

The Interpretation of Topical Indefinites as Direct and Indirect Aboutness Topics

Cornelia Endriss and Stefan Hinterwimmer
University of Osnabrück and Humboldt-University of Berlin

1. Introduction

In this paper we deal with the interpretation of sentences that contain indefinite DPs marked as topics. It has often been observed that topical indefinites can be interpreted in either of the following ways: 1. they receive widest scope (in episodic sentences) (cf. Cresti 1995 and Jäger 1996), 2. they are interpreted generically (in sentences with generic tense) (cf. Kuno 1972 and Kuroda 1972), 3. they induce so-called *Quantificational Variability Effects* (in the presence of adverbial quantifiers), i.e. the respective sentence is interpreted as if the quantificational force of the indefinite depended on the quantificational force of the Q-adverb (cf. Partee 1991 and Chierchia 1995). However, so far, these three observations have not been related to each other systematically. Our contribution in this paper is to show that the three readings that are in principle available to topical indefinites can be based on one underlying principle, which is responsible for the interpretive effect of topicality in the context of adverbial quantifiers and generic operators as well as in combination with determiner quantifiers. In other words, topicality has a truth conditional effect, which can be seen with topical indefinites. This effect has different shapes dependent on where the topical indefinite appears. However, all these shapes are just instances of the same underlying principle that determines the interpretation of topical items. The paper is structured as follows: in section 2, we give some background on determiner and adverbial quantifiers. In section 3, we lay out the basic facts we want to account for. In section 4, our analysis is presented in detail, and in section 5 we take up the issue of why there is a prosodic difference between topical indefinites that take widest scope and ones that are interpreted in the restrictor of an adverbial quantifier or the covert generic operator. Section 6 concludes the paper.

2. Background: Determiner Quantifiers and Adverbial Quantifiers

It is well-known that languages like English and German have two different types of quantificational elements: on the one hand, there are items like *every*, *no*, *most* and *a*, which syntactically behave like determiners insofar as they combine with NPs, forming DPs that occupy

argument positions at the surface. They are therefore called *quantificational determiners* or *determiner quantifiers* (D-quantifiers). On the other hand, there are items like *always*, *never*, *usually* and *sometimes*, which syntactically behave like adverbs insofar as they appear in VP- (or ν P-) as well as in TP-adjoined position. We will refer to them as *adverbial quantifiers* (A-quantifiers).

Concerning the semantics of D-quantifiers, the by-now standard view is that they take two expressions which denote sets of individuals as arguments and map them onto a proposition that is true if the respective sets stand in a certain lexically specified relation to each other (see Barwise and Cooper 1981). The first argument (which is often called the *restrictor*) is the denotation of the NP-complement of the D-quantifier. In the case of quantificational DPs in subject position, the second argument (which is often called the *nuclear scope*) is the denotation of the syntactic sister of the entire DP. Since the subject quantificational DP is the highest argument of the respective verbal predicate, its sister is guaranteed to be of the right type – namely a one-place predicate, i.e. (the characteristic function of) a set of individuals. Consider the examples in (1a, c):

- (1) a. $[_{TP} [_{DP} \text{Every } [_{NP} \text{dolphin}]] [_{T'} \text{is smart}]]$.
 b. $\{x: \text{dolphin}(x)\} \subseteq \{y: \text{smart}(y)\}$
 c. $[_{TP} [_{DP} \text{A } [_{NP} \text{dog}]] [_{T'} \text{bit my sister}]]$.
 d. $\{x: \text{dog}(x)\} \cap \{y: \text{bit-my-sister}(y)\} \neq \emptyset$

In the case of (1a), the proposition is true if the set of dolphins is a subset of the set of smart entities (as shown in (1b)), while in the case of (1c), the proposition is true if the intersection between the set of dogs and the set of entities that bit my sister is non-empty (as shown in (1d)).

With quantificational DPs in object position, the syntax-semantics mapping is less straightforward, since in these cases the sister of the respective DP is a transitive verb, i.e. (the characteristic function of) a set of pairs of individuals. One very popular solution to this problem is to assume that quantificational DPs can be moved away from their base position at LF and adjoin to the TP-node via *Quantifier Raising* (QR) (cf. May 1985). Under the additional assumptions that the trace left behind by the quantificational DP is interpreted as a variable of type e , and that a lambda-operator binding this variable is inserted directly beneath the moved

DP, the sister of this DP is again of the right type for it to function as the second argument of the D-quantifier (cf. Heim and Kratzer 1998 for discussion), as shown below:

- (2) a. Paul owns every book by John Updike.
 b. LF: $[_{TP} [_{Every\ book\ by\ John\ Updike}]_i [_{TP} \lambda_i [_{TP} Paul\ owns\ t_i]]]$
 c. $\{x: \text{book-by-John-Updike}(x)\} \subseteq \{y: \text{owns}(y)(Paul)\}$

The important point for our current purposes is that the arguments of D-quantifiers are strictly determined by (LF-)syntax. While prosodic as well as contextual information might have an influence on the truth conditions of sentences containing two or more D-quantifiers (see below), there is no way for this kind of information to alter the order in which a D-quantifier is combined with its two arguments: the NP-complement of a quantificational determiner can never be interpreted as its nuclear scope, while the sister of the entire DP is interpreted as the restrictor.¹

Concerning A-quantifiers, matters are different. Here, syntax does not entirely determine which part of the clause is to be interpreted as the restrictor, and which part is to be interpreted as the nuclear scope. Furthermore, the domain of quantification is different in this case. It is by now standard to assume that Q-adverbs quantify over situations or events. Controversies arise solely concerning the question of whether Q-adverbs can additionally quantify over individuals, at least in some cases (see below) (cf. de Swart 1993, von Stechow 1994 and Herburger 2000 for discussion).

Consider example (3a): depending on where the main accent (indicated by capital letters) falls, the sentence gets a different interpretation, as shown in (3b-d).

- (3) a. John always goes to the beach with Mary.
 b. John always goes to the beach with MARY =

¹ With the possible exception of weak quantifiers like *many*, for which precisely this claim has been made (cf. Herburger 2000) in order to explain the fact that sentences like (i) can be interpreted as paraphrased in (ii):

- (i) Many SCANDINAVIANS won the Nobel Prize in literature.
 (ii) There is a large number Nobel Prize winners in literature who are Scandinavians.

But see Cohen (2001) for the claim that this effect can also be explained as a consequence of the inherent vagueness of *many*.

‘All situations where John goes to the beach with someone are situations where he goes to the beach with Mary’.

c. John always goes to the BEACH with Mary =

‘All situations where John goes somewhere with Mary are situations where he goes to the beach with Mary’.

d. JOHN always goes to the beach with Mary =

‘All situations where Mary is accompanied to the beach by someone are situations where she is accompanied by John’.

It is therefore reasonable to assume that intonation plays a decisive role in the interpretation of sentences with A-quantifiers. Rooth (1985, 1992, 1995) has developed a formally precise theory that accounts for these intuitions: he assumes that the entire sentence (minus the quantifier) is interpreted as the nuclear scope of an A-quantifier, while the restrictor is determined on the basis of an algorithm which is sensitive to focus-marking – where focus-marking is indicated by intonational prominence. Simplifying somewhat, Rooth assumes that the semantic effect of focus-marking is the introduction of a (contextually restricted) set of alternatives to the (denotation of the) respective constituent. These alternatives are then composed with the rest of the clause in pointwise fashion, resulting in a set of situation predicates which only differ from each other with respect to the chosen alternative. This set is called the *focus semantic value* (in addition to the *ordinary semantic value*) of the respective clause.

For illustration, consider the focus semantic value of (3b) with object focus in (4):

$$(4) \quad \{ \lambda s. \text{go-to-beach-with}(\text{Mary})(\text{John})(s), \lambda s. \text{go-to-beach-with}(\text{Peter})(\text{John})(s), \\ \lambda s. \text{go-to-beach-with}(\text{Eva})(\text{John})(s), \dots \}$$

Applying set union to the object in (4), we get a situation predicate that is equivalent to the one in (5), which contains an existential quantifier over contextually restricted persons x , e.g. persons that stand in some contextually given relation to John:

$$(5) \quad \lambda s. \exists x [\text{person}(x) \wedge C(x) \wedge \text{go-to-beach-with}(x)(\text{John})(s)],$$

where C is a free variable over predicates that is resolved on the basis of contextual information.

The situation predicate in (5) can then function as the restrictor of the A-quantifier. (6) shows the denotation of (3b) – which is the intuitively correct result:

$$(6) \quad \{s: \exists x [\text{person}(x) \wedge C(x) \wedge \text{go-to-beach-with}(x)(\text{John})(s)]\} \subseteq \\ \{s: \text{go-to-beach-with}(\text{Mary})(\text{John})(s)\}$$

In light of the fact that other factors like context, lexical presuppositions and world knowledge sometimes seem to be able to overwrite the results of focus marking, von Stechow (1994) (see also Beaver and Clark 2003)² has argued for the following modification of the mapping algorithm proposed by Rooth: A-quantifiers take the entire clause (minus the quantifier) as their nuclear scope, while the restrictor is only given in the form of a free variable ranging over situation predicates. This variable is then either resolved on the basis of contextual information (if available) or on the basis of the focus semantic value of the sentence by default.

