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(Un)Frozen Scope in English and German Double Object Constructions

Tanja Heizmann
University of Massachusetts, Amherst

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Tanja Heizmann

University of Massachusetts, Amherst

1.   Introduction

It has been claimed that English double object constructions display scope freezing, e.g. Larson (1988) and Bruening (2001). A subject/object sentence as (1) displays scope ambiguity depending on which quantifier takes the widest scope. In a double object construction as in (2) however it is claimed that the lower quantified object can never take scope over the higher quantified object.

(1)   A boy climbed every tree.   a > every
                                            every > a

(2)   I gave a child each doll.   a > each
                                            *each > a   (Bruening 2001:233)

The analysis given in Bruening (2001) argues that the mechanism that accounts for Superiority effects in overt syntax, shortest move, can also account for the frozen scope phenomenon by applying it to restrict quantifier raising in a manner that does not allow for a hierarchical order different from the surface order.

Bruening's account generates an interesting prediction for languages that do not display Superiority effects such as German and Serbo-Croatian[1]. If these languages do not display Superiority, they might not have frozen scope either if the same mechanism is responsible for these effects in languages like English.

Three questions about English and German double object constructions are discussed in this paper. Is there scope freezing in English and German double object constructions or is inverse scope available? If inverse scope is available what is the preferred scope reading, the surface scope or the inverse scope? And finally, is there an

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[1] This holds for matrix sentences in these languages.

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observable difference between scope preferences for double object cases versus double object dative constructions and subject/object constructions?

This paper reports experimental results showing that inverse scope is available in English double object constructions where both, indirect and direct object, contain a quantifier. It is concluded that the phenomenon of frozen scope in double object constructions is not a property of English contrary to previous literature. Furthermore it is shown that surface scope is the preferred scope in every case, confirming previous findings, e.g. Tunstall (1998).

Experimental results also show that inverse scope is available for German double object constructions as well. Although the experimental results show a strong tendency in this direction, the conclusion that frozen scope is not a property of German double object constructions cannot be drawn completely because of language specific properties that include scrambling.

The remainder of this paper is structured as follows. Section 2 introduces Bruening's analysis of scope freezing in English and discusses predictions that this system makes for English and other languages. Section 3 describes the English study and discusses it's results. Section 4 introduces the German facts on inverse scope and discusses the properties of double object constructions. Section 5 describes and analyzes the German study.

2.   Scope Freezing in English

Scope ambiguities in English for subject/object cases and the general claim about scope freezing are introduced in section 2.1. The next section, 2.2., summarizes the account for frozen scope that is given in Bruening (2001). In section 2.3. Bruening's analysis for subject/object scope ambiguities is laid out. Section 2.4. discusses some counterexamples to frozen scope.

2.1.   General Claim

Bruening (2001) claims that English double object constructions display scope freezing. In his analysis he argues that frozen scope effects arise because quantifier raising (QR) obeys Superiority and therefore scope cannot be reversed.

Transitive constructions like in (3), where a subject and one object are involved, are ambiguous between a surface scope reading and an inverse scope reading.

(3)   A boy climbed every tree.   a > every   surface scope
                                                              every > a   inverse scope

In the surface scope reading, the existential quantifier *a* takes scope over the universal quantifier *every*. In this reading there is one boy who climbed every tree. In the inverse scope reading, the universal quantifier *every* takes scope over the existential quantifier *a*.

This reading can be paraphrased as every tree was being climbed by at least one, but possibly different, boy.

The standard assumption for the inverse scope reading is that the quantifier that is lower in the surface structure moves covertly to a position higher in the structure than the quantifier that is higher in the surface structure. This results in a logical form (LF) where the hierarchical order of quantifiers is the reversed version of the hierarchy in the surface structure.

However, double object constructions, where the indirect object and the direct object are quantified, the quantifier of the lower argument cannot scope over the higher quantifier. This is exemplified in (4) and (5).

(4)   I gave a child each doll.   a > each   surface scope
                                                          *each > a   inverse scope

(5)   The teacher gave a (#different) student every book.   a > every   surface scope
                                                               *every > a   inverse scope

(Bruening 2001:235)

Inverse scope, where the *each* has to scope over *a*, is not available in example (4). This phenomenon is known as scope freezing or frozen scope, e.g. Bruening (2001), Larson (1988, 1990) and Aoun & Li (1989, 1993)[2,3].

The dative counterparts of double object constructions do not display scope freezing. This can be seen in (6) where surface scope and inverse scope are available.

(6)   I gave a doll to each child.   a > each   surface scope
                                           each > a   inverse scope

(7)   The teacher gave a (different) book to every student.   a > every   surface scope
                                                                  every > a   inverse scope

Bruening explains frozen scope by claiming that QR obeys Superiority. The Superiority condition is derived from the more general economy principle Shortest Move, e.g. Chomsky (1995). Superiority arises in cases of multiple questions as seen in (8). The structure in (8) is ungrammatical because it violates Shortest Move. If two items, the two

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[2] Bruening also discusses spray-load verb constructions which also display frozen scope when they contain *with*, as in (i).

(i)   Maud draped a (#different) armchair with every sheet.   *every > a

Since these constructions are not the focus of this paper the reader is referred to the original paper for a detailed discussion.

[3] Bruening's analysis also discusses that albeit apparent differences elsewhere, *every* and *each* do not behave differently concerning frozen scope, i.e. double object constructions display frozen scope whether they contain *every* or *each*.

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wh-elements in (8), are eligible for a certain movement, here wh-movement to CP, then the element which is structurally closer to the landing site CP-Spec must move.

(8)   *What did who buy?

In example (8) the subject wh-element is structurally closer to the landing site, CP-Spec, and therefore must move according to Shortest Move. However, in our case the structurally farther element, the object wh-element, actually moved, therefore violating Shortest Move and giving rise to a Superiority violation.

For the case in (4) this means that if two elements are equally eligible for QR the structurally closer element, the quantifier of the indirect object *a* (child), must move rather than the further one, the quantifier of the direct object *each* (doll). The next section lays out the details of Bruening's analysis.

2.2.   Scope Freezing

QR is generally available for both quantifiers in frozen scope environments. The restriction is not on the operation QR itself but on the resulting order of the two quantifiers after QR. The following example illustrates the QR operations in the case of a double object construction.

The structure in (9) is assumed for the indirect object/direct object case.

