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Adverbial Quantification and Scrambled Objects

0. Introduction

In this paper I want to discuss the semantics of certain constructions in German where an object has been scrambled out of a VP containing an adverb of quantification. After presenting A. Kartzer's framework (Kratzer [1988]) in which these cases have first been observed, I will identify certain intonational patterns which force or prevent a "scrambled object" reading. Next will be a discussion of some of the conditions which appear to determine the grammaticality of the scrambled object constructions. Finally, a sketch for a unified account in terms of quantification over situations is proposed and some problems with this approach are noted.

1. The framework

. In her discussion of the semantics of individual-level vs. stage level predicates, Kratzer, following a line of research which draws upon the works of Lewis and Heim, gives the following analysis of adverbs of quantification. Sentences such as:

(1)   When Mary knows a language, she knows it well

are translated into a tripartite structure which consists of an unselective binder, a restrictive clause and a nuclear scope:

(2) $ALWAYS_x$ [language(x) & know(Mary,x)] [well(know(Mary,x))]

Because the quantifier is unselective with respect to the variables it binds, this analysis can capture a whole variety of quantificational structures, so, e.g. whereas in (1-2) quantification ranges over single languages, sentence (3)

(3)   If a man owns a donkey, he beats it
      $ALWAYS_{x,y}$ [man(x) & donkey(y) & own(x,y)] [beat(x,y)]

is a statement about pairs of men and donkeys. In the logical representation, this is reflected by there being only two variables x and y which are bound.

The main restriction we have is that quantification must not be vacuous. So, for example, sentence (4) is ungrammatical, because if we translate it there is no variable available that the quantifier could bind:

(4) * If Mary knows French she knows it well
      ALWAYS [know(Mary, French)] [well(know(Mary, French))]

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Variables which can be bound are supplied either by indefinite noun phrases as in (3), essentially Heim's analysis, or by stage-level predicates as in (5)

(5)   When Mary speaks French, she speaks it well
       ALWAYS$_1$ [speak(Mary, French,l)] [well(speak(Mary, French,l))]

The latter is in some ways special. Whereas NPs come with variables which stand for individuals, in the case of stage-level predicates, the variable originates in an additional argument position specifying "spatio-temporal" location.

One of Kratzer's main claims is now that individual-level predicates are not able to supply such a variable, so unless other elements in the sentence contribute variables, a quantificational structure with an individual-level predicate is ruled out as ungrammatical, which is the reason for the ungrammaticality of (4) above.

To fully understand the mechanics of quantification, it is important to note that although basically unselective, a quantifier such as "ALWAYS" can only bind variables which occur in both the restrictive clause and the nuclear scope. The reason for this is that variables which only occur in the nuclear scope are closed off by *existential closure*. That is, all the variables which were left unbound by the unselective binder are bound by an existential quantifier. So, for instance, we get the following translation for a sentence such as (6):

(6)   When Pedro comes home, he (usually) beats a donkey
       ALWAYS$_1$ [comes-home(Pedro,l)] [$\exists$x donkey(x) & beat(Pedro,x)]

After discussing the semantics of sentences with adverbial quantification, Kratzer sketches the mapping between syntactic structure and the tripartite semantic representation. Following an idea by Diesing, she assumes that the VP is mapped into the nuclear scope whereas everything outside the VP is appears in the restrictive clause. According to the relation that subjects of stage-level and individual-level predicates bear to the VP respectively, their different semantic behavior becomes explainable: since subjects of individual-level predicates are external to the VP at every step of derivation, they can only be translated into the restrictive clause whereas subjects of stage-level predicates are associated with the SPEC of VP position so that they can also appear in the nuclear scope. The principle that the semantic correlate of VPs are basically nuclear scopes allows a prediction concerning the behavior of objects: as constituents within the VP, they should be mapped into the nuclear scope, too; if outside the VP, however, they should be mapped into the restrictive clause. In German, word order within embedded sentences is a good indicator of where the object is with respect to the VP: adverbs of quantification take a position at the left margin of the VP, so, whenever we find an object to

