ANAPHORIC RESTRICTION OF ALTERNATIVE SETS: ON THE ROLE OF BRIDGING ANTECEDENTS

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Abstract

This paper addresses the problem of how to restrict the set of alternatives evoked by focus to obtain a subset relevant for quantification by focus-sensitive adverbs. The paper focusses on definite noun phrases. It is argued that most definite NPs, if they include a focus, have to make use of a bridging antecedent to achieve uniqueness. The bridging antecedent is shown to provide the relevant set of alternatives, which may in addition be constrained by the backgrounded part of the descriptive content. Moreover, NPs of the form "*the OTHER [p]*" are shown to relate to the (proper) alternatives induced by a preceding focus. The analysis is spelled out on the basis of DRT.

1   Introduction

It is commonly assumed that focus triggers a set of alternatives constituting, e.g., the quantificational domain of focus-sensitive adverbs (cf. Rooth 1992, Krifka 1993). The set of alternatives, first of all, has to comprise elements of the appropriate type. Moreover, it has to be restricted by the context of the utterance to exclude unwarranted results. For example, the sentence in (1) clearly does not support the interpretation that Lisa is the only individual Ben ever talked to. Instead, the hearer will recover from the context a set of relevant individuals to be considered as substitutes for Lisa:

(1)   Ben only talked to LISA.[1]

To address the problem of restriction Rooth in his 1992 paper suggested to conceptualize the domain of quantification as a subset of the focus semantic value, constrained by pragmatic processes. This conception leaves room for an account of pragmatic constraints of various sorts. Still, there is the question of how to determine, for a given utterance, the alternatives relevant in the context of the utterance. To be sure, there will be no general answer to this question that includes all kinds of possibly focussed items. There is, however, a class of definite noun phrases, including the majority of focussed occurrences, for which the set of relevant alternatives can be determined taking the uniqueness condition into account.

Suppose, Ben is a reporter who wants to conduct an interview with the members of a certain research team. Consider the proposition in (2). It will be false, if Ben talked to any member of the research team other than the leader. But it will not be false if he had interviewed someone not on the team in addition to the leader. Obviously, the research team itself provides the set of alternatives relevant for quantification in (2). At the same time, the definite NP *the leader* is related to the research team via bridging, the leader being the leader of the previously mentioned team. Thus the research team provides the bridging antecedent for the focussed NP.

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[1]Capital letters denote accenting of the word and also (narrow) focus, if not indicated seperately.

(2)   (The research team arrived at the base camp late at night.)

        Ben only talked to the LEADER.

Similarly, the proposition in (3)(a) will be false if Ben interviewed another member of the team in addition to the Dutch one. But it will not be false if he additionally interviewed someone not on the team. In this example the definite NP carrying the focus does not involve a functional noun like *leader*. Nevertheless the definite constitutes a bridging anaphor relating to the research team: The dutch researcher has to be the only dutch team member. As in the previous example the antecedent of the definite NP provides the relevant set of alternatives, i.e. the team members. In (3)(b) the deaccented part of the descriptive content, i.e. *geologist*, has to be accommodated. Due to lack of context the most likely interpretation is the one where the research team consists of geologists only. On this interpretation we conclude that all members of the research team are geologists.

(3)   (The research team arrived at the base camp late at night.)

        (a) Ben only talked to the DUTCH researcher.

        (b) Ben only talked to the DUTCH geologist.

Now consider the continuations of (3)(b) given in (4)(a) and (b). The definite NP *the OTHERS* relates to both the dutch geologist and the research team referring to the set of individuals which are non-dutch and geologists and team members. This set coincides with the set of proper alternatives induced by *the DUTCH geologist*.[2] It appears that the phrase *the OTHERS* provides a linguistic expression that refers to the proper alternatives induced by a previous focus. At the same time, the phrase *the OTHERS* itself is a focussed definite NP inducing a set of alternatives which is provided by a bridging antecedent, as in the case of (2)/(3). Furthermore, in (4)(b) the deaccented part of the definite applies to all elements of the alternative set, as in the case of (3)(b). Thus from (4)(b) we infer that the members of the research team are Greenpeace campaigners.

(4)   (The research team arrived at the base camp late at night. Ben only talked to the DUTCH geologist.)

        (a) The OTHERS were preparing for the next day.

        (b) The OTHER Greenpeace campaigners were preparing for the next day.