(9)   Bruening (2001:254)
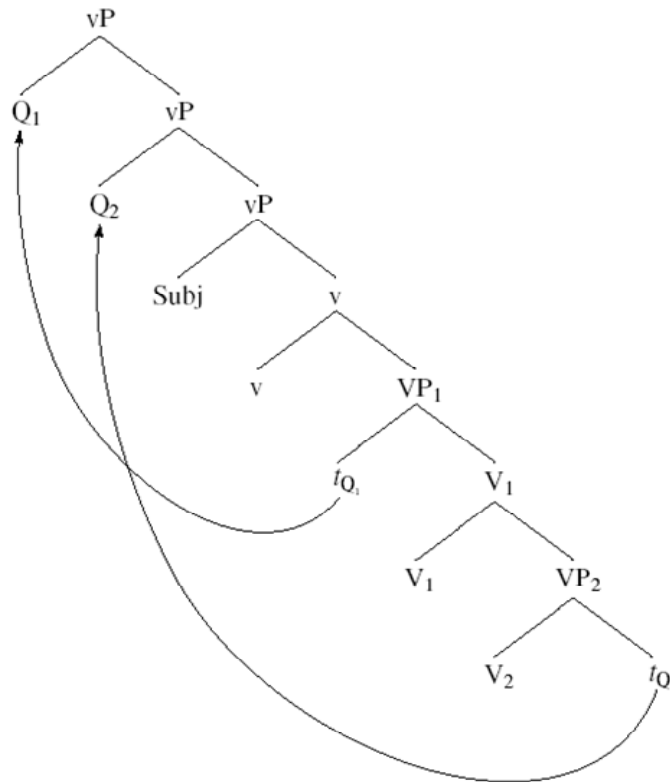
Bruening assumes that both quantifiers undergo QR to a position right above vP. vP is the first possible position where the two object quantifiers can be interpreted because they need to combine with a closed proposition[4]. After the subject merges in the spec of vP the right type for quantifier interpretation is given, i.e. we have a closed proposition[5]. The indirect object (IO), containing Q1, first undergoes QR to the specifier of vP. In doing so this movement obeys Superiority since the structurally closer object, containing Q1, moved rather than the object, containing Q2, which would have violated Shortest Move and give rise to a Superiority-type violation. Then the direct object, containing Q2, undergoes QR as well, 'tucking in' under the indirect object in the specifier of vP[6], cf. Richards (1997).

2.3.   Inverse Scope for Subject/Object Structures

A question that needs to be answered is how does inverse scope work in subject/object constructions under the Superiority account? How can an object quantifier take scope over a subject quantifier in this system?

Bruening argues that subjects and object do not compete for the same kind of movement and therefore a quantified subject does not compete for QR movement with a quantified object. Subjects can be interpreted either in their base-generated position in vP or in TP. Since subjects can be interpreted in their base-generated position they do not have the need for QR to be interpretable in the first place. Subjects move out of their base-generated position reasons other than QR; they move to fulfill the Extended Projection Principle (EPP). Quantified objects however need to QR in order to be interpretable. This difference in need of the subject and the object makes them not compete for the same kind of movement, namely QR. Furthermore it is claimed that subjects have the possibility to reconstruct to their base-generated position.

In the case of a subject and a single object this means that if the subject does not reconstruct, a surface scope reading is the result. If the subject does reconstruct to a position under the object that has been moved to a specifier of vP, an inverse scope reading is the result. This can be seen in the example in (10) that shows the inverse scope of the structure in b.

(10)   a. A girl kissed every bride.   every > a

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[4] See Bruening (2001) for a detailed discussion.

[5] Bruening also uses Antecedent Contained Deletion (ACD) cases to prove that QR is generally available. Again, in ACD cases the quantifiers of a double object construction retain the base order after QR obeying Superiority.

[6] This 'tucking in' parallels cases of multiple wh-movement in languages like Bulgarian where the wh-elements cannot change their canonical order after moving, cf. Richards (1997). However, not all Slavic languages that have multiple wh-movement behave like Bulgarian. For example Serbo-Croatian does not have this restriction and thereby does not display Superiority effects in examples paralleling (8), cf. Bošković (1995), Vignjevic-Heizmann (2005).

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$$\text{b. } [_{TP} \text{ a girl }_S [_T \text{ T } [_{vP} \text{ every bride }_Q [_{vP} \text{ t}_S [_{TP} \text{ kissed } \text{ t}_Q]]]]]$$

QR
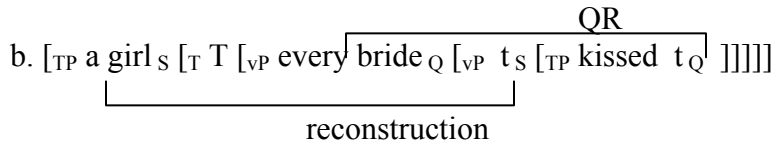
reconstruction

In the case of a subject and two objects, where the lower direct object is quantified, this means that the quantified direct object is still higher than the reconstructed subject. This has the result that in double object constructions the direct object can take scope over the subject but crucially the direct object can never take scope over the indirect object if the indirect object is also quantified[7]. The case of a subject and a quantified indirect object is shown in (11) where the inverse scope is exemplified in the structure in b.

(11)   a. A (different) teacher gave me every book.   every > a

$$\text{b. } [_{TP} \text{ a teacher }_S [_T \text{ T } [_{vP} \text{ every book }_Q [_{vP} \text{ t}_S [_{TP} \text{ gave me } \text{ t}_Q]]]]]$$

QR
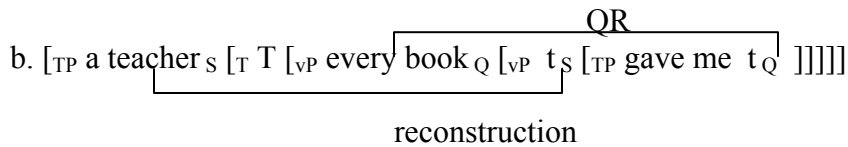
reconstruction

To summarize, Bruening's account makes the following predictions. Firstly, this system predicts that inverse scope should never be available in double object constructions where both objects contain quantifiers. Secondly, it is predicted that inverse scope is freely available for two quantified objects in a dative construction as well as for subject object constructions where both, subject and object, contain a quantifier.

The predictions of Bruening's system are not borne out by experimental results. This is discussed in sections 2.4. and section 3. The experimental results discussed in section 3 show that, contrary to the prediction, inverse scope is available for double object constructions.

2.4.   Non-frozen Scope in English

In the cases that Bruening shows the frozen scope effect seems to be a strong effect. However, there have been cases reported in the literature that show that sometimes inverse scope is indeed available in double object constructions. Tunstall (1998) reports the following observation from Aoun and Li (1989). Tunstall reports that only surface scope is available in (12) and (13), whereas native speakers can access both, surface scope and inverse scope, readings in (14)[8].

(12)   The committee gave some student every book in the library.

(13)   John asked two students every question.

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[7] Bruening mentions in a footnote that cases where subject and both objects in a double object construction are quantified are very difficult to judge. Therefore he discusses only the case where one of the objects, the crucial lower object, is quantified.

[8] Some of my informants did not have a problem with getting the inverse scope reading for (12) and (13) either.

(14)   Mary showed some bureaucrat every document she had.

(Tunstall 1998: 83)

The example provided in (14) already hints at the possibility that the phenomenon of frozen scope might not be uniform across different verbs and/or quantifier combinations. In order to assess whether scope freezing is indeed a phenomenon in English double object constructions, an experiment in form of a questionnaire study, discussed in the next section, was developed.