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the left of such an adverb, it must have been moved out of the VP, probably some process of scrambling which presumably responsible for word order variability as well. As we will see later, scrambling is not always possible. However, whenever it is, the corresponding English sentence is ambiguous between a reading with the object in the restrictive clause and in the nuclear scope. For instance:

(7)   Berta always answers letters from America
       - "Berta is always engaged in answering letters from America"
       - "Berta never leaves a letter from America unanswered"

This indicates that there must be levels of representation where scrambling is possible in English, too, despite being invisible. Also this fact contributes some evidence that the notions which play a role here are essentially semantic.

2. Indefinite objects and adverbial quantification

In the following sections, I will try to elicit some of the factors that determine the possiblity of scrambling of objects in German. Kratzer herself is not very explicit on this point. She notes that "there are probably several factors involved. Apart from the type of verb, the type of noun phrase seems to play a role." (Kratzer [1988], p.39)

2.1 "non-scrambled" objects

Before going into the details of the semantics of constructions where the object has been scrambled out of the VP, let us take a look at those sentences in which the object[1] has remained in its position (Kratzer dubs them "well-behaved"). A sentence like:

(8)   daß Berta **immer** [VP einen Brief aus Amerika beantwortet]
       that Berta always   a letter from America   answers
       "she is always engaged in answering letters from America"

is mapped into a logical representation like:

(9)   ALWAYS ₁ [location(l)]
           [∃y letter-from-America(y) & answer(B,y,l)]

Since "letter-answering" is presumably a stage-level predicate, the variable over spatio-temporal location provides the instances which are quantified over. The domain of quantification has to be restricted

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[1] I will confine myself exclusively to indefinite singular NPs here. The semantics of bare plural objects, especially with individual-level predicates, is very similar, though. Also, the subject is always definite; indefinite subjects often give rise to further complications.

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further, to those instances that are contextually salient, for example by a phrase like:

(10)   ... wenn wir sie besuchen ...
       ... whenever we visit her ...

With an individual-level predicate, we usually get a bad sentence:

(11) * daß Otto immer einen Film aus Italien   mag
         that Otto always a movie   from Italy   likes

Since such predicates do not supply a Davidsonian variable, the adverb of quantification (QA) does not have anything to quantify over: "Otto" is a name and existential closure prevents the variable of the indefinite NP from being bound outside the nuclear scope so that we get a forbidden case of vacuous quantification:

(12) ALWAYS $_?$ [?] [∃y movie-from-Italy(y) & like(O,y)]

Only if, with some force, we construe like as a stage-level predicate conceptualizing likings of movies as transitory does the sentence get grammatical.

However, this cannot be the whole story. Consider a sentence like:

(13) daß diese Zeitung meistens einen schlechten Artikel enthält
       that this paper mostly a   bad   article contains

It is perfectly o.k. although the logical representation we get according to our mapping procedure like the previous example does not contain any variable that the quantification could range over. Of course, intuitively, sentence (13) is talking about issues of a newspaper. As expected if we disambiguate the indefinite NP in such a way that it can only refer to single issues, we get a bad result:

(14) * daß diese Ausgabe meistens einen schlechten Artikel
         enthält
             ... this issue ...

What this means is that already in the non-scrambled cases, the logical representation does not provide us with a detailed enough account of what elements can contribute quantificational domains.