In this paper it will be shown that for a wide class of definite NPs carrying a focus the relevant set of alternatives is restricted by a bridging antecedent. The analysis is based on the account of definite noun phrases presented in Umbach (2002) where it is argued that most definite NPs, if they carry an accent, have to make use of a bridging antecedent to comply with the uniqueness constraint imposed by definiteness (there is a class of exceptions which is discussed below). Combining this analysis with the data in (2) and (3) the bridging antecedent seems to play a dual role, supporting uniqueness and also restricting the relevant alternatives. Thus, the restriction required for the alternative set is calculated as a side effect of resolving the definite's uniqueness condition, and there is no need to assume a seperate pragmatic process. In addition, an interpretation of the NP *the OTHER [p]*[3] will be suggested in this paper

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[2] The set of "proper alternatives" is the set of alternatives minus the focussed element.

[3] i.e. *the OTHERS, the OTHER one, the OTHER child(ren)* etc.

complying with the general interpretation of focussed definites and also accounting for the fact that these NPs systematically refer to the proper alternatives induced by a preceding focus.

The analysis will be based on DRT (Kamp&Reyle 1993) and the presuppositions-as-anaphors theory of van der Sandt (1992). The interpretation of focus will follow the idea of Rooth (1992) without, however, stipulating a seperate notion of alternative meaning. Moreover, it will make crucial use of the notion of the Focus Phrase, which is introduced in section 2. Section 3 gives a brief overview over the approach on definite noun phrases suggested in Umbach (2002). Section 4 and 5 present the interpretation of focussed noun phrases and of NPs of the form *the other [p],* respectively. Finally, a problem arising from overlaps and gaps in the construction of the alternative set will be discussed which leads to additional interpretation complexity.

2   Focus phrase and local background

The notion of the *Focus Phrase* (cf., e.g., Meinunger 1995, Krifka ms.) accounts for the fact that the alternatives induced by a focus need not correspond to the focussed item. This is evident, e.g., in contrastive sentences where the contrasted elements have to be mutual alternatives. In (5) the contrasting element in the second conjunct cannot correspond to the focussed item only, and it also cannot correspond to the intermediate NP or PP. Instead, it must match the "highest" definite noun phrase including the focus. Accordingly, the alternatives evoked by the focus in the first conjunct do not consist in colors, or dresses in various colors, but in girls with dresses in various colors.

(5)   Ben didn't invite [the girl in the RED dress]$_{\text{Focus Phrase}}$,

    (a)   but the girl in the BLUE dress.

    (b)   *but in the BLUE dress.

    (c)   *but the BLUE dress.

    (d)   *but BLUE.

The same effect occurs when sentences with *only* are continued by sentences explicitly referring to the excluded alternatives either by negation or with the help of "*the other ...*", cf. (6). Again, the alternatives cannot be colors or dresses, but have to be girls with differently colored dresses.

(6)   Ben only invited [the girl who was wearing the RED dress]$_{\text{Focus Phrase}}$,

    (a)   not the girl who was wearing the BLUE dress.

    (b)   *not the BLUE dress.

    (c)   the other girls had to stay at home in the evening.

    (d)   ?? the other dresses ...

These examples make it obvious that the alternatives evoked by the focus must correspond to the "highest" NP. This NP is called the Focus Phrase. In addition to cases like (5) or (6) Krifka ms. presents further evidence for the Focus Phrase which stems from a problem he calls the "only-child" problem. We will come back to this issue in the last section.

The focus phrase must not be confused with what is often called "focus domain" (and is simply called "focus" in this paper). The focus domain indicates the range of items with respect to which the alternatives vary, whereas the focus phrase indicates the range of items which have to be taken into account when constructing the alternatives. The difference is shown in (7): In (a) the focus domain (or focus) is given by *Denmark* whereas the focus

phrase comprises the superordinate NP *the girl from Denmark.* In (b) focus domain and focus phrase coincide.

(7)   (a)   Ben only invited [the girl from [DENMARK]$_{\text{Focus Domain}}$]$_{\text{Focus Phrase}}$
                (... not the girl from Bulgaria)

        (b)   Ben only invited [[the girl from DENMARK]$_{\text{Focus Domain}}$]$_{\text{Focus Phrase}}$
                (... not the woman with the fancy hat)