3.   Frozen Scope Experiment

This section discusses an off-line method study that was conducted in English to assess the scope freezing phenomenon. The following questions were addressed i) the allowed scope possibilities in double object constructions, ii) the preferred scope if the sentence does allow for scope ambiguity and iii) are there any differences in ratios of access to inverse scope in double object constructions, double object dative constructions which include PPs and subject/object constructions.

Section 3.1. discusses the English part of the study. The results of the English experiment are not expected under Bruening's account. It is shown that inverse scope is available for subject/object constructions as well as for double object constructions. Furthermore it is shown that the dative counterparts of double object constructions do not pattern with the findings for subject/object constructions and double object constructions. The dative constructions show a much higher ratio of inverse scope accessibility when compared to the other two cases. The German counterpart of the experiment is discussed in section 5.

3.1.   English Experiment

Task: A questionnaire was administered on paper which required the subjects to read sentences and indicate what meaning the sentence can have for them. The subjects were asked to circle the first interpretation that came to their mind out of two possible interpretations. This set of instructions was given to assess the interpretation that subjects prefer in case the sentence is ambiguous for them in the first place. After subjects had completed the questionnaire with the instruction described above, subjects were given a second set of instructions. In the second round of the questionnaire subjects had to indicate whether the interpretation that they did <u>not</u> chose in their first round was nevertheless a meaning that that the sentence can have after thinking about it for a while. This set of instructions was given to assess whether the sentence was ambiguous for the subjects, i.e. whether the subjects could access surface scope and inverse scope, making the sentence ambiguous for them.

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Items: The questionnaire contained 6 conditions. The first condition was a double object construction as seen in (15) which included the surface sequence existential quantifier before universal quantifier[9].

(15)   Christine showed a visitor every picture by Picasso.

           one visitor   several visitors
    (surface scope a > every)   (inverse scope every > a)

The interpretational possibilities were indicated as seen in (15) and the subjects had to circle the first interpretation that came to their mind in the first round of the questionnaire. The case in (15) is comparable to Bruening's examples. In the second round of the questionnaire subjects had to indicate whether the interpretation that they did not choose in their first round was nevertheless a meaning that the sentence can have after thinking about it for a while. For example, if subjects chose *one visitor* in the first round of judgments this means that they prefer the surface scope reading. If they indicate in the second round that *several visitors* is a possible meaning, it implies that the subject is able to access the inverse scope reading for this sentence. To make this task easier for the subjects the second round provided paraphrases of the interpretations which the first round did not provide. This is exemplified in (16) for the sentence in (15).

(16)   one visitor: There was one visitor. He/She was shown every picture by Picasso.

       several visitors: Christine showed every picture by Picasso to several visitors.

The second condition is the same as the first condition since it is a double object construction. However the surface sequence of the quantifiers is reversed to be universal quantifier before existential quantifier as seen in (17).

(17)   Christine showed every visitor a picture by Picasso.

           one picture   several pictures
    (inverse scope a > every)   (surface scope every > a)

An important issue needs to be pointed out at this point. If we compare the example in (17) to Bruening's examples in (4) and (5) and to the example in (15), we can see that the sequence of quantifiers in (17) gives rise to the following effect. The inverse scope of this sentence is entailed in the surface scope reading. The surface scope reading is a reading where every visitor was shown at least one, but not necessarily the same, picture by Picasso. The 'at least one' part in the surface scope paraphrase is exactly the reading which is technically the inverse scope reading. This reading is one where every visitor was shown the same picture by Picasso. The question at hand is whether we take this instance of an 'inverse scope reading' to be a true proof than an inverse scope reading is

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[9] The Theme argument, *picture* in example (17) and (15), was a heavy DP, i.e. *picture by Picasso*, in all conditions to resemble the items in the German study. This was done in German to facilitate the possibility of getting an inverse scope reading since German-specific aspects can interfere with judgments. This issue is picked up and discussed in detail in section 4 and 5 which look at German.

accessible if subjects indicate that this is a possible reading for them. The answer is that we should not take this to be an instance of real access to an inverse scope reading since this reading is semantically entailed in the surface scope reading. I will refer to this instance of inverse scope access as *entailed inverse scope reading*. Therefore, if we find a higher ratio of inverse scope accessibility in these cases it might be specifically due to the fact that we are dealing with the *entailed inverse scope reading*[10].

The third and fourth conditions were the dative counterparts of double object constructions with the same sequential difference in quantifiers as in the first two conditions. An example for condition three is in (18) and an example for condition four is in (19).

(18)   John showed every picture by van Gogh to a visitor.

(19)   John showed a picture by van Gogh to every visitor.

Sentence (18) is comparable to sentence (17) inasmuch as the technical inverse scope reading is already entailed by the surface reading. Therefore we are dealing with an *entailed inverse scope reading* here as well.

Condition five and six were subject/object constructions with the same alternations in quantifier sequence as condition one and two. Examples of condition five and six can be seen in (20) and (21) respectively.

(20)   Every music lover listened to an opera by Mozart.

(21)   A music lover listened to every opera by Mozart.

Again, as in (17) and (18), there is an *entailed inverse scope reading* in (20).

Fillers of the type shown in (22) were included in the questionnaire as well. These fillers were designed to allow for two interpretational possibilities just as the experimental items.

(22)   Sue and Mary saw a movie by Scorsese.

        one movie   several movies

Token: The questionnaire contained 5 double object constructions with the surface sequence existential quantifier before universal quantifier as in (15), 5 double object constructions with the surface sequence universal quantifier before existential quantifier as in (17), 5 dative object constructions with the surface sequence existential quantifier before universal quantifier as in (19), 5 dative object constructions with the surface

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[10] Since the experimental conditions included $\forall\exists$ quantifier sequences as well as $\exists\forall$ quantifier sequences this *entailed inverse scope reading* does not bear directly on the main point of this paper, namely that inverse scope is accessible for double object constructions, contrary to expectations. The conservative route is to regard the $\exists\forall$ case as the more reliable evidence.

sequence universal quantifier before existential quantifier as in (18), 5 subject/object constructions with the surface sequence existential quantifier before universal quantifier as in (21), 5 subject/object constructions with the surface sequence universal quantifier before existential quantifier as in (20), 3 sentences that were examples in Bruening's paper, namely (4) and (5), plus the spray-load construction in footnote 2[11]. Finally there were 8 fillers making a total of 41 sentences.

Subjects: The subjects were 27 University of Massachusetts undergraduate students who received class credit for participation. All of the subjects were English native speakers. They were oblivious to the purpose of the study and less than a third of the subjects were linguistics majors.

3.2.   Results and Discussion

Table 1 shows the percentage of surface scope preference for each type. This table shows the results of the first round of instructions given to the subjects to assess their preferred meaning for each sentence. Furthermore the means for crucial condition type, i.e. type 1 as in example (15), are compared to every other type with the $\exists\forall$ surface sequence[12]. Finally the results of a two tailed paired t-test are shown in the last column.