2.2 Scrambled objects

If we scramble the object out of the VP, it is in a position, which normally gets mapped into a the restrictive clause:

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(15)   daß Berta einen Brief aus Amerika **immer** [VP   beantwortet]
       that Berta a letter from America   always   answers
       "she never leaves a letter from America unanswered"
       ALWAYS y [letter-from-America(y)] [∃l answer(B,y,l)]

The instances we are talking about in (15) clearly have to do with
single occurrences of letters from America. Since such instances are
provided by the indefinite NP and do not involve spatio-temporal
locations associated with stage-level predicates, individual-level
predicates, too, can appear in such constructions:

(16)   daß Otto einen Film   aus Italien immer   mag
       that Otto a movie   from Italy always   likes
       "whenever there is a movie from Italy (that Otto gets to see) he
       likes it"
       ALWAYS y [movie-from-Italy(y)] [like(O,y)]

On the other hand, in many cases, scrambling gives rise to a bad
sentence:

(17) * daß dieser Beweis einen Fehler immer enthält
        that this proof   a mistake   always contains
        ALWAYS y [mistake(y)] [contain(this-proof,y)]

As before, nothing in the logical representation indicates what the rel-
evant differences are. The very least we can say at this point is that as
(18) shows:

(18) * daß Otto eine Tulpe   immer pflanzt
        that Otto a tulip   always plants

such cases do not coincide with the individual/stage-level distinction.
As we will see later, probably a variety of factors are responsible for the
incompatibility of scrambling with the interpretation that the resulting
structural configuration gets.

It is not at all obvious what the nature of the factors is that gives
rise to the incompatibilities. One hypothesis is that there is a syntactic
difference between the well-behaved vs. ill-behaved objects. For
example, one way of capturing this difference is to say that they take
different positions within the VP or are moved into different positions
outside the VP. However, even if something along these lines is going
on we would never expect that syntactic structure *alone* accounts for
scrambling possibilities; there should always be a concomitant
semantic difference just as subjects in SPEC of VP or IP position
always correlate with the nature of the predicate. Thus, while it is
hard to see what the difference of (19) vs. (20) with respect of their
syntactic behavior could consist of:

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(19)   einen Film
       a movie

(20)   einen chinesischen Film ohne Untertitel
       a chinese movie without subtitles

there is clear a semantic difference involving the sets of objects that both expressions denote which surfaces in the following difference:

(21)   ?? daß dieser Kritiker einen Film selten   mag
          that this critic   a movie   seldom likes

(22)   ✔ daß dieser Kritiker einen chinesischen Film ohne Untertitel
          selten mag

This means that it does not really seem to help us to speculate about possible syntactic differences unless we can identify the common semantic denominator that goes along with them distinguishing the scrambling possibilities.

2.3 Scrambled objects with VP-internal interpretation

What makes a clear understanding of the semantics of scrambled objects constructions difficult is that there are a lot of cases in which they are apparently *not* mapped into the restrictive clause but are interpreted as if they were inside the VP. One example where this happens quite consistently comes along with a particular intonational pattern.

If focal stress is put on the object (with falling intonation), we get for a sentence like:

(23)   daß Berta [einen Brief aus ***Amerika***] immer [$_{VP}$ beantwortet]

an interpretation like:

(24)   "It is letters from America for which it is true that:
         Berta is on all relevant occasions engaged in answering an
         instance of them"

For such a sentence is that it is already presupposed that there is a letter that Berta is constantly engaged in answering.

Note that the meaning of the sentence is very different from the one we get for the one we get for scrambled objects. What is going on is something which might be very similar to reconstruction processes at LF. So, for example, in the same way as the anaphor in the topicalization (25) presumably moves back to a position where it is c-commanded by its antecedent:

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(25) himself₁ John₁ likes

the object in (23) appears to undergo a process where it gets under the "scope" of the QA again, that is inside the VP.

Since with this kind of intonational pattern, we do not get the normal "scrambled object" semantics, one would expect that with sentences where scrambling usually is not allowed, focus intonation can improve the grammatical status significantly. This seems to actually be the case. So, for example, whereas usually ungrammatical, sentence (26):

(26) daß Anton einen *Anzug* meistens trägt

becomes good with focal stress on Anzug.