As already mentioned above, there is a controversy concerning the quantificational domain of A-quantifiers: in light of the fact that sentences like (7a) can be interpreted as paraphrased in (7b) – which exemplifies the *Quantificational Variability Effects* (QVEs) mentioned in the introduction –, it has been suggested (cf. Lewis 1975, Kamp 1981, Heim 1982 and Kratzer 1995) that A-quantifiers do not exclusively quantify over situations, but are also able to bind individual variables, where those individual variables are taken to be introduced by indefinite DPs. In order for this to work, indefinites are not analysed as generalized quantifiers with existential force, but as individual predicates that can either be bound by A-quantifiers or by a covertly inserted existential or generic quantifier.

- (7) a. A dolphin is usually SMART.
b. Most dolphins are SMART.

² A case in point is the example in (i), the most prominent reading of which is paraphrased in (ii), where *always* associates with the presupposition induced by *remember*, not the one in (iii), where it associates with the non-focussed material (Beaver and Clark 2003: 15, example (33)):

- (i) Mary always remembers to go to [church]_F
(ii) “Whenever it is time for church, Mary remembers to go”
(iii) ²“Whenever Mary remembers to do something, it is to go to church”

It has been shown by Berman (1987), von Stechow (1994), and Herburger (2000) that the phenomenon under discussion can also be explained in a way that neither necessitates altering the semantics of A-quantifiers nor the semantics of the indefinite determiner. In other words, it is possible to stick to the view that Q-adverbs exclusively quantify over situations/events and yet account for the QVEs exemplified in (7). In addition to that, Endriss and Hinterwimmer (to appear) and Hinterwimmer (to appear) have shown that there are strong empirical arguments for taking Q-adverbs to be exclusive binders of situation (or event) variables. Simplifying somewhat, Berman (1987) and von Stechow (1994) assume that A-quantifiers quantify over *minimal* situations, i.e. situations that contain only what is necessary to satisfy the respective predicate. This has the consequence that determining the restrictor of a sentence like (7a) on the basis of the focus semantic value by default results in the interpretation given schematically in (8), which is equivalent to the paraphrase in (7b): as the situations quantified over are solely individuated on the basis of their containing dolphins (and nothing else), the situations necessarily vary with the dolphins³.

- (8) Most s [$\min(s, \lambda s'. \exists x[\text{dolphin}(x)(s') \wedge \exists P[P(x)(s')]]]$
 $[\exists s''[s \leq s'' \wedge \min(s'', \lambda s'''. \exists x[\text{dolphin}(x)(s''') \wedge \text{smart}(x, s''')]]],$
 where $\min(s, P)$ iff $P(s) \wedge \neg \exists s'[s' < s \wedge P(s')]$
 ‘Most minimal situations where a dolphin has some property (i.e. minimal situations containing a dolphin) can be extended to a minimal situation where a dolphin is smart’.

Let us now turn to the main topic of this paper: the interpretation of indefinite DPs which are grammatically marked as topics.

³ In formula (8) (and subsequent formulas), $s \leq s'$ means that situation s is extendable to a situation s' .

The sentences in (9a, b) both exemplify so-called *left-dislocation (LD)*, where an XP in fronted position is associated with a resumptive pronoun in the specifier position of CP. (9c), on the other hand, is an example of *Hanging Topic Left Dislocation (HTLD)*, where an XP in fronted position is optionally (i.e. it does not have to be resumed at all) associated with an ordinary personal pronoun that can either remain in the middle field (as in (9c)) or occupy [Spec, CP]. Furthermore, in HTLD there is an intonational break between the fronted XP and the rest of the sentence, which is not the case in LD. We will not discuss HTLD in this paper (see Frey (2004) for discussion and references).

Crucially, we follow Frey (2004) in the assumption that only LD serves as an aboutness topic marking construction⁵, i.e. we assume that German left-dislocated phrases which are not understood contrastively are necessarily interpreted as topics. We thus use left-dislocation as a topic-test, comparable to Japanese *wa*-marking (cf. Portner and Yabushita 1998, Tomioka, this volume). Let us assume for concreteness that left-dislocated phrases occupy the specifier of a functional projection above CP, which is exclusively reserved for topical phrases (cf. Rizzi 1997). Note that for reasons discussed in section 3.3, we assume left-dislocated phrases to be base generated in this position. Accordingly, we do not take [Spec, CP] to be a topic position, but

⁵ An important difference between LD and HTLD is that only the former allows an anaphor or pronoun contained within the fronted XP to be bound by a clause-internal DP, as shown by the contrast between (i) and (ii):

(i) Den Artikel über sich in der *Zeit*, den hat Hans gelesen.
 The article about himself in the *Zeit* RP.-MASC.ACC.SING has Hans read.
 ‘Hans has read the article about himself in the *Zeit*’.

(ii) ??Den Artikel über sich in der *Zeit*, Hans hat ihn gelesen.
 The article about himself in the *Zeit* Hans has it read.

Therefore, Frey (2004) argues that cases like (iii), where the resumptive pronoun remains in the middle field, nevertheless have to be analysed as instances of left dislocation, because the anaphor *sich* can be bound by *er*:

(iii) Einen Bericht über sich, er will mir den heute zeigen
 A-ACC report about himself, he wants-to me-DAT RP.-MASC.ACC.SING today show

To us, however, and to some other native speakers we consulted, such examples feel slightly degraded, though not completely out. For those cases, we assume that it is marginally possible for C⁰ to come with a second specifier (i.e. a specifier above the one that is overtly filled by *er* in (iii)) where the resumptive pronoun can be inserted at LF, triggering lambda-abstraction.

rather follow Frey (2001) in assuming that (non-wh-)C⁰ hosts a purely formal feature that can in principle be checked by any XP, be it topical or not (see below).

3.2 The Aboutness Concept of Topicality

Intuitively, both sentences in (9) are felt to mainly convey information about Maria and Peter, respectively: they are both fine as answers to questions like *What about Maria/Peter?* or commands like *Tell me something about Maria/Peter*, while they are odd as answers to questions like *Who is a very talented singer?* or *Who haven't you seen for a long time?*, at least if they are read without an intonational break after the fronted DP and a strong accent on the RP (which might turn the sentences into instances of HTLD).⁶ Note furthermore that the left-dislocated DPs in (9a, b) are both necessarily at least *weakly familiar*: being proper names, they can only be used felicitously if both speaker and hearer know what individuals they refer to.

Because of the prevalence of examples with proper names, definite descriptions and pronouns in the literature on topics, many linguists subscribe to the view that (weak) familiarity is a necessary property of topics (cf. Hockett 1958; Kuno 1972; Gundel 1988; Portner and Yabushita 1998). We will, however, follow Reinhart (1981; see also Molnar 1993 and Frey 2000, 2004) in assuming that *familiarity* is *not* a defining property of topics. This claim is based on the observation that not only individual denoting DPs can be sentence topics, but also singular and unmodified numeral indefinite DPs (while other quantificational DPs are excluded from topic positions; more on this below). This is shown by the examples in (10):

- (10) a. EINEN Song von Bob Dylan, den kennt JEDER
A/One⁷ song by Bob Dylan, RP-MASC.ACC.SING knows everyone
(nämlich *Blowing in the Wind*).
namely *Blowing in the Wind*.

⁶ But even in these cases, the respective individuals need to have already been established as discourse topics in the preceding context.

⁷ German *Ein* is ambiguous between the meaning of the indefinite article and the meaning of the cardinality predicate *one* (more on this below).

‘There is one/a certain song by Bob Dylan that everyone knows (namely *Blowing in the Wind*)’.

- b. Eine neue Platte von Bob DYLAN, die kommt
A new record by Bob Dylan, RP-FEM.NOM.SING comes
meistens in die CHARTS.
usually in the charts.

‘A new record by Bob Dylan usually gets into the charts’.

Note furthermore that also propositions, i.e. sets of situations, make good topics, as shown by (11):

- (11) Dass die Polizei in Halberstadt nichts gemacht hat, das
That the police in Halberstadt nothing done has, RP-NEUT.SING
kann ich kaum glauben.
can I hardly believe.
‘I can hardly believe that the police didn’t do anything in Halberstadt’.

In section 4.2 we will discuss other examples showing that sets of situations can function as topics and offer an account of how this can be brought in line with our basic understanding of topics. For the moment, (11) only serves to show that not only individuals, but also sets (of situations) can be topics.