Table 1: Surface Scope Preferred

Item Type Comparison	Raw Numbers	paired t-test
double object ($\exists\forall$) vs. double object ($\forall\exists$) ex. (15) ex. (17)	126/135 vs. 72/135 93.3% 53.3%	p < 0.000
double object ($\exists\forall$) vs. object/PP ($\exists\forall$) ex. (15) ex. (19)	126/135 vs. 82/135 93.3% 60.7%	p < 0.000
double object ($\exists\forall$) vs. subject/object ($\exists\forall$) ex. (15) ex. (21)	126/135 vs. 131/135 93.3% 97.0%	p = 0.202

As we can see in Table 1, there is a significant difference in surface scope preference for the double object $\exists\forall$ sequence as compared to the double object $\forall\exists$ surface sequence, t (26) = -5.782, p < 0.000. This shows that there is a much stronger preference for surface scope in the double object $\exists\forall$ sequence. The weaker surface scope preference for the double object $\forall\exists$ surface sequence might be due to the *entailed inverse scope reading*. This means that since the inverse scope interpretation is entailed in the surface scope it could be weakening the surface scope preference if the entailment is processed with the surface scope processing as well. This finding is neither predicted nor denied under the Bruening analysis since this *entailed inverse scope reading* is not discussed in his paper.

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[11] Examples (4) and (5) were changed to include an R-expression instead of a pronoun and a DP respectively as seen in i) and ii)

i)   Susan gave a child each doll.
ii)   Chris gave a student every book.

[12] Table 1 shows the conservative $\exists\forall$ sequence comparisons with the exception of the double object construction which is compared in both sequence types. This is due to the *entailed inverse scope reading* issue discussed in section 3.1.

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Furthermore, there is also a significant difference in surface scope preference for the double object ∃∀ surface sequence as compared to the double object dative construction with the ∃∀ surface sequence, t (26) = 5.098, p < 0.000. This shows that there is a much stronger preference for surface scope in the double object ∃∀ surface sequence. The weaker surface scope preference for the double object dative construction with the ∃∀ sequence is expected under the Bruening analysis since inverse scope is available for these structures. However, it has been shown in previous experiments on scope ambiguity processing that even though structures are ambiguous the preferred on-line processing strategy seems to be the surface scope reading, cf. Tunstall (1998). The current experiment might not be completely comparable to these experiments since an off-line method rather than an on-line method was employed. Hence, the subjects had more time to think about the sentences although they were instructed to circle the first interpretation that came to their mind.

There is no significant difference in surface scope preference for the double object ∃∀ surface sequence as compared to the double subject/object construction with the ∃∀ surface sequence, t (26) = -1.308, p = 0.202. This shows that both constructions have a strong preference for the surface scope reading. This result is not expected under Bruening's analysis. The subject/object case should pattern with the double object dative constructions since this account argues that inverse scope is theoretically equally available for both of these structures. Therefore we would expect the surface scope preference to pattern with the double object dative constructions.

Although Table 1 shows the more conservative data set in light of the *entailed inverse scope reading* issue discussed in section 3.1., it is interesting to note that the ∀∃ sequences of all item types in comparison follow the same pattern as the conservative data set. In order to get the complete picture and to be able assess the surprising finding of the subject/object cases in Table 1 better, we need to look at Table 2 which shows the percentage of inverse scope accessibility. This data set was obtained during the second round of instructions where subjects had to indicate whether the interpretation that they did not choose in the first round of the questionnaire was a possible interpretation nevertheless. This answers the question whether the sentence is ambiguous for the subjects. This is particularly important if the subject chose the surface scope reading as the preferred one in the ∃∀ sequences of all types since we do not run into the problem of the *entailed inverse scope reading*.

Table 2: Inverse Scope Accessibility

Item Type Comparison	Raw Numbers	paired t-test
double object (∃∀) vs. double object (∀∃) ex. (15) ex. (17)	54/135 vs. 126/135 40.0% 93.3%	p < 0.000
double object (∃∀) vs. object/PP (∃∀) ex. (15) ex. (19)	54/135 vs. 128/135 40.0% 94.8%	p < 0.000
double object (∃∀) vs. subject/object (∃∀) ex. (15) ex. (21)	54/135 vs. 44/135 40.0% 32.6%	p = 0.076
subject/object (∃∀) vs. object/PP (∃∀) ex. (21) ex. (19)	44/135 vs. 128/135 32.6% 94.8%	p < 0.000

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As we can see in Table 2, there is a significant difference of accessibility to inverse scope between the double object ∃∀ sequence as compared to the double object ∀∃ surface sequence, t (26) = 6.996, p < 0.000. The reason for the higher rate of accessibility in the double object ∀∃ surface sequence is probably due to the fact that the inverse scope in this instance is the *entailed inverse scope reading*. Therefore this difference in accessibility is not due to differences in quantifier sequences per se but because of the entailment properties. Again, this finding is neither predicted nor denied under the Bruening analysis since this topic is not discussed.

Inverse scope is accessible for subjects 40% of the time for the double object ∃∀ surface sequence. This is not expected under Bruening's analysis which predicts 0% accessibility. The fact that subjects are able to access the inverse scope in these cases more than a third of the time cannot be data glitch.

The comparison between the double object ∃∀ surface sequence and the double object dative construction with the ∃∀ surface sequence also reveals a significant difference in accessibility, t (26) = -6.950, p < 0.000. The accessibility to inverse scope reading is extremely high in the object dative construction with the ∃∀ surface sequence. The difference in accessibility is actually predicted by the Bruening analysis since one is claimed to have frozen scope and the other does not. However, the fact that inverse scope is accessible for subjects 40% of the time for the double object ∃∀ surface sequence is not expected under his account as discussed above.

The next comparison is not expected under the Bruening account either. There is no significant difference between for the double object ∃∀ sequence as compared to the subject/object construction with the ∃∀ surface sequence, t (26) = 1.845, p = 0.076. We have seen in the discussion of Table 1 that both constructions have a strong preference for the surface scope reading. The result for accessibility to inverse scope in Table 2 is near a significant number. However, at a closer look the actual numbers show that the near significance is caused by a very low accessibility rate in the subject/object construction with the ∃∀ surface sequence, actually lower than the double object ∃∀ surface sequence. This is the reverse of what we would expect under Bruening's analysis since subject/object cases should allow access to inverse scope. The double object case on the other hand should not allow access to inverse scope but as we can see, it does.

It seems that the following picture is emerging not only from Table 2 but also from Table 1. The pattern that is different from all other patterns is not the double object case but the double object dative structure. This case does not show a clear preference in surface scope reading and furthermore it shows an extremely high rate of inverse scope accessibility, 94.8%. As we have seen there is a significant difference in accessibility if we compare the double objects and the double object dative. If the observation about the unique pattern is correct then we should also observe a significant difference in comparing the double object dative construction with the ∃∀ surface sequence and the subject/object construction with the ∃∀ surface sequence. Indeed, this is exactly what we can observe. This comparison is shown in the last line of Table 2. There is a significant difference in these cases, t (26) = 8.854, p = 0.000, confirming that the outstanding

pattern in the data set is the double object dative construction and not the double object construction.