Furthermore, sentences with the QA niemals ("never") are also different in that with scrambled objects, even if they do not bear focal stress, we get a meaning different from the one that other QAs invoke. For example, compare (27) with (28):

(27) * daß Hans ein Haus immer bauen wird
         that Hans a house always build will

(28) ✔ daß Hans ein Haus niemals bauen wird
         that Hans a house never   build will

The reason for this is probably that scrambling does not induce quantification over the (unrestricted) set of all houses (which presumably accounts for the incompatibility with other QAs) but rather gives rise to an interpretation which is closely related, if not totally equivalent to, the unscrambled counterpart:

(29) daß Hans niemals ein Haus bauen wird
         that Hans never a house build will

The intonational pattern that gives rise to the most clear-cut cases where the object is indeed interpreted inside the restrictive clause is the one where the object appears as a marked theme (with a raising intonation) and the QA as the focus (with a falling intonation):

                        raising   falling
(30) daß Berta *einen Brief aus Amerika* | *immer* beantwortet
         "each time there is an instance of a letter from America
         she answers it"

Interestingly, a similar kind of intonation that goes along with the same semantics seems to be involved in the following kind of discourse:

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(31) Beantwortet sie jemals Briefe?
      "Does she ever answer letters?"
      Einen Brief aus Amerika ? - Immer!
      "a letter from America: always"

2.4 Influences on scrambling possibilities

In the following section, I want to discuss some of the factors
that improve scrambling possibilities.

2.4.1 Modification of object

As already mentioned previously, modification of the object in a
lot of cases enhances the grammaticality of the sentences:

(32) * daß Otto einen Anzug meistens trägt
        that Otto a suit   usually   wears

(33) ✔ daß Otto einen Anzug, den ihm seine Freunde geschenkt
        haben, meistens trägt[1]
                        ...that to-him his friends presented have...

(34) ?? daß dieser Kritiker   einen Film selten   mag
        that this critic   a movie   seldom likes

(35) ✔ daß dieser Kritiker einen chinesischen Film ohne Untertitel
        selten mag
                        ... a chinese movie without subtitles ...

Intuitively speaking, the difference seems to be that in the
ungrammatical sentences, the domain of quantification is not
restricted enough. So in (32), we are talking about *any* suit and *any*
movie which exist, which is not specified enough to "make sense".
Also, note that in (33) with the relative clause we have made explicit
the "relevance" of the domain of suits with respect to Otto. This is an
example of a much more pervasive phenomenon. Quantification hardly
ever seems to be totally unrestricted. Thus, sentence (15) above, too,
does not make a statement about any letter from America but only
about those that, among other things, were directed to and received
by, Berta. Along the same lines, we have to accomodate some relation
between the critic and the movies he likes because it would be odd if
he could be   fond of movies which he does not know at least the
existence of (and has seen himself). Under normal circumstances,
there are enough contextual clues that indicate which set of entities is
relevant for the discussion. If this is not the case, however, there have
to be additional restrictions on the domain of quantification. Note,
furthermore, modification of the object also enhances the possibility

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[1] Example due to P. Portner

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to construe the indefinite NP as a referential indefinite whenever the QA is compatible with the predicates (i.e. whenever the predicate as stage-level can provide spatio-temporal locations to quantifiy over):

(36) daß Otto einen Anzug, den ihm seine Freunde geschenkt haben, meistens trägt
        ..that to-him his friends presented have...
    "Otto always wears a particular suit that his friends gave him"

2.4.2 The role of context

Similarly, context plays a great role by reducing the quantificational domain to the one which is contextually salient. If, for example, sentence (37)

(37) daß Otto   einen Esel meistens   besitzt
      that Otto   a donkey   usually   owns

is uttered in a context in which the ownership of the donkeys in a particular herd of donkeys and horses is to be determined, it sounds perfect. The reason for this is probably that instead of interpreting einen Esel as generic expression ("any instance of the species 'donkey'"), the context provides the possibility to assign it a partitive-like reading, something like: any donkey of that particular herd of donkeys and horses.

