two constraints: (i) accent if [F], (ii) deaccent if [NN], with the first rule taking priority over the second.

It would seem that examples like (37) argue for the non-novelty theory, as they involve a focus that does not influence the domain of quantification. However, this conclusion would be premature, as we can assume that foci may be associated with different operators. For (37), we can assume a focus on *a baseball cap* that is associated with the quantificational adverbial, and a focus on *a freshman* that is associated with the answer or assertion operator. An illocutionary operator, it has scope over everything else in the clause, and in particular over the adverbial quantifier. These scopal relationships may account for the fact that the focus of the illocutionary operator is more prominent than the focus of the quantificational adverbial.[7]

There is one substantial difference between the two theories, namely, in the way how indefinites are analyzed. According to the domain regulator theory there is only one type of indefinites. Indefinites just make sure that their index is defined in the output context; they don't care whether it is defined for the input context or not. The non-novelty theory, on the other hand, distinguishes between two types of indefinites, one that presupposes that its index is old, and another one that presupposes that its index is new. Hence evidence for a distinction between two classes of indefinites should, prima facie, be seen as evidence for the non-novelty theory.

Non-novel indefinites in English are sometimes marked by *a given*, an expression whose etymology is revealing for the current proposal. This is the case in the following two examples from the British National Corpus:

(46) a. But, however suggestive it may be, the fact that a given phenomenon is successfully predicted by a theory does not prove the theory to be correct.
   b. What limits a teacher wishes to set will depend entirely on her own intentions for a given student.

(46.a) expresses a quantification over phenomena, and (b) a quantification over students. However, *a given* is certainly not necessary for the interpreta-

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[7] See Jacobs (1991) for a theory that relates scopal relations between focus-sensitive operators to the strength of the realization of their foci.

tion of indefinites as non-novel. For example, (46.a) also expresses a quantification over theories, and (b) a quantification over teachers. Furthermore, *a given* can also be used in non-quantificational contexts to mark specific NPs, as in the following example which does not quantify over amounts of time. (I will return to specific indefinites shortly.)

(47) The students spend a given amount of time per week for a period of
      months (...)

I do not know of a language that marks the distinction between non-novel indefinites and regular indefinites in a consistent way. But consider the fact that we have to distinguish between at least three referential types: (i) definites, characterized by a uniqueness presupposition; (ii) non-novel definites, characterized by a presupposition that their index is given; and (iii) regular indefinites, which presuppose that their index is new. English is fairly consistent in differentiating (i) from (ii) and (iii) by the use of the definite vs. the indefinite article. There is evidence for languages that rather group (i) and (ii) together and mark non-novel indefinites like definites. This has been reported for Modern Greek (cf. Newton (1979)) and Spanish (cf. Laca (1990) for the data):

(48) a. Los vaqueros mascan tabaco.
          the   cowboys chew   tobacco
          'Cowboys usually chew tobacco.'
      b. Los vaqueros mascan el tabaco.
          the   cowboys chew   the tobacco
          'What cowboys usually do with tobacco is: they chew it.'

Notice that in (48.a) *tabaco* lacks an article, just like other indefinite mass nouns, and is not in the restrictor of the generic quantifier; in (b) *el tabaco* is marked by the definite article and is in the restrictor of the generic quantifier.

As is well known, many languages do not mark definites vs. indefinites in a consistent way but use other means that clarify the interpretation of an NP. One example is Japanese, a language in which topic marking often indicates definiteness. Now, it is interesting to notice that indefinite NPs in the restrictor of adverbial quantifiers are marked as topics.[8]

(49) Taitei, midori no me o shita inu   wa rikou   de   aru.
      usually, green   of eye Acc did dog(s) Top intelligent Decl is/are
      'Usually, a green-eyed dòg is intélligent'

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[8] Thanks to Katsuhiko Yabushita, who provided me with these examples.

(50) a. Shin-nyuu-sei   wa taitei   yakyuu bou o   kabu-tte iru.
newly-enter-student/s Top usually baseball cap/s Acc wear is/are
'Most freshmen wear a baseball cap'

b. Yakyuu bou wa   taitei shin-nyuu-sei   ga kabu-tte iru.
baseball cap/s Top usually newly.enter-student/s Nom wear is/are
'Most baseball caps are worn by a freshmen',

There is of course a natural connection between novelty and topicality: Topical NPs refer to entities that are established already in the context, and hence will be non-novel. This could be seen as a point in favor of the non-novelty theory. But the focus theory can explain the influence of topichood as well, as focused NPs cannot be topic.

But the following data point to a difference between the two theories. The meaning of (50.a) can also be expressed in the following way, in which 'a freshman' does not have a topic marker:

(51) Shin-nyuu-sei   ga   taitei   yakyuu bou   o   kabu-tte iru.
newly-enter-student/s Nom usually baseball cap/s Acc wear is/are
'A fréshman usually wears a baseball cap.'