To complete the data set, there were no statistical differences in inverse scope accessibility between any of the comparison pairs in the ∀∃ surface sequence types[13]. Again, this finding is most likely due to the *entailed inverse scope reading*.

Three of Bruening's original examples were included in the questionnaire as well, see section 3.1 and footnote 10. Interestingly, inverse scope was accessible for subjects around 50% of the times across all three examples. 62.9% for example (4), 48.1% for example (5) and 55.5% for the spray-load example in footnote 2. This finding shows an even higher rate of access to inverse scope than the experimental items. Since these examples were low in token we have to take this observation with a grain of salt. However, this finding is still surprising given that Bruening's analysis predicts 0% access to inverse scope for these cases.

To summarize the data so far, we have seen that the claim that there is frozen scope in English for double objects is not confirmed by the collected data. It seems that the outstanding pattern in the data set is not the double object construction but the object dative construction. This suggests that the question that needs to be answered is not why inverse scope is hard to access in double object constructions, since it is hard to access in subject/object constructions as well. The crucial question might have to be recast to why is inverse scope so incredibly easy to access in the object dative construction?

The answer to this question cannot be explored in this paper. However, it is a quite compelling project for further research.

A similar study like the English questionnaire was conducted in German. This study is discussed in the section 5. First, we have to establish the theoretical background for German in the next section.

4.   German Inverse Scope

To my knowledge there is no analysis that discusses the question whether the phenomenon of frozen scope exists in German double object constructions. Section 4.1. introduces general issues about German inverse scope. Access to inverse scope is problematic in some cases therefore strategies for facilitating access to inverse scope are discussed in this section as well. Section 4.2. discusses double object constructions containing two quantifiers and predictions for the experimental study which is discussed in section 5.

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[13] Double object ∀∃ sequence 126/135, double object dative ∀∃ sequence 133/135, subject/object ∀∃ sequence 121/135.

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4.1.   Inverse Scope in German

It is discussed in the literature on German that QR might not be available for German, see Sauerland (2003) who argues that QR is a possible strategy in German and provides a comparative discussion of accounts. In any case, inverse scope seems harder to be accessed by German speakers, e.g. Frey (1993), Krifka (1998), Pafel (1998). In example (23), the German equivalent of (1), inverse scope, where there are possibly different boys (one for every tree), is hard to access for German native speakers.

(23)   Ein Junge hat jeden Baum bestiegen.
        a   boy   has every tree   climbed
        'A boy climbed every tree.'

There are certain strategies that one can employ to make inverse scope more accessible i) prosody, ii) dislocation, iii) heavy indefinites. The remainder of this section discusses these strategies.

One strategy to facilitate inverse scope readings is to employ a special prosody. In German prosody interacts with quantifier scope. As discussed in Krifka (1998) a rise-fall accent contour on a doubly quantified sentence facilitates access to inverse scope[14]. Example (24) shows a quantified subject and object case where the subject has a universal quantifier. The example in (25) shows the same kind of structure as (24) but this time the object bears the universal quantifier. In both, (24) and (25), only the surface scope reading is available.

(24)   Jeder Student hat mindestens ein Roman gelesen.
        every student has at-least   one novel   read
        'Every student read at least one novel.'

(25)   Mindestens ein Student hat jeden Roman gelesen.
        At-least   one student has every novel read
        'At least one student read every novel.'   (Krifka 1998:77)

Examples (26) and (27) are the same examples as (24) and (25) respectively with the addition of the rise-fall intonational contour where / indicates a rise and \ indicates a fall. With this special intonation surface scope and inverse scope are available in both examples[15].

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[14] Examples (24) through (27) taken from Krifka (1998) who bases these examples partly on Frey (1993). Furthermore, the addition of *mindestens* (*at least*) adds to the facilitation in yet a different way. Since *ein* (*a*) and *ein* (*one*) are homophones and homographs. It is quite easy to get the exclusive *one* reading, thereby making it hard to access the *at least*, i.e. *a*, reading. This problem could be tackled by using the phonological reduced '*n* (*a*) form which is not ambiguous, i.e. it cannot be used for the cardinal *one*. However, since this strategy cannot be used in a written questionnaire it is not discussed further here.

[15] Not all native speakers agree with this judgment, i.e. access to inverse scope is not facilitated for these speakers. However, Krifka also has examples that involve a quantified argument and negation where inverse scope of the argument and the negation are more clearly facilitated than in the argument/argument cases shown here. Since I will not be concerned with negation in this paper I chose the argument/argument examples.

(26)   /JEDer Student hat mindestens \EINen Roman gelesen
            every student has at least   one novel   read
            'Every student read at least one novel.'

(27)   Mindestens /EIN Student hat \JEDen Roman gelesen.
            at least   one student has every novel read
            'Every student read at least one novel.'

Another way to ease access to inverse scope reading is in non-canonical orders with wither topicalization or scrambling, cf. Sauerland & Bott (2001) and Bader & Frazier (2005). Let us first look at topicalization. Example (28) shows the canonical order in a. and the topicalized object case in b. In (28) a. with a neutral intonation the inverse scope is almost impossible for native speakers to access. In (28) b. however both, the surface scope and the inverse scope, are easily accessible even without the help of a special intonation. In these cases the inverse scope can be accessed because there is the possibility to reconstruct the topicalized element to its base-generated position. In the example shown here the object reconstructs back to a position lower than the subject thereby triggering the inverse scope reading[16].

(28)   a. Ein Junge hat mit jedem Mädchen getanzt.
            a   boy   has with every girl   danced
        'A boy danced with every girl.'

        b. Mit jedem Mädchen hat ein Junge getanzt.
          with every girl   has a   boy   danced
        'With every girl, a boy danced.'   (Sauerland & Bott 2001:1)

Topicalization is not the only means of dislocation in German. Another possibility for dislocation is scrambling where material from within the VP is scrambled to a position outside of the VP but not as high as the CP in a topicalization. In addition, the canonical order can be changed in this process. This is shown in (29). In (29) a. the canonical order of subject and object is shown in the embedded sentence. In (29) b. the scrambled order is shown where the object precedes the subject. Again, the inverse scope is hard to access in (29) a. whereas it is easily available in b[17].

(29)   a. Peter weiss, dass ein Junge mit jedem Mädchen getanzt hat.
            P.   knows that a   boy with every girl   danced has
        'Peter knows that a boy danced with every girl.'

        b. Peter weiss, dass mit jedem Mädchen ein Junge getanzt hat.
            P.   knows that with every girl   a   boy danced has
        'Peter knows that a boy danced with every girl.'

---

[16] Note that through Topicalization in (28)b., we have a case of an *entailed inverse scope reading*.
[17] As with (28)b. (29)b. is a case of an *entailed inverse scope reading*.

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We can employ the same reasoning as in cases with topicalization. Scrambling can facilitate the inverse scope reading because the scrambled object can reconstruct into the base position and therefore give rise to the inverse scope reading.