2.4.3 "Closed classes"

As we saw before with example (35), it is not the case that scrambling of objects is not possible for individual-level predicates because the quantificational domain is not supplied by the predicate. However, it is especially with individual-level predicates that we find what I want to call the "closed class" phenomenon. It means that scrambling often results in a bad sentence if the subject is in relation with a predetermined, closed, finite (?) set of instances of the object denotation. For example in the following

(38) border a swamp (this lot)
      have a donkey (Pedro)
      contain an article (this newspaper)

a lot already comes with a closed class of swamps that it borders. For some reason then, it does not make sense to wonder if it borders any random element out of the set of all swamps which is somehow required by the quantificational configuration. Hence, the ungrammaticality of the following sentences:

(39) * daß dieses Grundstück an einen *tiefen* Sumpf immer grenzt
      that this lot   a deep swamp   always borders

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- daß Pedro einen *alten* Esel immer hat
  that Pedro an old donkey   always has
- daß diese Zeitung   einen *schlechten* Artikel immer enthält
  that this newspaper a bad article   always contains

On the other hand, in a case like

(40) like an italian movie (critic)

it appears that the class of movies that the critic is fond of is basically
open and can be expanded by any new instance of an italian movie he
gets to see. The reason for this difference is probably related to the
problem of restricted quantification mentioned before: whereas for
open-class predicates it is possible to accomodate those relations that
reduce the quantificational domain to the one relevant to the subject,
for closed-class cases this seems to be much harder beyond those
cases which are trivially relevant: the ones that are already contained
in the closed class.

2.4.4 "Resultative" predicates

Finally, we can isolate a class of predicates which quite consistently
produce ungrammatical sentences, which I want to dub "resultative
predicates". What I have in mind are cases such as

(41) build a house
      compose an opera

where the object(s) do not have existence independent of the subject
performing the predicate.

(42) daß Hans ein Haus immer baut
      that Hans a house always builds

(43) daß Hugo eine Oper meistens komponiert
      that Hugo an opera usually   composes

In other words, scrambled objects can only denote a domain of already
existing entities. This predicts that whenever a verb is ambiguous be-
tween a resultative and a non-resultative reading, only the latter is
compatible with a scrambled object construction. It seems, in fact,
that organisieren ("organize") is such a case: it can either mean that
through the organizational activity the object comes into existence or
an already existing object is given structure. Sentence (44) only has
the latter interpretation:

(44) daß Franz ein Konzert mit den WHO immer organisiert
      that Franz a concert with   the WHO always organizes

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Note however, that <u>Konzert</u> does not necessarily denote the complex activity situated at a particular place and time itself but can also refer to a more abstract level of conceptualization which involves Konzert as an object of imagination, or the plan for a concert. We get a similar effect for other predicates:

(45)   daß dieser Beweis einen Fehler(typ), den der Professor
         erwähnt hat, meistens enthält
                                    ... that the prof. mentioned has ...

(46)   daß Hans ein Haus für das er einen Vorschuß bekommen hat,
         immer baut
                                    ... for which he has an advance got ...

In (45), <u>Fehler</u> does not refer to the individual mistakes which occur on paper but to whole classes of mistakes. Similarly, in (46), it is not for non-existing houses that Hans gets advances but rather for the plans or intentions of building houses. It is when these more abstract levels of conceptualization are made explicit that the sentences become grammatical. Whereas it seems that entities such as houses by default come with a physical level of conceptualization, in different contexts, such as with legal loan documents[1], the primary level of conceptualization is easily construed as more abstract. In such context, existence does not necessarily coincide with physical existence any more.