To account for the role of the focus phrase we will introduce the notion of the "local background". First, following, e.g., Vallduvi&Vilkuna (1998) and Steedmann (2000) we assume that there are two independent dimensions of information structure: theme/rheme and focus/(local) background. The theme corresponds to what the sentence is about and may, e.g, be indicated by word order, the rheme comprises the complementary part of the sentence. A focus, as against this, may occur in both the theme and the rheme and is indicated by accenting. The focus comes with a local background relevant for the construction of the alternative set which need not comprise the complementary part of the theme or rheme, respectively. In the case of definite noun phrases the range of the local background is determined by the focus phrase. This is demonstrated in figure 1.
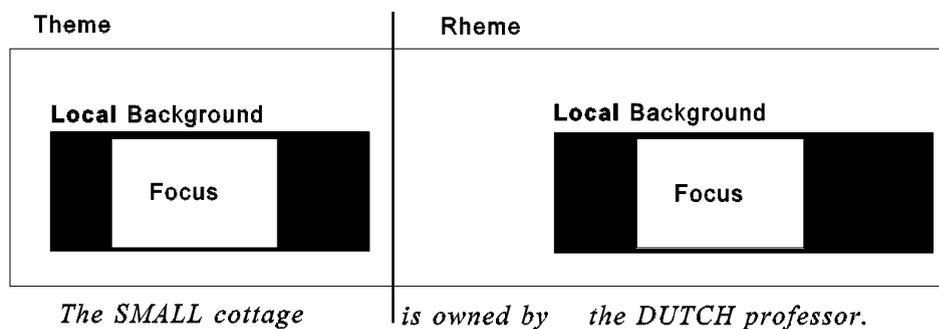

Fig. 1

3   Two uses of definite descriptions

In Umbach (2002) an analysis of definite noun phrases is presented which is novel in so far as it takes intonational differences into account. This section summarizes the main arguments. Consider the definite *the shed* in (8). Depending on whether there is an accent on *shed* or not, the interpretation of the noun phrase is radically different: With an accent we will conclude that there is exactly one shed belonging to John's cottage. But without the accent we have to interpret *the shed* as referring to the cottage itself, the speaker obviously making a disapproving comment.

(8)   (John has an old cottage.)

        (a)   Last summer he reconstructed the SHED.

        (b)   Last summer he RECONSTRUCTED the shed.

The analysis in Umbach (2002) employs a uniqueness view on definiteness and follows Farkas (2002) in regarding familiarity as a special case of uniqueness. According to Farkas a definite may achieve uniqueness either by identification with a given referent or because the descriptive content is unique. Moreover, Farkas classifies the range of definite expressions according to the way they achieve uniqueness: proper names and pronouns obtain a unique

referent by identification with a given referent, whereas full definite NPs have to make use of their descriptive content (and may require a restricted domain with respect to which the description is unique). This classification, however, is counterexemplified by the example (8) because it shows that even a full definite noun phrase may achieve a unique referent in either way, depending on whether there is an accent on (part of) its descriptive content. For this reason, in Umbach (2002) it is proposed to distinguish between a "given" and a "non-given" use of definite noun phrases:

- A (use of a) definite NP is called "given" iff the NP is completely deaccented. A given definite is comparable to a pronoun establishing an identity anaphor related to a previously introduced discourse referent. Uniqueness is accounted for by the salience hierarchy of accessible discourse referents, i.e. there is a most salient discourse referent to be identified with the definite's referent. The descriptive content of the definite merely has to be compatible with the antecedent and may also be accommodated.

- A (use of a) definite NP is called "non-given" iff at least part of the descriptive content is focussed. A non-given definite introduces a novel discourse referent, comparable to an indefinite NP. The uniqueness requirement imposed by the definite article has to be satisfied by the descriptive content. This is straightforward in the case of semantically unique descriptions (*the pope, the smallest prime number...*). However, uniqueness may also be achieved by the help of a bridging antecedent. In that case, it's the bridging relation together with the definite's descriptive content which have to account for uniqueness.

The two uses are demonstrated by the example in (8): In (8)(b) *the shed* is deaccented indicating that it has to be interpreted as an identity anaphor (and may in fact be substituted by a pronoun). This is the reason why, in the case of (8)(b), we conclude that *the shed* refers to John's cottage. In contrast, in (8)(a) there is a focus on the descriptive content indicating that the definite introduces a novel discourse referent.[4] Since the extension of *shed* is not a singleton, there has to be a bridging antecedent such that the bridging relation together with the description singles out a unique entity. Assuming that the bridging antecedent is provided by the previously introduced cottage the NP *the SHED* in (8)(a) will be interpreted as "the unique object related to John's cottage which is a shed". Thus we conclude that there is a (unique) seperate shed belonging to John's cottage.