It is then understood as an answer to a question like the following:

(52) Douyuu hito/Dare   ga taitei yakyuu bou o kabu-tte imasu ka.
what-kind-of people/who Nom usually baseball cap Acc wear is/are Q
'Who usually wears a baseball cap?'

The lack of topic marking of the subject NP in (51) is motivated here by the more pressing need to mark this NP as the focus of the utterance, which is incompatible with topic marking. This is similar to the English example (37). What is interesting in the Japanese case is that (51) cannot be used to express the meaning of (50.b), in any context. This comes as a surprise for theories that assume that adverbial quantifiers are directly or indirectly (by existential presuppositions) associated with focus.

Another type of evidence comes from languages with optional object NP markers, like Turkish or Persian. These markers are typically used for definite or specific NPs. Interestingly, they are also used to mark NPs in the restrictor of a quantifier, which we analyze as non-novel indefinites. For example, the following two sentences in Persian differ insofar as in (53.a) the object NP, which lacks the object marker -*ra*, is not part of the restrictor of the generic quantifier, whereas in (53.b) the -*ra* marked object is part of the restrictor.[9]

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[9] Thanks to Ezat Karimi, who provided me with this example.

(53) a. Kowboyeeha tanbako mijavand.
    cowboys   tobacco chew
    'Cowboys usually chew tobacco.'
   b. Kowboyeeha tanbako-ra mijavand.
    cowboys   tobacco-OM chew
    'What cowboys usually do with tobacco is: they chew it.'

Objects marked by *–ra* can be focused or non-focused. Hence the Persian data suggest that focusation is not a factor; rather, *-ra* is a marker of non-novelty.

Another property of non-novel indefinites is that they can undergo scrambling in languages that have this type of movement, like German. This is in contrast to regular indefinites, which do not scramble. Compare the following two examples, which I give in a verb-final construction:

(54) a. weil   einer alten Dàme$_{1,NN}$ gewöhnlich eine Kátze t$_1$ gehört
    because an old lady (DAT)   usually   a cat (NOM) belongs
    'because most old ladies own a cat'
   b. weil   eine Kàtze$_{2,NN}$ gewöhnlich t$_2$ einer alten Dáme gehört
    because a cat (NOM)   usually   an old lady (DAT) belongs
    'because most cats belong to an old lady'

Non-novel indefinites share this property with definites. However, it so happens that expressions in focus do not undergo scrambling either, and so it seems that the data in (54) could equally well be explained within the focus theory, according to which *eine Katze* is in focus in (54.a), and *einer alten Dame* is in focus in (54.b).

There is another approach that was developed to deal with the effect of scrambling on quantification, namely, Diesing (1992). Diesing analyzes scrambling as having an immediate effect on quantification. It is assumed that we have existential closure over the VP and that scrambling moves constituents outside of the VP. As a result, the variable of an indefinite that is scrambled will not be bound by the existential closure over the VP, and hence can be bound by an adverbial quantifier:

(55) [eine Katze]$_2$ gewöhnlich   [$_{VP}$ t$_2$ [einer alten Dame]$_2$ gehört]
    usually(cat(x), y[old lady(y)   belong-to(x,y)])

One problem this theory shares with the analysis in terms of association with focus is that we would be forced to treat the influence of presuppositions, as in (7), as a different phenomenon. And a specific problem of this theory is that it does not account for the fact that deaccented indefinites that apparently are in situ, that is, within the VP, can provide the variable for the adverbial quantifier:

(56) weil das Tierschutzheim gewöhnlich (ja doch) eine Kàtze
      because the animal shelter usually   PARTICLE a.ACC cat
      einer alten Dáme anbietet.
      a.DAT old   lady   offers
      'because the animal shelter offers most cats to old ladies'

If the adverbial *gewöhnlich* marks the VP (a function that Diesing claims for modal particles like *ja doch*, which can occur at this position as well), then *eine Katze* is within the VP, but it nevertheless provides the variable for the quantifier.

    I would also like to mention here the explanation for deaccenting of indefinite NPs proposed by Bartels & Merin (1997). The general function of what I have called deaccenting and what Bartels & Merin identified as L*H⁻ tone is to indicate, roughly, a transfer of authority of referent choice from the speaker to the hearer. In the case of indefinites this means that it is granted to the hearer to select an entity that satisfies the description. This relates to the way how universal statements are analyzed in game-theoretic semantics: To prove   x   [x], the speaker has to prove   [*a*] for some object *a* that can be chosen by a malevolent hearer, or "nature". This idea can be generalized for other quantificational forces. For example, to prove USUALLY(x)   [x], the speaker has to prove that   [*a*], where *a* is chosen by the opponent, is true for most choices of *a*. In contrast, for the existential interpretation   x   [x] it remains in the authority of the speaker to choose an instantiation *a* such that   [*a*], and this situation is not marked by L*H⁻ but by H*L⁻.