A third way to facilitate access to inverse scope is to make the indefinite DP heavy. This strategy was also employed in examples in Frazier & Bader (2005). In (30) the indefinite object DP is heavy, *a picture of Picasso*. In this case inverse scope, where there is one and the same picture that was shown, is readily accessible even without special intonation.

(30)   Jeder Museumsbesucher hat ein Bild von Picasso gesehen.
        every museum-visitor   has a   picture of P.   seen
        'Every visitor of the museum has seen a picture by Picasso.'

Since the questionnaire study was administered on paper just like the English study, the intonation strategy cannot be employed. However, the dislocation strategy and the heavy DP strategy were used in the German study.

4.2.   Inverse Scope in Double Object Constructions

Unlike in English, double object constructions are available for most ditransitive verbs in German. Example (31) shows a case with two objects where (31) a. is the canonical order of indirect dative object and direct accusative object and (31) b. is the scrambled order where the two objects are linearily inversed. In addition the indefinite direct object is a heavy DP.

(31)   a. Christine hat jedem Museumsbesucher ein Bild von Picasso gezeigt
          C.   has every museum-visitor   a picture by P.   shown
        'Christine showed every museum visitor a picture by Picasso.'

        b. Christine hat ein Bild von Picasso jedem Museumsbesucher gezeigt
          C.   has a   picture by P.   every museum-visitor   shown
        'Christine showed a picture by Picasso to every museum visitor.'

However, it seems that there is no facilitation effect in accessing the inverse scope from the scrambling version in (31) b. as opposed to (31) a. contrary to the pair in (29) where scrambling does show a facilitation effect for accessing the inverse scope in subject object cases. This observation is based on my own native speaker intuition. Therefore it does not completely exclude the possibility of a facilitation of access to inverse scope.

Furthermore we have a case of *entailed inverse scope reading* in (31)a. Just as in the English cases we have to be careful in evaluating access to inverse scope in this instance since the inverse scope is already entailed in the surface scope reading.

The properties of (31)a. and b. give us the following possibilities. If we observe a difference in ratio of accessibility to inverse scope between a. and b. and the ratio is lower for b. this could be due to reconstruction not facilitating access to inverse scope. If

we observe no difference in the ratios then there are two possible ramifications i) reconstruction in b. does indeed facilitate access to inverse scope and ii) in addition to the effect in i) the property of *entailed inverse scope reading* can cause the a. cases to show a higher ratio of access to inverse scope.

We also need to consider what predictions the Bruening analysis makes for our cases. Recall that Bruening parallels scope freezing with cases of Superiority violations. In German, Superiority 'violations' are actually grammatical as seen in the pair in (32). Example (32)b. is the counterpart to the English example (8). As we can see, it is perfectly grammatical in German.

(32)   a. Wer hat was gekauft?
              who has what bought
         'Who bought what?'

         b. Was hat wer gekauft?
              what has who bought
         'Who bought what?'

If Superiority is not an issue in German and Bruening's analysis is correct in paralleling QR to this phenomenon than the system would predict that there is no scope freezing in German. The concrete prediction is that we should find no difference in ratios of access to inverse scope in all three critical cases, double object constructions, double object dative constructions which include PPs and subject/object constructions. As we will see in section 5 this prediction is indeed confirmed. However, the conclusion that there is no scope freezing German double object constructions cannot be completely drawn based on the collected data. More research is needed to make this conclusion watertight.

5.   Frozen Scope Experiment

Like in the English study the following questions were addressed in the German counterpart i) the allowed scope possibilities in double object constructions, ii) the preferred scope if the sentence does allow for scope ambiguity and iii) are there any differences in ratios of access to inverse scope in double object constructions, double object dative constructions which include PPs and subject/object constructions.

Section 5.1. describes the German experiment. Section 5.2. analyses and discusses the results and section 5.3. discusses the German and the English data with respect to Bruening's original analysis.

5.1.   German Experiment

Task: A questionnaire was administered on paper which required the subjects to read sentences and indicate what meaning the sentence can have for them. The subjects were asked to circle the first interpretation that came to their mind out of two possible interpretations. This set of instructions was given to assess the interpretation that subjects prefer in case the sentence is ambiguous for them in the first place. After subjects had

completed the questionnaire with the instruction described above, subjects were given a second set of instructions. In the second round of the questionnaire subjects had to indicate whether the interpretation that they did <u>not</u> choose in their first round was nevertheless a meaning that that the sentence can have after thinking about it for a while. This set of instructions was given to assess whether the sentence was ambiguous for the subjects, i.e. whether the subjects could access surface scope and inverse scope, making the sentence ambiguous for them[18].

Items: The questionnaire contained 6 conditions. The first condition was a double object construction shown (33), corresponding to the English example (15) which included the surface sequence existential quantifier before universal quantifier[19]. However, the German example here is the scrambled version as discussed in section 5.1. Furthermore, the same interpretation possibilities were provided as in the English study.

(33)   Christine hat ein Bild von Picasso jedem Museumsbesucher gezeigt
      C.   has a   picture by P.   every museum-visitor   shown
      'Christine showed a picture by Picasso to every museum visitor.'

      ein Bild   mehrere Bilder
      one picture   several pictures

The second condition was the canonical version of (34), corresponding to the English example (17)[20]. As in the English example this construction includes an *entailed inverse scope reading* as already discussed in section 5.1.

(34)   Christine hat jedem Museumsbesucher ein Bild von Picasso gezeigt
      C.   has every museum-visitor   a picture by P.   shown
      'Christine showed every museum visitor a picture by Picasso.'

The third and fourth conditions were the dative double object constructions with the same sequential difference in quantifiers as in the first two conditions. As we can see form the English paraphrases we are dealing with a canonical order, (36)b., and a scrambled order, (36)a.

(35)   Anna hat ein Gericht aus dem Kochbuch für jeden Gast gekocht.
      Anna has a dish   from the cookbook for every guest cooked
      'Anna cooked a dish from the cookbook for every guest.'

(36)   Anna hat für jeden Gast ein Gericht aus dem Kochbuch gekocht.
      Anna has for every guest a dish   from the cookbook cooked
      'Anna cooked a dish from the cookbook for every guest.'

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[18] Subjects in this study were not provided with paraphrases in the second round like the English subjects. Again this is due to the fact that the German study predated the English version and was less fine-tuned than the English version.
[19] This example is the same as example (31)b.
[20] This example is the same as example (31)a.

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The fifth and sixth conditions were subject/object constructions with the same sequential difference in quantifiers as in the first two conditions. As opposed to the previous four conditions both, (37) and (38), are canonical orders.

(37)   Jeder Musikliebhaber hat sich eine Oper von Mozart angehört.
         every music-lover   has self-(reflex.) an opera of Mozart to-listened
         'Every music lover listened to an opera by Mozart.'

(38)   Ein Kritiker hat jedes Theaterstück von Molière besprochen.
         a   critic   has every theater-piece by Molière discussed
         'A critic discussed every play by Molière.'