In (9) - (11) the shed-example is represented on the basis of DRT. (9) corresponds to the context sentence. (10) represents the "given" case: The definite is interpreted similar to a pronoun, i.e. there is a presupposed variable which has to be bound, and the descriptive content is presupposed. (11) represents the "non-given" case: The definite introduces a novel discourse referent and the descriptive content is asserted. In this case the presuppositions include the bridging referent, the bridging relation[5] and the uniqueness condition combining the bridging relation and the description. Updating (9) with (10) results in a DRS containing

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[4] It has been argued that the shed in (8)(a) could be regarded as being given because the bridging antecedent, i.e. the cottage, is already given. This view, however, amounts to admitting that whenever a discourse referent is introduced all entities which can possibly be related to this referent are introduced simultaneously. In the case of the cottage in (8), the kitchen, the roof, the mortgage, the landscape, the previous owner, the new hat of the previous owner etc etc. would be introduced as new discourse referents along with the cottage referent. This assumption seems counterintuitive.

[5] The bridging relation is represented as an underspecified relation R which may be specified as, e.g., element relation or part-of relation. Identity has to be excluded because if identity were allowed for bridging, the difference between the given and the non-given case would collapse.

two referents, i.e. John and the cottage, whereas updating (9) with (11) gives us John, the cottage and a seperate shed referent.

(9)   John owns an old cottage.

x.v
x=john, oldCottage(y), own(x,y)

(10) (Last summer) he RECONSTRUCTED the shed.

reconstruct(u, v)	u. v shed(v)

(11) (Last summer) he reconstructed the SHED.

v	
shed(v) reconstruct(u, v)	u, w R(v,w) "$\forall z.R(z,w)$ & shed(z) $\rightarrow$ z=v"

The intonation-based approach admits two uses of definite noun phrases, but it does not admit two readings of the definite article *the*. Instead, the two uses are due to focussing/deaccenting the definite article uniformly indicating that the referent has to be unique. Note, moreover, that it is not up to the hearer to choose one or the other interpretation. Instead, the intended use is given by intonation, the speaker thereby instructing the hearer how to determine the referent, whether by identification with a previously given referent or by making use of the descriptive content.

Admittedly, there are examples challenging the correspondence of deaccented/given and focussed/novel, respectively. In the case of contrastive focus, for example, on the intonation-based approach we have to assume that the contrastively focussed referent is newly introduced (e.g. *John has two children. The BOY is called Kim*). This is the case even if the NP already occured in a conjunction (*John has a boy and a girl. The BOY is called Kim*). Note, however, that the use of a pronoun (*he*) would not be appropriate, which is evidence that the

boy-referent is not available.[6] This supports the idea that both the plural referent and the referent of the coordinated NP provide plural referents suited for bridging rather than introduce their constituent referents. For a comprehensive discussion of apparent counterexamples cf. Umbach (2002). Eventually, distinguishing between given and non-given definites the well-known problems coming with both familiarity theories (cf. Heim 1982) and with (pure) uniqueness theories (cf. Hawkins 1991) can be tackled and, last but not least, the interpretation differences in (8) can be accounted for.

4 Alternative sets as anaphors

To come back to the problem of how to restrict the set of alternatives triggered by a focus: The examples in the introduction clearly show that, if the interpretation of a definite involves a bridging relation, the bridging antecedent restricts the relevant set of alternatives. This suggests to conceive of the set of alternatives as an anaphor which can be bound by the bridging antecedent. Spelled out in the framework of DRT, the interpretation of focus in definite noun phrases induces the following conditions:

> Let **s** be the focus phrase corresponding to the definite NP and let σ be the respective discourse referent; **P** corresponds to the property given by the local background in **s**. Then a focus in **s** triggers the following presuppositions[7]

> (i)   there is a (set-valued) discourse referent **A**

> (ii)   A is constrained by the local background: **P*(A)**

> (iii)   the focus phrase referent is an element of A: $\sigma \in A$

> (iv)   there is at least one more element in A: $A \backslash \{\sigma\} \neq \varnothing$

Actually, in a footnote in his 1992 paper Rooth has already suggested to represent the focus semantic value of an expression as a DRT anaphor. The conditions above correspond to Rooth' focus interpretation as follows: The alternative set anaphor **A** is the counterpart of Rooth' variable C representing the subset of the focus semantic value relevant for quantification (which in Rooth' account is determined pragmatically). First, **A** has to be of the correct type. Since we are concerned with noun phrases only, **A** represents a set of individuals, cf. (i). Second, **A** is constrained by the local background, cf. (ii), which in Rooth' account is implemented in the procedure of constructing the focus semantic value. Finally, it has to be guaranteed that **A** contains the ordinary value of the focussed item and at least one contrasting element distinct from the focussed item, cf. (iii) and (iv).