    This type of explanation shares certain features with the one developed here. In particular, it assumes that some feature of the indefinite NP is responsible for the selection of the variables for an adverbial quantifier. Also, the distinction between speaker-based choice and hearer-based choice has a parallel in the theory proposed here: New discourse referents are introduced through the authority of the speaker, whereas if the speaker wants to refer to an old discourse referent he has to appeal to the hearer to choose one from the discourse referents that is already part of the common ground, which is at the disposal of the hearer.

    Non-novel indefinites compete with other NP types, in particular regular indefinites and definites. They have a *raison d'être* in the scope of adverbial quantifiers, but the question arises whether there are other ecological niches that they might occupy. What about the introduction of new discourse referents? Non-novel indefinites could do this by way of accommodation: They presuppose that their discourse referent is old, but at the same time cannot pick up a particular discourse referent (for this a definite NP would have been used). Hence the presupposition can only be satisfied by

accommodating it, that is, by introducing a new discourse referent under the given description. Normally this is done by regular indefinites, that is, by regular update of a context, and regular update should be favored over accommodation, everything else being equal. So this does not appear to be a good niche for non-novel indefinites either. But accommodation has at least one important property in which it differs from regular update: It tends to be global, that is, it tends to happen before a sentence is interpreted (cf. Heim 1983, van der Sandt 1992)[10]. This means that an accommodated non-novel indefinite may have wider scope than a non-accommodated regular indefinite.

Now, it is well-known that **specific** indefinites can have wider scope than we would expect if they were regular quantificational NPs. Fodor & Sag (1982) show that such NPs can scope out of syntactic islands and claim that they are referential and hence appear to have widest scope:

(57) Each teacher overheard the rumor that *a student of mine* was called before the dean.
'There is a student o mine x, and each teacher overheard the rumor that x was called before the dean.'

Abusch (1994) argues that the referential analysis of specific indefinites cannot be correct, as there are readings in which they are still in the scope of another operator:

(58) Every professor rewarded every student who read *a book he had recommended.*
'For every professor x: There is a book that x recommended, y, and x rewarded every student that read y.'

Cresti (1995) has developed an analysis of specific NPs as **topical**, where topichood introduces a certain **presupposition**, and this presupposition can be **accommodated** globally, as in (57), or on an intermediate level, as in (58). In any case, presupposition projection is not subject to syntactic island conditions, which explains the apparent wide-scope phenomena of specific indefinites. The presupposition introduced by an indefinite specific NP like [*a student*]$_i$ is essentially that the variable assignment must satisfy the condition $[\![student]\!](x_i)$, where x_i is the variable corresponding to the index i (see Cresti 1995 p. 164 for details). What this means is, essentially, that the variable x_i is already available, and that is established that x_i is a student. Details of implementation aside, this is similar to the proposal developed here for non-novel indefinites, which presupposes that their index is given. Cresti does not apply her theory to the solution of the requantifica-

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[10] See section 8 for a discussion of mechanisms for global accomodation.

tion problem, but what we have suggested here appears to be a natural extension of her approach.

The assumption that non-novel indefinite NPs are topical is quite natural.[11] We have seen that the topic marker in Japanese (examples (49) and (50)) can identify non-novel indefinite NPs, and topics certainly are generally deaccented, just like non-novel indefinites. In earlier presentations of the material discussed here I called non-novel indefinites "topical indefinites". I ultimately abstained from that because languages with topic markers like Japanese do not mark every non-novel indefinite NP (for example, in case there is more than one non-novel indefinite NP, as in (32), or when it occurs in the protasis of a conditional, a case which I will discuss in the next section.

7. Non-novel Indefinites in Conditionals

In this section I will discuss another type of evidence for non-novel indefinites within quantificational structures. So far we were mainly concerned with indefinites in the scope of an adverbial quantifier in which the domain was not explicitly marked. One way of marking the domain is by an *if*-clause or *when*-clause (i.e. the protasis of the conditional sentence):

(59) If it is raining, Mary usually stays home.
    'Most cases in which it is raining are such that Mary stays home.'

If indefinite NPs occur within the protasis, accentuation influences the truth conditions, as observed first by Kadmon (1987) and Kadmon (1990); cf. also Heim (1990).

(60) a. If a fàrmer owns a dónkey, he usually béats it.
        'Most farmers that own a donkey beat it.'
    b. If a fármer owns a dònkey, he usually béats it.
        'Most donkeys owned by a farmer are beaten by him.'

Kadmon calls (60.a) the subject-asymmetric reading (quantification is over the variable associated with the subject NP, *a farmer*), and (60.b) the object-asymmetric reading (quantification is over the variable associated with the object NP, *a donkey*).