Fillers of the type shown in were included in the questionnaire as well. These fillers were designed to allow for two interpretational possibilities just as the experimental items.

(39)   Peter hat gesagt dass jeder Lehrer seinem Schüler eine 1 gegeben hat.
         Peter has said   that every teacher his   pupil   a   1 gave has
         'Peter said that every teacher gave hsi pupil and A.'

         ein Schüler   mehrere Schüler
         one pupil   several pupils

Token: The questionnaire contained 8 scrambled double object constructions with the surface sequence existential quantifier before universal quantifier as in (33), 8 canonical double object constructions with the surface sequence universal quantifier before existential quantifier as in (34), 2 scrambled dative object constructions with the surface sequence existential quantifier before universal quantifier as in (35), 2 canonical dative object constructions with the surface sequence universal quantifier before existential quantifier as in (36), 4 subject/object constructions with the surface sequence existential quantifier before universal quantifier as in (38), 4 subject/object constructions with the surface sequence universal quantifier before existential quantifier as in (37) and finally there were 12 fillers making a total of 40 sentences[21].

     Subjects: The subjects were 16 German native speakers of which a third had linguistic training. They were oblivious to the purpose of the study[22].

5.3.   Results and Discussion

Table 3 shows the percentage of surface scope preference for each type. This table shows the results of the first round of instructions given to the subjects to assess their preferred meaning for each sentence. Furthermore the means for crucial condition type, i.e. type 1 as in example (35), are compared to every other type with the $\exists\forall$ sequence and the two

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[21] The German study chronologically preceded the English study. Therefore the English study token are more fine-tuned than the German token.
[22] Thanks Lyn Frazier and to all participants of the quantifier processing seminar in the fall of 2005 who participated in the studies and gave me feedback on them.

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double object conditions. Finally the results of a two tailed paired t-test are shown in the last column.

Table 3: Surface Scope Preferred

Item Type Comparison	Raw Numbers	paired t-test
double object (∃∀) vs. double object (∀∃) ex.(33), scrambled ex.(36), canonical	115/128 vs. 67/128 89.8% 52.3%	p = 0.000
double object (∃∀) vs. object/PP (∃∀) ex.(33), scrambled ex. (35),scrambled	115/128 vs. 24/32 89.8% 75.0%	p = 0.103
double object (∃∀) vs. subject/object (∃∀) ex.(33), scrambled ex.(38), canonical	115/128 vs. 47/64 89.8% 73.4%	p = 0.042

Table 3 shows that there is a significant difference in surface scope preference for scrambled version of the double object construction with ∃∀ surface sequence than the canonical version of the double object construction with ∀∃ surface sequence, t(15) = -4.392, p = 0.001. There is a stronger preference for surface scope in the scrambled version. This is due to the fact that scrambling is usually performed to manipulate the information structure of the sentence, i.e. for a semantic reason. Therefore it is not surprising that there is a clear preference for surface scope. Thsi however, does not mean that there is no access at all to the inverse scope. This issue is discussed in the next table.

If we compare the scrambled version of the double object construction with ∃∀ surface sequence with the scrambled version of the dative double object construction with ∃∀ surface sequence we do not expect a difference in surface scope preference given the result above. And indeed, there is no difference in surface scope difference in this comparison pair, t(15) = 1.735, p = 0.103. Both have a strong preference for surface scope given the semantic ramification of scrambling.

Furthermore we can see that there is a significant difference in surface scope preference for scrambled version of the double object construction with ∃∀ surface sequence than the canonical subject/object version with ∃∀ surface sequence, t(15) = 2.226, p = 0.042. Again, there is a stronger preference for surface scope in the scrambled version than in the canonical version.

Table 4 shows the subject's access to inverse scope in comparison pairs. This data was collected in the second round of the questionnaire where subjects were asked to indicate whether the interpretation that they did not choose in the first round was a possible meaning for them nevertheless.

Table 4: Inverse Scope Accessibility

Item Type Comparison	Raw Numbers	paired t-test
double object (∃∀) vs. double object (∀∃) ex.(33), scrambled ex.(36), canonical	118/128 vs. 97/128 92.2% 75.8%	p = 0.108
double object (∃∀) vs. object/PP (∃∀) ex.(33), scrambled ex. (35),scrambled	118/128 vs. 28/32 92.2% 87.5%	p = 0.060
double object (∃∀) vs. subject/object (∃∀) ex.(33), scrambled ex.(38), canonical	118/128 vs. 49/64 92.2% 73.4%	p = 0.932

(Un)Frozen Scope in English and German

As we can see in all three comparison pairs, there was no statistic difference found in accessibility ot inverse scope. The first pair, the scrambled double object version with $\exists\forall$ surface sequence and the canonical double object version with $\forall\exists$ surface sequence, does not show a difference in accessibility of inverse scope, both show a high accessibility to inverse scope. Two reasons might be at play here as already discussed in section 4.2. i) reconstruction in the scrambled double object version facilitates access to inverse scope and ii) in addition to the effect in i) the property of *entailed inverse scope reading* can cause the canonical double object version cases to show a higher ratio of access to inverse scope, as seen in the English study. Both of these independent effects can contribute to the finding. To assess the effects of both of these factors we would have to compare both cases with their counterparts where the surface sequence of quantifiers is reversed, i.e. the canonical structure with a $\exists\forall$ surface sequence of quantifiers and the scrambled structure with a $\forall\exists$ surface sequence of quantifiers. Unfortunately these cases were not included in the study. Therefore the details to this findings have to be left for further research at this point.

The next pair, the scrambled double object version with $\exists\forall$ surface sequence and the scrambled dative double object version with $\exists\forall$ surface sequence which includes a PP, does not show a difference in accessibility to inverse scope. Both show a high accessibility to inverse scope. This is not surprising given that reconstruction can facilitate access to inverse scope in both cases.

The final comparison pair, the scrambled double object version with $\exists\forall$ surface sequence and the canonical subject/object version with $\exists\forall$ surface sequence, again both show a high accessibility to inverse scope. This is a surprising finding since the high accessibility for the scrambled double object version can be explained by reconstruction. However the high accessibility rate for the subject/object cases cannot be explained by reconstruction or by the *entailed inverse scope reading* as in the $\forall\exists$ surface sequence cases.

This finding points us into an interesting direction. If we assume that the high accessibility rate for inverse scope in subject/object structures patterns with the rest of data set inasmuch as there is simply no frozen scope then the other cases of high accessibility rates can be explained by non-frozen scope in addition to the mechanisms already discussed above. To be able test this claim, additional research is needed. Crucially all possible combinations of canonical/scrambled versions and quantifier surface sequences have to be included[23]. In any case this finding is interesting especially in the light of researchers claiming that QR is not available in German, see discussion in section 4.1.

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[23] The $\forall\exists$ surface sequence cases all show a high accessibility rate as well but were not included in the discussion, except the double object case, because of the *entailed inverse scope reading* issue.