The interpretation of focus in definite noun phrases has to take into account both the conditions imposed by definiteness and the conditions imposed by focus. The intonation-based interpretation of definites accounts for the difference between deaccented definites and those including a focus. But it does not yet account for the fact that a focus induces a set of alternatives. If there is a focus within a definite NP it constitutes a non-gives one. So we have to combine the interpretation of non-given definites suggested in the previous section with the presuppositions given in (i)-(iv) above. Take the example in (3)(b), represented in (12):

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[6]Unless the pronoun itself is accented, cf. Bosch (1988).

[7]We adopt the notation of Kamp (2001) where star * indicates distributive application and greek letter stand for either individual or set-valued discourse referents.

(12)   (The research team arrived at the base camp late at night.)

Ben only talked to the DUTCH geologist.

u, v
u = ben dutch(v) talk-to(u,v) "∀z.z∈ A & talk-to(u,z) →z=v"	γ, A ------------------------ R(v,γ) "∀z.R(z,γ) & dutch(z) & geologist(z) shed(z) → z=v" geologist*(A) v∈ A A\{v} ≠ ∅

As indicated by the focus *the DUTCH geologist* is a non-given definite. Therefore a novel discourse referent, v, is introduced, and the accented part of the description is asserted, dutch(v). Moreover, since the predicate *Dutch geologist* does not denote a singleton, there has to be a bridging antecedent such that the bridging relation together with the property of being a dutch geologist obtain uniqueness. This is spelled out in the presuppositional part, by requiring a presupposed referent γ, an underspecified relation R(v, γ), and uniqueness of v with respect to being R-related to γ and being both dutch and a geologist. These are the conditions imposed by definiteness. The conditions imposed by focus are met by presupposing an alternative set anaphor, A, which is constrained by the local background, i.e. *geologist*, and moreover has to include the referent of *the DUTCH geologist*, v, and at least one additional element.

In (13) the DRS representing the context sentence of (12) is given. Updating (13) with (12) the bridging antecedent required by definiteness is bound to the research team referent (γ→X). To simplify the discussion let us assumed that *the research team* refers to a set-valued referent, X. In this case, the bridging relation R is simply the element relation. So the alternative set anaphor A can be bound by the bridging antecedent (A→X). In general, an additional set valued referent has to be accommodated which includes the elements R-related to the bridging antecedent, M= {x| R(x, γ)}, thus constituting a suitable referent for binding the alternative set anaphor (provided there is no conflict arising from previous conditions, cf. (15) below). In either case, all elements of the alternative set will be R-related to the bridging antecedent. The update, represented in (14), obtains the intended results: We can infer, (a) that Ben didn't talk not to any other member of the research team, (b) that the researchers are geologists, and (c) that there is at least one non-dutch team member.

(13)   The research team arrived late at night.

X
researchTeam(X), arriveLateAtNight*(X)

(14)   The research team arrived at the base camp late at night.). Ben only talked to the
       DUTCH geologist.

X, u, v

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researchTeam(X)

arriveLateAtNight*(X)

R(v,X)

"∀z.R(z,X) & dutch(z) & geologist(z) shed(z) → z=v"

u = ben

dutch(v)

talk-to(u,v)

"∀z.z∈X & talk-to(u,z) →z=v"

geologist*(X)

v∈X

X\{v}≠∅

In Heusinger (1998) the semantics of focussed definite NPs is discussed within the framework
of Alternative Semantics. Intuitively, the alternatives evoked by *the DUTCH professor* include
all professors (occuring in a given situation), i.e. the union of the focus semantic value of the
modified noun, $\cup[\text{DUTCH}_F \text{ professor}]^A$. However, according to the general rule of how to
construct the focus semantic value, the focus semantic value of the modified noun has to be
combined with focus semantic value of the definite article (which is the singleton set of its
ordinary value since the article is not focussed). Using the iota-operator to represent the
definite article Heusinger obtains a focus semantic value of the definite NP that comprises
only those professors who are unique with respect to their nationality. If, for example, there
are three French professors, one Turkish professor, and one Dutch professor present in the
situation, then the focus semantic value of *the DUTCH professor* would include the Turkish
one and the Dutch one, but not the French ones (because the iota operator doesn't give a value
if its argument is not a singleton). Heusinger discusses various ways to handle the problem
but regards none of them as satisfactory.

The anaphoric approach, as against this, meets Heusinger's intuition concerning the extent of
the alternative set (modulo its restriction due to bridging) and, at the same time, does not run
into the problem described above. Since the alternative set triggered by a focus is represented
as just another discourse referent, there is no seperate focus semantic value involved. The
alternative-set referent is introduced together with the referent of the definite NP and the
question of how to combine the semantics of the definite article with the alternative set simply
doesn't arise. It has to be kept in mind, however, that the anaphoric approach makes crucial
use of the notion of the focus phrase fixing the range of the local background to be taken into
account. This raises the question of how to extend the approach beyond the domain of definite
NPs (which will not be addressed in this paper). In addition there is a problem concerning the
role of the local background, which is discussed in the last section.