In Krifka (1992) I have treated the selection of subject-asymmetric and object-asymmetric readings as a consequence of focusing, assuming that

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[11] Beaver (1994) has argued that the domain of quantification can be implicitly restricted by topichood. He analyses a sentence like *all Itálians use their càrs to go to wórk* as a sentence about car-owning Italians, where the destressed *their cars* helps determining the topic. Beaver contrasts the idea that the domain of quantification is formed by topichood and the idea that it is formed by presuppositions.

focus in the case of (60.a) is on *owns a donkey*, and in (60.b) on *a farmer*. The interpretation rule for an adverbial quantifier that scopes over a conditional clause makes sure that the discourse referent of the non-focused indefinite NP in the protasis is affected by the meaning of the quantifier. An alternative account proposed by Chierchia (1992) assumes that quantification is only over the "topical" parts in the protasis, that is *a farmer* in (60.a) and *a donkey* in (60.b). I had two objections: First, in languages that mark topic, like Japanese, contrasts as the one between (60.a) and (b) cannot be expressed by differences in topic marking within the *if*-clause. Second, it is generally assumed that there can be only one topic per sentence; for example, Japanese allows for only one *wa*-phrase per sentence. But in addition to the asymmetric readings discussed in (60) there are also symmetric readings, as in (61). Chierchia would have to assume here that both *a farmer* and *a donkey* are topical, hence, that the protasis has two topics.

(61) If a fàrmer ówns a dònkey, he usually takes cáre of it.
    'Most farmer-donkey pairs x,y such that x owns y are such that x takes care of y.'

Chierchia (1995), chapter (2.4), provides a technical solution which involves coindexation of the quantifier with the NPs and the device of existential disclosure proposed in Dekker (1993). But it is not motivated there why existential disclosure is related to deaccentuation.

Alternatively, I assume that it is the non-novelty of indefinite NPs that distinguishes readings like (60.a,b). This eliminates the problems that an account in terms of topicality raises: While topical indefinite NPs are non-novel (cf. the discussion of the Japanese examples in (49) and (50)), we don't have to assume that EVERY non-novel indefinite NP is topical. The fact that we do not find topic-marked NPs within the protasis of a conditional in Japanese presumably shows that the topic marker identifies the topic of the whole sentence, and hence cannot occur within an embedded clause.[12] Also, there is no problem with the assumption that one sentence may contain more than one non-novel indefinite NP.

Take the basic interpretation scheme for adverbial quantifiers applied to a conditional clause with a protasis   and an apodosis :

(62) $c + Q(\ , \ )$
    $= c + Q$-many ways in which c can be updated so that it entails
        are also ways that, when updated with   , entail   .

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[12] Following Haiman (1978), it is the protasis itself that is the topic of the conditional sentence.

Where c entails   iff c +   = c. Here the updates of c with   define the domain of quantification. If   contains presuppositions, then the domain should be restricted further:

(63) c + Q(,)
    = c + Q-many ways in which c can be accommodated to satisfy the
       presuppositions of   so that the result entails
       are also ways that, when updated with , entail

More specifically for *usually* (cf. the definition (42) for comparison):

(64) [[*usually*]](,)
    = c{g   c | MOST({h | {g}   {g&h}[ ]   k[k   [{g&h} +   ]]},
                      {h | k[k   [{g&h} +   +   ]]})

To illustrate, consider the following derivation of an example that is slightly more complex than the object-asymmetric interpretation of (60):

(65) a. If a fármer owns a dònkey$_{NN}$, he usually béats it with a stíck$_3$.
    b. *usually* [*a farmer*$_1$ [*a donkey*$_{NN,2}$ [*t*$_1$ *own t*$_2$]],
        [*a stick*$_3$ [*he*$_1$ *beats it*$_2$ *with* t$_3$]]]
    c. [[*a farmer*$_1$ [*a donkey*$_{NN,2}$ [*t*$_1$ *own t*$_2$]]]]
        = c{h | g   c[DK(g$_2$)]   g   c[g <$_1$ h   FR(h$_1$)   OW(h$_1$, h$_2$)]]},
        = ①
    d. [[*a stick*$_3$ [*he*$_1$ *beats it*$_2$ *with* t$_3$]]]
        = c{h | g   c[g <$_3$ h   ST(h$_3$)   BT(h$_1$,h$_2$,h$_3$)]]},
        = ②
    e. [[*usually* [*a farmer*$_1$ [*a donkey*$_{NNOP,2}$ [*t*$_1$ *own t*$_2$]]],
        [*a stick*$_3$ [*he*$_1$ *beat it*$_2$ *with* t$_3$]]]]
        = c{g   c| MOST({h | {g}   {g&h}[①]   k[k   {g&h}+①]},
                         {h | k[k   {g&h}+①+②}]})
        = c{g   c|
        MOST({h | g<$_2$g&h   DK(h$_2$)   k[g&h<$_1$k   FR(k$_1$)   OW(k$_1$,k$_2$)]}
              {h | k[g&h <$_{1,3}$ k   FR(k$_1$)   DK(k$_2$)   OW(k$_1$,k$_2$)
                   ST(k$_3$)   BT(k$_1$,k$_2$,k$_3$)]]})}

This is true in a context c$_0$ iff all assignments g in c$_0$ have the following properties:

• most increments h of g such that h$_2$ is a donkey and there is a farmer that owns h$_2$

• also have the property that there is a farmer that owns h$_2$ and that there is a stick with which the farmer beats h$_2$.