Moreover, there are certain constructions[2] which appear to involve a somewhat different mapping into logical representation:

(47)   daß Otto ein Haus immer an einem Dienstag baut
         that Otto a house i .ways on a Tuesday builds
         ALWAYS $_{y,l}$ [house(y) & build(Otto,y,l)] [tuesday(l)]

Instead of talking about just *any* house, such a sentence appears to take the predicate already into the restrictive clause so that the sentence is only about those houses which Otto actually builds. Note that unlike the other cases of scrambled objects, here we do get an individual/stage-level difference:

(48) *   daß Otto einen Film immer an einem Dienstag mag
         that Otto a movie always on a Tuesday likes
         ALWAYS $_y$ [movie(y) & like(Otto,y)] [tuesday(?)]

"Tuesday" is a predicate to situate spatio-temporal locations, so if there is none available we get a logical representation which is not well-formed.

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[1] Example due to B. Partee
[2] Brought to my attention by M. Diesing

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3. Scrambled objects and quantification over situations

Let us now see whether we can fit the above discussion into a more unified approach to the question what elements can provide quantificational domains for QAs. One possibility is to base adverbial quantification on situations, following a suggestion for donkey-sentences by Berman [1987]. He proposes for a sentence like:

(49) If a man is from Athens, he (always) likes ouzo.

a representation along the following lines:

(50) ALWAYS_{s_1} if $[[\ a_x\ \text{man}(s_1)(x)][x\ \text{is-from-Athens}(s_1)]]$
$[_{s_2}\ f^1_1(s_1)\ \text{likes-ouzo}(s_2)]$ [1]

It basically means that every minimal situation s_1 that contains a man from Athens has to be extendible to a situation s_2 which it is also true that this man likes ouzo. Analogously, we can try to represent sentence (51):

(51) daß Berta einen Brief aus Amerika immer beantwortet
ALWAYS_{s_1} if $[\ a_x\ \text{letter-from-America}\ (s_1)(x)]$
$[_{s_2}\ \text{answer}(s_2)(B,x)]$

Here, each letter form America provides a (probably unique) situation which can be extended to one in which such a letter is also answered. As mentioned before, quantification in such a case is actually rather restricted to only those instances in which a letter from America bears relevance to Berta. That is, we have to accomodate information which restricts the individuation of situation quite drastically. A way to make this explicit is by means of an individuation relation "SITUATION" which supplies instances of minimal situations involving the subject and an instance of the object:

(52) ALWAYS_{s_1} if $[\ a_x\ \text{letter-from-America}\ (s_1)(x)$
& $\text{SITUATION}(B,x,s_1)\ ]$ $[_{s_2}\ \text{answer}(s_2)(B,x)]$

Since minimality of situations is crucial, we seem to get a natural account of the "closed class" restriction discussed above: in these cases it does not seem possible to individuate minimal situations that contain only single instances of the object. In addition to that, it is also intuitive that non-existing objects in general cannot supply relevant situations at all.

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[1] The function f is needed to assign a referent to the pronoun he. For further details, see references, esp. Heim [1987].

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Another advantage of this analysis is that we can treat those examples where the quantificational domain is provided by the subject (cf. (13)) along the same lines:

(53) $MOST_{s_1}$ if [SITUATION(this-paper,s_1)]

$[s_2$ ∃y bad-article(y) & contain(s_2)(this-paper,y)]

With such examples, the most salient individuation of a situation involves a single issue of a newspaper.

However, despite getting a unified approach to quantificational domains, it is questionable if situations are the right way of looking at the problem of what provides instances for quantification. After all, the whole burden of individuation is just shifted towards the situation relation, which by itself does not explain why certain configurations supply situations quite easily whereas others do not. Note also that we would even have to include the predicate with respect to which subject and object can enter into a minimal situation. For example (37) above, with the same context is bad if instead of besitzen the verb is haben:

(54) * daß Otto einen Esel meistens *hat*

Therefore, it seems that taking situations as fundamental does not really give us any advantage until we have a theory about which kinds of NPs together with which kinds of predicates in which context individuate what kinds of minimal situations. Only then do we seem to actually be in the position to predict the grammatical status of constructions involving scrambled objects and adverbial quantification.

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