Concerning indefinites, we will turn to the interpretation of topic-marked indefinites in sections 3.2 and 3.3. For the moment, suffice it to note that the acceptability of indefinites in topic position shows that any definition of topicality that is based on the notion of familiarity is doomed to fail, since it is well known that indefinite DPs have to be *novel*, i.e. they are not allowed to take up already existing discourse referents (cf. Heim 1982).⁸

Therefore, we understand the term topic in the aboutness sense of Reinhart (1981), whose basic understanding of topichood is based on Strawson (1964). According to her, the topic of a

⁸ Note that this holds for specific indefinites, too, which may (but need to be) known to the speaker, but crucially not to the hearer.

sentence is simply understood as the center of interest, the item the sentence is about. The topic then is the subject of the predication that the sentence expresses. The predication corresponds to the comment part of the assertion. Reinhart assumes that the topic of a sentence is the address where the rest of the information conveyed by the respective assertion is stored during the context update. Topicality thereby has an information structuring function in the literal sense of the term. In cases where the respective DP is of type e , marking it as the topic of the assertion *only* has this pragmatic effect, but no truth conditional one: an address corresponding to the individual denoted by the respective DP is created, and the information conveyed by the rest of the sentence is stored there. Following Searle (1969), Jacobs (1984), and Endriss (to appear) we assume that sentences containing topics involve two speech acts: the first speech act establishes the (denotation of the) respective constituent as the topic, while the second speech act asserts that the (denotation of the) rest of the sentence, i.e. the comment, is true of the topic (see also Tomioka, this volume, for a view according to which topics always take scope outside of the assertion).

We propose to formalize this pre-theoretic aboutness understanding of topicality in such a way as to interpret topic-comment structures as generalized subject-predicate structures, where the topical DP (irrespective of case-marking, agreement relations and thematic role) is the logical subject, and the comment is the predicate applying to this subject. A preliminary definition of the binary *topic* operator is given schematically in (12). We will refer to this interpretation scheme as the *topic principle*. The topic operator is assumed to be located in the head of the above mentioned functional projection. It takes the denotation of the CP c-commanded by it as its first argument, and the denotation of the left-dislocated constituent in its specifier as its second argument. Note that existential quantification over α in combination with identifying α with the (denotation of) the topic marked constituent X corresponds to the act of establishing X as the topic (i.e. address creation), while asserting that the comment P holds of α corresponds to the act of storing information under α . The topic operator defined in (12) thus conjoins two separate speech acts (cf. Krifka 2001 for the assumption that speech acts can be conjoined):

$$(12) \lambda P \lambda X. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]]$$

In section 4, we will see that it is the requirement to create a generalized subject-predicate structure which is responsible for the truth-conditional effects of topic-marking with indefinites that we mentioned in the introduction, i.e. the wide scope interpretation and the generic as well as

the QV interpretation of topical indefinites. These effects will be looked at in detail in sections 3.3 and 3.4. In a case like (13a), however, it is easy to see that the final interpretation given in (13b) is truth-conditionally equivalent to the case where *Peter* has not been topicalized:

- (13) a. Den Peter, den mag ich.
 The-ACC Peter, RP-MASC.ACC.SING like I.
 ‘Peter, I like’.
- b. $\lambda P \lambda X. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]] (\lambda x \lambda s. \text{like}'(x)(I)(s)) (\text{Peter}) =$
 $\exists \alpha [\alpha = \text{Peter} \ \& \ \text{ASSERT} [\text{like}'(\alpha)(I)(s)]]$

Concerning the details of how the predicate functioning as the first argument of the topic operator in (13b) is generated, we simply assume that the resumptive pronoun in [Spec, CP] triggers lambda-abstraction (Heim and Kratzer 1998): the pronoun moved to [Spec, CP] leaves behind a trace (or copy) bearing the same index, as shown in (14). This trace is interpreted as a variable. At the same time, the presence of the resumptive pronoun in [Spec, CP] triggers the insertion of a lambda-operator bearing the index of this pronoun. This lambda-operator binds any co-indexed variable in its c-command domain, thus turning the CP in (14) into the predicate shown in (13b).

$$(14) \ [_{CP} \text{den}_i \ [_{C'} \text{mag}_j \ [_{TP} \text{ich} \ [_{T'} \ [_{vP} \ t_i \ t_j] \ t_j]]]]$$

The claim that the resumptive pronouns in left-dislocation structures behave like relative pronouns in triggering lambda-abstraction is supported by the fact that these pronouns are morphologically identical to the standard relative pronouns employed in German, as shown in (15)⁹:

⁹ Note, however, that this analogy is not perfect. There are cases where the resumptive pronoun in left dislocation constructions and the relative pronoun of relative clauses are realized differently (cf. Gärtner 2001 for the observation that German employs different pronouns in ordinary German relative clauses as opposed to so-called integrated (relative-like) verb-second clauses).

- (i) Peter zieht in eine Stadt, **wo/*da** es kein Kino gibt.
 Peter moves to a city, RelP-Dat.SING it no cinema gives.
 'Peter will move to a city where there are no cinemas.'

- (15) a. Peter mag alle Filme, [_{CP} die Martin Scorsese gemacht hat].
 Peter likes all movies, RP-PLUR Martin Scorsese made has.
 ‘Peter likes all movies made by Martin Scorsese’.
- b. Die besten Filme der letzten zwanzig Jahre,
 The best movies of-the-last twenty years,
 [_{CP} die hat Martin Scorsese gemacht].
 RP-PLUR has Martin Scorsese made
 ‘The best movies of the last twenty years have been made by Martin Scorsese’.

Note that the CPs in (15a) and (15b) only differ with respect to the position of the finite verb: in (15b), it occupies C^0 , as required in assertive matrix clauses in German (den Besten 1977), while in (15a) it occupies the position at the right edge of the embedded clause (which we take to be T^0 , though nothing hinges on that), which is the typical situation in embedded clauses.

We take this near formal identity to be no coincidence, but rather as an indication that the two clauses are interpreted in full parallel, namely as the predicate $\lambda x. \textit{has-made}(x)(\textit{Martin Scorsese})$. In case of (15b), where the matrix verb directly follows the subject, the predicate is applied to its sister in order to create an assertion (cf. Lohnstein 2000 and the references cited therein). In case of (15a), where the finite verb of the embedded clause is in final position, the predicate under discussion is combined with the predicate denotation of the modified head by way of predicate modification (cf. Heim and Kratzer 1998). Let us therefore state the following principle:

- (16) A D-pronoun occupying [_{Spec}, CP] at LF triggers lambda-abstraction.¹⁰
 (Where *D-pronoun* is a neutral cover term encompassing all occurrences of pronouns of the type under discussion, i.e. ones starting with a *d* that can also be used as relative pronouns).¹¹

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- (ii) In EINER Stadt in Deutschland, **da/*wo** gibt es kein Kino.
 In a city in Germany, RP-Dat.SING gives it no cinema.
 ‘There is one city in Germany where there are no cinemas.’

¹⁰ See footnote 5 for a brief discussion of cases where the D-pronoun does not occupy [_{Spec}, CP] on the surface.

Having established a basic understanding of the concept (*aboutness*) *topicality* and an application of this concept to sentences containing referring expressions as topics, let us now turn to sentences with topical indefinites.

3.3 The Wide Scope Reading of Topical Indefinites: Basic Facts

Consider again (10a), repeated below as (17a):

- (17) a. EINEN Song von Bob Dylan, den _____ kennt JEDER.
 A/One song by Bob Dylan, RP-MASC.ACC.SING knows everyone
 ‘There is one song by Bob Dylan that everybody knows’
- b. Nämlich *Blowing in the Wind*.
 Namely *Blowing in the Wind*.
- c. #Maria kennt *Visions of Joanna*, Peter kennt *Everybody Must Get Stoned* und Paula kennt *Blowing in the Wind*.
 Maria knows *Visions of Joanna*, Peter knows *Everybody Must Get Stoned* and Paula knows *Blowing in the Wind*.

The oddity of the continuation in (17c) clearly shows that the topical indefinite in (17a) has to be interpreted as having scope over the universal quantifier in the matrix clause (cf. Cresti 1995, Jäger 1996 and Portner and Yabushita 1998 for the claim that topical indefinites have to be interpreted with scope over other quantifiers): the songs are not allowed to vary with the people. This contrasts with the minimally different sentence in (18a), which involves no left-dislocation and where the indefinite occupies [Spec, CP]: in this case both a wide scope and a narrow scope reading are available, showing that the indefinite can be reconstructed into its base position, where it is c-commanded by the universal quantifier in subject position.

- (18) a. EINEN Song von Bob Dylan kennt JEDER.
 A/One song by Bob Dylan knows everyone

¹¹ Note that this excludes demonstratives like *dieser* (this one), which are not acceptable in left dislocation constructions.

‘There is a certain song by Bob Dylan that everybody knows/everybody knows a/at least one song by Bob Dylan’.

b. Nämlich *Blowing in the Wind*.

Namely *Blowing in the Wind*.

c. Maria kennt *Visions of Joanna*, Peter kennt *Everybody Must Get*

Maria knows *Visions of Joanna*, Peter knows *Everybody Must Get*

Stoned und Paula kennt *Blowing in the Wind*.

Stoned and Paula knows *Blowing in the Wind*.

It is worth mentioning that it is often claimed (cf. Frey 2004 and the references cited therein) that left-dislocated DPs can be reconstructed into the base position of the resumptive pronoun in [Spec, CP]. Evidence for this claim comes from the fact that left-dislocated constituents may contain pronouns that are interpreted as bound by a quantifier contained within the matrix clause, as long as the quantifier c-commands the base position of the resumptive pronoun, as shown in (19a):

(19) a. EIN Foto von sich, das hat JEDER Schüler

A/one picture of himself RP.NEUT.SING has every pupil
mitgebracht.

brought-with-him

‘Every pupil has brought a (certain) picture of himself.’

b. Nämlich sein Einschulungsfoto.