That is, 'most donkeys that are owned by a farmer are beaten with a stick by a farmer that owns them'. This is a correct interpretation of the so-called

"weak" reading of (65.a). It appears plausible enough for the current case because we typically don't think of joint ownership of a donkey. See Rooth (1987), Chierchia (1995) for so-called "strong" readings, which I will not implement here for reasons of space, and Krifka (1996) for a discussion of the pragmatic principle governing weak vs. strong readings.

We have discussed the interpretation of quantificational adverbials in two types of contexts: When they are applied to a simple sentence, and when they are applied to a conditional. In the first case, the quantificational domain is formed by the discourse referents of the presuppositions of the sentence that have the properties expressed by the presuppositions of the sentence. In the second case, we have assumed that the domain of quantification is formed by the discourse referents of the presuppositions of the protasis that fall under the description of the protasis. The question arises how the presuppositions of the apodosis, the main clause, come into play. If they behave like the presuppositions of a simple clause, then we should assume that they influence the quantificational domain as well.

This is certainly the case. First consider an example in which the apodosis does not contain a presuppositional indefinite. The following sentence arguably has two readings:

(66) If a càt is heálthy, it usually lands on its féet.
    a. 'For every cat x that is healthy: Most situations s in which x touches ground are such that it lands on its feet.'
    b. 'For most pairs of situations s and healthy cats x in which x touches ground it holds that x lands on its feet in s.'

The reading (66.a) is easy to derive: A conditional with non-overt universal or generic quantifier embeds a simple sentence with an adverbial quantifier. This case combines the rule for *always* or the generic quantifier for *if*-clauses, and the rule (43) for *usually*. In the case of (66.b). we have only one quantificational domain, over pairs, and the presuppositions of the apodosis are merged with the ones of the protasis. We have the same two types of readings in the following example, in which the discourse referents are introduced by indefinite NPs; I only specify the pair reading here:

(67) If an influential politìcian is on the board of trustees of a heálth organization, a well-informed nèwspaper reader usually knóws about it.

    Pair reading: 'Most pairs x, y, where x is an influential politician on the board of trustees of a health organization and y is a well-informed newspaper reader are such that y knows that x is on the board of trustees of the health organization.'

This suggests an analysis of quantificational adverbials along the following lines:

(68) $c + Q(\ ,\ )$
  $= c + Q$-many ways in which c can be accommodated to satisfy the
    presuppositions of " and " so that the result entails
    are also ways that, when updated with , entail .

This leads to the following meaning rule for *usually* (cf. (64) for comparison). Here " ; " stands for the composition of the context-change potential with the context-change potential , that is, for $c[c +\ \ +\ ]$.

(69) USUALLY$(\ ,\ )$
  $=\ c\{g\ c|\ \text{MOST}(\{h|\{g\}\ \{g\&h\}[\ ;\ ]\ \ k[k\ \ [\{g\&h\} +\ \ ]]\},$
                $\{h\ |\ \ k[k\ \ [\{g\&h\} +\ \ +\ \ ]]\})$

In (67) the protasis and the apodosis will each supply the presupposition that a discourse referent is introduced (say, 1 and 2). The sentence will then quantify over increments h that map these two discourse referents to entities such that 1 is an influential politician and 2 is a well-informed newspaper reader (by accommodation), and that 1 is on the board of trustees of a health organization.

    The assumption that the presuppositions of non-novel indefinites are accomodated can account for certain effects of accentuation on the availability of discourse referents as antecedents for pronouns. For example, von Fintel (1994) observes a contrast involving *unless*-conditionals that can be also observed with regular conditionals.

(70) a. Unless Pedro ówns a dònkey, he doesn't beat it.
    b. *Unless Pedro owns a dónkey, he doesn't beat it.

(71) a. If Pedro doesn't ówn a dònkey, he doesn't beat it.
    b. *If Pedro doesn't own a dónkey, he doesn't beat it.

The ungrammaticality of the (b) examples follows from standard assmptions if we assume that negation limits the life span of discourse refrents introduced in their scope, and if we analyze *unless* as *if not*. The grammaticality of the (a) examples follows if we assume that *a donkey*, which is destressed, comes with a non-novelty presupposition that is, like other presuppositions, not affected by negation.

    The assumption that the presuppositions of the apodosis get accommodated can be used to explain why we find backward anaphora as in the following examples (they are taken from Chierchia (1995), chapter 3; I have supplied the prosodic markers).