Let us finally come back to the example in (3)/(12): Are there additional interpretations
beyond the one spelled out in the representation in (12)? First of all, it may be questioned
whether the research team has to consists of geologists only. Considered in isolation, this
interpretation is most likely. If, however, the context is extended, different interpretations may
become available. Suppose, for example, that Ben is specialized on reports for geological
journals and is waiting for an international research team consisting of biologists, physicists
and geologists:

(15)   (Ben wanted to conduct another geological interview. To his regret, the research team he had been waiting for arrived at the base camp not before ten in the evening. Therefore ...)

Ben only talked to the DUTCH geologist. (The others had to prepare for the next day.)

Changing the context like this the research team need no longer consist of geologists only. Accordingly, the set of alternatives may be a subset of the team members comprising the geologists. So, as before the local background applies to the set of alternatives A, and all elements of A have to be R-related to the bridging antecedent. But the contextual knowledge precludes A from being bound to the overall set of team members and, instead, requires binding it to a subset.

There is another question concerning the interpretation in (12): Is there a reading where the set of alternatives is restricted to those referents who can be picked up by an analogous definite description, thus excluding team members who happen to have a compatriot in the team? Suppose the team includes three French geologists, one English geologist and one Dutch geologist: Is there a reading of the proposition in (12) where the set of alternatives includes the English and also the Dutch researcher, but not the French ones? Such a reading would be true even if Ben had talked to one of the French geologists in addition to the Dutch one. However, this is clearly not a valid reading. This implies that uniqueness of the focussed element does not transfer to the alternatives triggered by the focus. (Sure, if there is by chance a single researcher from each country in the team, the alternative set would consist of researchers unique with respect to nationality, but this situation is covered by the interpretation in (12).)

To conclude: If a definite noun phrase relates to a bridging antecedent, the bridging relation simultaneously restricts the set of alternatives requiring each element of the set of alternatives to be related to the bridging antecedent. Now recall that, as soon as there is a focus, the referent of a definite noun phrase has to be determined by making use of the descriptive content. This implies that either the description has to be unique for semantic reasons, or there has to be a bridging antecedent. Since semantically unique descriptions are rare, most definite NPs will involve a bridging antecedent if they carry a focus. So, for most definite NPs, the set of alternatives is restricted by resolving the uniqueness constraint. Depending on the information provided by the local background the set of alternatives either coincides with the set of elements related to the bridging antecedent, or is a proper subset. Only in the case of semantically unique descriptions (*the pope* etc.), which do not need a bridging antecedent, restriction of the alternative set has to be assigned to general pragmatic processes.

5   The semantics of "*the OTHER [p]*"

Noun phrases of the form "*the OTHER [p]*"[8] are of special interest because they provide linguistic expressions to refer to the alternatives triggerd by a preceding focus. This has been demonstrated by the example in (4) repeated in (16) below. In Kamp (2001) a semantic interpretation for "*the other one*" has been suggested matching the interpretation proposed below except for minor differences. Kamp's analysis, however, centers on the (lexical) meaning of "*the other one*" and does not take focus into account. As against this, we will spell out the semantics of these expressions such that it (a) complies with the general interpretation of focussed definite NPs, and (b) accounts for their special role concerning alternative sets.

Let us assume that the meaning of the adjective *other* consists in the property of being distinct from a second referent which will be called *co-referent*. Being distinct is represented by a

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[8] i.e. *the OTHERS, the OTHER one, the OTHER child(ren)* etc.

two-place predicate, #, where "$\alpha\#\beta$" is false if α and β are equal, or one of them is an element or subset of the other one (cf. Kamp 2001). According to the interpretation of definites proposed in section 3, a noun phrase of the form "*the OTHER [p]*" constitutes a non-given definite introducing a novel discourse referent (individual or set-valued). This referent is asserted to be disctinct from a presupposed co-referent. is presupposed. Furthermore, the uniqueness condition on definites induces a presupposed bridging antecedent such that the property of being distinct from the co-referent is unique. The interpretation of focus, on the other hand, requires an alternative set anaphor including the referent of "*the OTHER [p]"* and another contrasting element. Combining the conditions imposed by definiteness and those imposed by focus we get the intended interpretation without making any specific assumptions beyond the lexical meaning of *other*. This is demonstrated in (16) below.