Namely his picture-of-his-first-day-at-school.

‘Namely a picture of his first day at school’.

c. #Paul ein Bild von sich mit seiner Tante,

Paul a picture of himself with his aunt,

Peter ein Bild von sich mit seiner Katze

Peter a picture of himself with his cat

Note, however, that if it was possible to reconstruct the left-dislocated indefinite in (19a) into the base position of the resumptive pronoun, the continuation in (19c) should be fine, just like the

one in (19b), contrary to fact. Again, this contrasts with the minimally different example (20a), where the indefinite occupies [Spec, CP], and where both continuations are possible:

- (20) a. EIN Foto von sich hat JEDER Schüler
 A/one picture of himself has every pupil
 mitgebracht.
 brought-with-him
 ‘Every pupil has brought a (certain) picture of himself.’
- b. Nämlich sein Einschulungsfoto.
 Namely his picture-of-his-first-day-at-school.
 ‘Namely a picture of his first day at school’.
- c. Paul ein Bild von sich mit seiner Tante,
 Paul a picture of himself with his aunt,
 Peter ein Bild von sich mit seiner Katze...
 Peter a picture of himself with his cat...

We take the difference between (19) and (20) as evidence that left-dislocated indefinites cannot reconstruct, but rather receive a wide scope *functional* reading in cases like (19a). (19a) does not allow for the pair-list continuation in (19c), which we take to reflect the fact that no narrow scope reading of the functional indefinite *ein Foto von sich* is available here. (19a) only allows for the functional wide scope reading exemplified by the continuation in (19b). The indefinite denotes the function named in (19b), i.e. the function that maps pupils onto the pictures of their first day at school. This function now takes wide scope with respect to other scope elements, i.e. the universal quantifier *jeder Schüler* (*every pupil*) in this case. The denotation of the wide scope taking functional indefinite in (19) would be $\lambda z \lambda Q. \exists x [picture(x) \wedge of(x,z) \wedge Q(x)]$. In the spirit of (Jacobson 1999), semantic composition involving functional elements such as *sich* (*himself*) above is carried out by 1. saturating the functional argument (here: *z*), 2. performing the standard semantic composition, and 3. abstracting over the functional argument again. The result is a function that assigns to each *z* the generalized quantifier ‘a picture of *z*’. (cf. Endriss to appear and Ebert and Endriss 2007 for details and a compositional derivation of this wide scope functional reading). (19) thus shows that the left-dislocated (functional) indefinite *ein Foto von sich* only allows for a *functional* wide scope reading. Note that this function counts as a *natural*

function in the sense of Chierchia 1993 or Jacobson 1999, while pair-list enumerations such as the one given in (19c) do not. (20) on the other hand, allows for a narrow scope reading of the indefinite, evidenced by the fact that it does not allow for only a wide scope functional reading, as one can continue with the pair-list enumeration in (20c).

In other words, we draw the distinction between natural functional readings and pair-list readings – well-known from discussions in the context of the semantics of questions and answers to them – in the context of scope relations, as well (cf. Groenendijk and Stokhof 1984). This makes it possible to distinguish between genuine narrow scope readings and functional wide scope readings. As we will see, the difference between (19) and (20) then gives further evidence for our topic principle in (12).

Accordingly, we assume that left-dislocated XPs are base-generated in their surface position (following Frey 2004; see Wiltschko 1997, Grohmann 2000 and Grewendorf 2002 for different views). Concerning the question of how they receive their case-features, which are identical with the case features of the D-pronoun in [Spec, CP], we tentatively make the following assumptions (as the focus of this paper is on semantic issues, we remain rather sketchy here): the case features of the D-pronoun in [Spec, CP] are transmitted to C^0 under Spec.-head-agreement and to the head of the functional projection hosting the left-dislocated DP under strict locality with C^0 .¹² This enables the head of the higher functional projection to assign to the DP in its specifier the same case carried by the D-pronoun in [Spec, CP].

A further noteworthy fact concerning indefinites in left-dislocated position is that singular indefinites and unmodified numeral indefinites are the only quantificational DPs that can occur in this position, as shown in (21):

- (21) a. (*Mehr als/*weniger als/*genau) zwei Songs von Bob Dylan,
 More than/ less than/ exactly two songs by Bob Dylan,
 die mag ich.
 RP-PLURlike I.
- b. *Keine/*wenige Songs von Bob Dylan, die mag ich.
 No/ few songs by Bob Dylan, RP-PLUR like I.

¹² See footnote 5 for a brief discussion of cases where the D-pronoun does not occupy [Spec, CP] at the surface.

In section 4 we will see how this restriction as well as the obligatory wide scope reading of topical indefinites (in sentences without adverbial quantifiers) can both be derived from the aboutness topicality concept. But let us first have a closer look at adverbially quantified sentences containing topical indefinites.

3.4 Topical Indefinites in Adverbially Quantified Sentences: The Facts

Consider again example (10b), repeated as (22):¹³

- (22) Eine neue Platte von Bob DYLAN, die kommt
 A new record by Bob Dylan, RP-FEM.NOM.SING comes
 meistens in die CHARTS.
 usually in the charts.
 ‘A new record by Bob Dylan usually gets into the charts’.

The sentence only gets an interpretation that can be paraphrased as *Most new records by Bob Dylan get into the charts*, i.e. the topical indefinite obligatorily induces the *Quantificational Variability Effect* already mentioned in sections 1 and 2: the quantificational force of the indefinite seems to depend on the quantificational force of the adverbial quantifier. Note, however, that such a reading is only available under the following condition: There is no heavy accent on the determiner *ein* as in the examples discussed in the last section, but the accent rather falls on some element within the NP-complement of the determiner (the most natural choice

¹³ Note that adverbially quantified sentences with left-dislocated indefinites are also acceptable if the indefinite contains a reflexive pronoun that is bound by a CP-internal DP. This shows that we must be dealing with left dislocation constructions and not with hanging topic constructions. This is shown in (i):

- (i) Einen Artikel über sich, den liest Hans meistens mit größter Genugtuung.
 An article about himself RP-MASC.ACC.SING reads Hans usually with greatest satisfaction.
 ‘Hans usually reads an article about himself with greatest satisfaction’.

being *Dylan*)¹⁴. If it falls on *ein*, the sentence becomes very odd for pragmatic reasons, since it can only be interpreted as saying that there is a particular new record by Bob Dylan which gets into the charts most of the time:

- (23) ^{??}EINE neue Platte von Bob Dylan, die kommt
 A/One new record by Bob Dylan, RP-FEM.NOM.SING comes
 meistens in die CHARTS.
 usually in the charts.

^{??}‘There is a new record by Bob Dylan that usually gets into the charts’.

(24b), however, shows that there is nothing wrong with interpreting a left-dislocated indefinite with scope over a Q-adverb, as long as the resulting reading is not extremely implausible:

- (24) a. Ein HUND, der ist meistens HUNGRIG.
 A dog, RP-MASC.NOM.PLUR is usually hungry.
 ‘A dog is usually hungry’.
- b. EIN Hund, der ist meistens HUNGRIG.
 A/one dog, RP-MASC.NOM.PLUR is usually hungry.
 ‘There is a certain dog that is usually hungry’.

(24) is instructive, since it exemplifies the two strategies that are available to interpret left-dislocated indefinites in sentences with adverbial quantifiers: they can either be interpreted in the restrictor of the Q-adverb, which results in a Q(uantificational)V(ariability)-reading, or they can be interpreted with scope over the Q-adverb. The choice between the two readings depends on the accentuation pattern within the DP.

Note that the predicate *be hungry* in (24a) cannot be interpreted episodically, but only generically, i.e. the sentence gets a reading that can be paraphrased as: *most dogs are generally hungry*, and not as: *most dogs are hungry at least once during their lifetime*. Furthermore, the sentence also gets a second, slightly different reading, which can be paraphrased as: *in general*,

¹⁴ Note that this accent comes in addition to the main accent, which falls on the most deeply embedded constituent within the matrix VP by default, thereby signalling that the whole matrix-CP is to be interpreted as focal (cf. Selkirk 1995).

dogs are hungry most of the time. This can easily be explained under the (by now) standard assumption that in addition to overt Q-adverbs, there also exists a covert generic operator, which has (roughly) the same quantificational force as the universal A-quantifier *always*, but differs from the latter in allowing exceptions (cf. Krifka et al. 1995). With this assumption in place, (24a) can be analysed as containing two instead of one A-quantifier: an overt one (*usually*), and the covert generic operator. The choice between the two readings paraphrased above then depends on the question which quantifier is interpreted with scope over the other: if *usually* is given higher scope, we get the first reading, and if the generic operator is given higher scope, we get the second one. In addition, assuming that there is a covert generic operator also enables us to analyse generic sentences like (25a, b), which are interpreted as making general assertions about elephants and lions, respectively, in analogy to sentences with overt Q-adverbs where the topical indefinite is interpreted in the restrictor of the Q-adverb:

- (25) a. Ein ELEFANT, der hat einen RÜSSEL.
 An elephant, RP-MASC.NOM.SING has a trunk.
 ‘An elephant has a trunk’.
- b. Ein LÖWE, der hat eine MÄHNE.
 A lion, RP-MASC.NOM.SING has a mane.
 ‘A lion has a mane’.