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5.3.   English and German Data Revisited

The evidence so far points in the direction that frozen scope is indeed not a property of German but an additional step in research is needed to ultimately answer this question. Crucially all possible combinations of canonical/scrambled versions and quantifier surface sequences have to be included. Therefore an ultimate evaluation of the prediction that results from Bruening's original hypothesis, if Superiority and QR travel together in a language then if a language does not constrict one operation it might not constrict the other, cannot be evaluated.

With regards to the English data we can observe that Bruening's analysis does not make the correct prediction. Scope freezing does not seem to be a rigid property of English. As we have seen in section 3.2. the outstanding pattern in English is the high inverse scope accessibility rate in double object dative construction whereas the double object construction patterns with subject/object constructions. Therefore it seems that Bruening's analysis might have to be reevaluated.

6.   Conclusion

I have shown that frozen scope is not a property of English double object constructions contrary to previous claims. The experimental data shows that the double object dative construction is the unique pattern in English since it allows a high rate of accessibility of inverse scope as opposed to all other cases that have a lower rate of accessibility. It seems that the question for further research is why this might be case. However, none of the tested structures exhibited scope freezing.

For German it has been shown that there is a general tendency of high accessibility rates for inverse scope. Nevertheless a firm conclusion about this issue cannot be drawn until further research can fill the gaps in the data. In any case it has been shown that there is a high rate of accessibility for inverse scope given that some literature on German precludes QR to apply in German.

Appendix A English Items

The first item shows the full paradigm. All other items can be reconstructed form the first paradigm. Fillers and the three Bruening examples are omitted.

Double Object
1. a. Julie served every guest a dish by Emeril.
   one dish   several dishes
   b. Julie served a guest every dish by Emeril.
   one guest   several guests
2. a. Max asked every student a question from the SAT prep guide.
3. a. Anne read every child a story by the brothers Grimm.
4. a. Christine showed every visitor a picture by Picasso.
5. a. Susan told every neighbor a joke from Jerry Lewis' book.
   Double Object Dative
6. a. Peter served a dish by Rachel Ray to every guest.
7. a. Kate recommended a book by Morrison to every student.
8. a. Charlie read a story by Dr. Seuss to every child.

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9. a. John showed a picture by van Gogh to every visitor.
10. a. Nick suggested a movie by Tarantino to every colleague.
    Subject/Object
11. a. Every music lover listened to an opera by Mozart.
12. a. Every cinema fan saw a movie by Hitchcock.
13. a. Every teacher recited a poem by Dickenson.
14. a. Every fantasy fan read a book by Le Guin.
15. a. Every reviewer discussed a play by Steinbeck.

Appendix A German Items

The first item shows the full paradigm. All other items can be reconstructed form the first paradigm. Fillers are omitted.

       Double Object
1. a. Peter hat einen Kunden der neuen Firma jedem Manager vorgestellt.
    ein Kunde   mehrere Kunden
    b. Peter hat jedem Manager einen Kunden der neuen Firma vorgestellt.
    ein Kunde   mehrere Kunden
2. a. Susi hat ein Gericht von Johan Lafer jedem Gast serviert.
3. a. Max hat ein Buch von Grass jedem Studenten empfohlen.
4. a. Klaus hat einen Film von Fassbinder jedem Kursteilnehmer vorgeschlagen.
5. a. Christine hat ein Bild von Picasso jedem Museumsbesucher gezeigt.
6. a. Anna hat ein Lied von Celine Dion jedem Gast vorgesungen.
7. a. Christian hat ein Gedicht von Goethe jedem Verwandten rezitiert.
8. a. Britta hat eine Geschichte von Andersen jedem Kind vorgelesen.
    Double Object Dative
9. a. Otto hat ein Lied von ABBA für jeden Besucher gesungen.
10. a. Anna hat ein Gericht aus dem Kochbuch für jeden Gast gekocht.
    Subject/Object
11. Jeder Musikliebhaber hat sich eine Oper von Mozart angehört.
12. Jeder Lehrer hat ein Gedicht von Schiller rezitiert.
13. Jeder Angestellte hat einen Witz über seinen Chef erzählt.
14. Jeder Kinofreund hat sich einen Film von Hitchcock angesehen.
15. Ein Fantasyliebhaber hat jedes Buch von Tolkien gelesen.
16. Ein Kritiker hat jedes Theaterstück von Molière besprochen.
17. Ein Rockfan hat jede CD von Elton John gekannt.
18. Ein Tourist hat jedes Musical von Andrew Loyd Webber gesehen.

References

Aoun, Joseph & Yen-hui Audrey Li. 1989. "Scope and Constituency". *Linguistic Inquiry* 20. 141-172.

Aoun, Joseph and Yen-hui Audrey Li. 1993. *Syntax of Scope*. MIT Press.

Bruening, Benjamin. 2001. "QR Obeys Superiority: Frozen Scope and ACD". *Linguistic Inquiry* 32. 253 – 273.

Bader, Markus and Lyn Frazier. 2005. "Interpretation of leftward-moved constituents: Processing topicalizations in German". *Linguistics* 43. 49 – 87.

Bošković, Željko. 1995. *Superiority effects with multiple wh-fronting in Serbo-Croatian.* Ms., University of Connecticut, Storrs.

Chomsky, Noam. 1995. *The Minimalist Program*. MIT Press.

Frey, Werner. 1993. *Syntaktische Bedingungen für die semantische Repräsentation: Über Bindung, implizite Argumente und Skopus*. Studia Grammatika XXXV. Akademie

Tanja Heizmann

Verlag.

Krifka, Manfred. 1998. "Scope Inversion under the rise-fall contour in German". *Linguistic Inquiry* 29. 75 – 112.

Larson, Richard K. 1988. "On the double object construction". *Linguistic Inquiry* 19. 335 –391.

Larson, Richard K. 1990. "Double objects revised: reply to Jackendoff". *Linguistic Inquiry* 21. 589-632.

May, Robert. 1985. *Logical Form: Its Structure and Derivation*. Cambridge, Mass.: MIT Press.

Pafel, Jürgen. 1998. *Skopus und logische Struktur. Studien zum Quantorenskopus im Deutschen*. Technical Report 129, Sonderforschungsbereich 340, Universität Tübingen

Richards, Norvin. 1997. *What moves where when in which language*. PhD Dissertation. MIT.

Sauerland, Uli and Oliver Bott. 2001. "Prosody and Scope in German Inverse Linking Constructions". In: B. Bel and I. Marlien (ed.), *Proceedings of the Speech Prosody 2002 conference,* 623-628. Laboratoire Parole et Langage, Aix-en-Provence, France.

Tunstall, Susanne Lynn. 1998. *The Interpretation of Quantifiers: Semantics & Processing*. PhD Dissertation, University of Massachusetts, Amherst.

Vignjević-Heizmann. Tanja. 2005. *Locality in Serbo-Croatian Multiple Questions*. Ms. University of Massachusetts, Amherst.

Tanja Heizmann
Department of Linguistics
University of Massachusetts
226 South College
150 Hicks Way
Amherst, MA 01002
USA

tanja@linguist.umass.edu