In the DRS in (16), the referent of *the OTHER Greenpeace campaigners,* Y, is newly introduced, and it is asserted that Y is distinct from its presupposed co-referent, ζ. Next, the bridging antecedent δ is presupposed together with a uniqueness condition (here: maximality, due to plural). Finally, the alternative set anaphor A is presupposed, where the local background (i.e. *Greenpeace campaigners*) has to apply, and the referent Y plus an additional contrasting element have to be included.

(16)   (The research team arrived at the base camp late at night. Ben only talked to the DUTCH geologist.)

The OTHER Greenpeace campaigners were preparing for the next day.

Y
Y # ζ \qquad\qquad ζ, δ, A

$R(Y,\delta)$

"$\forall Z.R(Z, \delta)$ & $Z\#Y$ & greenCamp*(Z) $\rightarrow Z\subset Y$"

greenCamp*(A)

$Y\subset A$

$A\backslash Y \neq \varnothing$

prepareForNextDay*(Y)
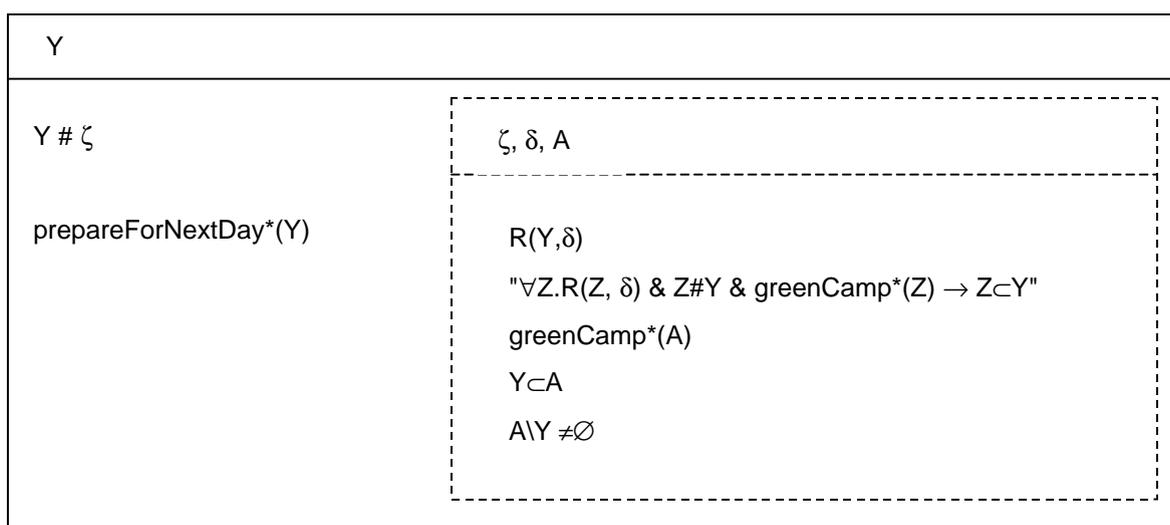
Updating (14) with (16), the co-referent ζ is bound to the dutchman v, and the bridging antecedent δ is bound to the team referent X. The alternative set anaphor A is also bound to the team referent (assuming again that X is set-valued and the bridging relation R is specified as the element relation). From the update in (17) we can infer (i) that the referent(s) of *The OTHER Greenpeace campaigners* are non-dutch, geologists and members of the research team; (ii) that the referent(s) of *The OTHER Greenpeace campaigners* coincide with the proper alternatives induced by *the DUTCH geologist*, and (iii) that the researchers including the Dutch one, are Greenpeace campaigners.

(17)   The research team arrived at the base camp late at night. Ben only talked to the DUTCH geologist. The OTHER Greenpeace campaigners were preparing for the next day.

X, u, v, Y	
researchTeam(X)	R(v,X)
arriveLateAtNight*(X)	"$\forall z.R(z,X)$ & dutch(z) & geologist(z) shed(z) $\rightarrow z=v$"
	geologist*(X)
u = ben	$v \in X$
dutch(v)	$X\backslash\{v\} \neq \varnothing$
talk-to(u,v)	greenpeaceCampaigner*(X)
"$\forall z.z \in X$ & talk-to(u,z) $\rightarrow z=v$	$Y \subset X$
	"$\forall Z. Z \subset X\backslash\{v\}$ & $\rightarrow Z \subset Y$"
	Y#v
	prepareForNextday*(Y)

6   The problem of Jan Yilmaz and Wladimir Stein

Finally, I would like to give a brief sketch of a problem which challenges the idea that the alternatives induced by focus in definite noun phrases invariably correspond to the focus phrase. Compare the continuations of (18)(a) in (b) and (c), respectively. Suppose that there is a team member called Jan Yilmaz, who is a citizen of both Turkey and The Netherlands (and there is no other Dutch researcher in the team). Furthermore, suppose that Ben only talked to Jan Yilmaz. Now, if the proposition in (18)(a) is interpreted as indicated by the continuation in (b), then it is clearly true, since Ben did not talk to a researcher other than Jan Yilmaz. But if (18)(a) is understood as indicated in (c), it might be regarded as being false, since Jan Yilmaz undoubtedly is a researcher with a citizenship other than the Dutch one.