Note that in these cases, too, a specific reading can be forced by placing an accent on the determiner instead of the noun:

- (26) a. EIN Elefant, der hat einen RÜSSEL.
 A/one elephant, RP-MASC.NOM.SING has a trunk.
 ‘There is one specific elephant that has a trunk’.
- b. EIN Löwe, der hat eine MÄHNE.
 A lion, RP-MASC.NOM.SING has a mane.
 ‘There is one specific lion that has a mane’.

We have seen that topical indefinites either receive wide scope (over other quantifiers or, in the presence of a Q-adverb, over the Q-adverb) or that they are interpreted in the restrictor of a

As already mentioned in section 3.1 (and as indicated by the paraphrase), sentences like (27), where a left-dislocated DP is combined with a CP-internal quantificational DP, only receive an interpretation according to which the left-dislocated indefinite takes wide scope. At first sight, this seems to follow rather straightforwardly from the assumption that left-dislocated XPs are base generated in their surface positions: as the indefinite cannot be reconstructed into the base position of the D-pronoun, the only way for the universal quantifier to scope over it would be Q(uantifier)R(aising). The standard assumption with respect to QR is, however, that it can only target IP/TP (cf. May 1985). Therefore, there is no way for a CP-internal quantifier to scope over a left-dislocated one.

However, the account just sketched would be in conflict with the assumption introduced in section 3.2., according to which the topic operator present in left dislocation sentences has the denotation repeated below as (28):

$$(28) \quad \lambda P \lambda X. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]]$$

First, the left-dislocated DP cannot function as the second argument of the topic operator, and second, the denotation of the CP cannot apply to the denotation of this DP, as required by (28). In (29a, b), the denotations of the left-dislocated indefinite and the CP are given, and in (29c) we see the result of combining the two constituents directly, i.e. without the intervening topic operator:¹⁵

$$(29) \quad \begin{aligned} \text{a. } & \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda s. \exists x [\text{song-by-Bob-Dylan}(x)(s) \wedge P(x)(s)] \\ \text{b. } & \lambda z. \lambda s. \forall y [\text{person}(y)(s) \rightarrow \text{know}(z)(y)(s)] \\ \text{c. } & [\lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda s. \exists x [\text{song-by-Bob-Dylan}(x)(s) \wedge P(x)(s)]] \\ & (\lambda z. \lambda s. \forall y [\text{person}(y)(s) \rightarrow \text{know}(z)(y)(s)]) = \\ & \lambda s. \exists x [\text{song-by-Bob-Dylan}(x)(s) \wedge \forall y [\text{person}(y)(s) \rightarrow \text{know}(x)(y)(s)]] \end{aligned}$$

While combining the denotation of the left-dislocated indefinite with the denotation of the CP directly via functional application gives us the right result – namely a wide scope interpretation for the indefinite –, it does not only come at the price of ignoring the meaning contribution of the

¹⁵ Note that we have to complicate the semantics of generalized quantifiers slightly by adding an additional situation argument in order to be consistent with what will be proposed in section 4.2.

topic operator in (28), but it is in conflict with the intuition that aboutness topics are the logical subjects of a predication contributed by the comment: as the indefinite denotes (the characteristic function of) a set of sets of relations between individuals and situations, while the CP denotes (the characteristic function of) a set of relations between individuals and situations, it is the denotation of the indefinite which applies to the denotation of the CP, i.e. the object denoted by the indefinite functions as the predicate, while the object denoted by the CP functions as the argument. This is counter to the aboutness concept of topicality and to the proposed topic principle, where the topic serves as the *object of predication*.

Rather, we assume (following Ebert and Endriss 2004 and Endriss to appear) that only individuals and sets can legitimately serve as addresses for storing information. This is evidenced by the fact that there are discourse referents and corresponding anaphoric expressions only for individuals and sets, but not for sets of sets. Therefore, the type of a topic-marked generalized quantifier has to be lowered to the type of sets at least, in order for it to serve as an address where the information conveyed by the rest of the sentence can be stored. Recall that in section 3.2 we have already seen in ex. (11) that a set, namely a set of situations (i.e. a proposition), can function as the aboutness topic of a sentence. Therefore, the topic operator has to be flexible enough to accommodate the type of sets anyway.

One way to achieve the goal of turning the generalized quantifier denoted by an indefinite DP into a set (another one will be discussed in section 4.2) is by creating a *representative* of the quantifier in the form of a *minimal witness set* (in the sense of Barwise and Cooper 1981; see Endriss to appear; cf. also Szabolcsi 1997). A minimal witness set of a quantifier is an element of this quantifier that does not contain any "unwanted" elements. The formal definition is given in (30):

$$(30) \text{ Definition of a minimal (witness) set } X \text{ of a generalized quantifier } G : \\ \min(X)(G) = \lambda s [G(X)(s) \wedge \forall Y [G(Y)(s) \rightarrow \neg(\lambda x.Y(x)(s) \subset \lambda x.X(x)(s))]]$$

In the case of a quantifier like *three dogs* (in a situation s), for instance, a minimal witness set of this quantifier is a set that contains three dogs (in s) and nothing else. Such a minimal witness set can then function as the address where the information conveyed by the comment is stored. In order for this to be possible, however, the denotation of the topic – which now is an object of type $\langle e \langle s, t \rangle \rangle$ – has to be combined with the denotation of the comment, which is of the same

type. Furthermore, as noted above, the intuition formalized in (28) has to be respected, i.e. the comment has to be applied to the topic. This can be achieved in the following way: an operator which turns the elements of the minimal witness set into a (sum) individual (cf. Link 1983) is applied to the respective minimal witness set.

Taking all this together, we assume that in (non-generic, non-adverbially quantified) sentences that contain a topical indefinite, the topic operator in (28) is shifted as shown in (31), which gives us an object that can apply to the quantifier and the comment property, respectively:

$$(31) \quad \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda X_e. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)] \Rightarrow \\ \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda X_{\langle \langle e, \langle s, t \rangle \rangle, \langle s, t \rangle \rangle} \exists \alpha [\exists s [\min(\alpha)(X)(s) \\ \& \ \text{ASSERT} [P(\sqcap \{x: \alpha(x)(s)\})]]]]$$

In the case of example (27) from above, repeated below as (32a), this yields the result in (32b):

- (32) a. EINEN Song von Bob Dylan, den kennt JEDER
A/One song by Bob Dylan, RP-MASC.ACC.SING knows everyone
(nämlich *Blowing in the Wind*).

$$b. \quad \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda X_{\langle \langle e, \langle s, t \rangle \rangle, \langle s, t \rangle \rangle} \exists \alpha [\exists s [\min(\alpha)(X)(s) \\ \& \ \text{ASSERT} [P(\sqcap \{x: \alpha(x)(s)\})]]]] \\ (\lambda P \lambda s. \exists x [\text{song-by-Bob-Dylan}(x)(s) \wedge P(x)(s)]) \\ (\lambda z \lambda s. \forall y [\text{person}(y)(s) \rightarrow \text{know}(z)(y)(s)]) = \\ \exists \alpha [\exists s [\min(\alpha)(\lambda P. \lambda s'. \exists x [\text{song-by-Bob-Dylan}(x)(s') \\ \wedge P(x)(s')])](s) \\ \& \ \text{ASSERT} [\lambda s'. \forall y [\text{person}(y)(s') \rightarrow \text{know}(\sqcap \{x: \alpha(x)(s)\})(y)(s')]]]]$$

This is the correct result. It reflects the wide scope reading for the indefinite and at the same time respects the principle underlying our formalization of the topic operator: it allows the creation of an address corresponding to the minimal witness set where the information conveyed by the comment can be stored.

In cases like (32), sum formation is trivial, as any minimal witness set contains just one element, anyway. In examples like (33), however, we get a true *sum* individual, as a minimal witness set of the quantifier under discussion has more than just one element. This has the consequence that in order to obtain the correct result, a distributivity operator (cf. Link 1983) has to be inserted in cases where the respective predicate is non-collective in order to distribute the atomic elements of the sum individual (i.e. the members of the minimal witness set) over the elements of the set denoted by the predicate.

- (33) a. ZWEI Mitglieder der Beatles, die kennt JEDER.
 Two members of-the Beatles, RP-PLUR knows everyone.
 ‘There are two members of the Beatles that everyone knows’.