(72) If it$_1$ is overcóoked, a hàmburger$_1$ usually doesn't táste good.

(73) If a bòy$_1$ líes to her$_2$, a gìrl$_2$ won't trúst him$_1$ anymore.

Notice that the indefinite NPs in the main clause are necessarily deaccented. Consequently they should be interpreted as non-novel indefinites. But then they become available as antecedents for the pronouns. For example, in the case of (73) the local input context {g} is accommodated to {g&h} at which the following context change potential can be interpreted:

(74) ⟦⟦a boy⟧$_{1,NN}$ lies to her$_2$⟧; ⟦⟦a girl⟧$_{2,NN}$ doesn't trust him$_1$⟧
   = c{g c | g c[BO(g$_1$)]   g c[FEM(g$_2$)]   LT(g$_1$, g$_2$)
                g c[GI (g$_2$)]   g[MALE(g$_1$)]   ¬TR(g$_2$, g$_1$)}

By the pragmatic argument given in the discussion of examples (44.a,b), the input context must not contain the indices 1 and 2 yet (in this case definite NPs, *the boy* and *the girl*, would have been used instead). This means that these two indices must be accommodated, together with the presupposed information that 1 is anchored to a boy and 2 is anchored to a girl. That is, if {g} {g&h}[(74)], we have DOM(h) = {1, 2}, and h$_1$ is a boy and h$_2$ is a girl. The domain of quantification is further determined by using {g&h} as an input context for the protasis, which will restrict h further to cases in which h$_1$ lies to h$_2$. The quantification then states that most such increments h are such that {g&h} supports the truth of the protasis (which is trivially satisfied, due to conservativity) and of the apodosis, in this case, that h$_2$ is a girl (which is already guaranteed by accommodation) and that h$_2$ does not trust h$_1$.

Chierchia (1995), chapter 3, has treated examples like (72) and (73) by assuming reconstruction of the protasis into a position in which the subject c-commands its antecedent and hence can bind it. He works with reconstructed forms like the following (where GEN stands for the generic operator):

(75) a. a hamburger$_1$ [[usually [doesn't taste good]] if it$_1$ is overcooked]
     b. a girl$_2$ [[GEN [won't trust him$_1$ anymore]] if a boy$_1$ lies to her$_2$]

A problem with this account is that it does not relate the availability of structures like (72) and (73) with the observed prosodic patterns[13]. This is particularly obvious when the full NP is in object position:

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[13] If anything, Chierchia's theory would predict that the NPs in question would NOT have to be deaccented. For (72) he argues for a structure as given in (75.a), and against the following structure, as this would result in a weak crossover violation after the *if*-clause is fronted from its original position:

   (i) a hamburger$_1$ [[usually [t$_1$ doesn't taste good]] if it$_1$ is overcooked]

If *usually* is adjoined to IP, then *a hamburger* is interpreted IP-internally in (75.a). But if we want to make a structural distinction between topical NPs and non-topical NPs at all, then we

(76) a. If he₁ líes to her₂, a boy₁ risks lóosing a gìrlfriend₂.
   b. *If he₁ líes to her₂, a boy₁ risks loosing a gírlfriend₂.

As an argument in favor of his reconstruction theory, Chierchia adduces the observation that a sentence with a pronominal main clause subject are bad (cf. (77.a)). This is to be expected in his theory, as reconstruction would lead to a principle C violation:[14] (cf. (77.a)).

(77) a. *If a boy₁ lies to her₂, he₁ risks loosing a girlfriend₂.
   b. *he₁ [risks [loosing a girlfriend₂]] if a boy₁ lies to her₂]

However, such sentences need not be ungrammatical if the indefinite object NP is deaccented, which makes them similar in acceptability to (73).[15]

(78)   If a boy líes to her, he risks lóosing a gìrlfriend.

This comes as a surprise for Chierchia's theory, but can be explained in the theory developed here: An indefinite in the apodosis can be antecedent to a pronoun in the protasis only if it is non-novel, and non-novelty is marked by deaccenting.

8. Accommodation by Rule or by Principle

When we discussed the influence of the presuppositions in cases like *Usually, a green-eyed dòg is intélligent*, we proposed interpretation rules like (42), repeated here:

(79) USUALLY( )
   = c{g c | MOST({h | {g} {g&h}[ ]}, {h | {g&h} +   })

This says that most ways in which c can be accommodated to satisfy the presuppositions of   are also ways that support the truth of . And when we discussed the influence of presuppositions in cases like *if a fármer owns a dònkey, he usually béats it*, we proposed interpretation rules like (69), represented here in the same format:

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will have to assume that topical NPs are interpreted IP-externally, that is, as in the problematic structure (i).

   [14] A standard donkey sentence like *If a boy lies to a girlfriend, he usually loses her* is fine because the protasis can be base-generated in situ. This option is impossible if the protasis contains pronouns with antecedents in the main clause.