(18)   (a) Ben only talked to the geologist with a DUTCH citizenship.

   (b)   The OTHER researchers .....

   (c)   The researchers with OTHER citizenships ...

The continuations in (b) and (c), respectively, correspond to different ways of constructing the alternative set. In the (b)-case the set of alternatives is made of researchers, so each reseacher is counted once. In the (c)-case the alternatives can be conceived of as researcher-nationality pairs. This is why Jan Yilmaz comes up twice, as Yilmaz-Dutch and also as Yilmaz-Turkish. First of all, it may be questioned whether (c) is an adequate continuation. Subjects seem to be reluctant to decide whether (18)(a) continued by (c) is true or is false in the situation described above. This is evidence that the (c)-continuation is not a natural reading.[9] But if we accept this reading, we have to explain where the ambiguity stems from.

Krifka (ms.), who pointed out this problem first, calls it "the problem of the only child". His example is *"Sam only talked to BILL's mother"* where Bill has a sibling. Krifka takes this example as semantic evidence that focus has to be evaluated at the level of the focus phrase.

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[9]In the example in (6) (section 2) this kind of continuation has been rejected.

In the-only-child example an interpretation analogous to (c) doesn't make sense, because there is no reason to distinguish between being the mother of Bill and being the mother of Bill's sibling. But Krifka also gives an example where an interpretation analogous to (c) does make sense (due to a scenario in which the property of being the mother of Bill and the property of being the mother of Bill's sibling have to be kept apart). This example is analysed by Krifka as being about de dicto (instead of de re) alternatives.

However, there is another problem which is the counterpart to the only-child problem but cannot be attributed to a de re /de dicto ambiguity. Let us change the team: Jan Yilmaz is replaced by Wladimir Stein who is a stateless person. Moreover we enter an unambiguously Dutch citizen. Now suppose Ben talked to both Wladimir Stein and the Dutch researcher. In this situation, if (18)(a) is continued by (b), it is clearly false, because Ben did talk to another researcher. But what about the (c)-case? Did Ben also talk to a researcher with a citizenship different from the Dutch one?

The problem with the stateless researcher stems from the fact that the alternatives of a modifier need not cover the overall domain given by the local background. Take, for example, "... the RED glass." Glasses may be red or blue etc., but they need not have a color. One might, of course, say that being colorless is a kind of color, too (and being stateless is a kind of citizenship, too). But this amounts to forcing a feature (color, citizenship) to apply to the entire domain where in fact it is only partially defined. (Note, that with the only-child example the problem doesn't occur, since *mother* is a relational noun, i.e. for any mother there is at least one person for whom she is the mother). In the case of Wladimir Stein the interpretation of (18)(a) indicated by (c) is rather far-fetched. There are, however, examples where the (c)-continuation is the natural one. Suppose, Ben is interested in the places where the geologists take the specimens and each geologist has a seperate finding place. Consider the proposition *"On his walk Ben only saw the rock assigned to Pim van Berg."* This is true even if Ben saw lots of rocks, provided none of them are assigned to one of the other geologists. This time, the (c)-continuation (*"The rocks assigned to the other geologists ..."*) is perfect whereas the (b)-continuation (*"The other rocks..."*) is inadequate.

Obviously, both the (b)-type and the (c)-type continuations have to be taken into account. The former exclude overlaps and fills in possible gaps: Employing the (b)-type continuation Jan Yilmaz (and the mother of Bill, rsp.) is excluded from occurring twice in the set of alternatives, and Wladimir Stein is included in the set of alternatives although the modification is not defined for this element. However, there exist scenarios where overlaps are required and there also exist scenarios where gaps are required. So we cannot simply dispose of the (c)-type continuations. Krifka's solution distinguishing between a de re and a de dicto reading of alternatives doesn't seem satisfactory, because it settles the overlap problem but not the gap problem. For the time being it seems to be more adequate to view the continuations in (b) and (c) as indicating a systematic ambiguity in the construction of the alternative set.

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