We follow (Ebert and Endriss 2004) and (Endriss to appear) in their assumptions about when a topical interpretation of a quantifier is possible and when it is prohibited. We can only briefly sketch the main ideas here and refer the reader to the cited papers. The authors assume that a quantifier can only be interpreted as a sentence topic if two constraints are fulfilled: 1. topic interpretation may not change the actual content of the sentence under discussion, and 2. topic interpretation may not eliminate anaphoric potential – both compared to the case when the quantifier under discussion is not interpreted as topical, but with similar scope relations as in the topic interpretation case. Formally, this can be spelled out as a condition on the lexical semantics of quantifiers, which checks whether the quantifier under discussion can serve as topic or not. A quantifier is called *topic-able* if and only if it passes this so-called *Topic Condition* that is divided into the two constraints pointed out above (see Endriss to appear for further formal details). A generalized quantifier Q is topic-able if applying Q to a non-complex predicate P (i.e. one that does not contain any scope operators) leads to the same result as applying P to the representative of Q (i.e. the sum individual corresponding to a minimal witness set of Q). For our concerns here this means that the topic operator in (31) applied to a non-complex property P and a quantifier Q must yield the same outcome as would result from applying Q to P. The reasoning behind this is the following: the first constraint ensures that topic marking is first and foremost a means of structuring information that is to be conveyed by the speaker, and not an operation that is intended to alter the truth conditions. The second constraint makes reference to dynamic binding possibilities and demands that in addition to the truth conditions, also the binding possibilities

may not be affected by the topic interpretation of quantifiers. This is in line with the assumption made in dynamic semantics (e.g. Groenendijk and Stokhof 1990) that the meaning of an expression is not exhausted by its truth conditional content, but rather by the combination of truth conditional content and binding potential.

Note that these assumptions concerning the interpretation of topical indefinites explain immediately why downward entailing generalized quantifiers (like *weniger als n NP* (*less than n NP*)) cannot be topicalized (cf. section 3.3): in these cases, the corresponding minimal witness set would be the empty set, obviously not a sensible representative for the quantifier. The truth conditions of the non-topic case, where the quantifier *less than n NP* is applied to a predicate P, and the topic case, where predicate P would be applied to the sum individual corresponding to the empty set, would differ massively. Hence the GQ *less than n NP* is not topic-able. If such a DP was overtly topic-marked (e.g. by a left-dislocation construction in German), this would result in a deviant sentence because the quantifier does not pass the Topic Condition and hence the speech act corresponding to the creation of a storage address would fail.

With modified quantifiers of the form *genau n NP* (*exactly n NP*), the problem is again that the GQ *genau n NP* (*exactly n NP*) does not meet the Topic Condition, because the truth conditions of the topic and the non-topic case would not be equivalent for non-complex predicates P. As expected, (34a) is odd:

- (34) a. ^{??}Genau ZWEI Mitglieder der Beatles, die kennt JEDER.
 Exactly two members of-theBeatles, RP-PLUR knows everyone.
 a. ^{??}Mehr als ZWEI Mitglieder der Beatles, die kennt JEDER.
 More than two members of-theBeatles, RP-PLUR knows everyone.

Assume that there are in fact three members of the Beatles that have property P, say: sleep (namely John Lennon, Paul McCartney and George Harrison). In this case, the proposition *exactly two members of the Beatles sleep* would be false. Under a topic interpretation of *exactly two members of the Beatles*, however, the sentence would be true, since it is only required that there is a set containing two members of the Beatles and each member of this set sleeps. This leaves open the possibility that actually more than two members of the Beatles sleep. The oddity of such examples can thus be accounted for under the assumption that topic interpretation is excluded here, as it would not lead to a truth conditionally equivalent interpretation.

In the case of quantifiers of the form *mehr als n NP* (*more than n NP*) (34b), the problem is that anaphoric possibilities would be destroyed that were available if the indefinite did receive its ordinary interpretation, i.e. the second constraint on topic interpretation is violated. It is well known that if the quantifier *mehr als zwei Gäste* (*more than two guests*) in a sentence such as *Mehr als zwei Gäste schlafen* (*more than two guests sleep*) binds a pronoun in a subsequent clause via dynamic binding (cf. Groenendijk and Stokhof 1990), this pronoun is understood to refer back to the maximal number of individuals that are guests and sleep (cf. Kadmon 1985). Creating a minimal witness set of the quantifier *mehr als zwei Gäste* (*more than two guests*), however, would have the consequence that a pronoun in a subsequent clause could only denote *three* individuals that satisfy the predicate *guests* (and that sleep), but not four or more. The oddity of (34b) can thus naturally be accounted for by reference to the second above mentioned constraint on the topical interpretation of quantifiers: in addition to the truth conditions, also the binding possibilities may not be affected by topicalizing a quantifier.

Note finally that universally quantified DPs seem to pose a problem for this account only at first glance. The minimal witness set of a universally quantified DP like *jeder Hund von Paulas Onkels* (*every dog of Paula's uncle*) is the set containing all dogs of Paula's uncle and nothing else. This is intuitively a decent representative for the quantifier and the quantifier passes the Topic Condition. The quantifier should thus be one that can be interpreted as sentence topic and hence be able to appear in left-dislocated position. However, (35) shows that this is not the case.

- (35) *Jeden Hund von Paulas Onkel, den mag Peter.
 Every dog of Paula's uncle, RP-MASC.ACC.SING likes Peter.

Now note that there is a mismatch between the semantic plurality of the object created from the generalized quantifier in (35) and the pronoun in [Spec, CP]. That this mismatch is (partially) responsible for the ungrammaticality of (35) becomes evident by comparing it to the minimally contrasting example (36), where the left-dislocated universally quantified DP is morphologically plural and thus comes with a corresponding plural D-pronoun in [Spec, CP].

- (36) ?Alle Hunde von Paulas Onkel, die mag Peter.
 All dogs of Paula's uncle, RP-PLUR likes Peter.

While still odd, (36) is considerably better than (35), thus showing that the (mis)match between semantic and morphological plurality plays a role here. That (36) is still far from perfect might be due to the fact that after applying the sum operator to the minimal witness set derived from the generalized quantifier, the resulting object has exactly the same denotation as the plural definite *The dogs of Paula's uncle*, namely the sum individual consisting of all the dogs Paula's uncle has. In light of the fact that *The dogs of Paula's uncle* makes a perfect topic, it would be extremely uneconomical to convey the same information by using the topicalized *all dogs of Paula's uncle*. Following Chierchia (1998), it can be assumed that covert typeshifting operations like the ones required to turn a universally quantified DP like the one in (36) into an object of type *e* are blocked whenever the same result could have been achieved via a lexical item – namely the definite determiner. This explains why not only morphologically singular, but also morphologically plural universally quantified DPs cannot felicitously be left-dislocated.

Taken together, this leaves indefinites and unmodified numerals as the only quantifiers that may be topicalized. Note finally that left-dislocated indefinites shifted to minimal witness sets can be seen as *direct* aboutness topics insofar as the comment is directly predicated over the element(s) of the minimal witness set. In this respect, they behave like topicalized DPs that denote individuals (i.e. proper names and definite descriptions). In the next section, we will see that topical indefinites can also function as *indirect* aboutness topics.

4.2 Topical Indefinites as Indirect Aboutness Topics

In section 3.4, we have seen that left-dislocated indefinites in adverbially quantified sentences can be interpreted in two ways: either with scope over the Q-adverb, or in the restrictor of the Q-adverb, depending on the accentuation pattern within the left-dislocated DP. The wide scope interpretation can be accounted for by assuming that the mechanism described in the last section applies to the topical indefinite and the predicate denoted by the CP containing the Q-adverb. An example like (24b), which is repeated here as (37a), thus receives the interpretation in (37b), which is paraphrased in (37c):

(37) a. EIN Hund, der ist meistens HUNGRIG.

With the accentuation pattern indicated, the sentence gets a QV-reading that can be paraphrased as “Most new records by Bob Dylan get into the charts”. We have already seen that QV-readings can be accounted for by assuming that the respective indefinite is interpreted in the restrictor of the Q-adverb.

But now the problem is that such an interpretation seems to be in conflict with our assumption that left-dislocated indefinites always need to be interpreted as aboutness topics: if the indefinite is interpreted in the restrictor of the Q-adverb, the CP containing this Q-adverb cannot be interpreted as a predicate applying to (the denotation of) this indefinite.

It is, however, possible to reconcile our view of left-dislocated indefinites as aboutness topics with the fact that such indefinites receive QV-readings in the presence of Q-adverbs if we view quantification as higher-order predication process. Seen this way, the restrictor set – i.e. the set quantified over – is the logical subject of a higher-order predication, where this higher-order predication consists in specifying the degree to which the restrictor set is contained within the set denoted by the respective matrix predicate (cf. Löbner 2000 for a similar view). A sentence like *Most children sleep* could thus be viewed as a higher order quantification construction where the subject of the predication are the children, the predication is the property of sleeping, and *most* gives the degree to which this *sleep*-property holds of the subject *children*. In the case of such quantificational DPs as *most children* this relation is masked, however, by the fact that quantificational determiners form constituents with NPs, which function as their restrictors (cf. section 2). Accordingly, the restrictor in these cases cannot be marked as an aboutness-topic via separating it from the rest of the clause, which could then function as the comment. In the case of Q-adverbs, on the other hand, this is possible, as Q-adverbs do not form constituents with their restrictors, but rather – occupying *vP*-adjoined (base) positions – with their nuclear scopes.