   [15] The conditions under which backward anaphora are possible need further testing. While accentuation clearly plays a role along the lines suggested here, there seem to be additional factors that decrease grammaticality. Also, I have found relatively little agreement between speakers in judgements in preliminary testing.

(80) USUALLY(,)
   = c{g c | MOST({h | {g} {g&h}[;] k[k [{g&h} +]]},
                {h | k[k {{g&h} + +]]})

That is, most ways in which c can be accomodated to satisfy the presuppositions of and so that the result entails are also ways that, when updated with , entail .

How are (79) and (80) related to each other? Ideally, the former should be a simplified version of the latter, with an empty restrictor . The empty context-change potential, for which I write 0, is the identity function c[c], which leaves a context unchanged:

(81) c + 0 = c.

Another, even more important issue is the following:[16] Rules like (79) and (80) appear suspicious because they make explicit reference to accommodation. Usually, accommodation is seen as a repair strategy in case something goes wrong with the application of the interpretation rules. But here we have a semantic RULE that unabashedly appeals to repairs! It would clearly be preferably to have an interpretation rule for adverbial quantifiers that necessitates accommodation for independent reasons, following the general repair strategies outlined by Heim (1983) and, in more detail, van der Sandt (1992).

The rules presented in (79) and (80) can be reformulated in a way that their connection becomes evident, and which does not make explicit reference to accommodation. Let me assume the following principle for the semantic analysis for quantificational adverbials:

(82) c + Q(,)
   = c + Q-many ways in which c entails
       are ways in which c entails and .

This principle does not make explicit reference to presuppositions. I will implement it by assuming a meaning of quantificational adverbials based on relations between an input assignment, a protasis context and an apodosis context. This is illustrated here with the operator MOST*, which will be crucial for our analysis of *usually*:

(83) MOST*(g)(c ,c) is defined iff h c [g h] and k c h c [h k].
   If defined, it holds iff MOST({h | k c [g&h = k]}, {h | i c [h i]})

That is, MOST* is interpreted with respect to an input assignment g, and establishes a relation between two contexts c and c , where the assignments in c are extensions of g, and the assignments in c are extensions of c . The

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[16] Thanks to Kai von Fintel, who got me thinking about this issue.

relation holds if most increments h by which the assignments in c differ from g are contained in the assignments in c.

It is useful to introduce one last piece of notation. If c is a context and a context-change potential, let $c\backslash$ stand for $\{g \in c \mid \{g\}+ \quad \}$, that is, $c\backslash$ reduces c to those assignments that support , without changing those assignments. Now the interpretation of *usually* can be given as follows:

(84) $c + \text{USUALLY}(,) = \{g \in c \mid \text{MOST*}(g)(\{g\}\backslash)(\{g\}\backslash[;])\}$

This captures (82) quite closely: If an input context c is updated with *usually α β*, then it will be restricted to those input assignments g for which it holds that most ways in which $\{g\}$ supports are also ways in which $\{g\}$ supports and .

Now, if $\{g\}$ supports then $\{g\}\backslash = \{g\}$, and if $\{g\}$ doesn't support then $\{g\}\backslash = $. In either case, there is no increment between the input assignment g and the assignments in $\{g\}$ or . This does not satisfy the requirements of MOST. A remedy in this situation is that presuppositions in or get accommodated in appropriate places. Let us first look at the presuppositions of the apodosis, , in case the restrictor is empty. There are three points at which they can take place: globally, intermediately, or locally (cf. van der Sandt 1992, Geurts 1995). I will write " $c [c \quad c [\quad]]$" for the context that we get from c if the presuppositions of are accommodated.

(85) $c + \text{USUALLY}(0,) = \{g \in c \mid \text{MOST*}(g)(\{g\}\backslash 0)(\{g\}\backslash[0;])\}$
$\qquad\qquad\qquad = \{g \in c \mid \text{MOST*}(g)(\{g\})(\{g\}\backslash)\}$

presuppositions of are not satisfied in $\{g\}\backslash$, which requires computation of $\{g\}+$.

a. Global accommodation:
   $c [c \quad c [\quad]] + \text{USUALLY}(0,)$
   $= \{g \in c [c \quad c [\quad]] \mid \text{MOST*}(g)(\{g\})(\{g\}\backslash)\}$

b. Local accommodation:
   $\{g \in c \mid \text{MOST*}(g)(\{g\})(c [\{g\} \quad c [\quad]]\backslash)\}$

c. Intermediate accommodation:
   $\{g \in c \mid \text{MOST*}(g)(c [\{g\} \quad c [\quad]])(c [\{g\} \quad c [\quad]]\backslash)\}$

Global accommodation, which changes the input context c to $c [c \quad c [\quad]]$, is of no use: The restrictor of the quantifier MOST* remains problematic. The same holds for local accommodation, in which the context in which is interpreted within the apodosis is changed. But intermediate accommodation helps: The context of the protasis, $\{g\}$, is changed to the accommodated context $c [\{g\} \quad c [\quad]]$, and g and the elements in $c [\{g\} \quad c [\quad]]$ will differ if the accommodation involves the introduction of new discourse referents. (85.c) amounts to the following, according to (83):

(85) c . {g   c | MOST({h | k   c [{g}   c [   ][g+h = k]},
                        {h | i   [c [{g}   c [ ]]\ ][h   i]})}

That is, most increments h of g such that h satisfies the presuppositions of   are contained in the assignments that satisfy . This is essentially what the original rule (79) said, now without explicit reference to accommodation.