Let us therefore assume that Q-adverbs always come in two, closely related varieties: the first variety is the one already discussed. Q-adverbs of this variety take the denotation of the clause they are contained in as their nuclear scope, while the restrictor is given in the form of a free variable ranging over situation predicates. This is the variety that is employed in cases where (a) no overt material c-commanding the Q-adverb is given, or (b) this material is to be interpreted with scope over the Q-adverb (as in (37a)) or (c) this material is reconstructed into a position

where it is c-commanded by the Q-adverb at LF (cf. Hinterwimmer to appear and Hinterwimmer 2006).¹⁶

Q-adverbs of the second variety take two arguments, like quantificational determiners, but they take their arguments in reverse order (seen from the perspective of determiner-quantification; cf. Chierchia 1995): they combine with the set of situations denoted by the ν P-segment they c-command at LF first, forming a predicate that can be applied to the respective topical set (cf. Hinterwimmer to appear for details).

Consider the example in (39a), where a *when*-clause has been left-dislocated. We assume that in such cases a topical set of situations is given directly in the form of the left dislocated *when*-clause. In order to account for such examples, the types of the arguments that the topic operator in (28) takes need to be adjusted, as shown in (39b), and the sentence can be interpreted as shown in (39c) (under the assumption that the subject *Maria* is reconstructed into its ν P-internal base position at LF). Note that we assume the D-pronoun *dann* to trigger lambda abstraction over sets of situations:

- (39) a. Wenn Paul in seinem Büro ist, dann ist Maria meistens glücklich.
 When Paul in his office is, then is Maria usually happy.
 ‘When Paul is in his office, Maria is usually happy.’
- b. $\lambda P_{\langle s, t \rangle, \langle s, t \rangle} \lambda X_{\langle s, t \rangle}. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]]$
- c. $\lambda P_{\langle s, t \rangle, \langle s, t \rangle} \lambda X_{\langle s, t \rangle}. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]]$
 $(\lambda Q_{\langle s, t \rangle}. \lambda s. \text{Most } s' [s' \leq s \wedge \min(s', Q)]$
 $[\exists s'' [s' \leq s'' \wedge \min(s'', \text{happy}(\text{Maria}))]])$
 $(\lambda s. \text{in_his_office}(\text{Paul})(s)) =$
 $\exists \alpha [\alpha = \lambda s. \text{in_his_office}(\text{Paul})(s)$
 $\ \& \ \text{ASSERT} [\lambda s. \text{Most } s' [s' \leq s \wedge \min(s', \text{in_his_office}(\text{Paul}))]]$
 $[\exists s'' [s' \leq s'' \wedge \min(s'', \text{happy}(\text{Maria}))]]]$

¹⁶ Clause (c) is relevant for examples where a focus-marked constituent that c-commands the Q-adverb overtly is interpreted in the nuclear scope. Hinterwimmer (2006, to appear) argues that in these cases the focus-marked material is reconstructed at LF.

In an example like (39a), the left-dislocated *when*-clause denoting a set of situations is thus the *direct* aboutness topic, being the “subject” of the higher-order predication expressed by the comment. In a case like (38), on the other hand, no such *direct* aboutness topic is given, as the left-dislocated indefinite denotes a set of sets of relations between individuals and situations, not a set of situations, as shown in (40). We assume that in order to fix this mismatch, there is a second possibility available (in addition to the one discussed in section 4.1) to turn an indefinite into a set that can serve as an address for storing information: it can be turned into a set of situations via a simple type-shift, namely by applying the predicate $\lambda x \lambda s. in(x)(s)$ to it (cf. Hinterwimmer to appear for details). This gives us a set of situations each of which contains an individual of the respective kind, as shown in (40) for the left-dislocated indefinite of example (38)¹⁷:

$$\begin{aligned}
 (40) \quad & \lambda P_{\langle e, \langle s, t \rangle \rangle} \lambda s. \exists x [\text{new-record-by-Bob-Dylan}(x)(s) \wedge P(x)(s)] (\lambda y. \lambda s. in(y)(s)) \\
 & (\lambda y. \lambda s. in(y)(s)) = \\
 & \lambda s. \exists x [\text{new-record-by-Bob-Dylan}(x)(s) \wedge in(x)(s)] = \\
 & \lambda s. \exists x [\text{new-record-by-Bob-Dylan}(x)(s)]
 \end{aligned}$$

This set of situations can then function as the aboutness topic in a case like (38), and the left-dislocated indefinite can be seen as the *indirect* aboutness topic of such sentences, as the *direct* aboutness topic is a set of situations that has been derived from the denotation of the respective indefinite.

One additional complication has to be taken into account in order to derive the reading we are after in cases like (38): the D-pronoun cannot be interpreted in [Spec, CP], where it triggers lambda-abstraction, as this would result in a reading where the indefinite has scope over the Q-adverb (as in (37) above). In order to overcome this problem, we assume that the D-pronoun in the specifier position of CP can optionally be reconstructed into its *vP*-internal base position,

¹⁷ We assume that in the case of left-dislocated bare plurals basically the same mechanism applies, modulo the fact that bare plurals denote kinds which have to be turned into plural indefinites in cases where they are to be combined with non-kind-level predicates (see Hinterwimmer to appear and the references cited therein for further discussion).

where it is interpreted as a free variable, i.e. just like an ordinary pronoun¹⁸. As such, it can be dynamically bound by the indefinite in the restrictor of the Q-adverb. This gives us a higher-order predicate that can be applied to the topical set, as shown in (41), resulting in an interpretation that can be paraphrased as “Most (minimal) situations that contain a new record by Bob Dylan can be extended to a minimal situation where this record gets into the charts”:

$$\begin{aligned}
 (41) \quad & \text{a. } \lambda P_{\langle s, t \rangle, \langle s, t \rangle} \lambda X_{\langle s, t \rangle}. \exists \alpha [\alpha = X \ \& \ \text{ASSERT} [P(\alpha)]] \\
 & (\lambda Q_{\langle s, t \rangle}. \lambda s. \text{Most } s' [s' \leq s \wedge \text{min}(s', Q)] \\
 & \quad [\exists s'' [s' \leq s'' \wedge \text{min}(s'', \text{gets_into_charts}(x))]]) \\
 & (\lambda s. \exists x [\text{new_record_by_Bob Dylan}(x)(s)]) = \\
 & \exists \alpha [\alpha = \lambda s. \exists x [\text{new_record_by_Bob Dylan}(x)(s)] \\
 & \quad \& \ \text{ASSERT} [\lambda s. \text{Most } s' [s' \leq s \wedge \text{min}(s', \alpha)]] \\
 & \quad [\exists s'' [s' \leq s'' \wedge \text{min}(s'', \text{gets_into_charts}(x))]]]
 \end{aligned}$$

In this section, we have seen how our concept of aboutness topicality can account for the QV-readings of adverbially quantified sentences with topical indefinites. In the next section we will return to the question why topical indefinites taking wide scope differ prosodically from indefinites that are interpreted in the restrictor of Q-adverbs.

5. Prosody as a Means of Disambiguating Topical Indefinites

In sections 3 and 4 we have seen that topical indefinites that are interpreted specifically differ prosodically from indefinites that are interpreted in the restrictor of a Q-adverb or the generic operator: whereas in the former case, the DP-internal accent is realized on the determiner, it is realized on some (usually the most deeply embedded) constituent inside the NP-complement of the determiner in the latter case. As the examples below show, the correlation between DP-internal prosody and wide scope vs. QV-reading is rather strict: if either the context or clause

¹⁸ It is well known that D-pronouns in German can function like ordinary pronouns insofar as they can either be dynamically bound, or be assigned a value on the basis of contextual information (what is excluded is binding by c-commanding quantifiers).

internal information strongly favour one of the two readings, while the prosody favours the other one, the resulting sentences are very odd¹⁹.

- (42) a. Peter besitzt viele Pferde.
Peter owns many horses.
- b. EIN Pferd, das hat braune AUGEN.
A/one horse, RP-NEUT.NOM.SING has brown eyes.
'One/a particular horse had brown eyes'.
- c. #Ein PFERD, das hat braune AUGEN.
- (43) a. Ein PFERD, das hat meistens braune AUGEN.
A/one horse, RP-NEUT.NOM.SING has usually brown eyes.
'A horse usually has brown eyes'.
- b. ??EIN Pferd, das hat meistens braune AUGEN.
A/one horse, RP-NEUT.NOM.SING has usually brown eyes.

(42c) with the indicated accentuation pattern can only be interpreted generically. It is, however, incoherent to make a general statement about horses after a particular set of horses has been introduced in the previous discourse. In the case of (43b), the problem is that the indefinite can only be interpreted specifically with the indicated accentuation pattern. This, however, is in conflict with the fact that *have brown eyes* is an individual level predicate (cf. Kratzer 1995) that as such can only hold of an individual during the whole time of its existence.

¹⁹ This has also been confirmed in an experiment where subjects should judge the felicity of sentences that exemplified such mismatches (see Endriss, Féry, Hinterwimmer, and Krause in preparation).

However, there are certain cases that seem to systematically lack this correspondence of wide scope reading and accent on the determiner, namely such cases where the NP-complement of the determiner consists of a lexically rich NP.

- (i) Ein Verwandter von Miriam aus STUTTgart, der war gestern auch im Café Burger.
A relative of Miriam from Stuttgart RP-MASC.ACC.SING was yesterday also in Café Burger.
'There is a relative of Miriam from Stuttgart who was also at Café Burger yesterday'.

These indefinites with lexically heavy NPs have to be treated differently for several reasons and will be ignored in this paper (see Endriss to appear for a detailed discussion).

The first thing to note about the phenomenon under discussion is that an accent has to fall on some constituent within this DP anyway because the indefinite DP forms a separate phonological phrase from the matrix CP. The question then is why the choice of determiner vs. NP correlates with the respective interpretation.

Let us assume that the DP-internal accent is interpreted as a focus accent inside a topic (in contrast to the CP-internal accent, which is just interpreted as a focus accent; see Tomioka, this volume for a similar analysis of contrastive *wa*-topics in Japanese). Let us furthermore assume (as already described in section 2) that focus-marking a constituent always has the effect of introducing alternatives to this constituent. The alternatives are then composed with the rest of the clause until the point is reached where a set of propositions (or, in the cases under discussion, a set of alternative combined speech acts each of which consists of a speech act where a topic is introduced and an assertion concerning this topic) has been generated that only differ from each other with respect to the denotation of each focus alternative.

Consider the case where the determiner *ein* is accented first: as already mentioned (and as indicated by the glosses and paraphrases of the respective examples), *ein* is not just an indefinite article, but also denotes the cardinality predicate *one*. It is therefore natural to assume that the alternatives introduced by focussing *ein* are the cardinality predicates *zwei* (two), *drei* (three), *vier* (four), etc. This has the consequence that a set of alternative conjoined speech acts is generated where *ein* has been replaced by *zwei*, *drei*, etc. Now, there has to be some point in introducing such a set – for example by implicating that at least one of the alternative (combined) speech acts would be infelicitous because the speaker considers the corresponding assertion wrong, or because the assertion corresponding to the (combined) speech act actually preformed is the only one the truth of which the speaker is sure of (cf. Tomioka, this volume, who analyses sentences containing focus marked *wa*-topics as introducing a set of alternative speech acts, too, and who assumes a similar rationale for why such a set is introduced).

If in the proposition asserted in the original (conjoined) speech act the indefinite is interpreted in the restrictor of a Q-adverb, the alternatives are of this form, too. Consider example (43b) and assume (counterfactually) that the indefinite is interpreted in the restrictor, resulting in a proposition that can be paraphrased as “Most minimal situations that contain a horse can be extended to a minimal situation where this horse has brown eyes”. The alternatives generated in this case can be paraphrased as “Most minimal situations that contain two/three/four etc. horses can be extended to a minimal situation where these horses have brown eyes”. The problem is that

In the case of (44), even under the assumption that the indefinite is interpreted in the restrictor of the Q-adverb, it makes sense to contrast the proposition asserted with the alternative propositions: it is perfectly reasonable to assume that while most minimal situations that contain a single stallion can be extended to a minimal situation where this stallion is manageable, it is wrong at the same time that most minimal situations containing more than one stallion can be extended to a minimal situation where these stallions are manageable. After all, stallions that come in groups are usually quite unmanageable.

These considerations also point to the solution for a problem our account seems to face at first sight: as soon as we choose a determiner of higher cardinality, it is not so clear anymore whether the alternatives with determiners of higher as well as the ones with determiners of lower cardinality are automatically implied. Nevertheless, a sentence like (45) is out:

- (45) ^{??}ZEHN Hengste, die haben meistens braune AUGEN.
 Ten stallions, RP-PLUR have usually brown eyes.

Note, however, that the sentence is strange irrespective of the question whether the determiner or the NP is focussed marked. We assume that this is due to the fact that as long as properties that individuals have in isolation, i.e. irrespective of the presence of other individuals of the same kind, are concerned, the determiner *ein* is the unmarked option. In other words, choosing a determiner with higher cardinality (irrespective of focussing) as well as focussing *ein* are marked options that are only allowed if they have a point, i.e. if it is conceivable that either the alternatives involving higher cardinalities or the ones involving lower cardinalities are wrong. Therefore, a minimal variant of (45) where a matrix predicate is chosen such that it is conceivable that this predicate only applies to horses that come in groups of ten (and possibly more) should be fine. (46) might be a case in point:

- (46) ZEHN Hengste (auf einer gemeinsamen Weide), die treten sich meistens.
 Ten stallions on a common meadow, RP-PL kick self usually .
 ‘Ten stallions (in one and the same meadow) usually kick each other’.

Concerning cases where a topical indefinite is interpreted specifically, it has been noted by (Hinterwimmer and Repp, to appear a, b) that in gapping sentences like (47a) topical indefinites

headed by determiners like *ein*, *zwei*, etc. (a/one, two, ...) can be contrasted even under surface identity. As shown by (47b), this is only possible with indefinites in topic position.²¹ Otherwise, a surface contrast is required (as shown by (47c)):

(47) a. EIN Student, der hat dem DiREKtor
 A/One student, RP-NOM.MASC.SING has the-DAT director
 geschrieben und EIN Student dem DekAN.
 written-to and a/one student the dean.
 ‘A/One student has written to the director and a/one student to the dean’.

b. ??Dem DiREKtor, dem hat EIN Student
 The-DAT director, RP-DAT.MASC.SING has a/one student
 geschrieben und dem DekAN EIN Student.
 written-to and RP-DAT.MASC.SING dean a/one student.
 ??‘To the director, one student has written, and to the dean, one student’.

c. Dem DiREKtor, dem hat EIN Student
 The-DAT director, RP-DAT.MASC.SING has a/one student
 geschrieben und dem DekAN ZWEI StudentEN.
 written-to and RP-DAT.MASC.SING dean two students.
 ‘To the director, one student has written and to the dean, two students’.

²¹ Note, however, that it is not the case that left-dislocation is required. Rather, fronting suffices as shown by (i).

(i) EIN Student hat dem DiREKtor geschrieben und EIN Student dem DekAN.
 A/One student, has the-DAT director written-to and a/one student the dean.

This can be explained if we follow Frey (2000) in his assumption that German has a topic position in the middlefield and that C^0 either hosts a *wh*-feature, a focus-feature or an EPP-feature, attracting the closest (in terms of c-command) constituent that can satisfy the respective requirement. Since the topic position is the highest position in the middlefield, a non-focal, non-*wh* C^0 automatically attracts the respective topic. This explains why (i) in contrast to (47b) is fine: in (i), the indefinite has been attracted from the (middlefield) topic position, in (47b), however, it was the definite DP.

In order to account for this pattern, Hinterwimmer and Repp assume that the alternative sets introduced by the respective conjuncts contain not the conjoined speech acts in their entirety, but just the assertion parts. This has the consequence that only the individuals created on the basis of the respective minimal witness sets are contrasted, not the generalized quantifiers, thus explaining why the absence of a surface contrast does not matter in these cases. Concerning the fact that the contrast has to be marked on the determiner, not on the NP, Hinterwimmer and Repp assume that this is due to the fact that the determiner is the element with the least substantive content within the whole phrase: since it is the object created on the basis of the respective generalized quantifiers that is contrasted, not some part of the (denotation of) generalized quantifiers, this is the best one can do.

If we follow this analysis, we have an account for why in the determiner has to be focussed the case of specifically interpreted left-dislocated indefinites: the speaker thereby signals that the assertion actually made, which involves a particular individual created from the topical indefinite, is the only one among the set of alternative assertions such that the speaker is sure that the proposition asserted is true, where the alternative assertions involve different individuals drawn from the set denoted by the respective NP. In order for this to go through, we have to assume that the respective alternative sets contain only the assertions, not the conjoined speech acts in their entirety.

Let us end this section by pointing out a contrast between the analysis sketched in this section and the one presented by Tomioka (this volume). While Tomioka assumes that only some *wa*-marked topics are interpreted contrastively, our analysis implies that all left-dislocated topics are contrastive: if the accent falls on the determiner, the assertion actually made is (at least implicitly) contrasted with alternative assertions involving different individuals drawn from the respective NP-set (apart from cases like (44) and (46) where the contrast actually concerns the respective cardinalities). If it falls on (some constituent within) the NP, on the other hand, the assertion actually made, which involves a set of situations defined on the basis of objects of a particular kind, is contrasted with alternative assertions involving sets of situations defined on the basis of other kinds of individuals. In other words, what is contrasted eventually are kinds of individuals.

Note, however, that at an intuitive level, there is a difference between the two types of sentences: while in the cases where the determiner is focussed there actually is a feeling of an at least implicit contrast, this feeling is usually absent in the cases where the accent falls on (some

constituent within) the NP. One could therefore alternatively assume that in the latter cases the NP-internal accent is just a default accent signalling non-givenness of the whole DP, not a focus accent in the sense of alternative introduction. A detailed investigation of these matters is, however, beyond the scope of this paper and therefore has to await another occasion.

6. Conclusion

In this paper, we have shown how the two readings that topical indefinites receive (the wide scope reading and the QV-reading) can be derived from a concept of aboutness topicality according to which the topic of a sentence has to be interpreted as the logical subject of a predication. In the case of the wide scope reading, we are dealing with a first order predication, as the predicate denoted by the comment applies to an individual that is derived from the original denotation of the indefinite as a generalized quantifier. In the case of the QV-reading, we are dealing with a second order predication, as the comment denotes a second-order predicate that applies to a set of situations which is derived from the original denotation of the indefinite. Furthermore, we have shown why the respective interpretations are associated with specific accentuation patterns.

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