In case the context-change potential   contains more than one non-novel indefinite NP, additional possibilities arise. It is sufficient that one non-novel indefinite is accommodated in the protasis; the other can be accommodated globally, leading to a specific interpretation, if we follow Cresti (1995). This is exemplified by the prominent reading of the following sentence:

(86) A frìend of mine$_{NN}$ usually is afráid of a dòg$_{NN}$.
'There is a friend of mine x, and for most dogs y: x is afraid of y.'

However, our way of representing presuppositions does not allow for such differential treatment. The context-change potential of the underlying sentence does not make a distinction between the two indefinites:

(87) A frìend of mine$_{NN,1}$ usually is afráid of a dòg$_{NN,2}$.
     c{g   c | g   c[FR(g$_1$)]   g   c[DG(g$_2$)]   AF(g$_1$, g$_2$)}

This can be only interpreted with contexts c that assign g$_1$ to a friend of mine, and g$_2$ to a dog. What we need here is a way to access presuppositions directly. Within the representational framework of DRT, this has been done by van der Sandt (1992) and Geurts (1995); an alternative, developed in Yeom (1998), makes use of a storage device. I will not implement direct access to presuppositions here.

Consider now cases in which the restrictor is not empty. Several possibilities arise: The presuppositions of the protasis could be accommodated locally or globally, and the presuppositions of the apodosis could be accommodated globally, intermediately, or locally. In order to satisfy the requirements for the quantifier, at least one presupposition has to be accommodated within the protasis. Also, if presuppositions of both the protasis and the apodosis are accommodated within the protasis, the order in which the accommodations are carried out may differ. Our original rule (80), in which both presuppositions are accommodated within the protasis, and the accommodation of the presuppositions of the protasis preceded the accommodation of the presuppositions of the apodosis, amounts to the following:

(88) a. c + USUALLY(,)
    = {g c | MOST*(g)({g}\ )({g}\[;])}

    b. Accommodation of {g} to c [c [{g} c [ ]] c [ ]], = ①:
    c + USUALLY(,)
    = {g c|MOST*(g)(①\ )(①\[;])}
    = {g c|MOST({h| k ①\ [g+h = k]}, {h | i [①\[;]][h i]})}

That is, most increments h of g such that h satisfies the presuppositions of and and where g+h actually makes true are contained in assignments that make and true as well. This is what the original rule (80) said, without explicit mentioning of presuppositions. However, notice that (80) now represents just one of several possibilities of how to satisfy the requirement that a presupposition is accomodated in the protasis.

The interpretation rule (84) may still appear dubious. True, it does not mention accommodation, but it will never lead to an acceptable result except through the accommodation of presuppositions that introduce discourse referents. But I think that we have to live with that if we assume that adverbial quantification is indeed presupposition-sensitive. Also, one might raise objections against it for empirical reasons. After all, there are cases where we appear to quantify over constituents that are not introduced by non-novel indefinites:

(89) If a mán came in, he usually took off his hát.

In this sentence, *a man* bears accent and is presumably not a non-novel NP; still it appears to quantify over men than came in. However, I think that there is evidence that (89), with an eventive sentence as a protasis, does not quantify over men, but over situations; a man that came in twice would have to count twice. But then we can assume that the protasis clause is about situations, and that the discourse referent of the situation is introduced via accommodation

9. Conclusion

Let us summarize. In this paper I have argued for a novel type of indefinites, namely, non-novel indefinites. They presuppose that their discourse referent is given, but they differ from standard definites insofar as they do not come with a uniqueness presupposition, or some equivalent thereof. This is the reason why they are not used as anaphoric elements themselves. But they are used in the context of adverbial quantification. The domain of adverbial quantification is supplied by presuppositions, and non-novel indefinites supply their indices by this mechanism to the domain of quantification. This allows us to circumvent a problem that appears in previous accounts of indefinites in the scope of adverbial quantification in terms of focus sensitiv-

ity, the requantification problem. We have also discussed the influence of non-novel indefinites in the protasis of conditional clauses. We have argued that they have a similar function there, namely to restrict the domain of quantification, and we have discussed how non-novel indefinites in the protasis and the apodosis collaborate in this task.

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